Eurasian Studies in Business and Economics 8/2
Series Editors: Mehmet Huseyin Bilgin · Hakan Danis

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Ender Demir
Ugur Can *Editors*

Eurasian Economic Perspectives

Proceedings of the 20th Eurasia Business and Economics Society Conference - Vol. 2

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Editors

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Preface

This is the eighth issue of the Springer's series *Eurasian Studies in Business and Economics*, which is the official book series of the Eurasia Business and Economics Society (EBES, http://www.ebesweb.org). The issue is divided into two volumes, and this volume includes selected papers in the field of business that were presented at the 20th EBES Conference. The conference was held on September 28–30, 2016, at the IFM—Real Estate and Facility Management at TU Wien in Vienna, Austria, with the support of Istanbul Economic Research Association. Prof. John Rust from Georgetown University, USA, and Prof. Alexander Redlein from Vienna University of Technology, Austria, joined the conference as keynote speakers. All accepted papers for this volume went through a peer-review process and benefited from the comments made during the conference as well.

During the conference, participants had many productive discussions and exchanges that contributed to the success of the conference where 261 papers by 420 colleagues from 60 countries were presented. In addition to publication opportunities in EBES journals (Eurasian Business Review and Eurasian Economic Review, which are also published by Springer), conference participants were given opportunity to submit their full papers for this volume.

Theoretical and empirical papers in the series cover diverse areas of business, economics, and finance from many different countries, providing a valuable opportunity to researchers, professionals, and students to catch up with the most recent studies in a diverse set of fields across many countries and regions.

The aim of the EBES conferences is to bring together scientists from business, finance, and economics fields, attract original research papers, and provide them publication opportunities. This volume covers a wide variety of topics in the field of business and provides empirical results from many different countries and regions

that are less investigated in the existing literature. The main business fields represented in this volume are:

(i) PUBLIC ECONOMICS
(ii) REGIONAL STUDIES
(iii) GROWTH AND DEVELOPMENT
(iv) INEQUALITY

Although the papers in this issue may provide empirical results for a specific country or regions, we believe that the readers would have an opportunity to catch up with the most recent studies in a diverse set of fields across many countries and regions and empirical support for the existing literature. In addition, the findings from these papers could be valid for similar economies or regions.

On behalf of the Series Editors, Volume Editors, and EBES officers, I would like to thank all presenters, participants, board members, and the keynote speaker, and we are looking forward to seeing you at the upcoming EBES conferences.

Istanbul, Turkey Ender Demir

Eurasia Business and Economics Society (EBES)

EBES is a scholarly association for scholars involved in the practice and study of economics, finance, and business worldwide. EBES was founded in 2008 with the purpose of not only promoting academic research in the field of business and economics but also encouraging the intellectual development of scholars. In spite of the term "Eurasia," the scope should be understood in its broadest terms as having a global emphasis.

EBES aims to bring worldwide researchers and professionals together through organizing conferences and publishing academic journals and increase economics, finance, and business knowledge through academic discussions. To reach its goal, EBES benefits from its executive and advisory boards which consist of well-known academicians from all around the world. Every year, with the inclusion of new members, our executive and advisory boards became more diverse and influential. I would like to thank them for their support.

EBES conferences and journals are open to all economics, finance, and business scholars and professionals around the world. Any scholar or professional interested in economics, finance, and business is welcome to attend EBES conferences. Since 2012, EBES has been organizing three conferences every year. Since our first conference, around *9132* colleagues from *92* different countries have joined our conferences and *5240* academic papers have been presented. Also, in a very short period of time, *EBES has reached 1713 members from 84 countries*.

Since 2011, EBES has been publishing two academic journals. One of those journals, *Eurasian Business Review—EABR*, is in the fields of industry and business, and the other one, *Eurasian Economic Review—EAER*, is in the fields of economics and finance. Both journals are published thrice a year, and we are committed to having both journals included in SSCI as soon as possible. Both journals have been published by *Springer* since 2014 and are currently indexed in *Scopus,* the *Emerging Sources Citation Index* (Thomson Reuters), *EconLit*, *Google Scholar*, *EBSCO*, *ProQuest*, *ABI/INFORM*, *Business Source*, *International Bibliography of the Social Sciences (IBSS)*, *OCLC*, *Research Papers in Economics (RePEc)*, *Summon by ProQuest*, and *TOC Premier*.

Furthermore, since 2014 Springer has started to publish a new conference proceedings series (*Eurasian Studies in Business and Economics*) which includes selected papers from the EBES conferences. Also, the 10th, 11th, 12th, 13th, 14th, 15th, and 17th EBES Conference Proceedings have already been accepted for inclusion in the Thomson Reuters' *Conference Proceedings Citation Index*. The 16th, 18th, and subsequent conference proceedings are in progress.

On behalf of the EBES officers, I sincerely thank you for your participation and look forward to seeing you at our future conferences. In order to improve our future conferences, we welcome your comments and suggestions. Our success is only possible with your valuable feedback and support.

With my very best wishes,

Jonathan Batten, PhD
President

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Part IV Inequality

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Part I
Public Economics

Corruption in France: Characteristics of the Phenomenon and Statistical Data

Joanna Brzezińska

Abstract The aim of the study is to analyse the phenomenon of corruption in France that remains one of the most modern pathologies associated with the globalization process in the economy. Its development is currently determined by huge growth of international transactions. Corruption affects individuals acting on behalf of any organisation that may make beneficial economic decisions in exchange for obtaining material or personal benefits, or the promise of receiving them for making a particular decision. It is therefore always a violation of the performance of duties falling within the scope of one's work. One of the most dangerous dimensions of corruption is currently known as great corruption, which relates to economic and political elites. This article will present organisations, whose objective is to combat corruption in France (Central Service for the Prevention of Corruption—SCPC) and the estimated scale of corruption, which is constantly increasing. According to statistical data, there are 150–200 cases of convictions due to corruption recorded each year, but the real figure for this pathology is much higher, indicating clearly insufficient tightness of the law on economic regulations in this area.

Keywords Corruption • Pathology of the economy • Statistical data

1 Introduction

Corruption is referred to in France as one of the largest, most serious and most spectacular economic plagues (Ambroise-Castérot 2008; Delmas-Marty and Manacorda 1997; Zanoto 2002). Broadly speaking, it means all manifestations of demoralisation, or destruction, as well as violations of applicable moral rules. In French doctrine the phenomenon is sometimes characterised as embezzlement or trade in one's function, and it therefore constitutes a violation of obligations resulting from one's position. As Quéméner underlines: "corruption is defined as behaviour, through which a person performing a particular public or private

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function assigned to them, seeks or accepts a gift, offer or promise, given the fulfilment, delay or omission of behaviour directly or indirectly encompassed by the scope of executed obligations" (Quéméner 2015, p. 211). Roux (2015), in turn, highlights that corruption is an illegal pact or agreement, on the basis of which a public officer conducts an activity, resulting from their function or mandate, receiving any benefit in return. Due to the omnipresent nature of the phenomenon of corruption, the French law distinguishes the following basic categories of entities, among which the frequency of corruption remains the highest: (1) judges, assessors, experts, (2) public officers, (3) doctors, (4) employees, (5) sportsmen (Cornu 2007; Belloir 2013; Cadiet 2004). And although the discussion below concerns all the aforesaid occupations, the most common form of corruption is corruption of officials (Lascoumpes 2010; Dolling 2001; Cartier-Bresson 2015).

2 Definition of Corruption

The French criminal law distinguishes two basic forms of corruption: active and passive corruption (Lopez and Tzitzis 2004). When defining passive corruption, one should think of a corrupt activity from the perspective of a corrupted party that does a favour as opposed to active corruption perceived from the perspective of a corrupting party that offers a bribe. The specified dependency is best presented by the figure below:

A corrupt activity is an offence that obligatorily requires active participation of two entities, a party that makes an illegal offer on one part, and a party that accepts the offer on the other part (Fig. 1). Depending on the perspective from which the fulfilment of the attributes of the discussed offence is seen, there are different forms of the offence itself (active or passive corruption) (Rassat and Roujou de Boubée 2008).

The active corruption is "intrigues, through which a third party receives or seeks to receive gifts or promises from a person performing a public function, which (the promises) that person fulfils, delaying or preventing an activity resulting from that person's function to eventually facilitate the performance of that activity by an appointed person" (Lepage et al. 2015). Passive corruption, in turn, involves using a

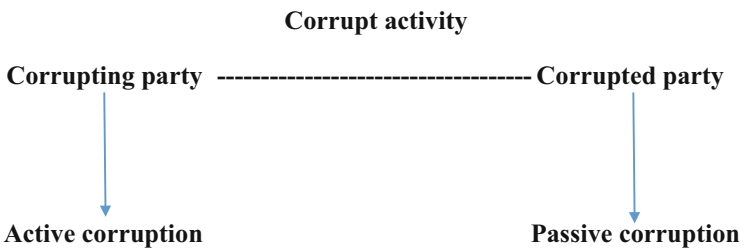

Fig. 1 Act of corruption. Source: Own source

public function by a person performing that function by accepting gifts, promises or benefits, given the execution or inhibition of activities related to the performance of the said function. Certain similarities that occur between active and passive corruption offences result in the presence of common constituting elements in their structure, which may lead to the situation, in which both forms of the offence are treated interchangeably (Cartier and Mauro 2000).

Taking into account the fact that the phenomenon of corruption becomes international, the necessity of protection of not only the internal national market against the phenomenon remains fully justified. The implication of this state of affairs is that France has implemented complex ways of responding to the concerned pathology, both externally (internationally) and under the national law. From the perspective of economic conditions, due to the necessity to combat certain unfair competition practices, which increased under the French law in the second half of the 1990s, it became necessary to adopt appropriate international regulations, whose purpose was to eliminate those practices. As the regulations were being implemented, France, in Brussels, acceded the Convention against corruption, ratifying it on 26 May 1997. At the same time, the adoption of the Convention provisions contributed to the introduction (on the basis of the Act of 30 June 2000) of the provision of article 435 – 1 (and subsequent provisions) to the French Criminal Code (Code Penal), which satisfied the undertaken international obligations. On the basis of the indicated regulation, a corrupt activity committed by an EU official, an official of another EU Member State, a public official or an official of the European Committee, Court of Justice or Court of Auditors (Rassat and Roujou de Boubée 2008; Meny 1993) was penalised. However, the indicated regulations were not complete as they prevented combating corrupt activities committed by official of non-EU States. It was the Act of 13 November 2007 (Ambroise-Castérot 2008) that eliminated the legal gaps, which emerged as a result of the ratification of formerly binding regulations: the Council of Europe Convention of 27 January 1999 and Merida Convention of 31 October 2003. The legislator concluded that entities established on the basis of the Treaty on European Union were to be considered entities of the international public law and subject to the following provisions: article 435 – 1 C.P to 435 – 4 Criminal Code (Code Penal), penalising corruption and trade in influence, in both active and passive form (Didier 2000).

The offence of corruption under the French criminal law, in turn, is penalised under several provisions. Hence, the regulation is of a very complex nature. First of all, the French legislator decided to distinguish the offence of corruption of officers in article 432 – 11 Criminal Code (Code Penal 2015a, b). This provision refers exclusively to the corrupt activities committed by public officials. In article 433 – 1 Criminal Code (Criminal Code 2015a, b), in turn, the criminal code provides for penalisation of active corruption committed by individuals, considering that they are persons performing public functions. Moreover, article 434 – 9 Criminal Code (Code Penal) provides for the necessity to penalise corruption committed by a judge or any other person, who has been entrusted with duties lying within the scope of judicial power (arbitrator, expert, conciliator, mediator) (Segonds 2008). This

catalogue of provisions is additionally supplemented by the regulations of the Act n. 2005 – 750 of 4 July 2005, eventually repealing special provisions of the labour code related to corruption committed by employees of private enterprises (Lepage et al. 2015).

Looking at all the code regulations indicated above, it should be emphasized that under the French criminal law the most complex structure remains with the offence of active corruption. There are two forms of the offence: the first, extremely important one, concerns public officials and officers, while the second one refers to corruption in the private sector and concerns particular individuals. This duality of the indicated regulation facilitates public awareness of economic threats and serious economic losses induced by the characterised pathology.

A closer analysis of the structure of the provision penalising active corruption of officials proves that it is comprised of several essential elements, resulting in its complexity. Pursuant to article 433 – 1 of the French Criminal code (Code Peal 2015a, b) active corruption is an offence that involves adopting certain behaviour by any person, who illegally, directly or indirectly, makes a proposal, which involves the execution of any offers, promises, gifts or benefits, to a person that executes public power or carries out their mission in public service or executes public mandate, for that person or someone else:

– if the indicated person adopts or refrain from adopting, or if the person adopted or refrained from adopting behaviour, which results from the function that person performs, or their mission or mandate, or (if) such behaviour was facilitated, given the performed function, mission or mandate,
– if the indicated person overuses or used to overuse their real or anticipated influence, given the possibility of exercising power or performing tasks and entitlements resulting from one's position in terms of distinctions, positions, titles or any other favourable resolution.

In reality, a corrupt activity involves the transfer of goods or performance of diverse activities intended to help achieve beneficial, for the corrupting party, resolutions. Nevertheless, it usually involves giving specific financial benefits: money, cheques or objects. Furthermore, a corrupt activity may not only be intended to help increase assets (delivery of goods), but it may also involve decreasing liabilities (e.g. paying off a debt), or even fulfilling obligations on preferential terms (atypical economic conditions of order fulfilment) (Lepage et al. 2015).

Committing the offence of active corruption requires that the conclusion of an agreement entered into by a corrupting party, before undertaking any beneficial activities by an official, is proved. Thus, such an agreement, from time perspective, must precede all benefits, which may result from the corrupting party's activities. The discussed offence has a formal nature, which means that an offer made by a corrupting party does not have to be accepted, yet is has to be made (Chopin 2005).

As it has been noted before, active corruption may accompany not only officers, but may also be present in the private sector. On the basis of the Act n. 2005 – 750 of 4 July 2005 (Act n. 2005 – 750 of 4 July 2005), including the provisions of

the Council framework decision of 23 July 2003 (on combating corruption in the private sector) into the internal French law, the provisions of articles 445 – 1 to 445 – 4 Criminal Code (Code Penal), penalising the offence of corruption committed by persons not performing public functions, have been introduced to the criminal code. While aiming to determine, who is an offender, it should be pointed out that it is a person, who performs, as part of their vocational or social activity, a managerial function or executes work for a natural person, legal person or any other entity (Lepage et al. 2015).

The sanctions envisaged in the French criminal code that apply to the offence of active corruption of officers are extremely severe. A natural person is subject to the penalty of deprivation of liberty of 10 years and a fine in the amount of 1 million euros, which may be doubled, given the benefits an offender obtained as a result of the offence. Identical sanctions apply to European and foreign officers (article 432 – 11 and article 433 – 1 of Criminal Code 2015a, b). Apart from imposing principal penalties on an offender, additional penalties may be imposed such as: deprivation of public, civil and family rights, prohibition from exercising a particular public function, vocational or social activity, during which the offence has been committed (for the period of 5 years). Additionally, a court may disqualify the offender from conducting commercial or industrial activities, or running, administering, managing or controlling an industrial enterprise or a commercial company, or even order to confiscate the sums or objects accepted by the offender, excluding those to be returned.

In case of legal persons, criminal liability has been regulated in a specific way and amounts to five times the fine imposed on natural persons. This sanction may be supplemented by appropriate additional penalties. When it comes to active corruption in the private sector, a court may impose the penalty of deprivation of liberty of 5 years and a fine in the amount of 500 thousand euros, which may be doubled in case of obtaining benefits from the committed offence. Additional penalties may be imposed in accordance with the rules envisaged in relations to active corruption in the public sector.

3 Organisations, Whose Objective Is to Combat Corruption

Due to the significance of the threat of corruption, certain activities are being continuously undertaken in France. Their main purpose is to minimise the adverse effect of corruption on the national economy. For that purpose numerous initiatives are undertaken, which are aimed at creating organisations preventing all manifestations of corruption not only in the public sector but also in the private one. Among them the most important are: Central Service for the Prevention of Corruption (Service Central de Prevention de la Corruption), TRACFIN, General Directorate for Competition Policy, Consumer Affairs and Fraud Control, as well as Public

Finances Directorate General (DGFIP) and Inspectorate General of Finances (IGF) (Rozès 1995).

One of the most important French anti-corruption units is the Central Service for the Prevention of Corruption established on 29 January 1993 (on the basis of the act no. 93 – 122) (Act n. 93 – 122 of 29 January 1993). One of its essential tasks is to increase the level of transparency of economic life and state procedures. In order to reach the set objectives, the authority collects all information necessary for the detection and prevention of all manifestations of active or passive corruption committed by persons performing public functions or entities involved in illegal interests or activities, which are targeted against the proper execution of procedures resulting from the public procurement law. Moreover, the Central Service conducts activities aimed at combating corruption among non-governmental organisations, companies and local communities (Badie 2015). It collects statistical data concerning offences committed by public officers and local government officials. It keeps statistics concerning all manifestations of corrupt behaviour, kept by specialised organisations such as: Transparency International France (TI France), SHERPA, ANTICOR, as well as by scientific organisations: CNRS, CEVIPOF or enterprises, or authorities specialised in combating the analysed pathology (e.g. Police records). It is worth emphasizing that the Central Service remains in France an example of an organisation that is engaged in most comprehensive corruption prevention. What is important, due to its broad-based activity (anti-corruption actions, raising public awareness of economic and business threats, data collection, analyses of the frequency of the offence, studies on the mechanisms that potentiate pro-corrupt behaviour among both government and local government politicians), the discussed phenomenon of corruption may be thoroughly studied (starting from the causes of its occurrence and ending with the mechanisms of its execution), while effective methods of combat with corruption may be determined (Badie 2015).

Yet another important organisation, which supports the Central Service for the Prevention of Corruption in the combat with corruption in France, is the Unit for intelligence processing and action against illicit financial networks (TRACFIN 2015). Its fundamental objective is to inform representatives of the Ministry of Finance about all manifestations of organised crime (e.g. money laundering, financing terrorism or money forgery, etc.). It also supports the activities of the Central Service in the combat with corruption, which resulted in compiling "Guidelines on the detection of suspicious financial transactions associated with corruption" (Guide-Aide 2014) in 2014, which was published in an electronic version on the websites of the Ministry of Justice and Economy. Additionally, in 2014 TRACFIN conducted a study at French prosecutor's offices, aimed at indicating offences most tightly connected with money laundering. Corruption was indicated as many as ten times (per 17 audited offices).

Furthermore, among French institutions, whose task is to control the legality of financial operations and to indicate cases of offences, which may result from their violations, there are such institutions as: General Directorate for Competition Policy, Consumer Affairs and Fraud Control, Public Finances Directorate General

(DGFIP) and Inspectorate General of Finances (IGF). The tasks of the aforesaid institutions encompass exercising control, conducting audits, preparing recommendations for state economic and financial organisations. As part of their competencies they also, but to a lesser degree, undertake activities aimed at preventing all manifestations of behaviour, which may determine the activation of corruption mechanisms, and detect this category of offences that have already been committed (Badie 2015).

4 Corruption According to Statistics

The Corruption Perceptions Index drawn up each year by Transparency International (Heidenheimer 2009) remains the most important ranking of the level of corruption in particular countries. The ranking shows corruption perceptions by financial analysts, businessmen, and representatives of the financial sector. A country can get a score on the scale between 100 and 0 points (the higher the number of points, the lower the corruption). France scored its highest number of points (the lowest crime level) in 2005, when it was ranked the 18th, and for nearly 7 years now it has been ranked in the first half of the third ten of all the countries, finishing 23rd (Fig. 2).

While looking at the frequency of the offence of corruption in France (Fig. 3), it should be stressed out that its level is subject to slight changes. During the consecutive 3 years (2011–2013), the number of detected cases of passive

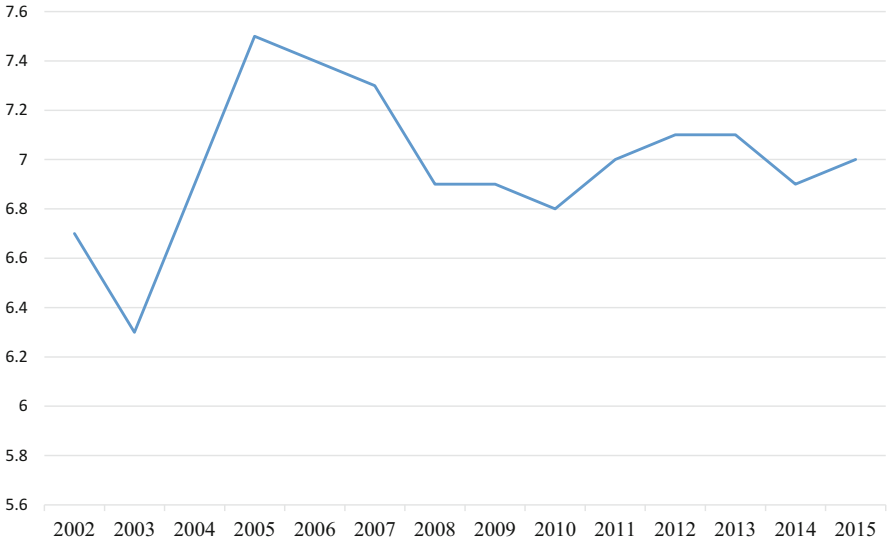

Fig. 2 Corruption perceptions index for France in the years 2002–2015. Source: Transparency International (2016)

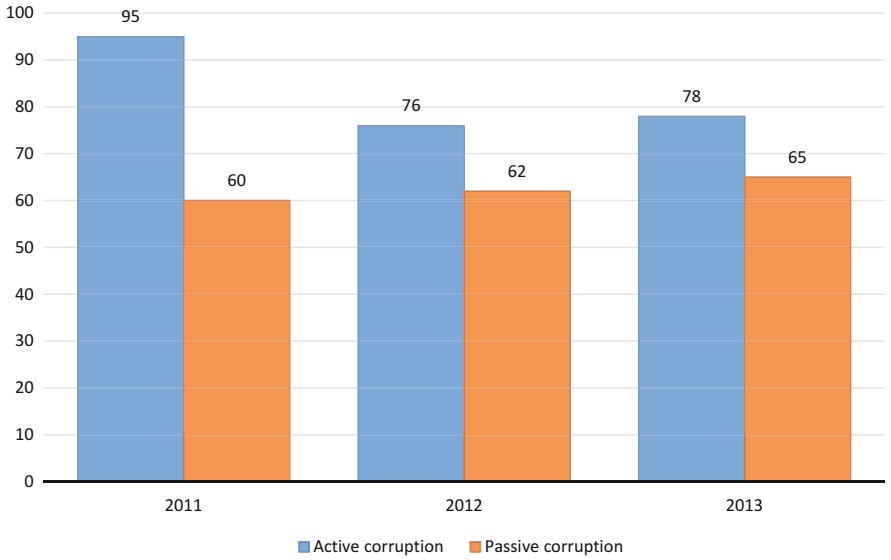

Fig. 3 The number of detected offences of corruption in France in the years 2011–2013. Source: Service Central de Prevention de la Corruption (2014)

corruption remained at the same level (60 in 2011, 62 in 2012 and 65 in 2013). On the other hand, when it comes to active corruption, a moderate decreasing trend can be observed (from 95 cases in 2011 to 78 in 2013). It should also be emphasized that, taking into account the statistical data presented below, among cases of corruption in France, active corruption clearly prevails.

A closer analysis of the corrupt activity of the French proves that there are several public sectors most vulnerable to its occurrence. It should be noted that the research conducted in the French society proves (Bolzette 1996; Meny 1993) that corruption develops most often among politicians, businessmen and financial analysts as well as among entrepreneurs, media representatives and public officers and officials (Fig. 4). However, the most advanced level of the phenomenon can be observed among representatives of political parties and persons having serious financial resources at their disposal. Thus, corruption develops particularly well where political and financial influences collide.

Figure 5 shows in turn the number of persons convicted for corruption in France in the years 2003–2013. It should be underlined that the highest volatility of convictions for the offence in question was noted between the year 2007 and 2011, in which 103 and 160 persons were convicted respectively. In the years 2012–2013 the number of convictions amounted to 140 cases and did not exhibit an increasing trend.

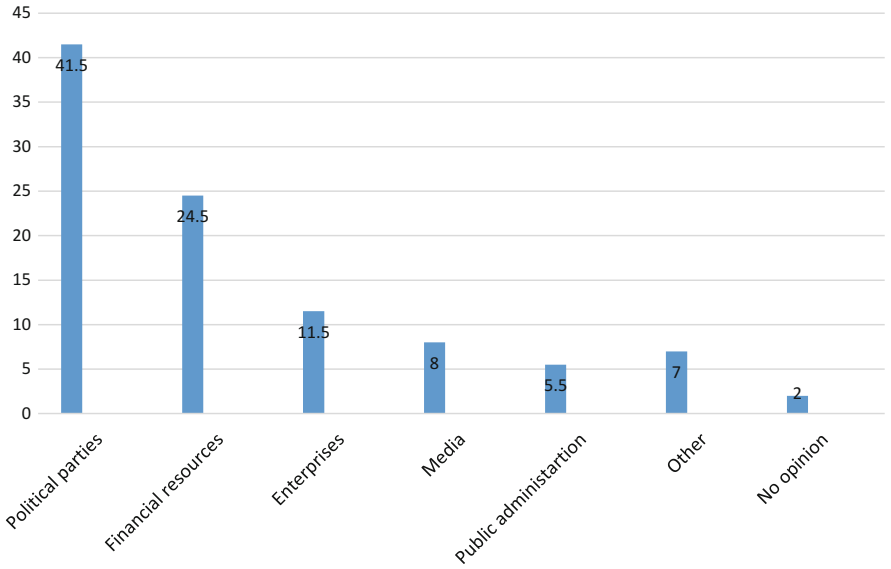

Fig. 4 Most corrupt sectors in France. Source: Lascoumpes (2010)

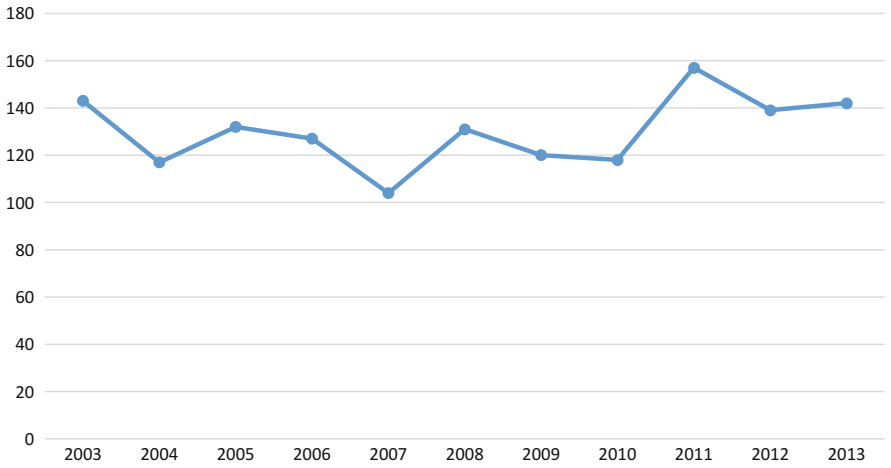

Fig. 5 The number of persons convicted for corruption in France in the years 2003–2013. Source: Service Central de Prevention de la Corruption (2014)

5 Conclusions

The phenomenon of corruption is nowadays one of the fundamental, most common French pathologies (besides money laundering or organised crime), threatening proper development in the domain of state politics, business and economy. The

precise estimation of the true scope of the discussed offence and losses associated with it remain impossible as the offence itself often remains undetected. Its scale is even larger due to the fact that it is not limited to behaviour in the realm of public sector (the so-called corruption of officials) but it also concerns all activities undertaken by individuals in the private sector. The multidimensional nature of the discussed offence has translated into the execution of normative regulations applicable under the French law. It should be underlined that the French legislator actively undertakes activities aimed at creating the strictest and tightest possible system of anticorruption provisions. Their closer analysis allows one to conclude that the system has a dichotomous nature as on one hand, France, as a EU member state, is a signatory of numerous international normative acts, in particular the Convention against corruption. Their adoption allows for undertaking all necessary activities aimed at eliminating corruption from the international area. On the other hand though, state regulations, which penalise the phenomenon of corruption, remain extremely complex. The French civil code includes several categories of provisions aimed at preventing the pathology in question. Among them there are provisions typifying passive as well as active corruption, committed not only by public officers or officials but also by individuals not performing any functions or tasks as part of the electoral mandate given to them.

Due to the attempt to "tighten up" the activities of the French state in terms of creating a coherent anti-corruption system, numerous organisations have been established, whose objective is to strengthen and actively support the legislative activities of the French legislator. Among them there are such authorities as: Central Service for the Prevention of Corruption (SCPC), TRACFIN, GAFI, particular Ministries (the Ministry of Justice or the Ministry of Finance) and separated for that purpose units as well as activities of local authorities. The most important asset of the said organisations and their units is that they have broadened the scope of their anticorruption activities not only in organisational terms but most of all in educational and preventive terms. Their priority objective is to raise public awareness of the mechanisms that potentiate the increase in pro-corrupt behaviour; to define method of their elimination, to develop effective strategies aimed at preventing and minimising corruption mechanisms (e.g. among politicians, sportsmen, judges, etc.). Raising public awareness of the manifestations of behaviour that facilitates the occurrence of the discussed offence as well as public education focused on the elimination of such behaviour facilitate the update of awareness of individuals, who, once they locate symptoms of the concerned pathology, may try to actively prevent or combat it.

It seems that nowadays the high level of awareness of the threats directly associated with corruption (white collar crime, money laundering), particularly in business and economic terms, results in a little decrease in the frequency of its occurrence in France (Fig. 3). Nevertheless, undoubtedly there are still several strategic sectors, in which corruption develops. Politics, finances, administration, media and sport are the most important ones (Fig. 2). This state of affairs means that, despite great efforts of lawyers as well as state organisations (governmental and non-governmental ones) the issue of corruption exists, which resulted in France

being low-ranked 26th in the Corruption Perceptions Index of 2015 drawn up by Transparency International, which constitutes a reflection of the actual perception of the phenomenon of corruption in society. This position proves that corruption is unfortunately still a very serious issue (economic, political and social one), given the fact that France has been ranked in the third ten of the countries included in the analysed ranking.

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Economics, Competition and Coopetition of the Italian Private Welfare State: A Cluster Analysis

Angela Besana

Abstract At crisis times, Public Welfare States are not more enough in order to support the growth of the social and nonprofit economy. This article addresses pivotal and different roles of the Welfare State of private grant-makers in Italy, when competition is not more useful in order to solve allocation of scarce public and private resources. Thanks to coopetition by means of networks, partnerships with several stakeholders, pooling of resources and project leadership, the Private Welfare State of Italian Foundations of banking origin (IFBOs) will be clustered for 2012s performances. Economic performances concern financial assets, which affect solvency, gains and philanthropy. According to reports coopetition is estimated for intensification from pure grant-making and resource pooling to partnerships. Six profiles are significant. When investments are modest, these foundations are profitable and solvent, though coopetition is not optimized. Increasing investments are combined with increasing philanthropy and coopetition. The article concludes that profiles experience a different intensity of coopetition. Findings constitute practical insight into the issue of philanthropic best practices in crisis times.

Keywords Italy • Foundations • Competition • Coopetition • Clusters

1 Introduction

The social and nonprofit economy is the intersection of nonprofit organizations, public administrations, the for-profit, which are competing in order to provide public and merit goods and which are combining their operating and grant-making roles for the benefit of the whole society (Defourny and Nyssens 2010; Mair and Marti 2006; Austin 2000). The operating role cannot survive without the grant-making role. Both roles can be found in the same organization, which supplies grants to social causes and at the same time, the organization itself, leads and manage not-for-profit projects. Some nonprofit organizations sometimes specialize

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in the grant-making role, especially, foundations (corporate, community and independent).

Different types of foundations, as a consequence, develop complementary (more than competing and subsidiary) roles next to and with the support of stakeholders of the same and different supply chains for common goals and for the growth of the social economy (Caroli 2015; Birchall 2013; Grassi 2012; Bacq and Janssen 2011; Borzaga et al. 2011; Borzaga and Tortia 2010; Birch and Whittam 2008). Competition is, as a consequence, not more useful in order to optimize relationships, provision of public and private goods and philanthropy.

Nevertheless, when the real and financial crisis has negatively affected public administrations, the triad of nonprofit, public administrations and for-profit may collapse. Complementary roles can become subsidiary roles, especially for private grant-makers and sponsors who replace the State and public administrations (Wang and Han 2015).

The balance of competition and collaboration, roles and powers can move from the Public Welfare State to intermediate and hybrid organizations, whose strategies are a combination and bricolage of grant-making, leadership, partnership, networking and pooling of resources (Grassi 2012; Bacq and Janssen 2011; Wang and Alvi 2011; Kickul et al. 2011).

At hard times with collapsing resources, the nonprofit and social economy relies, as a consequence, on the philanthropy of the Welfare State of private grant-makers, as the Public Welfare State is affected by high debts and, as a consequence, concentrated on deleveraging and spending review. The Private Welfare State can be the grant-making foundation whose role is not concentrated only on grant-making, but also on coopetition by means of resource pooling, networks, partnerships with several stakeholders and project leadership.

Next to corporate, independent foundations and community ones, Italian Foundations of Banking Origin (IFBOs) have been an important partner of the Italian social and nonprofit economy for more than two decades and their philanthropic role has gained a very significant importance since the latest crisis. In the above-mentioned triad, they are grant-makers, who have been changing their roles from pure grant-makers to partners and leaders. At crisis times, they are developing some versatile roles that cross boundaries of traditional grant-making (Battilana and Lee 2014; Kickul et al. 2011).

This paper aims to present the universe of 88 IFBOs for their performances and profiling according to 2012s accounting data and reports, which collect results of their projects as for the classification of the above mentioned bricolage of strategies, from pure competing to coopetition. Several pages report planning, monitoring and performance analysis of coopetition, as a superior choice and strategy in comparison with competition. In Italy, 2012 is a crucial year of the latest crisis: an increasing national debt is not an excuse to discharge the social expenditure of the Public Welfare State. Nevertheless, the retrenchment is a must for Italian Public Administrations, also taking into consideration the commitment to EU rules and policies and the need of subsidiary and hybrid roles is urgent. IFBOs are an elective partner, who can also be subsidiary and who can generate hybrid public-private

organizations, where public administrations, for-profit sponsors and grant-makers balance their roles and resources.

The ability of IFBOs to connect to small and large communities, for their grant-making role and also for their partnering with different stakeholders, it could not be affordable unless resources were enough and connected with financial markets. Since 1990, when they were born, pooling of resources from different markets (from financial market to venture philanthropy), networks, leaderships and partnerships, they all have become their best practices next to (competition) or with (coopetition) the Public Welfare State of central, regional and local administrations and any other stakeholders, from sponsors to philanthropists. This is their significant coopetition in order to optimize nonprofit goals.

The paper builds on a cluster analysis of IFBOs according to their 2012s performances, 2012 to be considered one central year of the contemporary crisis for Europe and Italy. With this in mind, the current paper adopts a typical approach of ranking and classification of industrial organization, in order to investigate economic performances of the sample and in order to focus on the philanthropy and coopetition that derive of these economic performances, also taking into considerations mission reports with the lists of projects, different roles and results.

The cluster analysis emphasizes profiling of these Foundations. Six profiles emerge and they reveal separate features as regards economic performances, philanthropic success and coopetition for leadership, networks, pooling of resources and partnerships that can be appreciated in their reports. Next to economics of this Private Welfare State, the nature and trends of coopetition are investigated.

The main focus remains on the issue of the finance of the social and nonprofit economy, when the Public Welfare State is too much indebted and nonprofit organizations are competing for resources of the Private Welfare State. Complementary and substitute roles can emerge as very indebted Public Welfare States cannot more afford expenditures of the last century. At the same time screening among good causes is becoming essential for IFBOs and other private grant-makers who are besieged by requests. IFBOs select and monitor and define benchmarks for their future grant-making. Coopetition is significant in order to screen and optimize the best replies to social needs, too.

As a consequence, the paper focuses on the most important Italian Foundations within boundaries and needs of local, regional and national economies. It can be appreciated that cluster analysis is a methodology that can separate significant features of foundations, so that significant strategic patterns and standards derive from their economic, philanthropic (grants/net gain or loss) and coopetition performances.

2 The Theoretical Framework: When Competition Is Not More Enough

The Public Welfare State is still a solution to market failures like imperfect competition, externalities, asymmetric information and public goods (Gough 2009; Armingeon and Beyeler 2008; Leibfried 2001; Kuhnle 2000; Barr 1987). The Public Welfare State is providing the society with 'merit goods', the for-profit and the nonprofit cannot supply efficiently. With this meaning, the Public Welfare State is alternative to for-profits and nonprofits. The State, for-profits and nonprofits compete for the welfare: they all provide public and private goods and audiences can choose in this triad.

Otherwise, the retrenchment of the same Welfare State is now evident because of pressing globalization, post-industrialism and, above all, the contemporary austerity with the collapse of public spending and of 'sovereignty' (Pitlik 2007; Korpi 2003; Palier and Sykes 2001; Bonoli et al. 2000). At crisis times, Public Welfare States are concentrated on spending review. Their role is, as a consequence, compensated thanks to a wide range of grant-makers of the 'Private Welfare State'. Public and private provisions of the social benefit can, as a matter of fact, become complementary. Next to the Public Welfare State the market is crowded of the Private Welfare State of foundations, sponsors, philanthropists and other private grant-makers (Bommert 2010; Klein 2003; Hacker 2002).

Crucial and dramatic changes in the public resource allocation have, as a consequence, led to the achievement that an alternative Welfare Role-Player is increasingly needed. After decades of increasing size, complexities, attempts to attend multiple targets and conflicting causes, the 'Public Leviathan' is too much complex, too much indebted and not more able to support collective and merit causes. As a consequence, 'Private Samaritans' are replacing the Public Welfare State or they are committing themselves with the Public Welfare State (Eggers and Macmillan 2013; Hansmann 2013; Ashworth et al. 2013; Oliveira and Tavares 2012).

For decades the public complexity has been particularly increasing along with the growth of vertical and horizontal specialization and bureaucracy: ministries and public hierarchies as well as several administrations at the same level (of the public hierarchy) have increased the number of officers and steps, private for-profit and nonprofit have to confront with for any business (Christensen and Laegreid 2011). Proliferation, fragmentation and complexities of public roles and tasks are not useful, if they slow down the life cycle of any business.

If a mixture of competition, hierarchy and decentralization is allowed, bureaucracy and scarcity of resources can be stopped. If for-profit and nonprofit, both grant-making and operating, they can manage the welfare next to the public sector and if they collaborate with the public sector, flexibility and transparency can be implemented (Bommert 2010). These organizations are institutions that can create networks and partnerships. They can pool resources and they can lead projects.

Hybridizations and bricolage of roles are fully legitimated and they help social and nonprofit economy realize coopetition.

Coopetition is better than competition according to different scientific approaches. According to the approach of game theory, coopetition reduces costs thanks to information sharing, so that knowledge development can be attained (Hong and Snell 2015; Brandenburger and Nalebuff 2011; Okura 2007). Altruism and cooperation affect Nash equilibria and cooperative games show benefits of coopetition.

Thanks to coopetition firms are able to achieve superior performances than through collaboration or competition alone (Lado et al. 1997). Resource allocation is optimized thanks to coopetition. Complementarity and synergy of resources and roles (from partners to leaders) they are drivers of coopetition according to resource-based view of firms (Brakman and Dean 2014; Mustafa and Lines 2012; Robert et al. 2009; Bonel et al. 2008).

With the meaning of cooperation, coopetition has been investigated in applied economics, management and marketing of small and medium sized firms, service and other industries for more than two decades. The focus has been both on advantages and disadvantages, internationalization, globalization of cooperation and poles between the desire to combine and co-create and the emergence of opportunism and unfair appropriation of benefits, innovative frameworks and approaches (Beamish and Lupton 2016; Bouncken et al. 2015; Ritala and Tidstroem 2014; Bouncken and Kreis 2013). For the interdependence of stakeholders and destination managers, coopetition has been recently investigated in the tourism industry, where small and medium-sized firms are stimulated to coopete in order to achieve better economic performances (Czernek and Czakon 2016; Wang 2008).

Thanks to coopetition in the social economy, hybrid organizations solve for transaction costs of public hierarchy, they agilely clear for all for-profit and nonprofit needs and they can be a solution to complexity, conflicts, contradictions and institutional pressures (Hansman 2013; Birchall 2013; Grassi 2012; Bacq and Janssen 2011; Greenwood et al. 2011; Evers 2007). Stating today's needs and foreseeing tomorrow's expectations especially in local communities within regional (either district or cluster) boundaries, hybrid organizations are multifunctional entities combining different resources, tasks, values and organizational forms. They can take advantage of both the public and the private spheres: they screen crucial priorities according to the 'public choice' and 'merit standards' and they implement strategies of the private sector when this is a pro-active benchmark. While joining objectives, standards and strategies, they are stimulated to avoid mistakes and enhance practices and performances both on the public and the private sides.

As a matter of fact, the latest global crisis is conditioning both Public and Private Welfare States, so that these ones are often forced to combine their resources and efforts in order to maximize the collective benefit. The Private Welfare State often derives resources from the same financial markets of any other investor or grant-maker. If the collapse is affecting the comprehensive credit and financial market, the Private Welfare State may suffer too. Pooling of resources is recommendable,

especially for projects that need a deep breath and are of great national impact. Anyway, matching roles are not always possible and what is the most efficient roles' allocation between the contemporary Public Welfare State and the Private One, it is particularly discussed (Caroli 2015; Seaman and Young 2010; Ben-Ner 2002, 1994).

Pooling of resources is not enough. It is the antecedent to coopetition, which emerges from network, leadership and partnership.

The aim of this paper is the profiling of Italian Foundations of banking origin, as the most important Italian Private Welfare State for their economic performances and their philanthropic role in 2012.

3 Italian Foundations of Banking Origin and Their Coopetition

In 1990 the Italian Parliament approved the law that gave birth to foundations of banking origin as spin-offs of savings banks. These ones had to separate their philanthropic role from their commercial (banking) role. Savings banks were born in the nineteenth century with a focus on community needs: they were well connected to decentralized and local administrations; they were consulted to plan and develop community projects and were pro-active in order to collect and combine any kind of donations and bequests with their grants for the comprehensive growth of local territories. According to the law and mission statements banks were not disregarding their civic roles but, in order to optimize their social (Welfare) role, saving banks were obliged to separate the not-for-profit business (philanthropy) from the for-profit one (commercial bank). Foundations of banking origin were born as corporate foundations of the banking industry.

As a matter of fact, when they were born, in 1990s, IFBOs were merely grant-makers. Soon their role grew from a pure philanthropic one to: (1) pool, when they aggregate different public and private resources for common goals and projects; (2) network, when they are salient intermediaries of regional and local stakeholders for the growth of the nonprofit, social, cultural, education economy and any other 'merit and public goods'; (3) partnership, when they coordinate different public-private stakeholders and projects; (4) leadership, when they are not simply partners but they also lead a project.

Today, the grant-making role is mixed with the operating one. They investigate needs of communities and territories, they sit with public and decentralized administrations in order to screen main regional and local priorities, they pool private and public resources, they lead and monitor local projects and they also rank best practices and benchmarks, in order to ensure the best allocation of resources in the very next future of their philanthropy. Among the latest innovations, they support venture philanthropy, they create platforms for online fundraising and they do not disregard atypical financing like crowd-funding. Recipients of grants are nonprofit organizations or public, especially, local administrations.

Table 1 The strategic trend from grant-making to coopetition

	From external and minor roles ⇒⇒⇒⇒ to **Leadership**	
To **pool of resources** (money and in-kind) ⇑⇑⇑ From funds	⇒⇒⇒⇒ **hybrids** **Coopetitor** Pure Grant-maker and Competitor	To private and public **Partnerships** ⇑⇑⇑ From ancillary roles
	From grant-making, alone ⇒⇒⇒⇒ to **Networks**	

Source: own elaboration

The strategic trend of this welfare role, from pure grant-making to coopetition, is shown in Table 1. The trend develops from pure grant-makers to coopetitors, who provide grants to the social economy, pool resources from different stakeholders, build a network and lead to maximize performances of philanthropy.

At the beginning foundations were only grant-makers. They were considered as provider of money, with ancillary and external roles in projects they supported. Today they support the social economy with the not-for-profit and the for-profit: they create networks with other stakeholders, they pool resources from money to in-kind and they can create partnerships with distribution of roles and, above all, leading roles. Roles can range from grant-making to cooperating with hybrids between poles of Grant-maker and Coopetitor. This trend concerns different industries, from the education to culture, from research to social expenditure, etc.

IFBOs mostly specialize in culture and creativity (arts and culture). Especially, they develop cultural multi-year projects like restorations, research and development with universities, urban planning and renovation of quarters, clusters and districts with local agencies, other foundations (above all, community ones) and other local stakeholders. With this long-term focus on culture, they need to pool grants and public administrations are promptly engaged with. This, taking into account that the Public Welfare State has always been dedicating less than 1% of the public spending to Culture in Italy.

Table 2 shows the latest philanthropic performances of IFBOs on average and with particular concern on their connections and coopetition with other stakeholders, first of all, with the Public Welfare State. In 2009 and 2010 performances are the best ones, both for the amounts, the number of grants and for the partnership, networking and hybridization with local and public administrations. In 2010, above all, decentralized administrations count for main beneficiaries of 33.2% of number of grants and 35.1 of their total amounts. 'Pooling grants' hugely increased from 2009 and local and public administrations still represent partners for 47% of this type of grants. In 2010 the number of projects topped 308 and the average amount was the highest one, 27,084 euro.

The public expenditure for culture is never more than 1% per year and last five rows of Table 2 show the burden of the Public Administration, the re-payment of the public debt and the social expenditure of an ageing society. Increasing percentages of Social Expenditure and Public Expenditure for Culture do not mean

Table 2 The private welfare state of italian foundations of banking origin and some public expenditures as percentages of total, 2009–2012

	2009	2010	2011
Grants, millions of euro	1386	1366.6	1092.5
Number of grants	25,716	27,084	24,906
Average number of grants per foundation	292	308	283
Average amount per grant, euro	53,914	50,459	43,866
Multi-year projects, % of the total amounts of grants	13.5	10.1	11.7
High-specialized foundations, %	55	48	65
% of number of grants to local and public administrations	31.9	33.2	32,9
% of the total amounts of grants to local administrations	34.4	35.1	35.2
Pooling grants—joining public and private resources—%	3.5	18.4	14.9
Public (decentralized) administrations as partner of pooling grants, %	47	47	31
Arts and culture, % of number of grants	35.5	31	36.9
Arts and culture, % of the total amounts of grants	29.4	35.2	30.7
Parliament and other administration, % of public expense	0.41	0.45	0.43
Central administrations, % of public expense	0.09	0.08	0.10
Transfers to local administrations, % ...	14.20	14.72	14.65
Social expense, % ...	10.05	9.34	9.82
Culture, % ...	0.9	0.8	0.5
Public debt (debt interests are here included), % ...	38.03	39.74	39.49

Source: ACRI, Associazione delle Casse di Risparmio italiane (2014) and Ragioneria generale dello Stato (2014)

increasing nominal values as the retrenchment of the public expenditure has been significant in Italy for at least one decade.

After 2010, IFBOs performances are moderately impacted by the financial crisis, as it can be read in columns 2011 and 2012 of the Table 2. Otherwise, grants are not particularly decreasing, above all in the average amount and Arts and Culture, they still remain the target of 30–35% of their grant-making. We will here concentrate the analysis on 2012s performances. The next section will explore details of their performances. The whole universe will be clustered in six main groups, according to economic, philanthropic and coopetition performances that can be different and separating.

4 Economics and Coopetition of Italian Foundations of Banking Origin: Methodology, Analysis, Results

The comprehensive endowment of all Italian grant-making and operating foundations, sums up to more than 100 billion euro, with 60% concentrated in IFBOs. In order to profile the universe of 88 IFBOs, we focused on the following main accounting data of 2012s reports of each Foundation (www.acri.it): Total Assets,

Investments, Financial Assets that are not Investments (savings and temporary cash), Net Assets, Gain or Loss, Grants. These data were indexed in order to focus on main ratios, as signals of the economic and philanthropic results for this Private Welfare State.

The ratios are: Investments/Total Assets, Financial Assets that are not Investments/Total Assets, Net Assets/Total Assets, Gain or Loss/Total Assets and Grants/Gain or Loss. Apart of Grants/Gain or Loss being the perfect signal of the magnitude of their philanthropy, Gain or Loss/Total Assets is evidence of the availability (or unavailability) of sums to be deserved to their philanthropic role. Net Assets/Total Assets means solvency. Financial Assets that are not Investments/Total Assets and Investments/Total Assets show the exposure of IFBOs to financial markets, where is the 'origin' of IFBOs: the first ratio means a modest commitment in comparison with the second ratio, which implies investments on a long-term basis.

In order to evaluate the intensity of coopetition, the coopetition index refers to content analysis of reports of these foundations. Reports usually contain details of supported projects and labels of roles. Number of citations and intensity of reporting and project description (pages, sentences, labels like 'leader', tables with analysis of intermediate and final performances, amounts of grants, number of partners, number of ancillary organizations, etc.), they are considered valid proxies for different levels of the strategic trend from pure grant-making to coopetition (Table 1). As a consequence, the coopetition index can increase as follows: from 0 to 0.25 for the magnitude of pure grant-making, from 0.26 to 0.49 for the combination of grant-making and pooling of resources, from 0.50 to 0.60 for the added value of networks, from 0.61 to 0.74 for the leading role and from 0.75 to 1 for the sum of previous grant-making, pooling, network, leadership with partnership. The range 0.50–1 includes network, partnership and leadership in a straight chain as they are often mixed and combined. When network is present, leadership is a predictable added value as well as partnership.

Particularly, we adopted a normal mixtures clustering. Cluster analysis is often applied in biology and other natural sciences in order to disaggregate populations (species) into significant groups (subspecies), according to specific features or selected variables (Ward 1963). In microeconomics and industrial organizations, cluster analysis is very useful in order to classify industries, districts, networks, strategic groups and any other aggregate that reveal significant and differentiated patterns (Hair et al. 2009; Becattini et al. 2009; Breschi and Malerba 2005; Wiggins and Ruefli 1995; Harrigan 1985). Above all, normal mixtures is an iterative technique implemented in the k-means clustering platform, but rather than being a clustering method to group rows, it is more of an estimation method to characterize cluster groups. Rather than classifying each row into a cluster, it estimates the probability that a row is in each cluster. Hierarchical and k-means clustering methods work well when clusters are well separated, but when clusters overlap, assigning each point to one cluster is problematic. In the overlap areas, there are points from several clusters sharing the same space. It is especially important to use normal mixtures rather than k-means clustering for an accurate estimate of the total

Table 3 Average performances and roles of Clusters according to 2012s performances (%)

Clusters	Investments/ total assets	Financial assets (not investments)/ total assets	Net assets/ total assets	Net gain or loss/ total assets	Grants/ net gain or loss	Coopetition index
Cluster 1 *Grant-maker with resource pooling. Not Investor*	15.15	70.48	94.11	4.25	40.11	37.53
Cluster 2 *Grant-maker with resource pooling. Investor*	78.48	5.38	87.93	1.09	21.38	40.82
Cluster 3 *Network. Investor*	72.89	11.09	86.65	2.47	67.74	50
Cluster 4 *Leader*	89.41	2.09	79.39	0.30	94.63	70.42
Cluster 5 *Partnership*	61.50	25.06	86.99	2.95	60.60	75
Cluster 6 *Partner-ship. Coopetitor*	69.89	33.03	89.09	2.92	57.64	100

Source: Own elaboration with jump statistical software

population in each group, because it is based on membership probabilities, rather than arbitrary cluster assignments based on borders. The algorithm for normal mixtures method works similarly to k-means, but with probabilities rather than cluster memberships.

Having clustered above-mentioned ratios with JUMP Statistical Software, we obtained 6 main clusters. Table 3 shows average performances of clusters. Tables 4 shows composition of clusters. One micro-cluster is excluded from the analysis, as it is an outlier for extra-ordinary performances and zero philanthropy ratio.

This universe profits by an excellent Net assets/Total assets ratio between 79.39 and 94.11%. Losses are absent and taking into consideration assets, gains are between 0.30 and 4.25%. Separating features refer to the composition of assets, the philanthropy ratio and the coopetition index.

Regarding the asset composition, prevailing Investments are associated with high philanthropic performance and coopetition index in Clusters 3, 4, 5 and 6, though the highest ratio of Net Gain/Total Assets refers to the fewest Investments in Cluster 1. High investments are matched with high philanthropy, leadership, networks and partnerships. The Not-Investor (Cluster 1) shows the highest Net Assets/Total Assets ratio of 94.11%. Nevertheless, the philanthropic ratio of Grants/Net Gain or Loss is the second lowest of all here investigated foundations. The coopetition index is the lowest one.

The most crowded cluster is the Cluster 5 with 52 IFBOs. The coopetition index is 75% for 52 out of 88 IFBOs. Grant-making, pooling of resources, networks, leaderships and partnerships are here present. The best economic performances are

Table 4 Composition of clusters

Clusters	Composition of clusters
Cluster 1 *Grant-maker with resource pooling. Not investor*	FONDAZIONE CR CALABRIA LUCANIA, FONDAZIONE CR FOLIGNO, FONDAZIONE CR LORETO, FONDAZIONE CR MIRANDOLA
Cluster 2 *Grant-maker with resource pooling. Investor*	FONDAZIONE CR JESI, FONDAZIONE CR REGGIO EMILIA, FONDAZIONE CR SAN MINIATO, FONDAZIONE CR SAVIGLIANO, FONDAZIONE CR TRENTO E ROVERETO, FONDAZIONE MONTE PIETA' VICENZA, FONDAZIONE SICILIA
Cluster 3 *Network. Investor*	FONDAZIONE CASSAMARCA, FONDAZIONE CR ASTI, FONDAZIONE CR FANO, FONDAZIONE CR LA SPEZIA, FONDAZIONE CR PADOVA E ROVIGO, FONDAZIONE CR SALUZZO, FONDAZIONE CR TERNI, FONDAZIONE CR VERONA VICENZA BELLUNO ANCONA, FONDAZIONE MONTE BOLOGNA E RAVENNA, FONDAZIONE VARRONE CR RIETI
Cluster 4 *Leader*	FONDAZIONE CR BOLOGNA, FONDAZIONE CR BRA, FONDAZIONE CR FERRARA, FONDAZIONE CR RIMINI, FONDAZIONE CR TORINO, FONDAZIONE CR TRIESTE
Cluster 5 *Partnership*	COMPAGNIA DI SAN PAOLO, ENTE CASSA DI RISPARMIO DI FIRENZE, FONDAZIONE BANCA MONTE LOMBARDIA, FONDAZIONE BANCA MONTE LUCCA, FONDAZIONE BANCA MONTE ROVIGO, FONDAZIONE BANCO DI SARDEGNA, FONDAZIONE BNC, FONDAZIONE CARIGE, FONDAZIONE CARIPARMA, FONDAZIONE CR ALESSANDRIA, FONDAZIONE CR ASCOLI PICENO, FONDAZIONE CR BIELLA, FONDAZIONE CR BOLZANO, FONDAZIONE CR CARIVIT, FONDAZIONE CR CARPI, FONDAZIONE CR CENTO, FONDAZIONE CR CHIETI, FONDAZIONE CR CITTA' CASTELLO, FONDAZIONE CR CIVITA-VECCHIA, FONDAZIONE CR CUNEO, FONDAZIONE CR FABRIANO CUPRAMONTANA, FONDAZIONE CR FERMO, FONDAZIONE CR FORLI', FONDAZIONE CR FOSSANO, FONDAZIONE CR GORIZIA, FONDAZIONE CR IMOLA, FONDAZIONE CR LIVORNO, FONDAZIONE CR LUCCA, FONDAZIONE CR MACERATA, FONDAZIONE CR MODENA, FONDAZIONE CR ORVIETO, FONDAZIONE CR PERUGIA, FONDAZIONE CR PESARO, FONDAZIONE CR PISTOIA E PESCIA, FONDAZIONE CR PRATO, FONDAZIONE CR PROVINCIA DELL'AQUILA, FONDAZIONE CR PUGLIA, FONDAZIONE CR RAVENNA, FONDAZIONE CR SALERNITANA, FONDAZIONE CR SAVONA, FONDAZIONE CR SPOLETO,

(continued)

Table 4 (continued)

Clusters	Composition of clusters
	FONDAZIONE CR TERAMO, . . ., FONDAZIONE CR VERCELLI, FONDAZIONE PISA, FONDAZIONE VENEZIA
Cluster 6 *Partnership. The perfect Coopetitor*	FONDAZIONE CARIPLO, FONDAZIONE CR CARRARA, FONDAZIONE CR CESENA, FONDAZIONE CR E BANCA MONTE LUGO, FONDAZIONE CR E MONTE FAENZA, FONDAZIONE CR ROMA

Source: Own elaboration with jump statistical software

here matched with grant-making strategies, which do not only include resource pooling but also networking with local administrations and other not-for-profit organizations. Above all, they cooperate with several stakeholders for long-term projects, from cultural activities to heritage restoration. These foundations are project leaders and they match their resources with other stakeholders' money. Partnerships are long-lasting and they enhance fundraising opportunities for other philanthropy and not-for-profit projects.

5 Discussion of Results

Pages of reports describe projects in details and it can be appreciated the ranking and classification of this philanthropy intensification. The philanthropic performance is not only mature in the magnitude of Grants/Net gain or loss but also in coopetition with communities and the Public Welfare State of national, regional and local administrations. Details about partners, matching grants and roles are fully explained and some reports emphasize best practices and benchmarks to upgrade as concerns screening standards and to stimulate the next philanthropy.

Though coopetition is spread and mature, the focus on networking, partnership, pooling ad leadership can be differently intense for previous clusters so that *brands* of versatile and strategic bricolage separate clusters (column 1 of Table 3)

The most crowded cluster 5 refers to foundations like the big Compagnia di San Paolo and Ente Cassa di Risparmio di Firenze. Leaders and partners in their communities and regions, they develop their project management with local administration, corporations as sponsors, citizens and philanthropists, so that they enable the growth of the regional and social economy. They personally manage projects with focus on long-term objectives and monitor steps and intermediate performances.

With the biggest foundation of the universe, Fondazione Cariplo, the Cluster 6 regularly implements partnerships for projects that imply several and specific partners. This is the perfect coopetitor. One example is the project of cultural districts where Fondazione Cariplo is leading micro (with few partners) and macro-partnerships (with a lot of and relevant partners) in order to support local

and regional development of territories, which are focusing on the added value of culture and creativity for the growth of their economy. This cluster includes Fondazione Roma whose attention for the heritage in Rome is well-known for projects as regards archaeological sites, exhibitions, performing arts, movie industries, music halls, etc. The strategic trend is not more purely grant-making but also dialogue with several stakeholders, focus on critical issues and problems both surface-level and more deep-rooted, screening of the most relevant priorities and projects, monitoring and the generation of economic and social impact.

The Cluster 4 is a small one. Foundations are project leaders like Fondazione CR Torino, whose grant-making and leading, they were both essential for the 150th anniversary of Unity of Italy in 2010 and 2011.

Next to Fondazione Cassamarca, which is one of the biggest foundation as for assets, the Cluster 3 includes small foundations whose networking strategy is essential in order to strengthen objectives and collect increasing resources on these objectives. The *Networker* is constantly looking for connections and connected projects.

Small Clusters 1 and 2 are grant-makers with focus on resource pooling. Most of them have projects on neighbouring territories, so that they usually pool resources of different public and private sources and assure the commitment of several stakeholders of the social economy.

When investments are modest, these foundations are profitable and solvent. Increasing investments are combined with increasing philanthropy and coopetition. The commitment to investments does not cause the highest solvency. Crisis times have affected performances of investments on a long-term basis. Nevertheless, as concerns economic and philanthropic ones, this Private Welfare State shows better performances of the Public Welfare State, if we consider that the Italian Government has been suffering of deficits for decades and it suffers of a debt of 130% of GDP.

The main commitment of the Public Welfare State remains the repayment of the public debt (Table 2): *deleveraging* implies that past debts must be progressively covered and the focus on the provision of public goods and other traditional welfare, it is not salient as concerns available resources. The much more solvent Private Welfare State can play welfare roles, which the Public One cannot more.

6 Conclusion

The Italian Public Welfare State is today reducing expenditures. Nevertheless, the public debt is constantly increasing and it is more than 130% of a Gross Domestic Product (GDP).

The Italian Private Welfare Role is played by grant-making foundations. The biggest ones are Foundations of Banking Origin, the so-called Private Welfare State who is collaborating with public and private stakeholders.

This empirical research confirms that IFBOs can ensure philanthropic roles, which are not only subsidiary, with the meaning of competition, but also complementary, with the meaning of coopetition, with public administrations, other private grant-makers and multiple partners (Table 2).

The 'banking origin' can be a constraint. Diminishing returns affect amounts and number of grants: from 2011 to 2012 they diminished from 1092.5 to 965.8 and from 24,906 to 22,204 after having topped in 2010 27,084 grants (Table 2). Nevertheless, multi-year projects increase from 2010 to 2012 (Table 2) and this trend can be further evidence of matching grants and coopetition.

Project management of foundations is now evolving into a mature *planned giving*. Planned giving refers to the philanthropy when grants are supplied with monitoring and verification of intermediate results, so that the social goal is targeted with attention to interim and final results. These steps include, first of all, community empowerment, which implies co-decision of priorities and implementing strategies. After having selected priorities and merit-causes, matching grants of other stakeholders, from the for-profit to the State, are stimulated. The third step concerns selection of philanthropy and finance, so that multiple resources are pooled thanks to networks and partnerships. It is not excluded the start-up of ancillary organizations, like community foundations. Permanent charitable funds and partner foundations are helpful intermediaries, in order to help matching partners to maximize objectives and resources.

Above all, partner foundations have a volunteer advisory board comprising local leaders who know critical issues and strengths of their communities. Through their association with the IFBO, partner foundations are able to focus their efforts on local grant-making, while the IFBO provides administrative support and investment expertise. Monitoring of intermediate results becomes crucial, also thanks to storytelling of social media, and editing of intermediate reports.

Finally, post-selection is the focus on excellent projects. Best practices and performances of excellent projects should be recalled as benchmark for their future grant-making. Next to the optimization of project management, IFBOs constantly take a judicious and visionary discernment of their goals and what they try to achieve. Scarcity of visions is a limitation for all stakeholders. Therefore, coopetition is continually growing and boundaries of targets are bigger and bigger.

Nonprofit project managers should, in this case, look for this *visioning approach*, too, so that they do not overestimate or underestimate their major and minor goals. Exogenous conditions matter. In a better regulatory and international framework, with a robust charitable registration process, 'charity rankings' should be further implemented both offline and online to signal who is the best grant-maker and the best benchmark for all other philanthropists. These foundations as well as the other nonprofit organizations, they can further grow if laws and competition change, thanks to rules against frauds and abuse of resources, too.

Next to this, industry analysis to evaluate competition, microeconomic and macroeconomic trends of rapidly changing economies and to assess social issues, they should be further implemented, too. The fundraising arena is turbulent, unstable and in need for funds for multiple and several good-causes. Long-term

sustainability implies planning, project management, social accountability as for common managerial standards. Coopetitors should lobby for universal screening schemes of the best projects, so that free-riding is prevented.

There are some limitations associated to our study. The exposure to financial markets can be a limit for IFBOs and any other grant-maker. To understand the extent and implications of the profiling here investigated, it could be useful both to widen the philanthropic universe with other categories of grant-makers (community, corporate and independent foundations) and to consider a longer period, before and 'after' the crisis. It should, otherwise, be recalled that IFBOs represent 60% of all operating and grant-making foundations in Italy.

The selected universe refers to the prevailing Italian Private Welfare State. Nevertheless, further investigations may be useful to understand the role of sponsors, who can be only for-profit corporations according to the Italian Law.

This would also imply an investigation of policies, above all, fiscal policies and their support of the private philanthropy (the latest *Art Bonus*, for example). Policies should avoid distortions Policies should, in conclusion, ensure the efficient allocation of resources 'between' the Public 'and' the Private States. The mix of public and private management is, today, a very important issue and the perfect balance of roles may be the main focus of next national, regional and local policies.

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Expenditure on Education in the Countries of the European Union in the Light of the Europe 2020 Strategy

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Abstract The paper looks at education policy in the European Union (EU) in the light of the Europe 2020 strategy. The research concerned in particular the scope of EU education policy, its objectives and methods used to measure whether strategy goals are being achieved. The paper examines the following hypothesis: the level of expenditure on education is essential for achievement of EU policy objectives by the Member States of the European Union. To test this hypothesis, EU education policy objectives are described and the methods used in implementing them are presented. This is followed by an analysis of the level of public spending on education in the selected EU countries along with the degree to which European benchmarks have been achieved by individual countries. Statistical methods are used to analyze the correlation between the data. The study found that the variation in the level of spending on education is reflected in the degree to which the individual EU countries have achieved the benchmarks. In addition, the results of research support the conclusion that the degree to which the objectives have been achieved is also determined by objective factors. These include the structure of the education system, management methods, constitutional frames, and by political factors under state policy (reforms implemented, amendments to legal provisions). In conclusion, the progress individual countries have made in achieving EU education policy objectives has been positive.

Keywords European Union educational policy • Europe 2020 strategy • Education and Training 2020 Programme • European benchmarks • Open coordination • Public expenditure on education

1 Introduction

The importance of education for the development of every society has always been great, and remains so today. Therefore, ensuring that it functions consistently as a part of state activity is essential—a fact the EU also emphasizes. The

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European Commission, for its part, has been drawing attention to the importance of education since 2000 by stressing that it is more than a factor that improves the individual's chances of employment; by preparing people for their professional careers, education contributes to self-realization and helps to activate the citizens of democratic societies with respect to cultural and language diversity. Education also plays an important role in integrating society by promoting fundamental values enshrined in European societies, including tolerance and respect for human rights. In this era of science and globalization, it will be crucial for the future of Europe and its citizens to create an internally cohesive and open European educational territory.

Today education is ascribed fundamental importance to society's development, increasing welfare and economic competiveness. As a result of economic and social changes, changes are occurring not only for all of the institutions involved and affected by education policy, but the aims and content taught and those to whom it is taught. More and more often the term "educational policy" is used in the context not only of state activity but also that of the EU, which can itself therefore be treated as a subject of educational policy (Zgliczyński 2010). This policy is addressed to every member of society—children, adolescents and adults alike—according to the concept of education as a coherent system of forming and raising individuals covering various levels of education in both institutional and non-institutional forms (Ministry of National Education and Sport 2005). In the light of these considerations, I have formulated three questions: *What is the scope of educational policy in the EU? what are its objectives? And what methods are used to measure performance?* I have also hypothesized that the level of public expenditure on education is essential to achieving the objectives of EU educational policy by the union's individual countries. The research problem and the hypothesis are the basis for establishing the main aims of the paper, which include: the description of the EU educational policy, its objectives and the methods used in their implementation, and analysis of the results achieved by individual EU countries.

The structure of the paper reflects the aims of the research. First, a review of the economic theories concerning the role of the state in education and ways to finance it are presented. This is followed by an explanation of the nature and scope of European education policy. The final section includes an analysis of the degree to which individual EU countries have achieved the objectives of the Education and Training 2020 Programme (ET 2020). The paper also examines the correlation between the level of public expenditure on education in the countries of the EU and the indicators that have been achieved. The paper ends with the most important conclusions to be drawn from the research.

2 The State's Role in Education in the Light of Selected Economic Theories

In the development of economic thought since the eighteenth century, there have been a variety of views on the role the state should play in education. Some include supporting an active role, in the form of financing and the provision of educational services, while others staunchly oppose any state intervention in education. The study of these theoretical views on theories allows for the formulation of the following conclusions, which illustrate a variety of approaches to financing education.

Representatives of classical economics, such as Smith (1976), opposed state interference in the economy. He limited the role of the state to the three spheres of activity, including education, which he argued should introduce the elements of choice and competition. Smith (1976) also indicated equality and even the superiority of education financed by its beneficiaries and philanthropists over that backed by the (inefficient) role of the public finance apparatus. Despite the validity of state functions, he thought it more reasonable to leave education in private hands (Smith 1976). Later exponents of classical economic thought, Mill (1966) and Spencer (2002), questioned state intervention in education, while at the same time formulating views about its meaning in a social context. Mill (1966) warned against state influence on making choices (public education rather than private) and Spencer (2002) elaborated the negative social effects education brings about. A total separation of state and education prevailed in the views of twentieth-century conservative thought and the Austrian school of economy, led by Hayek (2006) and Mises (1998).

Starting in the 1970s, a gradual but significant re-evaluation of the dominant ideas and economic theories, and consequently the principles of state economic policy, began. This was one of the effects of events that included global economic crisis. These changes resulted in a turning away from the idea of state intervention and economic statism in favor of the liberal theories of neoclassical economics (Szostak 1991). A move to privatize education became increasingly more common, and involved separating the supply of educational services (previously dominated by the public sector) and their financing, which was still based on public funds administered by the state (Winiecki 1996). Privatization was intended to reduce the state's role as producer of goods and services and the owner of broadly defined resources. There is a variety of motives at its core, including pragmatic, ideological, economic, and populist ones. Taking into account the distinction between production and supply of goods and services, proposes a typology to examine the essence of the different concepts of privatization. The typology includes basic institutional arrangements for the provision of services (by increasing the degree of privatization) such as: direct state provision, agreements between local authorities, the sale of services by the state, contracts, subsidies, vouchers, licensing, market, social activities, subsistence (self-service). The most popular and most frequently recommended mechanisms used to privatize services/social benefits include

contracts, voucher systems and the activities of non-governmental organizations (Savas 1982). However, the concept of privatization should be distinguished from the idea of marketization or liberalization. The former involves establishing new markets as an alternative to the services provided by the state while the latter is associated with the release of agents from state regulation (Belfield and Levin 2002).

Privatization of education can be discussed with distinction of its three basic forms highlighted by researchers from the National Center for the Study of Privatization of Education (NCSPE) at Columbia University (Belfield and Levin 2002). These include the provision of private services, private financing and private regulation, and decision-making and responsibility (Belfield and Levin 2002). In practice, privatization of education is mainly based on the use of educational vouchers, the introduction of choice with regard to public schools, the liberalization of public schools, the privatization of specialized services, the introduction of exemptions and tax relief for the parents of the students, subsidies and financial aid for private schools (Bielecki 2005).

Within the neoclassical school of economics there is a widespread belief that educational vouchers are among the most effective ways of financing education. They are seen as a means to providing higher quality education at lower prices and with greater consumer satisfaction. Becker (1995), Friedman and Friedman (1980), and Hayek (2006) all shared this view. The voucher is an instrument that will ultimately increase competition between the providers of educational services. In focusing a significant portion of their work on educational vouchers, Friedman and Friedman (1980) made the greatest contribution to their development. One of the progenitors of the theory of human capital (along with Mincer (1958) and Schultz (1962)), Becker (1995) emphasized the role of education in the theory of economic growth and underlined its benefits for particular entities (individual benefits).

In contrast to the dominant theory of human capital, which is the basis of economic analyses of education and the labor market, two alternative models of education—public choice theory and selection theory—offer a different interpretation of state education policy. They generally regard the reduction in public expenditure on education to be socially useful as they raise the issue of costs related to the resources allocation carried out by the state and its institutions. These theories also focus on the choice between effectiveness and equity in the allocation of public funds for education. In the light of these theories, efforts to lift the quality and effectiveness at the same time meant continued inequality in access to education. This view dominated in Stiglitz's work (2004).

The classifying distinction between market goods (private) and non-market (public) goods is useful from both theoretical and pragmatic points of view for the analysis of the conditions of and prospects for the marketization of education. In addition, as a commodity (private education), education is also a value that is immeasurable and does not have a market price (non-monetary effects of education). Therefore, the market is not able to determine how to efficiently allocate resources in this area. The analysis of issues regarding financing education and its placement in the public sector should include Musgrave's and Musgrave's (1984)

important views on public goods and the use of cost-benefit analysis in education as well as on estimating the rate of return on investment in education. The theory of public goods formulated by Samuelson (1954) and developed by Musgrave and Musgrave (1984) assumes the public sector market is unreliable. In analyzing the views presented by Musgrave and Musgrave (1984), Buchanan (1965), Samuelson (1954) and Stiglitz (2004), one rarely encounters the view of education as a purely public good; however, it is widely seen as a category of private good financed from public funds.

In the light of the above discussion, the views of Polish economists are interesting. Reference to the aforementioned, Owsiak (2005) envisages education as a social good, hence the need for state participation and classifies it ones that may be private for physical reasons, but because of the social doctrine and social policy carried out by the public authorities they are delivered to a citizen, even when the citizen does not accept it, on the contrary Kuzińska (2005) states that since quality of teaching makes education very important as a result of evaluation by citizens on constant basis, education needs to be primarily financed from public funds to ensure accessibility and equal opportunities for both children and adolescents respectively.

The nature of education is also reflected when it is described as 'desired goods' (substantive). From a descriptive point of view of goods as being efficiently produced by a private economy and distributed through the mechanism of the market; however, the external benefits associated with the production of desired goods justify their production within the public economy, so that as a result of the incurred public expenditure and free of charge provision or with partial co-payment by users (Denek et al. 2005).

In extending the concept of a desired good, it should be determined whether using the goods supplied by the state is compulsory or voluntary. Golinowska (1994) states that goods should be produced in the common interest, not imposed on but desired by the community but more importantly the assessments of these goods should be carried out by people based on the value of these goods. Furthermore as individuals will not consume goods in a similar pattern that will enhance the allocation of these goods that will be useful to their development.

The theory of public finance most commonly treats education as a public good and services that are available to all and provided by the state. The state's involvement in education is usually political in nature, and if additionally we take into account social policy objectives that reward facilitating access to public goods for the poorer contingent of the population, it becomes evident that state intervention in this area is considered in terms of its economic efficiency.

An overview of the theories of economic schools from the approach of classical economics and running through the latest views on the functioning and financing of education clearly shows that this issue has always stirred substantial controversy. The basic disagreement concerns the role and scope of state intervention in providing and financing educational services. Despite the differences between specific solutions, most economists recognize the need for the state to play a role in implementing and financing education. The size of public expenditure on education in the individual EU countries will be presented in the further sections of this paper.

3 Defining the EU's Education Policy

The most commonly discussed issues in the interests of the European Union include common agricultural policy, regional policy, and monetary policy (in the context of the EU's economy and currency); education policy rarely makes the conversation. Taking into consideration the definitions cited in work on education policy, that policy covers, among other things, the principles for organizing the teaching system, guaranteeing the appropriate financial support, defining the principles for managing the educational system and determining the form and content of the teaching (Dziewulak 1997). These elements, however, do not lay within the EC's competencies, which is why the EU's actions in terms of education policy is more a group of assumptions and tools which it uses to implement certain tasks, which are part of a wider social-economic context.

Legal regulations on education policy in the EU grew out of normative acts of various strength. Treaties functioning as the foundation of all EU actions are particularly important. Indication of a particular area of the policy in the treaty is the mandate for the European Commission to propose legislation concerning this sphere. The regulations, directives, decisions and—in this case, having its widest application—(non-binding) recommendations and opinions, as well as other acts unnamed in the treaties, such as conclusions, messages or resolutions are all also important (Zgliczyński 2010).

Issues of education policy have appeared in all of the most important EU treaties since the first were signed in 1957. These include the Treaty of Rome (EEC Treaty 1957), officially (the Treaty establishing the European Economic Community (TEEC), and The Treaty establishing the European Atomic Energy Community—Euratom)[1]. In subsequent documents the regulation of education policy that was initially limited to professional training was gradually widened. The evolution of the regulation was subordinated primarily to the then current economic priorities and resulted from the need to adapt education and training systems to the needs of the labor market (Mierzwa 2006).

However, the then current regulations that applied to education were further widened in the proposition of the treaty establishing the Constitution of Europe of 2004 (European Union Treaty 2004) and in this form was found in the Treaty on The Functioning of The European Union (TFUE) (European Union Treaty 2012a)[2].

[1]The Treaty of Rome (EEC Treaty 1957) (Treaty establishing the European Economic Community and the Treaty establishing the European Atomic Energy Community—Euratom). Both documents, together with the Treaty of Paris are the foundation of European integration. In the preamble, the signatories committed themselves to joint actions intended to eliminate barriers dividing Europe. Improvements to living standards and labor conditions citizens of Member States enjoyed were to support the elimination of those barriers.

[2]This treaty entered into force on 1 December 2009 and is the result of recent EU reforms established in Lisbon (Presidency Conclusions 2000), The Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community (European Union Treaty 2007) was adopted on 13 December 2007.

This change essentially included in the new treaty a declaration of the special significance of sport, but it was not very important (Zgliczyński 2010). That the Union attaches importance to education at all levels is reflected in art. 165 of the TFEU (European Union Treaty 2012a, p. 120). Act 1 of the Article states that: "*The Union shall contribute to the development of quality education by encouraging cooperation between Member States...*". However, in accordance with paragraph two, with regard to education, activities are intended to develop the European dimension in education, facilitate the mobility of students and teachers, promote cooperation between educational establishments, develop exchanges of information and experience, and develop the European dimension in sport.

The above legal regulations do not, however, limit the freedom of Member States in formulating education policy because the states employ those EU initiatives which they believe to appropriate. In addition, Member States can cooperate on projects, leaving the European institutions to function in a strictly supportive capacity, while the states help steer the community's education policy through the European Council. Pursuant to art. 15, act 1 of the Treaty on European Union (European Union Treaty 2012b, p. 23), the European Council "*gives the union an impetus that is essential to their growth and defines the general directions and policy priorities*". Cooperation among Member States can concern particular aspects and sectors of education, including the higher education covered under the Bologna Declaration, or the education and professional training the Copenhagen Declaration focuses upon (Zgliczyński 2010).

Aside from those treaties, the Lisbon Strategy (Presidency Conclusions 2000) has been particularly important in shaping EU education policy. The Strategy was produced as a result of a 2000 meeting of the European Council in Lisbon, convened to establish the EU development plan up to the year 2010. One of the main objectives layed down in this plan was to fashion the EU economy into "*the most competitive and dynamic knowledge-based economy, capable of sustainable economic growth, with a growing number of constantly improving workplaces, and exhibiting a high degree of cohesion*" (Presidency Conclusions 2000). Thus defined, education policy was infused with an element of labor market policy and the wider political economy (Zgliczyński 2010) and demanded essential changes, including to the form of the educational system.

As education and youth are the exclusive competence of Member States, cooperation in these areas for the achievement of shared objectives demanded the adoption of appropriate instruments. One tool used in the EU is the intergovernmental method of open coordination, based on volunteer cooperation between Member States, but occurring at the supranational level, but with the limited participation of the union's institutions. The European Commission most often plays the role of coordinator of action of states participating in a given shared project—it assists in gathering, analyzing and exchanging information and experience (Ministry of National Education 2014).

Open cooperation consists in, among other things, defining and adapting goals that are shared by the entire EU, and aided by qualitative and quantitative indicators for the participating countries. The second stage consists in defining benchmark

levels, which help in comparing one's own goals against examples of the best solutions elaborated by other Member States, agreeing approaches to and deadlines for the regular monitoring of the results achieved. In the third stage, common guidelines are transformed by Member States into concrete plans and policies, both national and regional, which establish national targets in specific areas. Subsequent stages include assessing the propriety of state action through the periodic monitoring and review of the situation and results of operations (Ministry of National Education 2014).

Of fundamental importance in the application of this method—management by objectives—is to define the objectives to be achieved. In the case of EU educational policy goals, the provisions established in Lisbon by the European Council (Presidency Conclusions 2000) were key. These enabled the Board of Education to prepare a report, which became the first official document sketching a European approach to education policy in the union's individual Member States. It identifies three strategic objectives: To improve the quality and efficiency of the education systems in the EU, to facilitate universal access to education and training systems, and to open up education systems to the wider world (European Commission 2002). At the same time, the report was used as the basis for the detailed work programme on the objectives of education. The work was completed in March 2002 in Barcelona, and approved by the European Council work programme Education and Training 2010 (European Commission 2002). In this way, the Lisbon Strategy marked the first time the Council *created a solid framework for European cooperation in education and training, basing it on common goals and setting it as the lead task in improving the national education and training systems (. . .) through the open method of coordination* (Council of the European Union Conclusions 2009, p. 2).

The result of the measures taken within the program was to develop a common educational area. The objectives of this program have become the targets of EU education policy, which strives to achieve Europe's highest level of education, ensure the compatibility of the systems of education, ensure the recognition of qualifications in the European Union educational and professional knowledge and skills acquired in different EU countries. It also seeks to guarantee all Europeans, regardless of age, learning opportunities throughout life (lifelong learning) and an open Europe that will cooperate with other regions, to the benefit of both (European Commission 2002).

These objectives marked the beginning of the changes in EU education policy, which included the implementation of education reforms, laying out the direction they were to move in and stimulating progress in every country and throughout the EU as a whole. European cooperation in education and training implemented on the basis of the Lisbon Strategy is continued in the Europe Strategy 2020 (European Commission 2010). Under the new programme, Education and Training 2020 (Council of the European Union 2009), the cooperation framework is to consist of four strategic aims:

– implementing the concepts of life-long learning and mobility,
– improving the quality and effectiveness of education and training,

– promoting equality, social cohesion and civic activity,
– increasing creativity and innovation, including entrepreneurship, on all levels of education and training.

Achieving these EU education policy aims on the basis of the method of open coordination required defining the quantitative indicators, which are assumed to allow the implementation of aims to be monitored, problems to be recognized and, on the basis of data, policy promoting the general concepts to be created.

Implementing the Lisbon strategy involved creating indicators which were individually identical to the reference levels of European average performance demarcating the European benchmarks contained in the Education and Training 2010 programme (Council of the European Union 2003). For the strategic objectives of Education and Training 2020, a number of European benchmarks were identified. These benchmarks are based on current levels (Council of the European Union 2003), adopted under the Education and Training 2010 programme (Council of the European Union 2009). Member States were requested, on the basis of national priorities and the changing economic situation, to identify how and to what extent they could, through national measures, help to achieve these benchmarks. Member States subsequently agreed five levels for the 2020 programme (Council of the European Union 2009). In addition, due to the widely recognized added value of learning mobility and the intention to increase mobility, two additional benchmarks addressing mobility issues were introduced in the Education and Training 2020 programme (Council of the European Union 2011). An additional benchmark for competence in foreign languages was also proposed (European Commission 2012a). Table 1 shows the key indicators and benchmarks in the framework of the Education and Training 2020 programme (Council of the European Union 2009).

A continuation of an earlier program carried out under the Lisbon Strategy (Presidency Conclusions 2000), The programme *Education and Training 2020* (Council of the European Union 2009) considers elements not included in the earlier document, but which are essential for Europe's future.

The European Commission has also established, in its education policy, the goal of implementing *key competency* measures, included as a part of both the ET 2010 (European Commission 2002) and ET 2020 programme (Council of the European Union 2009) assumptions. Seeing the need to formulate a European framework for new basic skills to be gained in the process of lifelong learning, the European Council undertook to define them in Lisbon in 2000 (Zgliczyński 2010). The Recommendations of the European Parliament and of the Council of 18 December 2006 identified key competences to be covered in lifelong learning. This was done in the "European framework of reference", and goals established to precede them (European Parliament and Council of the European Union 2006b).

The Council thus defined the basic knowledge, skills and attitudes each student, before completing his or her education and training, should gain in sufficient detail to enable active participation in the social life characterizing the knowledge society (Council of the European Union and Representatives of the Governments of the

Table 1 Key indicators and benchmarks in the Education and Training 2020 programme

		Target 2020
Educational poverty and spending cuts: challenges for the education sector		
Share of 15 year-olds who underachieve in:	Reading[a]	Below 15%
	Maths[a]	Below 15%
	Science[a]	Below 15%
Education attainment levels of young people across Europe		
Early leavers from education and training (age 18–24)[a]		Below 10%
Tertiary education attainment (age 30–34)[a]		At least 40%
Policy levers for inclusiveness, quality and relevance		
Early childhood education and care (participation from age 4 to the start of compulsory education)[a]		At least 95%
Learning mobility	Share of higher education graduates should have had a period of higher education-related study or training (including work placements) abroad, representing a minimum of 15 ECTS credits or lasting a minimum of 3 months	At least 20%
	Share of 18–34 year-olds qualified in education and professional training and a period of education or training abroad connected with education and professional training (including professional practice/internship), lasting for at least two weeks or less if the individual possesses a Europass certificate	At least 6%
Employment rate of recent graduates by education attainment (age 20–34 having left education 1–3 years before reference year) (European Commission 2012b)[a]		At least 82%
Adult participation in lifelong learning (age 25–64)[a]		At least 15%

[a]Education and Training 2020 benchmark, data refer to weighted EU average, covering a different number of Member States depending on the source;
Source: European Commission (2015a, b)

Member States 2008). The reference framework sets out eight key competences—communication in one's mother tongue, communication in foreign languages, mathematical competence and basic competences in science and technology, digital competence, learning to learn, social and civic competences, a sense of initiative and entrepreneurship, cultural awareness and expression (European Parliament and Council of the European Union 2006b). The Council of the European Union believes these competences are necessary for personal fulfillment and development,

active citizenship and social integration and employment. Implicit in this approach is that, even though the content of education remains exclusively within the competence of the Member States, education programs increasingly emphasize transferable skills, such as learning skills.

Both direct management instruments used by the European Commission in the form of direct management of educational programmes (European Parliament and Council of the European Union 2006a) and shared management in the form of EU funds transferred to the Member States (mainly the Structural Funds) are crucial to the implementation of EU education policy. Funding comes from sources including the European Regional Development Fund (ERDF) (European Parliament and Council of the European Union 2013a). On the international plane, the source of support for the development of education from the ERDF is cross-border cooperation programs implemented under the European Territorial Cooperation, which seeks to develop joint local and regional initiatives. Of key importance, however, due to the extent of financial resources it commands, is the second of the Structural Funds—The European Social Fund (European Parliament and Council of the European Union 2013b). This is the EU's main financial instrument promoting employment, improved education and employment, and equal opportunities for all EU citizens seeking work. Its main task is to invest in human resources in Europe—including workers, youth and anyone looking for work. In addition to EU level financial support, Member States, as part of their education policy, also allocate public resources at the national level to achieve European education policy objectives.

4 Public Expenditure on Education and the Realization of EU Education Policy Objectives by Member States

Methods of managing and financing education in EU countries differ considerably from each other. This is one result of leaving Member States the freedom to regulate and fund their education systems. Despite the ongoing harmonization of legislation in many areas of economic and social life, differences between the specific solutions for financing education are very durable. This is because the differences are determined by many factors, including specific constitutional solutions adopted in individual countries, including the history of local government. Hence, while analyzing the amount of public expenditure on education, one should be aware of the different conditions at work behind the realization of tasks in education. The demographic changes that are taking place throughout the European Union are also an important factor that determines the level of spending on education. A particular challenge in recent years has become the need to reform education due to progressive demographic decline.

It should also be stressed that increasing education spending will not automatically improve outcomes. How funds are used and what mechanism was used to

allocate them are both important. To benefit from education, the Member States must ensure that financial resources are appropriate and used effectively and efficiently. Investing in education and training plays a key role in the current economic and demographic situation, and underinvestment in human capital is threatening the European perspective of sustainable and inclusive growth. The need to consolidate public budgets must be combined with education and training policy that stimulates growth.

The European Commission has repeatedly called on Member States to implement structural reforms and ensure investments are being made in the development of educational policy. Despite these recommendations, many Member States have reduced public spending on education in recent years. The level of expenditure on education and training differs significantly between countries. In 2014, in ten Member States, that level fluctuated broadly around the EU average of 4.9% of GDP. But in BG, DE, IE, ES, IT, RO, and SK it amounted to 4.3% or less, Whereas in eleven Member States (BE, DK, EE, FR, CY, LV, MT, PT, SI, FI, SE) it reached 5.5% or more.

Spending as a percentage of GDP started to decline in most EU countries in 2011, as a result of the global financial crisis. The decrease in total expenses as a percentage of GDP in the European Union in 2012 was attributable to a decrease in expenses in 15 Member States. The persistence of this negative trend is not caused by a one-off reduction of expenditure in the whole of Europe, but rather consistent reductions in the same group of Member States. For example, ES, IE, CY, LV, LT, HU, NL, PL, PT, RO, SK and UK reported a consistent decrease in their education budgets for three consecutive years. In addition, countries such as BG, ES, IT, RO and SK incur the lowest expenditure on education as a percentage of GDP. However, positive developments are also in evidence in the data, as BE, LU, and MT all bear out. The relative share of EU GDP devoted to education fell from 5% of GDP in 2013 to 4.9% in 2014. Education expenditure as a percentage of GDP decreased in 2014 in nine Member States, remained constant in 12 and increased in the remaining seven. Some convergence in the levels of expenditure can be observed across the EU, with several low-spending Member States starting to reverse the negative trend from 2010 (BG, RO, HU). Public expenditure on education in the individual Member States is shown in Table 2.

The analysis shows that, for example, in 2013 the average expenditure on education in the EU accounted for 10.2% of total public expenditure and remained unchanged throughout the analyzed period in most Member States. This means that in nominal terms, spending on education and total expenditures have similar dynamics and the ratio between them is constant. It also suggests that the reduction of public spending is not limited only to education.

Despite the negative trends observed for the reduction of expenditure on education, it can be said that Member States do endeavor to implement EU 2020 educational policy objectives (Council of the European Union 2009). Indicators defined in the Education and Training 2020 Programme (Council of the European Union 2009) which have been attained by individual countries since the beginning

Table 2 Public expenditure on education in member states in the years 2010–2014

	Public expenditure on education									
	As a share of GDP					As a share of total public expenditure				
Country	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
EU (28)	**5.3**	**5.1**	**5.0**	**5.0**	**4.9**	**10.5**	**10.5**	**10.3**	**10.2**	**10.2**
Belgium (BE)	6.0	6.1	6.3	6.4	6.3	11.2	11.3	11.4	11.5	11.4
Bulgaria (BG)	3.6	3.4	3.4	3.7	4.1	9.9	10.0	9.7	9.8	9.7
Czech Republic (CZ)	5.1	5.1	5.1	5.1	5.2	11.8	11.8	11.4	12.1	12.2
Denmark (DK)	7.2	6.9	7.0	7.0	7.2	12.6	12.1	12.0	12.3	12.8
Germany (DE)	4.4	4.3	4.3	4.3	4.3	9.2	9.5	9.6	9.6	9.7
Estonia (EE)	6.6	6.2	6.2	5.9	5.6	16.3	16.6	15.8	15.4	14.7
Ireland (IE)	5.0	5.0	4.8	4.5	4.3	7.6	10.9	11.6	11.3	11.1
Greece (EL)	4.1	4.4	4.5	4.6	4.4	7.8	8.2	8.2	7.5	8.8
Spain (ES)	4.5	4.4	4.2	4.1	4.1[p]	9.8	9.6	8.7	9.0	9.1
France (FR)	5.6	5.5	5.5	5.5	5.5	10.0	9.8	9.7	9.6	9.6
Croatia (HR)	5.1	4.9	4.9	5.1	4.7	10.9	10.1	10.4	10.7	9.8
Italy (IT)	4.4	4.1	4.1	4.1	4.1	8.8	8.3	8.0	8.0	7.9
Cyprus (CY)	6.8	6.6	6.1	6.5	5.8	16.1	15.5	14.5	15.7	11.8
Latvia (LV)	6.2	5.9	5.7	5.7	5.9	13.9	15.1	15.5	15.6	15.8
Lithuania (LT)	6.4	6.1	5.8	5.6	5.4	15.2	14.3	16.1	15.8	15.5
Luxembourg (LU)	5.2	5.4	5.6	5.2	5.2	11.8	12.5	12.7	12.0	12.2
Hungary (HU)	5.5	5.1	4.7	4.6	5.2	11.2	10.2	9.7	9.3	10.3
Malta (MT)	5.6	5.7	5.7	5.8	5.8	13.7	13.9	13.6	13.8	13.5
Netherlands (NL)	5.6	5.5	5.5	5.4	5.4[p]	11.7	11.8	11.7	11.7	11.7
Austria (AT)	5.1	5.0	5.0	5.0	5.0	9.7	9.8	9.8	9.9	9.5
Poland (PL)	5.5	5.4	5.4	5.3	5.3	12.2	12.4	12.6	12.4	12.5
Portugal (PT)	7.6	7.3	6.2	6.2	6.2	14.8	14.5	12.7	12.5	12.0
Romania (RO)	3.3	4.1	3.0	2.8	3.0	8.3	10.4	8.2	8.0	8.6
Slovenia (SI)	6.5	6.4	6.5	6.5	5.9	13.2	12.9	13.3	10.9	11.9
Slovakia (SK)	4.2	4.1	4.1	4.0	4.1	9.9	10.2	10.1	9.7	9.9
Finland (FI)	6.6	6.5	6.4	6.4	6.4	12.0	11.9	11.5	11.1	11.0
Sweden (SE)	6.5	6.5	6.5	6.6	6.6	12.7	12.8	12.7	12.6	12.7
United Kingdom (UK)	6.6	6.0	5.7	5.3	5.2	13.5	12.8	12.3	11.8	11.8

p – provisional
Source: European Commission (2015a, p. 25) and Eurostat

of the programme have been improving, and in fact in many countries are close to meeting the objectives set for 2020 (Table 3).

In 2014, goals set for the share of early leavers from education and training were achieved by 19 Member States, seven more than in 2011. In addition, the majority of other countries also made progress in achieving these goals. The average for all countries in 2014 came in at 11.1%, while the 2020 target is below 10%. However,

Table 3 Key indicators and benchmarks in Education and Training 2020 Programme (ET 2020) in EU countries

Country	Year	Early leavers from education and training (age 18–24) (%)	Tertiary education attainment (age 30–34) (%)	Early school education and care (participation from age 4 to starting of compulsory education) (%)	Share of 15 year-olds with underachievement in:			Employment rate of recent graduates by education attainment (age 20–34 having left education 1–3 years before reference year) (%)	Adult participation in lifelong learning (age 25–64) (%)	Education investment:	
					Reading (%)	Maths (%)	Science (%)			Public expenditure on education as a share of GDP (%)	Public expenditure on education as a share of total public expenditure (%)
Belgium	2011	12.3	42.6	98.1	–	–	–	80.8	7.1	6.1	11.3
	2014	9.8	43.8	98.1*	16.1**	19.0**	17.7**	79.0	7.1	6.3	11.4
Bulgaria	2011	11.8	27.3	86.6	–	–	–	59.2	1.3	3.4	10.0
	2014	12.9	30.9	97.3*	39.4**	43.8**	36.9**	65.4	1.8	4.1	9.7
Czech Republic	2011	4.9	23.7	87.3	–	–	–	80.7	11.4	5.1	11.8
	2014	5.5	28.2	85.7*	16.9**	21.0**	13.8**	81.3	9.3	5.2	12.2
Denmark	2011	9.6	41.2	97.9	–	–	–	83.0	32.3	6.9	12.1
	2014	7.7	44.1	98.3*	14.6**	16.8**	16.7**	83.8	31.7	7.2	12.8
Germany	2011	11.6	30.6	96.4	–	–	–	88.3	7.8	4.3	9.5
	2014	9.5	31.4	97.0*	14.5**	17.7**	12.2**	90.0	7.9	4.3	9.7
Estonia	2011	10.6	40.2	89.9	–	–	–	75.1	11.9	6.2	16.6
	2014	11.4	46.6	90.4*	9.1**	10.5**	5.0**	81.0	11.5	5.6	14.7
Ireland	2011	10.8	49.7	98.6	–	–	–	70.9	6.8	5.0	10.9
	2014	6.9	52.2	97.2*	9.6**	16.9**	11.1**	73.9	6.7	4.3	11.1
Greece	2011	12.9	29.1	76.0	–	–	–	50.4	2.5	4.4	8.2
	2014	9.0	37.2	76.4*	22.6**	35.7**	25.5**	44.3	3.0	4.4	8.8
Spain	2011	26.3	41.9	99.7	–	–	–	67.1	11.0	4.4	9.6
	2014	21.9	42.3	97.1*	18.3**	23.6**	15.7**	65.1	9.8	4.1	9.1

France	2011	11.9	43.3	100.0	–	–	–	77.6	5.5	5.5	9.8
	2014	8.5	44.1	100.0*	18.9**	22.4**	18.7**	75.4	18.6	5.5	9.6
Croatia	2011	5.0	23.9	71.0	–	–	–	62.7	2.6	4.9	10.1
	2014	2.7	32.2	71.4*	18.7**	29.9**	17.3**	62.0	2.5	4.7	9.8
Italy	2011	17.8	20.4	99.1	–	–	–	57.7	5.7	4.1	8.3
	2014	15.0	23.9	98.7*	19.5**	24.7**	18.7**	45.0	8.0	4.1	7.9
Cyprus	2011	11.3	46.2	85.0	–	–	–	72.5	7.5	6.6	15.5
	2014	6.8	52.5	84.3*	32.8**	42.0**	38.0**	68.7	6.9	5.8	11.8
Latvia	2011	11.6	35.9	92.7	–	–	–	71.6	5.1	5.9	15.1
	2014	8.5	39.9	94.1	17.0**	19.9**	12.4**	77.0	5.5	5.9	15.8
Lithuania	2011	7.4	45.7	84.2	–	–	–	69.5	5.7	6.1	14.3
	2014	5.9	53.3	86.5*	21.2**	26.0**	16.1**	80.7	5.0	5.4	15.5
Luxembourg	2011	6.2	48.2	95.6	–	–	–	86.1	13.6	5.4	12.5
	2014	6.1	52.7	99.4*	22.2**	24.3**	22.2**	83.8	14.0	5.2	12.2
Hungary	2011	11.4	28.2	94.5	–	–	–	73.4	2.6	5.1	10.2
	2014	11.4	34.1	94.7*	19.7**	28.1**	18.0**	78.5	3.2	5.2	10.3
Malta	2011	22.7	23.4	100.0	–	–	–	91.4	6.4	5.7	13.9
	2014	10.4	26.6	100.0*	–	–	–	91.7	7.1	5.8	13.5
Netherlands	2011	9.1	41.1	99.6	–	–	–	92.2	16.7	5.5	11.8
	2014	8.6	44.6	99.5*	14.0**	14.8**	13.1**	87.3	17.8	5.4	11.7
Austria	2011	8.5	23.6	94.3	–	–	–	90.5	13.4	5.0	9.8
	2014	7.0	40.0	93.9*	19.5**	18.7**	15.8**	87.2	14.2	5.0	9.5
Poland	2011	5.6	36.5	78.4	–	–	–	75.3	4.4	5.4	12.4
	2014	5.4	42.1	83.8*	10.6**	14.4**	9.0**	75.6	4.0	5.3	12.5
Portugal	2011	23.0	26.7	93.8	–	–	–	75.8	11.5	7.3	14.5
	2014	17.4	31.3	93.9*	18.8**	24.9**	19.0**	69.4	9.6	6.2	12.0
Romania	2011	18.1	20.3	86.4	–	–	–	70.8	1.4	4.1	10.4
	2014	18.1	25.0	86.4*	37.3**	40.8**	37.3**	66.2	1.5	3.0	8.6

(continued)

Table 3 (continued)

Country	Year	Early leavers from education and training (age 18–24) (%)	Tertiary education attainment (age 30–34) (%)	Early school education and care (participation from age 4 to starting of compulsory education) (%)	Share of 15 year-olds with underachievement in:			Employment rate of recent graduates by education attainment (age 20–34 having left education 1–3 years before reference year) (%)	Adult participation in lifelong learning (age 25–64) (%)	Education investment:	
					Reading (%)	Maths (%)	Science (%)			Public expenditure on education as a share of GDP (%)	Public expenditure on education as a share of total public expenditure (%)
Slovenia	2011	4.2	37.9	89.8	–	–	–	76.0	15.9	6.4	12.9
	2014	4.4	41.0	89.8*	21.1**	20.1**	12.9**	70.1	11.9	5.9	11.9
Slovakia	2011	5.1	23.2	76.9	–	–	–	70.1	3.9	4.1	10.2
	2014	6.7	26.9	77.5*	28.2**	27.5**	26.9**	72.7	3.0	4.1	9.9
Finland	2011	9.8	46.0	74.0	–	–	–	78.4	23.8	6.5	11.9
	2014	9.5	45.3	84.0*	11.3**	12.3**	7.7**	77.0	25.1	6.4	11.0
Sweden	2011	6.6	46.8	95.3	–	–	–	84.6	24.9	6.5	12.8
	2014	6.7	49.9	95.7*	22.7**	27.1**	22.2**	85.0	28.9	6.6	12.7
United Kingdom	2011	14.9	45.5	95.8	–	–	–	81.0	15.7	6.0	12.8
	2014	11.8	47.7	96.1*	16.6**	21.8**	15.0**	83.2	15.8	5.2	11.8
EU Average (28)	2011	13.4	34.8	93.2	–	–	–	77.1	8.9	5.1	10.5
	2014	**11.1**	**37.9**	**93.9***	**17.8****	**22.1****	**16.6****	**76.1**	**10.7**	**4.9**	**10.2**
Target 2020	2014	**Below 10%**	**At least 40%**	**At least 95%**	**Below 15%**	**Below 15%**	**Below 15%**	**At least 82%**	**At least 15%**	–	–

* =2013, **=2012, Source: European Commission (2015c); Eurostat (2016b)

in some countries—ES, IT, PT, RO—the percentage remains high—above 15%. Although significant progress was made in implementing the common main objective set in the Europe 2020 strategy (European Commission 2010), the number of people who leave school early exceeds 4.4 million, and roughly 60% of them are inactive or unemployed, leaving them at a sharper risk of social exclusion and beyond civic engagement. In 2015, 58.2% of 18-to-24-year-old early leavers from education and training were either unemployed or inactive. Of the total population of 18-to-24-year-olds, 19.1% were neither in employment nor in any further education or training (NEET), and thus at risk of being excluded from the labor market (Eurostat 2016a).

Similar improvement has been made in terms of the percentage of people with higher education (age 30–34). In 2011 the EU average was 34.8%, while it increased to 37.9% in 2014. The objective was to reach at least 40%, a number achieved by 16 countries in 2014. The highest rate—over 50%—is observed in IE, CY, LT, LU. While significant progress has been made towards implementing the main common objective set forth in the Europe 2020 strategy (European Commission 2010), the ability of graduates to find employment decreased across the EU as a whole. The employment rate among recent graduates (20-to-34-year-olds having left education and training in the past three years) has dropped considerably due to the economic and financial crisis. It fell from 82.0% in 2008 to 76.1% in 2014. Graduates in BG, EL, ES, HR, IT, CY, PT and RO have the most difficulty finding employment (the employment rate of recent graduates in these countries is below 70%).

Positive changes are also evident in early school education and childcare goals. While the goal was to have at least 95% attending early school or childcare, the EU average in 2014 was 93.9%. Additionally, 13 states have already exceeded 2020 targets. At roughly 75%, EL, HR and SK ranked the lowest.

Education of 15-year-olds faces challenges. Across the EU, 22% achieve poor results in mathematics, 18% of 15-year-olds achieve low scores in reading and comprehension, and 17% have poor results in understanding the natural sciences. Students in BG, GE, CY, RO, SK and SW, where the rates come in as high as 25%, have the most serious problems.

Participation in life-long learning has also struggled to meet the objective, which has been set at a level of at least 15% by 2020. In 2014, the EU average was 10.7%. This was achieved by only six Member States: DK, FR, NL, FI, SW and UK, while 18 States came in below 10%. The percentage of people participating in life-long learning is particularly low in BG (1.8%), GE (30%), CR (2.5%), HU (3.2%), PL (4.0%), RO (1.5%) and SK (3.0%). Given the demographic changes that are taking place in EU countries, this objective is particularly important. The progressive population decline causes a decrease in the number of students at all stages of education. Many countries will be forced to reform educational institutions in the coming years in order to adjust to the new demographic conditions. A higher percentage of people engaging in life-long learning can significantly reduce the negative effects associated with population decline, including reduced employment in the education sector and a declining number of educational institutions. In

addition, upgrading skills is also important for meeting the basic objective of the Europe 2020 Strategy (European Commission 2010) that includes ensuring intelligent economic growth thanks to more efficient investments in education, research and innovation and favors social inclusion.

A simple econometric analysis was used to identify whether there is a linear relationship between public spending on education measured as a percentage of GDP in the EU countries and indicators in the EU countries, such as the percentage of people who leave education and training prematurely (aged 18–24 years), the percentage of people with higher education (aged 30–34 years), the rate of early child education and childcare (from age 4 to the age when primary education begins), the total employment rate for new graduates by education level (aged 20–34-year-olds who have completed their education from 1 to 3 years before the reference year) and the rate of adult participation in life-long learning (aged 25–64 years). Linear regression models with two variables were used for the analysis, which included statistical data from the 28 EU countries for 2014 derived from the Eurostat database.

Estimations come from the following linear regression function:

$$Y = \alpha_0 + \alpha_1 \cdot X + \varepsilon$$

where Y is the dependent variable, X is the independent variable, α_0, α_1 are the parameters of the linear regression function, and ε is a random component. The dependent variable Y is assumed to be, respectively: the percentage of people who leave education and training prematurely (aged 18–24), the percentage of people with higher education (aged 30–34), the rate of early child education and childcare (from the age of 4 years to the age at which primary education starts), the total employment rate for new graduates by education (aged 20–34 and who completed education from 1 to 3 years before the reference year), and the rate of adult participation in life-long learning (aged 25–64). The independent variable X in all regression models is considered to be public expenditure on education measured as a percentage of GDP.

It is expected that higher public expenditure on education measured as a percentage of GDP in the EU will increase the percentage of people with higher education, the rate of early school education and childcare, the employment rate for new graduates by education in general and the rate of the adults in life-long learning. At the same time, it is expected to reduce the percentage of people who leave education or training prematurely.

The estimation results from linear regression models are shown in Tables 4, 5, 6, 7, and 8. The values of the statistical F-test and probability p-value in the F-tests (see Tables 4, 5, 6, 7, and 8) indicate the statistical significance of almost all regression functions with a significance level of 0.1. The function of the linear regression of early school education and childcare indicator (from age 4 to age at which primary education starts) relative to public expenditure on education measured as a percentage of GDP proved to be statistically insignificant (p-value of the F-test is 0.2962, compare Table 6). Furthermore, the individual parameters of all the

Table 4 Results of linear regression of the percentage of 18–24-year-olds who left education or training prematurely relative to public spending on education measured as a percentage of GDP

	Coefficient
Intercept	0.1782*** (0.0006)
Percentage of people who leave education and training prematurely (aged 18–24)	−1.5967* (0.0740)
R^2	0.1177
n	28

Note: *, ** and *** denote significance of the T-tests at the 0.1, 0.05 and 0.01 significance level, respectively
Source: The author

Table 5 Results of linear regression of the percentage of people with higher education (age 30–34) relative to public spending on education measured as a percentage of GDP

	Coefficient value
Intercept	0.1615* (0.0835)
Percentage of people with higher education (aged 30–34)	4.4986** (0.0132)
R^2	0.2138
n	28

Note: *, ** and *** denote significance of the T-tests at the 0.1, 0.05 and 0.01 significance level, respectively
Source: The author

Table 6 Results of linear regression of the indicator early education and childcare from age 4 to the age when primary education begins) relative to public spending on education measured as a percentage of GDP

	Coefficient value
Intercept	0.8269*** (4.41E-10)
Rate of early child education and childcare (from the age of 4 years to the age at which primary education starts)	1.7224 (0.2962)
R^2	0.0419
n	28

Note: *, ** and *** denote significance of the T-tests at the 0.1, 0.05 and 0.01 significance level, respectively
Source: The author

regression functions, except of the regression coefficient of the linear regression function for the early school education and childcare in terms of public expenditure on education as a percentage of GDP, are statistically significant at the significance

Table 7 Results of linear regression of the indicator employment of new university graduates according to education (age 20–34 years who have completed education from 1 to 3 years before the reference year) relative to public spending on education measured as a percentage of GDP

	Coefficient value
Intercept	0.4534*** (0.0005)
Total employment rate for new graduates by education (aged 20–34 and who completed education from 1 to 3 years before the reference year)	5.6829** (0.0139)
R^2	0.2111
n	28

Note: *, ** and *** denote significance of the T-tests at the 0.1, 0.05 and 0.01 significance level, respectively
Source: The author

Table 8 Results of linear regression of the indicator adult participation in life-long learning (aged 25–64) relative to public spending on education measured as a percentage of GDP

	Coefficient value
Intercept	−0.1871 *** (0.0095)
Rate of adult participation in life-long learning (aged 25–64)	5.5757 *** (0.0002)
R^2	0.4296
n	28

Note: *, ** and *** denote significance of the T-tests at the 0.1, 0.05 and 0.01 significance level, respectively
Source: The author

level of 0.1 (see the values of statistical tests and p-value of the t-Student test in Tables 4, 5, 6, 7, and 8).

The accuracy of estimates obtained from linear regression functions can also be assessed by using the standard deviation of the residual component (random) and the coefficient of linear determination. Unfortunately, the coefficients of linear determination R^2 in the regression functions estimated do not exceed 43%. The highest coefficient of linear determination R^2 was the 42.96% observed for the function of the linear regression indicator of adult participation in life-long learning (aged 25–64) with respect to public expenditure on education (see Table 8). The conclusion based on this measure is that, in terms of the designed regression function, only approximately 43% of the variation of the adult participation in life-long learning was explained by the variability of public expenditure on education. It appears, therefore, that although the linear relationship between public spending on education measured as a percentage of GDP and the selected dependent variables, which are indicators, are statistically significant, that significance is weak or moderate at best.

A 1-percentage point (pp) increase in public expenditure on education measured as a percentage of GDP reduces the percentage of 18–24-year-olds who leave

education and training prematurely by an average of approximately 1.6 pp. At the same time, a 1-pp increase in public expenditure on education measured as a percentage of GDP increases not only the percentage of 30–34-year-olds with higher education on average by almost 4.5 pp, but also the employment rate of new graduates according to their education (age 20–34 years who completed education from 1 to 3 years before the reference year) generally in the EU on average by approx. 5.68 pp. Furthermore, if public expenditure on education measured as a percentage of GDP in the EU rise by 1 pp, the rate of adult participation in life-long learning (adults aged 25–64) in the EU will increase by approx. 5.58 pp.

The empirical results of the estimation based on linear regression models, including low values of the linear determination coefficients, indicate that the proposed linear regression equations are not yet a good approximation of linear relationships between public spending on education measured as a percentage of GDP in the EU countries and indicators such as the percentage of people who prematurely resign from education or training, the percentage of people with higher education (aged 30–34), the employment rate for new graduates according education (age 20–34 years who have completed education from 1 to 3 years before the reference year) and the rate of adult participation in life-long learning (aged 25–64 years). However, the results do show that the variable "public expenditure on education measured as a percentage of GDP" plays a fairly significant role in explaining the variability of each indicator. To verify what variables beyond that one play an important role in explaining the variation of each indicator, further estimation would be required, for example based on linear econometric models with a greater number of variables.

The above analysis shows that the varied level of expenditure on education finds reflection in the degree to which individual countries have accomplished *Education and Training 2020* programme (Council of the European Union 2009) and *Europe 2020* strategy (European Commission 2010) goals. Those countries which have dedicated more financial resources to education have managed to more thoroughly realize EU education policy targets. Note, however, that the results are determined by a number of factors which cannot be assessed strictly through the prism of outlays on education. Those factors can be divided into two groups—first, objective ones including the structure of the education system, methods of financing and managing it, and constitutional arrangements. The second group of factors represents a source of instability in terms of the functioning of education. They include demographic changes, the scale of which varies across the Member States, and political factors connected with the realization of state policy, such as reforms and changes in the law.

5 Conclusions

Investing in education is crucial for the improvement of labor productivity, career development, and, more widely, the economic development of the European Union. Other benefits education brings about are a more active civil society and greater chances of finding work. While it does not officially have an education policy, and gives individual Member States a good deal of freedom in setting policy, the European Union does define the frameworks and goals the states should strive to achieve while also providing them financial support so they may better achieve those goals.

The amount of EU financing designated directly for education is quite small compared with the investment the countries make themselves. However, within the EFS framework, for the 2007–2013 timeframe, 33.7 BLN EUR went to education measures. The 2014–2020 timeframe calls for an estimated 27.1 BLN.

It is difficult to establish a direct correlation with the impact of EU support, though in recent years significant progress has been made in implementing the Europe 2020 goals (European Commission 2010). Effort is nonetheless still required to achieve the goals. While most countries are nearing strategy Europe 2020 (European Commission 2010) education objectives, some Member States still lag behind in achieving national targets. Countries that have fallen behind—including Hungary, Portugal, Croatia and Romania—recently adopted a comprehensive strategy for education and science, which are intended as the beginning and driving force for the implementation of educational policy goals.

It would seem that the consistent implementation of national education policy by 2020 with the assistance of EU funds from the 2014–2020 financial perspective would enable the Member States to achieve ET 2020 objectives. A system of action and reforms was included in the operational programmes of individual countries for the years 2014–2020. The aim of these programmes is to strengthen selected public policies by pursuing the objectives of the Europe 2020 strategy (European Commission 2010). With regard to education, their implementation will enable two objectives to be achieved: First, to bring the share of early school leavers to less than 10% and, second, to increase the percentage of highly educated people aged 30–34 to at least 40%. Given the importance of education to the development of social and economic life, as well as the levels where these indicators currently stand, many countries have established even more ambitious goals.

This paper has been structured around the hypothesis that the level of expenditure on education is important for achievement of EU policy objectives by the Member States of the European Union. The analysis presented verifies that hypothesis. It turns out that although the linear correlations between public spending on education as a percentage of GDP and the selected dependent variables used as indicators are statistically significant, they are only weak or moderate correlations. The results of the empirical estimation of linear regression models, including low coefficients of linear determination indicate that the proposed linear regression equations are not yet a good approximation of linear relationships between public

spending on education as a percentage of GDP in the EU and the indicators under consideration. They nonetheless show that the variable "public expenditure on education as a percentage of GDP" plays a fairly significant role in explaining the variability of each indicator.

In conclusion, the research presented here could function as the basis for further, more thorough analyses of education policy, both in the EU and in the Member States. Identifying the causes of low-level indicators for the dissemination of life-long education and employment of recent graduates by education attainment (ages 20–34) should be of particular interest, as should determining the effectiveness of funds spent on employment due to the lack of progress in achieving the intended objectives. In addition, studying the impact of demographic change (including the decline in the number of students) on the scope of the exchange taking place in the educational policy of the European Union could lead to interesting conclusions. It would also be revealing to analyze variables beyond public spending on education as a percentage of GDP, as they play an important role in explaining the variability of the indicators (for example, by estimating linear econometric models with a greater number of explanatory variables).

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Permitted Modifications of Public Contracts in the EU Court of Justice Case Law and in the New Directives of Public Procurement Law

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Abstract The new EU directives of public procurement law, which the implementation period expires in April 2016, for the first time in the history of regulation this area of the EU internal market introduced rules concerning the exercise of public contracts. The legal framework of this regulation also covered the issues modification of public contracts during their execution. The rules defining the scope of the admissibility of such changes represent an attempt to find the right formula between the striving for effective execution of the contract in the situation of the need to adapt to changing conditions and requirements of equal treatment and procedural transparency to entities interested in the execution of contracts a given type. The importance of this issue for the protection of the public procurement market competitiveness and fairness to compete for contract in the procurement procedures was noticed in the case law of the Court of Justice of the European Union (CJEU) for many years. The importance of this issue for the protection of the public procurement market competitiveness and fairness to compete for order in the proceedings for many years noticed in the case law the CJEU. The aim of the article is to illustrate the development and evolution of EU jurisprudence on these issues and to show what effect this process has received in legal regulation of the new law on public procurement directives.

Keywords Public Procurement • EU • Procurement Directives • Modifications of Public Contracts • EU Court of Justice Case Law

1 Introduction

For the first time in the history of EU legislation, regulations on modification and termination of public procurement contracts was introduced in new 2014 Directives on Public Procurement Law governing public procurement market. They form

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separate chapters of the directives entitled "Contract Performance" [see Chapter IV of the Directive 2014/24/EU (Articles 70–73) and Chapter IV of the Directive 2014/25/EU (Articles 87–90)]. Introduction of these regulations changes the status quo where the EU (Community) public procurement law governed only the procedures for awarding public procurement contracts and for handling complaints (Sołtysińska 2006), disregarding the stage of performance of awarded contracts. Before the regulations forming a legal framework for modifying already executed public procurement contracts had been introduced in the EU secondary law, the rules on admissibility of such modifications were formulated in EU judicature. It is the EU Court of Justice judicature that developed the notion of "a material modification" of a public procurement contract and identified the circumstances (situations) where a planned or made modifications can be classified as material. The present discussion is set in the context of a mandatory nature of regulations governing public procurement procedures and aims at demonstrating the need to perceive material contract modifications as a form of awarding a public procurement contract outside the relevant procedural framework. Not only did the judicature serve as a starting point for a discussion on legal framework for modifying public procurement contracts, but also highlighted the significance of this issue from the perspective of basic principles of EU legislation, such as non-discrimination due to national origin, equal treatment, transparency, and competition protection (Horubski 2013). Hence, the discussion below will begin with presentation of key conclusions contained in the relevant EU judicature.

2 Modifications to Public Procurement Contracts in the Light of Judicature of the Court of Justice of the European Union

The first EU court decision defining the basic assumptions that underlie subsequent rules on admissibility of modifications in public procurement contracts was the judgement rendered on 5 October 2000 in the case C-337/98 *Commission of the European Communities versus French Republic*. The issues addressed in the judgement by the EU Court of Justice included the nature of modification of the object of the contract in the course of the proceedings as a factor determining whether a given procedure still remains one and the same procedure. The case pertained to the procedure having a form of negotiations without publishing tender notice, which, with interruptions, lasted several years and involved the same contractor with whom negotiations had been conducted on a contract for organisation and operation of urban district light railway transport (see the C-337/98 judgement, paras 9–14, 29–34). Due to the fact that, in the course of negotiations between the contracting authority and the supplier of automatic light railway system the object of the contract (object of negotiations) was also modified to some degree, it was necessary to establish whether (at some point) as a result of such modifications, the object of

negotiations and the original object of the contract were no longer identical. This in turn, was relevant for determining the moment in time when the negotiations procedure actually commenced—without a call for proposals addressed to competitors—and concluded with a contract for the supply of a specific urban transport system. With regard to the above-mentioned issue, it was concluded that if the object of negotiations evolved in the course of negotiations so that it became substantially different in character from the initial object of the contract, thus demonstrating the intention of the parties to renegotiate the essential terms of the future contract, it would be impossible to declare equivalence of the contract awarding procedure (see the C-337/98 judgement, paras 44, 46).

The C-337/98 judgement, although not directly pertaining to a modification in executed contract, served as a reference point for subsequent the Court of Justice of the European Union (CJEU) judgements expressly addressing modifications of the contents of already executed contracts. This pertained, in particular, to the assumption that it was necessary to determine how much a contract modification diverged from the original intentions of the procurement contract in order to establish whether the modification was substantial or not. The judgement also impacted subsequent ones by highlighting the issue of substantial modifications as those demonstrating the intention of the parties to renegotiate the essential terms of the contract.

The rules on modification of public procurement contracts were further developed in another judgement—significant in the light of the discussed problem—rendered on 29th April 2004 in the case C-496/99 *Commission of the European Communities versus CAS Succhi di Frutta SpA*. In the case concerned, the European Commission implementing a support programme of free supply of food to non-EU countries published, pursuant to its own earlier regulations, announcement on initiating an award procedure for the supply of fruit juices and fruit jams, assuming that in consideration for the supply the suppliers would receive a specific quantity of specific types of fruit (apples or oranges) in the intervention stocks, withdrawn from the markets of Member States. Tender terms did not contain any provision allowing for the possibility to perform the contract by offering other fruit types (see the C-496/99 judgement, para 82). However, modifications to that effect were introduced in the course of contract performance. The Commission, as contracting authority, allowed for the possibility to perform the contract by providing the already selected suppliers with peaches, and subsequently also other types of fruit instead of apples or oranges originally prescribed in the contract terms. Also, coefficients of equivalence of certain fruits were laid down for the purpose of "converting" the quantities of fruits indicated in bidder's offers to substitutes (other types of fruit) for the purpose of contract performance by successful bidders (see the C-496/99 judgement, paras 2.13–2.14). Consequently, a complaint was filed by a tender participant *Succhi di Frutta SpA* seeking invalidation of the Commission decision introducing the above-mentioned modifications on the grounds that they infringed the equal treatment principle and transparency requirement.

The CJEU judgement concerned was particularly important as it expressly highlighted the fact of the awarding entity being bound by the equal treatment and transparency principles also in the course of contract performance, i.e. after the relevant contract had been awarded and executed (see the C-496/99 judgement, paras 115–116). In other words, the individual interest of a bidder was recognised, protected under EU law, in demanding compliance with these principles also during contract performance so as to afford equality of opportunity to all bidders participating in the procedure. The interest stems from the very fact of submitting a tender (see the C-496/99 judgement, paras 82–83). Hence, the Court dismissed the opinion presented by the contracting authority in the proceedings that after executing a contract with the successful bidder, the above-mentioned principles provided for in the primary EU legislation no longer applied. And so, the EU Court of Justice postulated the necessity to provide for the possibility to modify the tender terms and also to identify, in advance, the circumstances, contents, and procedure for modifying contracts at a later stage (see the C-496/99 judgement, para 118). Consequently, modifications to the essential terms of contracts would be permitted only if they do not derogate from conditions originally specified in invitation to tender (see the C-496/99 judgement, paras 117–119). Should the contracting authority and the successful bidder be granted total freedom in making such modifications, the impartiality of the whole procedure would be at risk, while its original conditions setting the framework within which the entire procedure must be carried out, could become distorted (see the C-496/99 judgement, paras 120–121). The view on the issue adopted in the C-496/99 judgement should be considered strict, as it excludes the possibility to introduce any modifications in situations that could not be reasonably foreseen by the contracting authority and which are beyond its control. In the light of the foregoing judgement, any modification would necessitate initiation of a new award procedure under new tender terms adapted to the changes circumstances.

To end the discussion on the importance of the C-496/99 judgement for the legal framework governing modification of public procurement contracts, one more assumption made there should be mentioned, namely on treating the contract performance phase as a stage of broadly understood process which does not end, by any means, with contract award. Hence, in the judgement concerned, as already mentioned above, the necessity to respect the equal treatment and transparency principles is highlighted in order to protect the interests of all bidders and not only of the successful one. Furthermore, it is emphasised that the principles are applicable and binding "up to the end of the stage during which the relevant contract is performed", which means that the contracting authority is at all times bound by the terms provided for in the invitation to tender (see the C-496/99 judgement, para 115), although the nature of this binding relationship changes and serves to safeguard the arrangements made in the course of the contract awarding procedure, both in terms of subject-matter and object thereof.

Apparently crucial for the evolution of judicature rules on admissibility of modifications in public procurement contracts was the CJEU judgement of 19th June 2008 in the case C-454/06 *pressetext Nachrichtenagentur GmbH versus the*

Republic of Austria. The theses formulated there were, on the one hand, in line with the approach adopted in the judicature discussed above, yet, on the other hand, they introduced significant elements of novelty. The said judgement laid down, against the background of the case, the rules constituting the major point of reference for defining a substantial modification in a public procurement contract. It defined circumstances in which a contract modification could not be considered in compliance with basic principles of EU public procurement law. The judgement, for the first time, provides an interpretation of the term "public contract award", both in the context of modifications of a public contract wording and change of parties to the contract (Sołtysińska 2006), pointing out that a contract may be deemed awarded in breach of the requirements of EU public procurement law not only as a result of failure to publish invitation to tender, but also due to a material modification of the contract itself. Both situations have the same effect—they deprive other prospective bidders of an opportunity to compete for the contract.

As already mentioned above, the C-454/06 judgement defined the detailed content-related criteria of the term "substantial contract modification", thus expanding the term itself, compared to earlier judgements. The Court of Justice pointed out that "an amendment to a public contract during its currency may be regarded as being material when it introduces conditions which, had they been part of the initial award procedure, would have allowed for the admission of bidders other than those initially admitted or would have allowed for the acceptance of a tender other than the one initially accepted" (see the C-454/06 judgement, para 35). Moreover, according to the Court, "an amendment to the initial contract may be regarded as being material when it extends the scope of the contract considerably to encompass services not initially covered" (see the C-454/06 judgement, para 36). Finally, the Court stated that "an amendment may also be regarded as being material when it changes the economic balance of the contract in favour of the contractor in a manner which was not provided for in the terms of the initial contract" (see the C-454/06 judgement, para 37). Consequently, the concept of a material modification should cover public contract modifications which trigger at least one of the following effects: (1) conditions are introduced which would expand the circle of possible bidders or result in selection of a different tender; (2) the initial scope of the contract to be performed by the contractor is considerably extended; (3) the economic balance of the contract is changed in favour of the contractor in a way not initially provided for (Wicik 2009). Yet, it should be emphasised here that the Court did not prioritised the rules in any way, nor did it comment on mutual relations among them as regards their application for the purpose of determining the nature of specific contract modifications. However, the importance of formulating these rules for determining the material nature of substantive modifications to the procurement contracts, in the process of adjudicating on their admissibility, is of extreme importance.

The basic point of reference for applying the first rule is surely the process of competing for the contract in the course of the procedure preceding the contract award (Wicik 2009). The purpose of this rule is to avoid distortion (warping) of the process and its result which is the selection of the best tender. To do that, the

introduced or contemplated modification needs to be tested for compliance with effective competition protection requirements. The test would include hypothetical comparison of the tender presented by the contractor in the modified wording with the tenders of other entities participating in the contract awarding procedure (Olivera 2015). The purpose of such comparison would be to establish whether the tender of successful bidder would still be the best or, given the modified tender conditions, a different tender would have been selected, i.e. whether the modification would affect the actual result of the contract awarding procedure.

The second of the above-mentioned rules on modification of public procurement law seems to serve the purpose of safeguarding competition on the public procurement market. It is intended to prevent considerable expansion of the scope of contract through contract modification, i.e. based on agreement between the parties to the initial contract, without allowing other bidders to compete for such an extended contract under a procedure respecting broadly understood transparency principle. Yet, the rule may be also regarded as ensuring effectiveness and integrity of the competition process under contract awarding procedure, as it can be assumed a priori that the result of the procedure would be different, had all bidders been able to compete from the very beginning for a contract much broader in scope. Generally, such situation is reflected in the prices offered in tenders or in other tender conditions affecting the final awarding decision.

The third rule should be perceived as pertaining to both competition areas discussed above. Significant changes in the economic balance of the contract, as reflected in the initial contract to be awarded, may distort the competition for public contract award, as they would substantially modify the contract terms, compared to the initial ones, thus suggesting the necessity to initiate a new (repeated) transparent contract award procedure open to competition. Material modification of the contract, changing the economic balance in favour of the contractor and to the detriment of the contracting authority, lead to favouring the contracting authority's contractual partner as against other possible service providers, both those participating in the original contract awarding procedure and others operating on the relevant market (see the opinion of Advocate General Julianne Kokott in the case C-454/06, para 76). Having admitted that contract modifications affecting the initial economic balance of the contract pose a significant threat to the competition protection in the contract awarding procedure, the Court expressly provided for the necessity to envisage such modifications. Here, therefore, a reference should be made to the predictability requirements laid down in the C-496/99 judgement. The rule at issue, when applied in practice, would in many cases overlap with the rules discussed above. For, quite often, a substantial modification affecting the economic balance between the parties to a contract will also adversely affect effectiveness and integrity of the competition in the contract awarding procedure.

To sum up the significance of the rules discussed above for broadly understood protection of competition in the area of performing and awarding public procurement contracts it is worthwhile to mention the view presented in the opinion of Advocate General J. Kokott in the case C-454/06, where she claimed that the purpose of the rules is to eliminate modifications of such contracts, which "may

materially distort competition on the relevant market and favour the contracting authority's contractual partner as against other possible service providers", since such modifications "justify conducting a new procurement procedure" (see para 76 of the opinion of the Advocate General J. Kokott in the case C-454/06).

To date, the last CJEU judgement concerning admissibility of modifications in a contract executed by a public authority after conducting competition based contract awarding procedure was the judgement rendered on 13th April 2010 in the case C-91/08 *Wall AG versus Stadt Frankfurt am Main* (see the C-91/08 judgement, paras 33, 37–38). The case examined by the Court concerned the procedure for the award of the service concession for the operation, maintenance, servicing and cleaning of municipal public lavatories. The service provider under the contract *FES* referred in the proceedings to the capabilities of another entity (*Wall*) which also participated in the tender procedure, but was excluded, which resulted in rejection of its tender (see the C-91/08 judgement, paras 14–16, 33). *Wall* was indicated in the tender submitted by *FES* as a subcontractor for the supply of lavatories and organisation of advertising services in the lavatories. The contract provided for the possibility to change the subcontractor with respect to both contract tasks upon consent of the entity granting the concession. Prior to commencing the work being the object of the concession and without evoking specific financial or technical reasons, the concession-holder asked the entities selected at its discretion, including the sub-contractor identified in the contract, to present their offers concerning the performance of the above-mentioned works. As a result of a competition, the works were entrusted to an entity other than *Wall*. The city, as the authority granting the concession, approved the substitution of a sub-contractor. Then, the existing subcontractor filed a case with domestic court in order to prevent the performance of the works concerned for the concession-holder by another entity selected by it after execution of the contract (see the C-91/08 judgement, paras 21–25, 27).

The Court examined the facts from the perspective of broadly understood transparency requirement which covers the obligations to: open the concession granting procedure to competition, ensure adequate level of openness of the proceedings, and enable control over impartiality of the proceedings (see the C-91/08 judgement, para 28). This obligation, in turn, constitutes materialization and a guarantee of equal treatment principle as a basic EU right (see the opinion of Advocate General Yves Bot in the case C-91/08, paras 67, 72). It was assessed that the substitution of the subcontractor identified in the contract after executing the concession contract, was—as a matter of principle—immaterial; however, a reservation was made that in exceptional circumstances is may be considered inadmissible. The Court decided that this particular case was exceptional on the grounds that the fact of mentioning a specific subcontractor in the tender submitted by concession-holder affected the final decision on the contract award. For, "where the use of one subcontractor rather than another was, in view of the particular characteristics of the services concerned, a decisive factor in concluding the contract" any such modification to the content of the contract cannot be considered immaterial (see the C-91/08 judgement, para 39). Identifying a specific

subcontractor in a tender, due to its reputation, experience and technical expertise has, therefore, become an essential element of the tender due to its significance for the result of the procedure (see the opinion of Advocate General Y. Bot in the case C-91/08, paras 72, 73). Hence, the Court highlighted also a problem of particular characteristics of the service concerned—also in the context of their impact on the final result of the procedure—that could be provided only with the participation of that specific subcontractor due to its resources and capabilities (Kunkiel-Kryńska 2014). Moreover, certain doubts should be mentioned here, concerning a situation where a change of the subcontractor playing in the contract award procedure a role similar to the one described above, would take place without any financial or technical reason, and *de facto*, before commencement of contract performance. A change made in such circumstances would be a sign of fictitious character of the tender submitted in the procedure, intended only to win the contract, which is clearly contradictory to competition protection requirements (fairness in competing for contracts), and, consequently, to the transparency requirement (see the opinion of Advocate General Y. Bot in the case C-91/08, paras 67, 72).

In the C-91/08 judgement, the above modification was found to be "materially different in character from those on the basis of which the original concession contract was awarded, and are therefore such as to demonstrate the intention of the parties to renegotiate the essential terms of the contract" (see the C-91/08 judgement, para 37). Hence, it was concluded that "where modifications to the provisions of a service concession contract are materially different in character from those on the basis of which the original concession contract (. . .) all necessary measures must be taken (. . .) to restore the transparency of the procedure, which may extend to a new award procedure." (see the C-91/08 judgement, para 43). In the judgement concerned, the CJEU found the modification described above inadmissible despite the fact that the contract provided for the possibility to substitute the subcontractor upon the consent of the party granting the concession. However, the relevant clause could not have been considered satisfying the foreseeability standards with respect to contract modifications in the course of award procedure (see the C-91/08 judgement, paras 19–20, 33), laid down in earlier judicature (see the C-469/99 judgement, paras 118, 120), as the contract did not specify the situations justifying the change of the subcontractor identified in the contract.

To sum up the above theses found in CJEU judicature, first, it should be noted that material contract modifications necessitate initiation of a new award procedure. The conclusions of the EU judicature concerning material contract modifications, aimed at preventing and sanctioning awarding of public contracts with the omission of the procedures laid down in relevant directives led to equating material modification with awarding a new contract or with awarding the original contract under a new contract procedure. Consequently, material modifications are subject to award procedure and cannot be introduced otherwise. Relevant CJEU judicature rejects automatic categorisation of modifications as material ones merely on the grounds that they pertain to apparently essential conditions of any public procurement contract, being a contract involving consideration—namely to remuneration due to the contractor and the services to be provided in return (Kunkiel-Kryńska 2014).

On the contrary, specific contract modifications should be tested for their compliance with multi-dimensional competition protection principle. The rule serves as a basic point of reference in determining materiality of a public contract modification. Competition protection dimensions referred to above cover, both competing in the same award procedure (actual competing for a contract) as well as possible scale of the competition in reference to the procedure as such and to the moment in which the modification is made. Evaluative analysis of the circumstances of the implemented or contemplated contract modification referred to above should encompass a number of conditions, such as: the scope of modification, circumstances justifying or necessitating it, position of the contractor *vis-a-vis* other potential bidders (if it is possible to assess it), and the impact of the modification on the contract position of the contractor *vis-a-vis* the awarding authority (Moras 2013). Only such a multi-dimensional analysis based on above-mentioned modification admissibility requirements should allow for classification of a given change as material or immaterial. It should eventually eliminate the risk of competition distortion on the public procurement market or the risk of a contractor enjoying a privileged position as a party to the contract vis-a-vis its actual or potential competitors.

Undoubtedly, the judicature discussed above had a law-making quality. Starting with a general assumption excluding contract modifications which *de facto* would result in awarding a new contract, it developed detailed rules on admissibility of contract modifications. By addressing the issue of contract modifications, which is a crucial aspect of contract performance, the CJEU judicature became the primary instrument safeguarding effective realisation of internal market freedoms and, consequently, of cross-border competition. Subsequent introduction of contract modification determinants derived from general principles was a clear manifestation of a need to enact a normative act governing these issues. This was one of the arguments justifying commencement of works on new public procurement law directives.

3 Admissible Public Contract Modifications in New EU Public Procurement Directives

During the works on new public procurement directives, EU legislator has decided that the conclusions found in CJEU judicature should become normative provisions, so that the newly enacted regulation define the permitted scope of contract modifications and, at the same time, specify situations in which a new award procedure is mandatory (Kunkiel-Kryńska 2014). In this way, the rules developed in judicature on determining materiality of modifications in public procurement contracts have been codified and have become a part of broader legal regulation covering certain aspects of public contract performance. In view of these facts, there is not doubt that evoking relevant above-mentioned CJEU judgements in

interpreting specific provisions of directives is fully justified (Semple and Andrecka 2015).

Given the above assumptions, the directive regulations on admissibility of contract modifications have been based on general notion of substantial modification in a public procurement contract. The core of the notion is the nature of the contract as the basic point of reference for the contemplated or implemented modification (Semple and Andrecka 2015). Accordingly, the basic limit of freedom enjoyed by parties to a public procurement contract is the situation where, following such modification, "the contract would be materially different from the one initially concluded" (art. 72 (4) of the Directive 2014/24/EU). The ban on modification of the initial character of a contract without conducting a new award procedure was supplemented by reference to judicature rules on contract modifications, quite similar in wording to those contained in C-454/06 judgement (Olivera 2015). Hence, it is provided for in art. 72 (4) of the Directive 2014/24/EU that in any event a modification shall be considered to be substantial where one or more of the following conditions is met: (1) "the modification introduces conditions which, had they been part of the initial procurement procedure, would have allowed for the admission of other candidates than those initially selected or for the acceptance of a tender other than that originally accepted or would have attracted additional participants in the procurement procedure"; (2) "the modification changes the economic balance of the contract (. . .) in favour of the contractor in a manner which was not provided for in the initial contract or framework agreement"; (3) "the modification extends the scope of the contract or framework agreement considerably"; (4) "where a new contractor replaces the one to which the contracting authority had initially awarded the contract in other cases than those provided for under point (d) of paragraph 1". And so a legal definition of a substantial modification in a contract was formulated. By codifying the rules on determining materiality of modifications, developed in the judicature, the general ban on modification of initial character of a public procurement contract was further clarified.

Apart from generally negative definition of lawful substantial modification, the EU legislator provided also positive premises permitting modifications in certain situations. The analysed regulation specifies five such situations. First of all, minor modifications of value, compared to initial contract value, should be mentioned (Art. 72 (1)(a) of the Directive 2014/24/EU). The modifications are permitted in any situation, without the need to satisfy any additional criteria. This means that only after the value exceeds certain threshold amounts, it is necessary to prove that the premises pertaining to other instances permitting contract modifications are met. Pursuant to art. 72 (2) of the Directive 2014/24/EU, the value of the contract modifications should be below the general thresholds set out in the directive (see art. 4), and below 10% of the initial contract value for service and supply contracts and below 15% of the initial contract value for works contracts. Such approach to regulating that issue reflects one of the views (aspects) of the notion of substantial modifications present in the CJEU judicature discussed above. According to this view, a substantial change is the one characterised by certain noticeable degree of

intensity (thoroughness, scale of interference), assessed from the perspective of the contract as a whole (see the C-337/98 judgement, paras 44, 46 and the C-454/06 judgement, para 34). Hence, the fact that EU legislator allows for contract modifications below certain fixed threshold values, by principle, in any circumstances and without any obligation to foresee in advance the object, scope, or direction of such changes, reflects the approval for the above-mentioned view that such modifications have generally little impact on the contract as a whole. Nonetheless, also in this case a reservation has been made that such modifications must not render the contract substantially different and if, with respect to a given public procurement contract, this provisions serves as a legal basis for a number of modifications, their total value cannot exceed the fixed thresholds.

Another specifically defined legal basis allowing for modifications in public procurement contracts is founded on broader spectrum of conditions, but not in every case they cover restrictions on the value of services to be provided by the contractor under the modified contract. This is the case when it is permitted to introduce modifications envisaged in initial contract terms in specific review/option clauses (art. 72 (1)(a) of the Directive 2014/24/EU). Such clauses should define the scope of possible modifications and the conditions in which they can be introduced. These requirements apparently reflect the conclusions formulated in the judicature, concerning the equal treatment and transparency standards applicable to award procedures in order to safeguard the interest of bidders participating in the procedure as well as of those potentially interested in participation. This refers to the obligation to provide all interested entities, at the same time, with the same information on the object, scope, and directions of as well as on the circumstances justifying any future modification in the contract (see the C-469/99 judgement, paras 118, 120). Recital 111 of the preamble to the Directive 2014/24/EU contains a reservation that review or option clauses concerning envisaged modifications should not give contracting authorities "unlimited discretion".

Another two legal bases setting the framework for relevant contract modifications pertain to situations which have not been foreseen in initial contract terms. A situation mentioned in art. 72 (1) (b) of the Directive 2014/24/EU refers to the notion of additional works present in the provisions of former EU procurement law directive (Cf. art. 31 (4)(a) of the Directive 2004/18/EC). In the present legal situation this instrument, consisting in awarding a contract under negotiations procedure, without publication of a tender notice, for additional works/services not previously envisaged, but necessary to complete the initial contract for works or services, is substituted by relevant legal basis permitting contract modification (Horubski 2013). The scope of works/services and the contractor's remuneration in the situation where such previously unforeseen works/services become necessary to complete the contract will no longer be extended through formal award of a new contract (under a single-source procedure), but through modification of the contract. Whether a modification will be permitted in a given case depends on occurrence of the circumstances where the change of the initial contractor cannot be made for economic or technical reasons which would cause significant inconvenience or substantial duplication of costs for the contracting authority. A significant

inconvenience referred to above should be understood as pertaining to the costs or technical difficulties related to substitution of the present contractor with another one, and not to the necessity to conduct another award procedure. This requirement may be interpreted as giving primacy to economic effectiveness of a contract assessed from the perspective of the awarding entity over competition protection issues, which is very rare in legal regulations governing the public procurement system (Dzierżanowski 2015). This basic requirement is accompanied by a threshold amount restricting the permitted increase of contract price (up to 50% of the initial contract value) and a reservation that such modifications cannot be aimed at circumventing directive provisions. When the said requirements are met, the additional construction works or additional supplies may be entrusted to the present contractor without conducting a new procedure open to competition. This does not mean that the discussed legal basis for public procurement contract modifications can be perceived as ignoring the obligation on the part of the contracting authority to exercise due diligence in defining the scope of the contract. It certainly cannot be used to eliminate the consequences of intentional acts or negligence of the contracting authority as regards clear and precise description of the object of the contract (Dzierżanowski 2015). Modifications stemming from the failure by the contracting authority to comply with its obligations concerning adequate preparation of the procedure should be considered substantial modifications, as they favour the contracting authority's contractual partner as against other existing or possible competitors.

The second of the above-mentioned legal bases for modifications in public procurement contracts, which has not been foreseen in the initial contract terms, has some connection with relevant provisions of former directives, which opened a possibility for awarding contracts without publishing a tender notice due to circumstances beyond the contracting authority's control, justifying the prompt need to award or perform the contract (see art. 31 (1)(c) of the Directive 2004/18/EC). Recognising the need to enact a legal instrument that allows for necessary modifications in a contract in order to account for unforeseeable (despite due care and diligence exercised by the contracting authority—see the recital 109 of the preamble to the Directive 2014/24/EU) circumstances, also in this case the EU legislator additionally limits the possible modifications. This is done through reference to the obligation to respect the overall nature of the initial contract, underlying the discussed regulation as a whole. Moreover, it also introduces a maximum threshold of permitted increase of the contract price and repeats the restriction forbidding evasion of the directive provisions by introducing a number of such modifications in the same public procurement contract (art. 72 (1) (c) of the Directive 2014/24/EU).

The fact that EU legislator included in the regulation providing a legal framework for permitted contract modifications the provisions laying down the basis for introducing modifications in unforeseeable situations constitutes a deviation from the standard prevailing in the EU judicature, namely the transparency (predictability) of changes, yet it is a sign of recognition of actual problems strongly present in the practice of awarding public procurement contracts. At this point it is worth

reminding that in the light of the overall analysis of the EU judicature it cannot be concluded that it is necessary to predict the basis for every modification in order for such modification to be considered in compliance with basic EU legal principles. Such a requirement has been expressly defined for modifications resulting in a change of economic balance in favour of the contracting authority (see the C-469/99 judgement, para 37); consequently, satisfaction of the predictability requirements determines, as a matter of principles, the possibility to qualify the same as immaterial. However, there are examples in the judicature of unpredicted modifications which have been found permitted due to their immateriality (see the C-454/99 judgement, paras 60–64), and changes which have been actually foreseen (and are thus permitted) in the initial contract terms, but are considered substantial as they resulted in distortion of the results of the procedure and, consequently, of the competition in the award procedure (see the C-91/08 judgement, para 39). Rejection by the EU legislator of the concept of full predictability of modifications should be perceived as positive, as the regulation based on such a requirements would be too strict and formal. The predictability requirements ignores the fact it is the unpredictable affecting the contract performance reality that necessitates introduction of modifications in public procurement contracts. A regulation governing these issues cannot be in opposition to market reality, fast technological changes, economic crises, and specific nature of long-term contracts (Wieloński 2012).

Worth mentioning in the discussion on contract modification of specific types is also a characteristic feature of these regulations, namely the presence of the premises defining, in general, the scope of their application. They include such factors as: overall nature of a public procurement contract (art. 72 (1)(a-b) of the Directive 2014/24/EU), ban on using modifications to circumvent the directive (when a number of modifications is made during the contract term; art. 72 (1)(c-d) of the Directive 2014/24/EU), exclusion of subject-related modification, should they trigger off other substantial modifications of the contract (art. 72 (1)(d) of the Directive 2014/24/EU). The relevant notions, not clearly defined, coexist in the discussed regulation of categorised modifications permitted in public procurement contracts with very precisely defined requirements concerning e.g. maximum value thresholds for contract modification. The use of such unclear notions is necessary (see the opinion of the Advocate General J. Kokott in the case C-454/06, footnote 29 (para 49) of the opinion) due to very broad scope of the public procurement system, allowing for virtually unlimited number of possible situations justifying the need to modify a contract, also due to specific features of the object of a contract (Gola 2013). Their purpose is to seal the public procurement legal system. Through reference to practitioners interpreting law, they are intended to prevent breaches of basic principles of public procurement law or, in more general terms, of internal market freedoms, in situations where detailed premises permitting a modification are met. Undoubtedly, unclear notions make judicature more important as it becomes an area where the provisions using these notions gain contents, including more detailed (clearer) rules.

4 Conclusions

The findings show how important the regulations concerning admissibility of modifications in public procurement law are for the internal EU market, specifically as regards the provisions of supplies, services and works to public entities. Clear legal framework for modifying public procurement contracts must be considered a necessity ensuring competition on the public procurement market. Fair and competitive access to public procurement contracts is protected in two dimensions. First of all, limitation of freedom in modifying public procurement contracts through agreements between the parties to such contracts ensures fair competition of the contract awarding procedure preceding contract conclusion. Secondly, regulations limiting contract modifications prevent awarding new contracts outside public procurement system—through far-reaching modifications of objects of contracts or material extension of their scope. While the first of the above-mentioned dimensions of competition protection on public procurement market covers mainly economic operators who has taken part in a given contract award procedure, the second one affects all public procurement market participants who could be potentially interested in a given type of procurement contract. Introduction of the notion of contract modifications based on ECJ judicature into secondary EU legislation is also a sign of treating the phase of contract performance as a complex (multi-stage) process serving purposes and values that form the foundations of the EU public procurement law as a whole. For, the need to safeguard competition, equal treatment of economic operators and transparency on the public procurement market does not end with contract execution, but continues until the contract is performed in full.

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Interdependence of Macroeconomic Indicators and Inequality in Kazakhstan and its Main Trading Partners

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Abstract For the current stage of development of the world economy, a high degree of interdependence of macroeconomic indicators across countries is characterized. Business cycles pulse transmission can occur through many channels. They can occur as a result of observed shocks of global factors, such as the world price of oil, food products, and unobservable factors, such as the spread of new technologies. In the report the aim is to reveal the relationship of macroeconomic indicators of Kazakhstan and its main trading partners on the basis of a global vector autoregression model. The model includes 12 countries: Kazakhstan, China, Russia, Austria, Belgium, Finland, France, Germany, Italy, Netherlands, Spain and the United States. For its construction quarterly data for 1995–2013 years were used. Shocks of variables such as real GDP, inflation, short-term and long-term nominal interest rates, real exchange rate, Gini index, and responses to them in all countries are considered. Also, world oil price shocks has a strong influence. The constructed model makes it possible to assess the impact of the various shocks that arise in partner countries on macroeconomic performance in a small economy, including socio-economic indicators, such as income inequality. In particular, it became clear that a positive shock in real GDP in each country reduces inequality in the country and in other countries. Positive shocks to Russia Gini Index has also increased income inequality in Kazakhstan.

Keywords Interdependence • Autoregression model • Inequality • Impulse-response analysis

1 Introduction

In today's world, economies are becoming more open. This reinforces the interdependence of macroeconomic indicators. The dynamics of these parameters significantly affect the achievement of the objectives of economic growth and welfare of the population. Research of the relationship of real, financial and

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socio-economic performance of countries—trading partners is required. For Kazakhstan, these are China, Russia, the European Union and the United States. Kazakhstan and Russia are the largest members of the new regional integration association EEU—Eurasian Economic Union.

In recent years, the impact of globalization on income inequality has become an important issue that attracted attention of many scientists. The fact is that due to the strengthening of globalization processes in the world in most countries since the 1980s, income inequality of the population and relative poverty increased due to sudden gap that occurred in wages (compared to growth of demand for highly skilled labor). This is consistent with the Heckscher–Ohlin theorem, according to which international trade leads to a decrease in the proportion of workers in developed countries with a high share of capital-intensive high-tech production. Although, it should be noted that the majority of researchers argue that technological progress effects were much greater. For example, Wood (1994) believes that the impact of globalization on inequality can be significant, as technological progress may be affected by international competition and globalization, through the so-called defense technological innovation. Wood (1994) argues that the expansion of trade between developed and developing countries has become one of the main reasons for the growth of economic inequality in the US and persistent unemployment in Europe.

Researchers and politicians have expressed a concern about the impact of European integration on income distribution. According to Pearson (1998), the creation of the European Union has led to a weakening of the welfare policy, since the State had to resort to the adoption of austerity measures. (Czerewacz-Filipowicz 2016) discussed possible quantifiable effects of EEU on the economic development of its Member States. Beckfield (2006) concluded that as a result of European political integration states' social spending decreased, which led to an increase in income inequality. He believes that regional economic integration leads to an increase in income inequality since the workers are exposed to international competition and trade unions are weakened. Regional political integration also leads to higher levels of income inequality, but through a different mechanism. Political integration leads to a reduction in the social role of the state. Beckfield (2006) showed that regional integration explains almost half of the growth in income inequality in Western Europe.

The impact of globalization on employment and income distribution has been actively discussed in recent years leading some observers in Europe and the United States to call for protectionist measures, including the introduction of barriers to cross-border trade, labor mobility and investment flows. According to Brixiova and Treigiene (2003) one of the most serious problems related to globalization, is that it has not led to a reduction in income inequality. Heshmati (2005) conducted a regression analysis of the relationship between inequality and globalization. The results showed that the globalization index explains only 7–11% of the variation in income inequality between countries. Decomposition of the aggregate index of globalization in the four sub-components showed that personal contacts and transfer of technologies reduces inequality, while economic integration increases. The

author stated that in the conditions of growing globalization, inequalities within countries have increased, but it does not explain the long-term growth of income inequality in the world. The author believed that the integration into the world economy does not lead to inequitable distribution of income or profit in the world. In addition, within the same country distributional effects may not be entirely linked to globalization. The growth of income inequality in a given country can be explained by lack of education, poor performance of public institutions, the ineffectiveness of government, and undemocratic policies of internal redistribution of income.

This conclusion was confirmed by Auguste (2012) who analyzed the data on the Gini coefficient of 17 countries over the period from 1980 to 2007. He concluded that European integration has led to the equalization level of inequality between countries. This convergence of inequality did not occur at the expense of its decline, but just the opposite. Many countries have reduced the level of social spending, and thus, the social costs relative to the EU leveled off, but it led to an increase in income inequality.

Dollar and Kraay (2015) concluded that the wave of globalization that began in the 80s of the twentieth century, increased economic equality and reduced poverty. Goklani (2015) stressed that poor countries use knowledge and technology of wealthier countries. Rich countries are investing heavily in the development of expensive medicines and technologies that then become available for poor countries. Killick (2001) on the contrary, says that poor countries cannot use the developments of more developed countries. In particular, he drew attention to the fact that the major biotechnology research and development in the world is limited to agricultural production in the industrialized countries with temperate climates, and therefore, does not consider the conditions and problems of developing countries, where there is, for example, lack of fresh water. Therefore, developing countries still cannot use the development of the Green Economy, and turn in the global processes to increase agricultural productivity.

Literature studied various influences on poverty and inequality through different factors exposed to globalization, such as economic growth, social policies in support of low-income population, ownership of property, etc. Cornia and Kiiski (2001) showed that there is a negative relationship between the level of inequality and poverty, that is, maintaining a high level of inequality hampers the task of poverty reduction. Furthermore, in their opinion, such traditional factors as land ownership, deprivation of education, availability of power, do not affect the increase in income inequality. Birdsall (2001) argued that high levels of inequality may reduce the rate of economic growth and have undesirable political and social consequences, wherein high rates of economic growth can maintain a low level of inequality, as evidenced by the experience of Taiwan and Canada.

According to United Nations Development Programme (2014) in 53 countries (out of 75 analyzed), in-country differentiation in incomes has increased. According to Friedman (2005), in most developing countries only a few provinces got an impetus to development and economic growth in the globalization process. For example, China's industrial development is concentrated only in areas of the

east coast, in India the resources used by Western companies, grouped in the Bangalore area. Thus, integration processes lead to the development of certain regions of the country, thereby increasing regional disparities.

Jomo (2015) notes that the differentiation of the population by income in East Asia was lower, despite the growth in exports, but there was a significant increase in its post-1997 financial crisis. The results of Heshmati (2003) regression analysis showed that the index of globalization only partially (about 10%) explains the variation in income inequality among countries. After decomposition of the overall index of globalization in the four sub-components, the author concluded that the personal contacts and technology transfer lead to the reduction of inequality, while economic integration intensifies it.

According to estimates of United Nations Development Programme (2005), as for the beginning of the twenty-first century, total wealth of 225 richest people in the world exceeded 1 trillion USD, which was equal to the annual income of 2.5 billion of poor, who constituted 47% of the world's population.

In Kazakhstan, only a few works are devoted to study the influence on the living standards of the population. Thus, according to research by the World Bank the results of 2011, Kazakhstan actually lost per capita income, which was primarily due to higher external tariff of the Customs Union, which also hinders trade diversification. The article explores the mutual influence of macroeconomic indicators and income inequality in Kazakhstan and its main trading partners, which are Russia, China and the European Union.

2 Model

For the current stage of development of the world economy, a high degree of interdependence of macroeconomic indicators by country is characterized. Business cycles pulse transmission can occur through many channels. They can occur as a result of observed shocks of global factors, such as the world price of oil, food products, and unobservable factors, such as the spread of new technologies. We will briefly present here GVAR modeling method, which allows exploring and evaluating the complex relationships of indicators, both at the country level and among the countries (Mauro and Smith 2013; Smith and Galesi 2014). This approach was first proposed by Pesaran et al. (2004).

Suppose there are $N+1$ countries or regions. They are numbered by indices $i = 0, 1, \ldots, N$. Each country i has its set of variables, for example, GDP, inflation rate, exchange rate, etc., that form components of the vector x_{it}, where t—number of a period (year, quarter). Variables in the vector x_{it} are arranged in the same way for all countries. The dynamics of all these variables and observed global variables is advisable to model treating them as endogenous variables. But in the framework of *VAR* model, this becomes virtually impossible due to the rapid growth of the estimated parameters as the number of states in the model increase. In the approach of the GVAR, individual $VARX^*(p_i, q_i)$ model of a country i is as follows:

$$x_{it} = a_{i0} + a_{i1}t + \sum_{j=1}^{p_i} \Phi_{ij} x_{it-j} + \sum_{j=0}^{q_i} \Psi_{ij} x^*_{it-j} + v_{it},$$

where x_{it}—vector of dimension k_i of internal variables, and x^*_{it}—vector of dimension k^*_i of external variables for the country i in the period t, a_{i0}, a_{i1}—vectors, Φ_{ij}, Ψ_{il}—matrices of appropriate dimensions. Vector of external variables x^*_{it} is calculated as a weighted average of the vectors of internal variables in all countries, except for the country i:

$$x^*_{it} = \sum_{j=0}^{N} w_{ij} x_{jt},$$

Where, $w_{ij}, j = 0, 1, \ldots, N$, represent the weights that determine the importance of other countries to the country i, and $w_{ii} = 0$, $\sum_{j=0}^{N} w_{ij} = 1$. They are determined on the basis of the data on trade, finances and other relationships with the partner countries. The economy of each country is assumed small compared to the rest of the world, except for the country 0, in the model it is a large economy of US.

Let's consider a model $VARX^*(2, 2)$:

$$x_{it} = a_{i0} + a_{i1}t + \Phi_{i1} x_{it-1} + \Phi_{i2} x_{it-2} + \Psi_{i0} x^*_{it} + \Psi_{i1} x^*_{it-1} + \Psi_{i2} x^*_{it-2} + v_{it}. \quad (1)$$

Let x_{it} and x^*_{it} be integrated first order processes, i.e. $x_{it} \sim I(1)$ and $x^*_{it} \sim I(1)$. Then the corresponding vector model of error correction $VECMX^*(1, 1)$ is represented in the form:

$$\Delta x_{it} = c_{i0} - \Pi_i [z_{it-1} - \gamma_i (t-1)] + \Psi_{i0} \Delta x^*_{it} + \Gamma_i \Delta z_{it-1} + v_{it}, \quad (2)$$

where $z_{it} = \left(x'_{it}, x^{*'}_{it}\right)'$, Π_i—a matrix $k_i \times \left(k_i + k^*_i\right)$. If the rank of the matrix Π_i equals to zero, then it means that a matrix Π_i in Eq. (2) is a null matrix and the original model VARX*(*2, 2*) becomes a model of smaller dimension. Let $\text{rank}\Pi_i = r_i > 0$. This means that there are r_i linear cointegrated vectors. In this case, a matrix Π_i can be represented in the form $\Pi_i = \alpha_i \beta'_i$, where α_i—a matrix of dimension $k_i \times r_i$, β_i—a matrix of dimension $\left(k_i + k^*_i\right) \times r_i$. A model $VECMX^*$ $(1, 1)$ is written as:

$$\Delta x_{it} = c_{i0} - \alpha_i \beta'_i [z_{it-1} - \gamma_i (t-1)] + \Psi_{i0} \Delta x^*_{it} + \Gamma_i \Delta z_{it-1} + v_{it}. \quad (3)$$

Columns of β_i matrix in Eq. (3) form a basis of r_i cointegrated vectors, which can be chosen orthonormal, a matrix α_i distributes their impact on the dynamics of Δx_{it} and determines the rate of convergence to the steady state. Thus, $\beta'_i [z_{it-1} - \gamma_i (t-1)] \sim I(0)$, i.e. the components of this vector are stationary time series.

Error correction vector models $VECMX^*$ are estimated for each country separately, conditional on x_{it}^*, assuming their components are first order integrated processes, weakly exogenous with respect to the parameters of the model $VECMX^*$. Estimates of the parameters of the model $VECMX^*$ are translated into the parameters of the original model by inverse transformations.

Equation (1) can be represented as follows:

$$A_{i0}z_{it} = a_{i0} + a_{i1}t + A_{i1}z_{it-1} + A_{i2}z_{it-2} + v_{it}. \tag{4}$$

Where indicated vector $z_{it} = \left(x_{it}', x_{it}^{*\prime}\right)$ and matrices $A_{i0} = (I_{k_i}, -\Psi_{i0}), A_{i1} = (\Phi_{i1}, \Psi_{i1}),\ A_{i2} = (\Phi_{i2}, \Psi_{i2})$. Using weight coefficients $w_{ij}, j = 0, 1, \ldots, N$, for the country i W_i matrix is determined, such that $z_{it} = W_i x_t$, where vector $x_t = \left(x_{0t}', x_{1t}', \ldots, x_{Nt}'\right)'$ has dimension $k = k_0 + k_1 + \ldots + k_N$. Then Eq. (4) can be rewritten as

$$A_{i0}W_i x_t = a_{i0} + a_{i1}t + A_{i1}W_i x_{t-1} + A_{i2}W_i x_{t-2} + v_{it}.$$

These equations for $i = 0, 1, \ldots, N$ can be combined into one vector equation of the following form:

$$Gx_t = a_0 + a_1 t + H_1 x_{t-1} + H_2 x_{t-2} + v_t. \tag{5}$$

Here, vectors a_0, a_1, v_t and matrices G, H_1, H_2 are obtained by appropriate combining component of vectors $a_{i0}, a_{i1}, v_{it},\ i = 0, 1, \ldots, N$, and rows of the matrices $A_{i0}W_i, A_{i1}W_i, A_{i2}W_i,\ i = 0, 1, \ldots, N$. A matrix G has a dimension $k \times k$ and in general, it is a non-degenerate. By multiplying both sides of the Eq. (5) by the inverse matrix G^{-1} there is a second order differential equation obtained

$$x_t = b_0 + b_1 t + B_1 x_{t-1} + B_2 x_{t-2} + \varepsilon_t. \tag{6}$$

If the Eq. (6) is constructed, then it is solved recursively and can be used for various purposes, such as to analyze the impact of external variables, including global variables, as well as to predict the real, financial and socio-economic indicators. Note that no conditions are imposed on the covariance matrix of random members ε_t.

3 Assessment of Indicators Interdependence

This research was conducted to determine the interdependence of macroeconomic indicators and inequality for Kazakhstan and its main trading partners. The model includes China, Russia, Austria, Belgium, Finland, France, Germany, Italy, Netherlands, Spain and the United States. These eight countries of the European Union are identified in the model as Euro. This model uses quarterly statistical data for 12 countries from 1995 to 2013 from the IMF International Financial Statistics, the

World Bank, as well as Statistics Committee of the Ministry of National Economy of Kazakhstan, the National Bank of Kazakhstan, the Federal State Statistics Service of Russia and the Central Bank of Russia. Seasonality was eliminated.

3.1 Estimation of the Model

Application of VAR and VECM models requires tests on stationary and determination of the integration order of time series. For all variables (internal, external and global), ADF augmented Dickey and Fuller (1979) tests and WS (weighted symmetric estimation) unit root tests were applied. Akaike and Schwartz criteria were used for determination of lag length. A constant was included in all regressions, but trend was included only in the regression for levels, because capturing the first differences makes linear trend disappear.

In the GVAR approach $I(1)$ assumption is essential, i.e. the first order integration of all variables. At the same time, it is known that unit root test for small samples is insignificant. In some cases, ADF and WS tests give opposite results. Thus, for output variable with and without trend hypothesis of the unit root is not rejected for all countries, while for the first difference of this variable it is rejected at the 5% level of significance for all countries except Russia. For the inflation rate, hypothesis of unit root is rejected by the ADF test, but is not rejected by WS. For the first difference of the inflation variable, both tests clearly reject the hypothesis of a unit root. Therefore, we will adhere the assumption of the first order integration for all variables in the model.

For $VARX^*(p_i,\ q_i)$ model, lags of internal and external variables were determined in accordance with the values of information criteria AIC, SBC and Loglik. In this study, variant IV was selected for the VECM with unlimited constants and limited trend coefficients. Number of cointegrating relationships was defined by the number of unit roots of Π_i matrix and by the stability profile.

The basic assumption that underlies this method is weak exogeneity of x_{it}^* with respect to the long-term $VECMX^*(1,1)$ model parameters, as defined in Eq. (3). Testing this hypothesis for external and global variables can be made by the Johansen (1992) method.

3.2 Variables Response to the Shocks

Constructed GVAR model allows studying various economic shocks impact on all countries. In particular, following simulations were performed: the shock of sharp drop in world oil prices, positive/negative shocks of real GDP, real exchange rate, equity, interest rates in China, Russia, Euro, USA and Kazakhstan. All shocks, either positive or negative, are equal to one standard error of the corresponding

variable, calculated by statistical data. We obtain impulse response functions, i.e. responses of all variables on each shock for all countries. Due to the limited space some of them are given below. Figure 1 shows functions of impulse return of real GDP on negative shock of real GDP of China. In all figures, the horizontal axis shows quarters, and the vertical axis is the change of the logarithms of the corresponding variables.

Figure 2 shows impact of negative shock of Russia's real GDP on real GDP of China, Kazakhstan and European Union. In Kazakhstan decrease in real GDP is happening. Real GDP of China declines after a short rise. Real GDP of Euro increases after some decline with respect to initial level.

It is interesting to identify the impact of real GDP growth of Russia on inequality in other countries and in Russia itself. As can be seen in Fig. 3, a sharp output

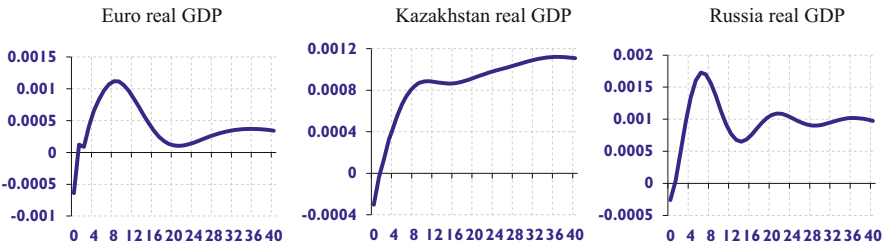

Fig. 1 Generalized impulse responses of a negative unit shock to China real GDP

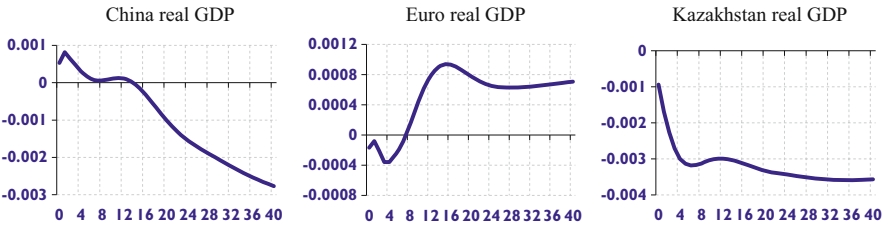

Fig. 2 Generalized impulse responses of real GDP for China, Euro, and Kazakhstan on unit shock to Russia real GDP

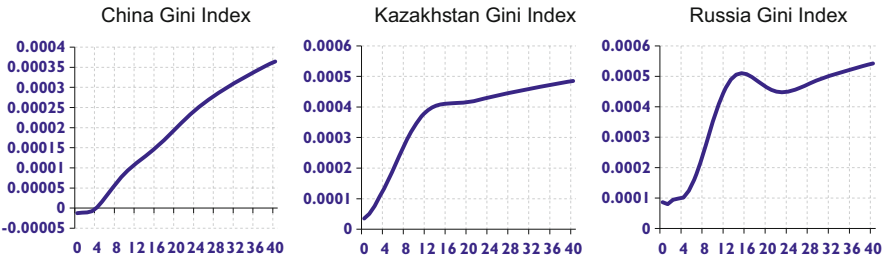

Fig. 3 Generalized impulse responses of Gini index for China, Kazakhstan, and Russia on unit shock to Russia real GDP

decline in Russia leads to increased inequality in all three countries. In particular, there is a negative relationship between the growth of real GDP in Russia and the level of inequality measured by the Gini index.

As expected, there is a positive response of the inequality level in Russia. In addition, there is a positive response of the real exchange rate and negative response of the long-term interest rate in Russia. Macroeconomic indicators of the country can affect level of inequality in it. Figure 4 shows the responses of the Gini index to the shocks of some macroeconomic indicators in Kazakhstan. Positive jump of inflation rate increases inequality, and positive shocks of long-term interest rates and real GDP reduces inequality in Kazakhstan.

The interest is to find out, what impact has the dynamics of macroeconomic indicators on inequality in other countries. The response of inequality level on a positive shock in real GDP of Euro is shown in Fig. 5. As a response to the positive jump in real GDP in the Euro region, there is an increase in inequality in China, Kazakhstan and Russia.

What is the mechanism of the effects of the real GDP of Russia on inequality in other countries? Impulse transmission can occur through different channels. For example, a negative shock of Russia GDP gives a negative impulse for Kazakhstan's GDP (Fig. 2), which in turn leads to a positive response of Kazakhstan's Gini index (Fig. 4).

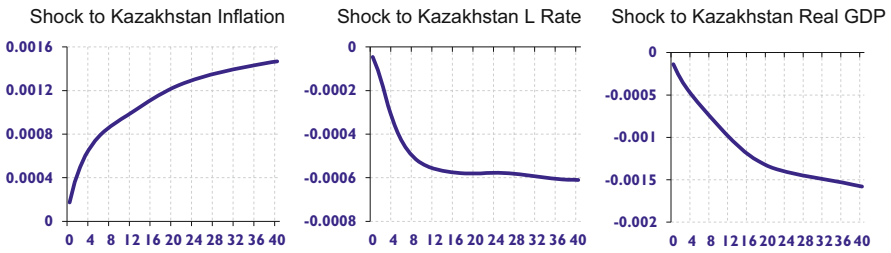

Fig. 4 Generalized impulse responses of Kazakhstan Gini index to positive unit shocks of inflation, L rate, and real GDP in Kazakhstan

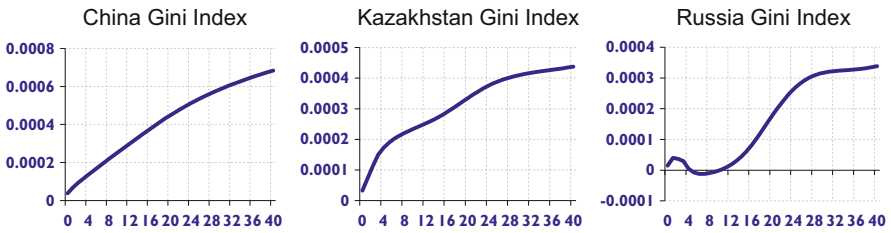

Fig. 5 Generalized impulse responses of a positive unit shock to Euro real GDP

It is unclear how levels of inequality interconnected in different countries. How to explain the effect of a positive shock of inequality in Russia on inequality rise in Kazakhstan? The impulses can be transmitted through different channels, and their consequences can be multidirectional.

3.3 *Variables Response to the Shocks with Confidence Intervals*

Figures 1, 2, 3, 4, and 5 present the median estimates of response functions of macroeconomic variables to different shocks. In the following figures, the response functions charts with 90% confidence intervals are presented. They allow to make statistically significant conclusions about the impact of shocks on economic indicators. We only note that not all shocks and variables deviation functions from zero are statistically significant. Therefore, below we consider only those situations where the response deviations are statistically significant at least for a short time interval.

The consequences of the decline of the world oil prices on inflation in the Euro, USA and Kazakhstan are shown in Fig. 6. In all three cases, there is a decrease in the rate of inflation for two quarters. Then, inflation returns approximately to baseline.

Changes in the world price of oil affect the real exchange rate (Fig. 7). Its decline increase the real exchange rate in China and the Euro for two quarters, and its growth in Kazakhstan can last up to 4 years.

Figure 8 shows graphs of impulse impact of the short-term interest rates in the Euro and the long-term interest rates in the US on the decline of the world price of oil. In both cases, short-term reduction of these interest rates will happen.

Consider the consequences of a positive shock in real GDP of Kazakhstan. After the initial shock of the positive jump, it can be expected that in a long time, about 22 quarters, real GDP in Kazakhstan will be higher than the initial level (Fig. 9).

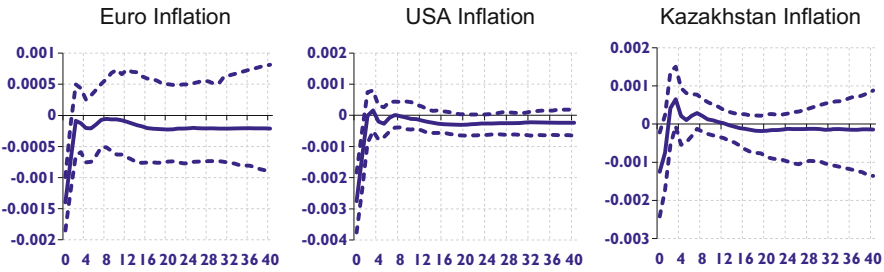

Fig. 6 Generalized impulse responses of inflation rate for Euro, USA, and Kazakhstan on a negative unit shock to oil price

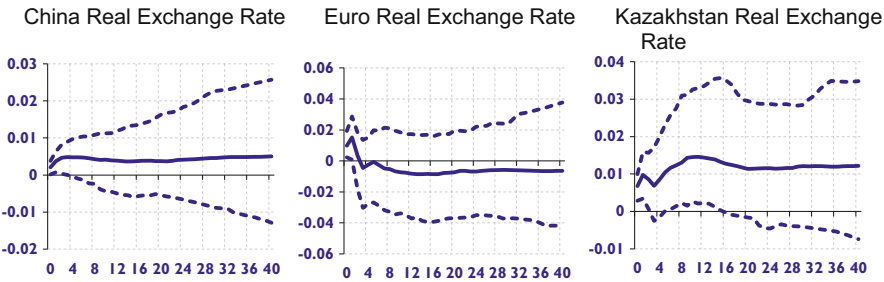

Fig. 7 Generalized impulse responses of real exchange rate for China, Euro, and Kazakhstan on a negative unit shock to oil price

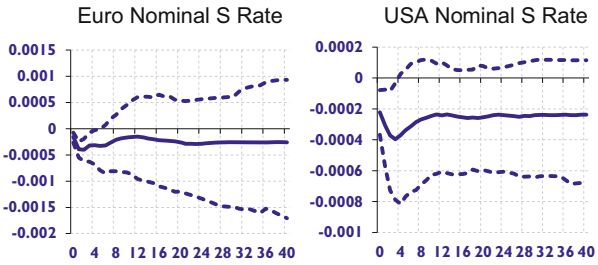

Fig. 8 Generalized impulse responses of nominal S Rate for Euro and USA on a negative unit shock to oil price

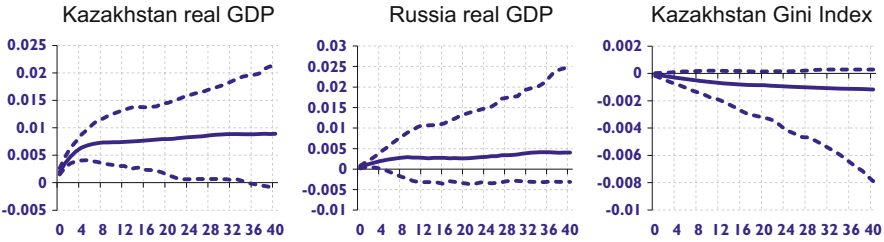

Fig. 9 Generalized impulse responses of a positive unit shock to Kazakhstan real GDP

While in Russia, real GDP will experience a modest recovery in 1–2 quarters. There will be a reduction of inequality in Kazakhstan.

A positive shock of inflation in Kazakhstan will have short-term effects (Fig. 10). After 1–2 quarter inflation rate will return to its original level. This inflation shock will reduce the real GDP of Kazakhstan for at least 4–6 quarters. In addition, it will increase the level of inequality in Kazakhstan.

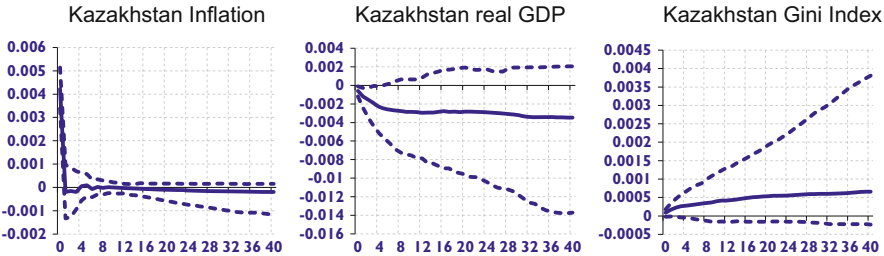

Fig. 10 Generalized impulse responses of a positive unit shock to Kazakhstan inflation

Fig. 11 Generalized impulse responses of a positive unit shock to Russia Gini index

Figure 11 shows the functions of impulse impact of macroeconomic indicators of Kazakhstan on a positive shock of Gini index in Russia. According to their schedules, long-term nominal interest rates will be reduced, real GDP will increase.

Here we see the resulting effects of Gini index shock in Russia for the indicators in Kazakhstan, transmitted through different channels.

4 Conclusions

The problem of the influence of globalization and regional integration on income inequality causes a heated debate among economists. There are different points of view on the impact of economic integration processes on inequality. Integration processes can have both positive and negative effects on the level and quality of life, as well as inequalities in income distribution both between the countries affected by these processes, as well as within countries.

To study the complex processes of interdependence of macroeconomic indicators, the appropriate instrument is a GVAR approach. This article presents the simulation results for the economies of China, Kazakhstan, Russia, the European Union and the United States. Shocks of variables such as real GDP, inflation, short-term and long-term nominal interest rates, real exchange rate, Gini index and

responses to them in all countries were considered. Also, world oil price shocks have a strong influence.

A special focus was on inequality factor. It turned out that a positive shock to real GDP in each country reduces inequality in the country, but with the exception of Russia, increases inequality in other countries. Positive shocks to inflation and the real exchange rate have also increased inequality in Kazakhstan. It was found that changes in inequality in one country might have an impact on inequality in other countries. Positive shocks of Gini index in Russia resulted in a statistically significant increase in the level of inequality in Kazakhstan. This can be explained as the result of the total transmission of impulses through various channels of macroeconomic variables response.

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Access to Public Procurement Contracts in EU: Perspective of SMEs

Sebastian Bobowski, Jan Gola, and Wojciech Szydło

Abstract The aim of the paper is to study public procurement market in the European Union (EU) from the perspective of small and medium sized enterprises (SMEs). An important component of the analysis is the European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts of 2008, providing guidelines and good practices, and ongoing public procurement reform. SMEs are found as significant source of jobs, growth and innovation, thus, their share in public procurement should be higher than the current 45% of aggregate contract value above EU thresholds. Thus, SMEs perform much below their economic weight. Considering the fact, that public expenditures on goods, services and works account for approximately 14% of the EU's GDP, public procurement may be recognized as the important trigger of economic recovery after the global crisis 2008+. Worth mentioning, public procurement may contribute to realization of the key EU2020 horizontal policies, focused on establishing more green, innovative and socially-inclusive economy. A key objective of newly established legislative measures is to open-up national public procurement markets to companies from the other EU countries, including cross-border procurement. Among important solutions aimed at enhancing higher participation of SMEs in the EU public procurement market there are, among others, fragmentation of contracts, reduction of turnover required to enter tender procedure and simplification of documentary requirements.

Keywords Public procurement • EU • SMEs

1 Introduction

Public procurement used to be an important source of economic growth of the EU's Single Market, accounting for, approximately, 14% of combined GDP, with annual value of nearly two trillion Euros. Inclusive, transparent, competitive public procurement system encourages new jobs and economic growth due to expanding

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business opportunities, including small and medium sized enterprises (SMEs). The latter are found as significant source of jobs, growth and innovation, thus, their shares in public procurement should be higher than the current 45% of aggregate contract value above EU thresholds—when pointing at overall weight of SMEs in the EU's general economy, shares should amount to 58%. Thus, SMEs perform much below their economic weight.

Regarding the fact, that public sector is the largest single purchaser in the EU, public procurement may contribute to realization of the key EU2020 horizontal policies, focused on establishing green, innovative and socially-inclusive economy (Pricewaterhousecoopers 2013; European Commission 2015).

The public procurement reform of 2014 provided a set of legislative instruments to enhance SME's access to public procurement markets, including:

- liberalization of requirements regarding turnover of participant in a tender procedure;
- reduction of documentation required;
- division of large contracts into parts.

For the purposes of effective utilization of the Public Procurement Directives, the European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts was established in 2008 as a set of best practices and guidelines for EU countries and their contracting authorities. Another important determinant of SME's access to public procurement contracts in the EU is the procurement digitalization (e-procurement), then, comprehensive use of electronic tools both by businesses participating in a tender procedure and public sector being in charge of procedure management.

2 The European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts of 2008

The European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts is aimed at better utilization of the EU's Public Procurement Directives by Member States and their contracting authorities (European Commission staff working document of 25 June 2008 on the European code of Best practices facilitating access by SMEs to public procurement contracts). SMEs, defined in accordance to Commission Recommendation 2003/361/EC as enterprises employing less than 250 persons, with total annual turnover below 50 million EUR (European Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises), used to prioritize changes in the contracting authorities' procurement culture over legislative changes in respective directives.

Enhanced participation of SMEs in the public procurement would intensify competition for public contracts, then, encourage efficiency of public spending.

Moreover, more competitive and transparent public procurement may boost innovation and growth potential of SMEs operating within EU.

This document is the first single code ever providing guidance in regards of applying EC's legislative measures, while prioritizing national rules and practices that enhance SMEs' access to public procurement. It has to be treated as a guideline for public authorities when designing strategies, programs, and action plans aimed at this category of business entities interested in obtaining public contracts. The European Code identifies the so-called headings/clusters of actions to be undertaken, namely (European Commission 2008):

- improving an access to information, with emphasis put on its quality;
- addressing the problem of the size of public contracts;
- challenging the problem of administrative burden;
- setting appropriate requirements in terms of qualifications and financial issues;
- providing sufficient time to draw up tenders;
- prioritizing the value of money over the price;
- speeding-up financial settlements in the public procurement.

Under the Public Procurement Directives, namely, Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, and European Parliament and Council Directive 2004/18/EC of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, public procurement market should be open for all economic operators, irrespective of their size. Thus, special attention needs to be paid to small and medium sized enterprises, considered as the backbone of the EU economy in terms of growth, innovation and employment potential.

2.1 Improving an Access to Information, with Emphasis Put on its Quality

Among key issues listed above there is a critical aspect of the SMEs' access to relevant information on business opportunities in public procurement, that should be addressed by e-procurement, enabling both quick and low cost communication (article 1(7) and (13), article 33, article 42(1), (4) and (5) and article 54 of European Parliament and Council Directive 2004/18/EC; Article 1(5), (6) and (12), article 15, article 48(1), (4) and (5) and article 56 of European Parliament and Council Directive 2004/17/EC).

Under the European Commission Communication on a Small Business Act for Europe, all Member States are expected to establish useful national public procurement portals with the following attributes:

- free access to notices;
- establishment of a single centralized website, especially in federal and larger countries;
- publication of public procurement notices online;
- direct downloading of tender documentation;
- provision of multi-functional search engine;
- possibility to establish a profile to receive alerts of corresponding business opportunities;
- electronic tendering facility, enabling contracting authorities to receive bids via Internet in compliance to the Public Procurement Directives in regards of integrity of information, confidentiality, appropriate access etc.

For the purposes of providing equal access to public procurement for both local, national and foreign tenderers, as well as encouraging cross-border contracts, establishment of national procurement websites in various Community languages is recommended. Noteworthy, under the principle of transparency contracting authorities are enhanced to give feedback to economic operators participating in an award procedure to prepare them better for the future bids (article 41 of European Parliament and Council Directive 2004/18/EC and article 49 of European Parliament and Council Directive 2004/17/EC). Considering the problem of quality of information it is crucial to offer training and guidance for contracting authorities to design an award procedure in the way that attracts SMEs to improve the procurement culture and professionalism (Bernatt 2011; Szydło 2008, 2014).

2.2 Addressing the Problem of the Size of Public Contracts

In order to facilitate SMEs' access to public procurement, sub-division of contracts is suggested to address productive capacity and specialization of the smaller tenderers (quantitative and qualitative aspects). Noteworthy, if fragmentation of public contracts proves to be appropriate and feasible, engagement of SMEs would broaden competition, that is beneficial for contracting authorities. The economic operator may rely on the economic, technical and financial resources of the other enterprises in order to meet requirements of contracting authority, irrespective of legal character of inter-company relations (article 47(2) and (3), article 48(3) and (4) and article 52(1) of European Parliament and Council Directive 2004/18/EC and article 53(4) and (5) and article 54(5) and (6) of European Parliament and Council Directive 2004/17/EC). Importantly, it is necessary to prove, that external resources are available to tenderer. Following the Public Procurement Directives, group of economic operators may not only rely on the capacities of the members, but also those belonging to the third parties. It is advised to point at possibility of grouping tenderers in the contract notice to attract more SMEs in the procurement, while securing appropriate time for preparation of such a form of joint bidding. An useful instrument here is the Enterprise Europe Network (EEN) launched in 2008,

embracing all the Member States, assisting enterprises, with special regard to SMEs, in collecting information on EU legislation, innovation networks, market opportunities, and potential business partners.

Another possibility is the conclusion of the so-called framework agreement with a few economic operators and organization of mini competitions by contracting authority (article 32 of European Parliament and Council Directive 2004/18/EC and articles 14 and 40(3)(i) of European Parliament and Council Directive 2004/17/EC). Consequently, framework agreement, including high number of economic operators and sub-division of contract may favor SMEs unable to deliver all the goods within one single big undertaking. However, contracting authorities should design selection criteria in a way that will not discourage smaller tenderers, then, avoid a situation in which the scoper of framework agreement seems to exclude SMEs, assuming relatively complex and time-consuming procedure. Furthermore, sub-contracting opportunities should be expanded to attract more SMEs able to deliver some added value in the form of innovative services or products, lacking potential to act as prime contractor or to bid in a group of economic operators under given circumstances. Interesting option here is to constitute a rule under national legislation, that terms of cooperation between prime contractor and sub-contractors have to comply with those between prime contractor and contracting authority.

2.3 Challenging the Problem of Administrative Burden

Considering limited administrative capacities of SMEs, it is important to keep administrative requirements to a minimum in order to cut time-consuming paperwork. The Public Procurement Directives assume, that public contracts should be awarded after checking the compliance of tenderers with requirements in terms of personal situation of the candidates, both professional and technical potential, as well as suitability to execute a given sort of actions under the public contract. Contracting authorities should exclude tenderers engaged in criminal organization, corruption, fraud to the financial interests of the EC, money laundering, namely, being a subject of a conviction by a final judgment (article 45(1) of European Parliament and Council Directive 2004/18/EC). Moreover, Member States are allowed to exclude candidates under different circumstances, such as bankruptcy, offences regarding professional conduct, non-performance of tax and social security contributions, serious misrepresentation of concrete documents (article 45(2) of European Parliament and Council Directive 2004/18/EC). Importantly, the Public Procurement Directives set limits to procedures of verification of the suitability of tenderers to execute a given sort of actions considered under the public contract, however, national legislation points at details of documentary evidences to be collected and submitted by participants of public procurement procedures, including time frameworks. National legislation may provide, that tenderer who has made the best offer, will be obliged to deliver a set of required document in originals within a specified time limit, while before awarding the contract it could take the

form of declaration on the honour only. However, tender documentation might assume, that tenderer who made the best offer but failed to issue the relevant set of documentary evidence, is losing the contract at the expense of the tenderer who made the second best offer, if the latter fulfilled all the documentary requirements in terms of suitability to execute the contract. Therefore, contracting authorities should ensure a sufficient number of suitable candidates before inviting to tender, negotiations or any kind of dialogue in order to enhance competition (article 44 (3) and (4) of European Parliament and Council Directive 2004/18/EC). It is also recommended to resign of documentary evidence by contracting authority, if a given tenderer already submitted such documents for another public procurement procedure and they are still valid. In such case, candidate or tenderer might be able to declare that documentary evidence has been already provided and the state of facts didn't change to date. On the other hand, Member States are expected to establish penalty regime for the purposes of sanctioning any kind of deception or fraud by tenderers. Finally, documentary evidence should be SMEs-friendly, short, standardized forms and certificates.

2.4 Setting Appropriate Requirements in Terms of Qualifications and Financial Issues

Criteria on financial, economic, and technical capacities have to be related and proportionate to the content of the contract, as it was also indicated by the European Court of Justice's case law (article 44(2) of European Parliament and Council Directive 2004/18/EC). Undoubtedly, setting appropriate, non-discriminatory requirements by contracting authorities would advantage numerous SMEs, however, selection criteria, as well as document evidence of compliance, should be linked with the kind of purchase, as well as its value. It is especially important in regards of technical and professional capacities of tenderers, in case of which general qualifications may be treated as of secondary importance. Noteworthy, the way requirements are designed shouldn't limit the competition due to addressing irrelevant matters such as experience in cooperation with the public sector.

As already mentioned, the Public Procurement Directives entitle economic operators to rely on the capacities and abilities of the other entities, that may enable SMEs to meet high requirements in terms of qualifications and financial issues. In this context, contracting authorities are expected to limit the size of financial guarantees required to cover the risks related to award procedure and execution of the contract, as well as to eliminate unjustified and prolonged retention of participants' resources to enhance higher participation of SMEs in the public contracts. Furthermore, financial guarantees shouldn't be demanded automatically, but on the basis of individual risk analysis.

2.5 Providing Sufficient Time to Draw Up Tenders

For the purposes of encouraging competition and participation of SMEs in public procurement, contracting authorities should set reasonable time limits to enable smaller tenderers, lacking specific administrative capacities, to deal with all the documentary requirements. There is a possibility of using prior information notices on a voluntary basis to give more time to potential tenderers to prepare sufficient documentation, as well as to find business partners to bid jointly (article 35(1) of European Parliament and Council Directive 2004/18/EC and article 41(1) of European Parliament and Council Directive 2004/17/EC). Worth mentioning, prior information notices should be as detailed as possible to enable SMEs to meet the deadline.

2.6 Prioritizing the Value of Money Over the Price

Public contracts may be awarded on the basis of the lowest price or the economically most advantageous offer. In the latter case, contracting authorities are able to point at such attributes of the contract like: quality, running costs, cost efficiency, technical assistance, technical and functional characteristics, post-sale services etc. (article 53(1) of European Parliament and Council Directive 2004/18/EC and article 55(1) of European Parliament and Council Directive 2004/17/EC). This, in turn, may enhance economic operators, with special regard to SMEs, perceived as important source of R&D activities, to deliver more innovative solutions and better, more sustainable products. In order to set appropriate criteria to select the economically most advantageous offer, the staff engaged in preparation of the procurement procedure should be also involved in the use of purchased products in order to enhance both efficiency and consistency of formerly established requirements.

Technical specifications of a contract doesn't have to be defined in terms of standards, but optionally may be addressed in terms of performance or functional requirements in order to secure diversity of technical solutions provided by economic operators involved in the public procurement (article 23(3)(b), (c) and (d) of European Parliament and Council Directive 2004/18/EC and article 34(3)(b), (c) and (d) of European Parliament and Council Directive 2004/17/EC). This approach may favor innovative SMEs able to develop new, functional products and services, use inputs, methods and techniques of high environmental and technical value, however, unable to meet technical specifications set by the recognized standard bodies. Moreover, the Public Procurement Directives entitle contracting authorities to allow economic operators to submit variants in order to leave some space for innovative solutions beyond the knowledge and recognition of the public sector to date. However, contracting authorities are expected to clarify the minimum requirements to be met by variants, as well as any specific requirements in terms of presentation of the variants. Contracting authorities may award

public contracts through negotiated procedure without prior publication of the contract notice in the Official Journal of the EU, if the product is manufactured for the purposes of research, experimentation, study or development (article 31(2) (a) of European Parliament and Council Directive 2004/18/EC). However, this cannot be extended to quantity production in commercial scale or to discount R&D expenditures, therefore, limited production may apply here to verify suitability of the product for quantity production and qualitative standards imposed by the subsequent procurement procedure. In such case, public supply contract may be regarded as a first listing that would serve the winning tenderer as a basis to bid in traditional manner. Similarly, public contracts for R&D services may be procured, excluding those fully remunerated by the contracting authority and favoring it exclusively (article 16(f) of European Parliament and Council Directive 2004/18/EC and article 24(e) of European Parliament and Council Directive 2004/17/EC). Finally, any contract going beyond limited production or supply has to address the Public Procurement Directives, as well as Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2007) 799, and the European Commission Staff Working Document Guide on Dealing with Innovative Solutions in Public Procurement, SEC(2007) 280.

2.7 Speeding-up Financial Settlements in the Public Procurement

Last but not least, an important obstacle for SMEs' participation in the public procurement is the late payment in commercial transactions. There is a payment deadline up to 30 days, default level of interest for delayed payments and recovery procedures for unchallenged claims (European Parliament and Council Directive 2000/35/EC). Furthermore, contracting authorities are entitled to include contractual clauses, under which suppliers are obliged to settle with sub-contractors on time.

3 E-Procurement in the EU

The procurement digitalization is expected to make public spending more transparent, effective, optimized, evidence- and market-oriented. The new EU legislation goes beyond the use of electronic tools to simplify pre-award and post-award stages of the procurement procedure, both to facilitate businesses to participate and public sector to manage the procurement.

Among the key opportunities resulting of digitalization there are as follows (European Commission 2016c):

– improvement of access to public procurement markets for enterprises, with special regard to SMEs;
– increased transparency;
– simplification and acceleration of procedures;
– reduction of costs of participation in the procedure for all parties;
– reduction in administrative burden and red-tape;
– encouraging innovation.

The legislative frameworks of e-procurement in the EU are developed in accordance to timetable as follows:

– tender opportunities and documentation are electronically available since April 2016;
– full electronic means of communication including electronic bid submission will be implemented by the central purchasing bodies by April 2017;
– all contracting authorities and procurement procedures will involve e-submission by October 2018;
– further provisions are planned to improve interoperability and standardization of e-procurement in the EU.

Key policy documents concerning e-procurement are presented in the Table 1.

The transition to e-procurement embraced a series of reforms of the public procurement procedure so far, namely, prequalification of economic operators (ESPD and e-Certis), as well as e-invoicing. The European Commission established the Multi-Stakeholder Expert Group on e-Procurement (EXEP), expected to pave the way toward Digital Single Market of the EU. The EXEP is focused on three aspects of digital transformation of public procurement, namely, regulation, governance and technical issues, in accordance to EC's communication of 26 June 2013. Among others, EXEP released the Golden Book of e-procurement practices, a set of guidelines for developing e-procurement systems.

The European Single Procurement Document (ESPD) is a self-declaration form that replaced various documents submitted previously by economic operators to prove the fulfillment of exclusion and selection criteria of the procurement, such as no overdue tax payments or criminal activity. On the other hand, e-Certis is a web service assisting tenderers in identification of certificates and attestations requested for the purposes of eligibility in the procurement procedures in the EU.

The E-Invoicing Directive provided a European standard for e-invoicing to address the problem of diversity of e-invoice formats across the EU, that increased the costs and complexity of economic operations (European Parliament and Council Directive 2014/55/EU). Consequently, all contracting authorities are obliged to accept electronic invoices complying with the European form, while national rules are still valid. E-invoices proved to be cheaper and user-friendly. According to Capgemini Consulting Report (2007), potential annual benefits in the business-to-business field would amount to 40 billion Euros. The main advantages of e-invoicing are as follows:

Table 1 Key policy documents in the EU's e-procurement reform

Title of the document	Date of publication/ adoption	Authority
Green Paper on expanding the use of e-procurement in the EU	18 October 2010	The European Commission
Communication on a strategy for e-procurement	20 April 2012	The European Commission
Communication on end-to-end e-procurement to modernise public administration	26 June 2013	The European Commission
The Classical Sector Directive 2014/24/EU	26 February 2014	The European Parliament and the Council of the European Union
The E-Invoicing Directive 2014/55/EU	16 April 2014	The European Parliament and the Council of the European Union

Source: European Commission (2016c)

- reduction of printing, postage, and storage costs;
- speed-up of the financial settlement with the customer;
- more efficient data administration due to transfer of the content of electronic invoice directly to enterprise's payment and accounting systems;
- reduction of training and system development costs.

Meanwhile, some disadvantages of e-invoicing may be pointed out, namely:

- security concerns regarding e-invoicing systems, including misrepresentation in fraud;
- diversity of national rules determining validity and acceptability of e-invoices in both legal, administrative and financial terms;
- diversity of e-invoice formats across the EU threaten the smooth transfer of an e-invoice between the Member States, then, the expected benefits and cost savings.

The European Committee for Standardization (CEN), operating under the auspices of the EC, acts in favor of e-invoicing implementation in collaboration with representatives of standards organizations. Noteworthy, every year the Connecting Europe Facility (CEF) is providing EU grants for the projects of setting up, upgrading and deploying e-invoicing solutions in the EU. CEF used to dedicate a part of its budget to Digital Service Infrastructures (DSIs) aimed at delivering networked cross-border services for individuals, businesses and public administration, including e-procurement field.

The European Multi-Stakeholder Forum on Electronic Invoicing (EMSFEI) serves as a forum to exchange information and best practices between representatives of national e-invoicing forums and market users for the purposes of promoting e-invoicing at national and EU-level. Moreover, EMSFEI is entitled to issue

recommendations to the EC. Among important EU projects aimed at e-procurement, next to aforementioned CEF, there are as follows: Electronic Simple European Networked Services (e-SENS), Internal Market Information System for Public Administrations, and open source e-procurement platform (e-PRIOR).

The Electronic Simple European Networked Services (e-SENS) is a large scale initiative aimed at development of the European Digital Market using ICT tools. Through e-tendering pilot, cross-border e-procurement procedures in the EU are expected to develop. The Internal Market Information (IMI) system has been launched in April 2015 to assist public authorities from one EU country in verification of data and documentation delivered by economic operators established in the other EU country. As a result, national public authorities are able to check whether a given tenderer has the requested technical specifications, having been convicted for fraud, all the documents and certificates provided are authentic, as well as information included in the ESPD.

The e-PRIOR is an open source e-procurement platform that enables implementation of interoperable electronic services in the public administration, embracing both pre-award and post-award stages of procedure. It serves as intermediary between the back-office applications used in the public administration and the Pan-European Public Procurement OnLine (PEPPOL) interoperability initiative. The e-PRIOR infrastructure proved to be useful when passing e-invoices between contracting authorities and economic operators established in different EU Member States.

4 The New EU Procurement and Concession Rules of 2016

According to newly established rules on public procurement contracts, the EU's public procurement market will be more open to competition, prevent buy-national policies, and enhance the free movement of goods and services. The main objectives of the reform are as follows (European Commission 2016a):

- to reduce administrative burden;
- to create a culture of integrity;
- to address societal challenges;
- to modernize public administrations.

In regards of the new opportunities for SMEs, the reform of public procurement legislation will introduce the following changes:

- small enterprises with limited financial capacities will be able to bid for contracts (the required annual turnover doesn't have to be higher than twice the contract value);

– fragmentation of contracts (see subchapter 2.2 for more details); contracting authorities unwilling to divide larger contracts into parts will be requested to justify decision;
– reducing administrative burden through ESPD; documentary evidence of fulfilling the exclusion and selection criteria will be provided only by the tender winners, however, even this obligation may be eliminated after e-procurement tools will be linked to repositories of actual evidence;
– improving the SME's access to defence and security contracts, awarded under the Defence Directive.

5 The Access of SMEs to Cross-Border Defence Procurement

The Directive on defence and sensitive security procurement established rules for the procurement of arms, munitions, war material, including related works and services, as well as sensitive supplies, works and services, for defence purposes (European Parliament and Council Directive 2009/81/EC). The Directive is aimed at enhancing openness and transparency in the EU defence markets, while addressing security interests of the Member States. A set of innovations have been provided, namely:

– awarding authorities may oblige contractors to select subcontractors in a competitive manner and to open-up supply chains in order to broaden an access of SMEs to defence and security sector;
– a balance needs to be maintained when setting rules on research and development contracts in order to enhance innovation, while securing the openness of production markets;
– the procurement participants may be required to submit special guarantees of ensuring security of information and supply;
– the negotiated procedure with prior publication may be used as a standard procedure in the public procurement in order to set all the details of the contract more flexibly;
– protection of the interests of the economic operators engaged in the procedure will be secured under national legislation.

According to EC's data, there are approximately 9000 SMEs in the European defence industry supply chains, providing very often specialized products and services within niche markets, while the prime contractors—mainly large enterprises—are situated on the top of the supply chains as system integrators of complex defence products. From the perspective of SMEs, the cross-border defence market tends to be challenging due to lack of information, administrative burdens, cultural, legal and administrative differences, language barriers, as well as the costs of the physical distance. Noteworthy, there is a need to deal with nationally

classified data, security of supply requirements, certification and standardization, as well as the export control regulations.

The European Council stressed the importance of cross-border market access for SMEs in the official communication from December 2013, pointing at the issue of subcontracting and opening-up supply chains. The European Commission established a group of experts representing EU Member States to prepare a report in this matter between April 2015 and November 2016. The main conclusions of the evaluation report were as follows (European Commission 2016b):

- cross-border market access and open-up supply chains are critical for the European Defence Equipment Market, however, should address both the interests of sub-suppliers and prime contractors;
- for the purposes of promoting SMEs' participation, contracting authorities should notify early about the long-term strategies, distribute more complex information regarding procurement, using pre-procurement advertising, design procurement procedure in favor of cross-border contracts engaging SMEs; on the other hand, prime contractors should be transparent in terms of long-term strategy, utilize pre-procurement subcontracting advertising, open-up supply chains for potential sub-contractors from the different Member States;
- SMEs capacities should be increased through promotion of cross-border bidding, support for combining forces to increase market position, internationalization of defence economic operators, improvement of the EU-wide databases for defence enterprises;
- more actions are needed in such issues as intra-EU transfers, cooperative procurement, R&T, certification and standardization.

On 30 November 2016, the European Commission released a Notice providing guidance on government-to-government contracts in defence, in order to assist the Member States in applying exclusion of the Defence Directive (article 13(f) of European Parliament and Council Directive 2009/81/EC). Furthermore, the EC initiated an assessment procedure of the Directive in terms of addressing the rules through the EU's Tenders Electronic Daily (TED), then, the online version of the supplement to the Official Journal of the EU, embracing approximately 460,000 calls for tenders per year amounted to around 420 billion Euros.

6 Conclusion

Small and medium sized enterprises (SMEs) used to play a significant role in the EU economy, accounting for massive shares of newly established jobs, innovation and growth. The public procurement market in the EU, amounted to 14% of GDP of the 28 Member States, is an abundant source of opportunities for the smaller economic operators, lacking appropriate capacities to manage large sized contracts, however, able to act as sub-contractor, suppliers of innovative products and services within niche markets, as well as supply chains established by larger enterprises.

The Public Procurement Directives pointed at the importance of SMEs in terms of enhancing openness, transparency and competition of the EU public procurement market (European Parliament and Council Directive 2004/18/EC and European Parliament and Council Directive 2004/17/EC). The European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts of 2008 prioritized an access to information, the size of public contracts, administrative burden, procurement requirements, time frameworks in the procurement procedures, selection criteria, as well as deadlines for financial settlements between contracting authority and prime contractor, as well as prime contractor and sub-contractors. This has been accompanied by on-going digital transformation of the public procurement in the EU, including the Classical Sector Directive, the E-Invoicing Directive, initiatives and tolls such as ESPD, EXEP, e-CERTIS, e-PRIOR, IMI system, and e-SENS. The EU public procurement market is expected to be more inclusive, user-friendly, innovative, less bureaucratized, more efficient in terms of time and costs.

Furthermore, the Defence Directive underlined the necessity of broadening SME's access to defence and security markets through transparent, competitive criteria of selection of sub-contractors, and open-up of supply chains integrated very often by the large enterprises (European Parliament and Council Directive 2009/81/EC). The new EU procurement rules and concessions of 2016 highlighted the issues of reducing the red-tape, administrative burden and procurement documentation, liberalizing financial requirements for bidders, dividing contracts into lots in order to facilitate SMEs' participation. Moreover, cross-border joint bidding by SMEs is to be highly appreciated and welcomed.

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Control of Public Procurement in the European Union: Selected Problems

Jan Gola

Abstract Public procurement now forms a significant part of the market in economic terms (component of the free market economy). Its importance is increasing continuously due to value of contracts to be awarded, thus, many companies perceive such contracts as the key method for staying afloat on the market. The above brings about a growing competition in the public procurement market, encouraging pathological behavior fully focused at winning contracts, i.e. corruption. Note that the scope and degree of pathological phenomena in the public procurement system is largely influenced by applicable legislation in this field. Admittedly, regularly introduced legal institutions intended to reduce improper behavior proved to be partly ineffective. Curbing the risk of irregularity in the field of public procurement requires a multi-faceted impact, including efficient checks by the special bodies. The paper offers a review of the existing juridical solutions of EU law in respect of the analyzed subject. Relevant regulations of Polish law will be also discussed in this context.

Keywords Public procurement • EU • Polish law • Social market economy • Public procurement directives

1 Introduction

It is believed that the area of public procurement is inextricably linked with some pathologies in the public administration. These pathologies cannot be ignored. Many of them, including corruption, are considered the biggest threat to democracy and to free and fair business competition. They penetrate to each area of life: to the administration, politics, the judiciary and economy. In my opinion, they can be largely counteracted through the function of the public procurement control.

Note that, at present, public procurement represents a significant part of the market in the economic sense (a market economy components). However, its importance is decided by the continuously growing value of contracts awarded in the public procurement processes. Consequently, business and standing of some

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entrepreneurs is predominantly based on winning public contracts. Therefore, public procurement market used to be highly competitive, encouraging pathological behavior aimed at winning public contracts. To minimize the risk of irregularities in the public procurement, a multi-faceted approach is required, including an efficient performance of checks and inspections. The article will present juridical solutions on the subject matter. The question is whether they are appropriate and fulfill their legal function.

2 Pathologies in the Public Procurement System: Description

The key pathological factors are: the value of the public procurement market and, consequently, potential benefits which could be available on the market to entrepreneurs and public officials who decided on awarding contracts. Noteworthy, at present, public procurement represents a significant part of the market in the economic sense (a market economy component). However, its importance is decided by the continuously growing value of contracts awarded in the public procurement processes. Consequently, business and standing of some entrepreneurs is predominantly based on winning public contracts (Schmauch 2016).

The above causes an increasingly heavy competition on the public procurement market, encouraging pathological behavior aimed at winning public contracts. To minimize the risk of irregularities in the public procurement, a multi-faceted approach is required, including an efficient performance of checks and inspections. It is often pointed out that, the most frequently breached public procurement rules and also behaviors which may favor or request from a corruption include: non-application of public procurement legislation in the case when their applicability arising from meeting substance and subject-based assumptions for their applications or attempts to bypass the legislation in some EU member states (praeter legem actions) such as: breaking down contracts into parts to reduce the estimated value of the contract in the effort to reclassify it to a different/lower eligibility category; defective preparation of a public contract awarding procedure; lack of a clearly defined concept or purpose for delivering a public contract; unsound planning of a public contract; defective development/preparation of documents; inappropriately drawn up public procurement contracts; abuse of procedures other than public procurement; manipulating access to the public procurement information, bid assessment/scoring criteria and other contract-awarding criteria, insufficient documentation of proceedings, awarding public contracts to unreliable contractors (Wiśniewski 2006).

Note that intensity and extent of the pathologies in the public procurement system are largely affected by the applicable legislation in the area. While legal institutions operating towards restriction of corruptive practices are introduced on a

regular basis, experience shows that, in many instances, expansion of procedures and regulations is not effective (Panasiuk 2004).

Furthermore, public procurement abuses do not end upon awarding a public contract. One may also encounter pathologies in the performance of a public contract when the contracting authority may use the contracted goods/services for personal purposes and demand to receive for himself some additional benefits from the contractor as a "payment" for assistance in awarding the contract (Mituś 2009).

3 Control: Attempt at Definition

The observations presented in the paper will focus on the ex-ante and ad hoc control in the public procurement system in the public. These institutions have a major impact on preventing corruption in the public administration and their proper operation contributes to a more effective distribution of public funds. There is importantly that control functions are performed in the supervisory process defined as verification (ex-post) or prevention (ex-ante). The supervisory body is equipped with the means of influencing the approach and procedures of supervised bodies and it should draw consequences from their operations by introducing legal measures which are capabilities of an imperious and unilateral impact on the operation of the supervised body (Chmielnicki 2006).

Chełmonski (1966) emphasizes that control over the administration is aimed at analyzing correctness of its operation in terms of delivery of its planned objectives and in terms of choosing the right measures to achieve it. Furthermore, (Chełmoński 1966) observes that the administrative law manifests a trend to organize a control over administration in such a manner so that it could work both in the sake of the common interest and interests of private individuals. Also note that control functions include: an information function, function of correcting decisions, function of promoting model behavior standards, the function of increasing the guarantee of the rule of law and the function of raising the general work culture (Sylwestrzak 2004). Control functions have both a material and technical nature and are not made for the purpose of causing some specific legal consequences but for the purpose of causing or creating a state of facts (Szewczyk 1995).

The importance of the control in an organized activity is high and, in the case of administrative activities, takes particular importance. It is assumed that a broad range of controls existing in many areas are justified by operations of the administration. The largest complexity and complication of administrative actions is, the more expanded and varied verification and control measures should follow. Further to the above, the control sphere for the public administration continues to spread while undergoing a permanent transformation process (Wacinkiewicz 2007). Also note that the legal system of control is aligned to the core purpose of the institution which is assuring compliance.

4 EU Laws on the Public Procurement Control

The EU policy addressing public procurement is to assure transparency, competition and effectiveness of contract awards, while proper operation of the sphere affects the economic growth of its member states. The most important pieces of the EU legislation on public procurement include (Schabesta 2016):

- Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement (the classic directive)
- Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors (the sectoral directive)
- Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award of concession contracts as well as Directive 2007/66/EC of the European Parliament and Council of 11th December 2007 amending Directive 89/665/EEC with regard to improving the effectiveness of review procedures concerning the award of public contracts.

Analysing provisions of the EU law, one may conclude clearly that, in a democratic state of law, it is not possible to have only a court control system for public procurement. It is in the public interest that, next to the court system, member states should have their public procurement market supervisory bodies (Horubski 2013).

In the above-mentioned directives, there are also some provisions related to the public procurement control. They apply not only to controlling the very public procurement procedures but also to the activity of subcontractors who must have full compliance, including environmental compliance. And so, e.g. according to the classic directive, legal instruments of the public procurement may consist in particular of personnel and organisational measures such as the severance of all links with persons or organisations involved in the misbehaviour, appropriate staff reorganisation measures, the implementation of reporting and control systems, the creation of an internal audit structure to monitor compliance and the adoption of internal liability and compensation rules.

In case of the public control as such, the EU legislator refers to the control by referring to monitoring the public procurement. Member States should remain free to decide how and by whom this monitoring should be carried out in practice; in so doing, they should also remain free to decide whether the monitoring should be based on a sample-based ex-post control or on a systematic, ex ante control of public procurement procedures covered by this Directive. It should be possible to bring potential problems to the attention of the proper bodies; this should not necessarily require that those having performed the monitoring have standing before courts and tribunals.

Provisions of art. 83 of the classic directive should be also analysed thoroughly. Therefore for the purpose of ensuring effectively a competent and effective delivery of the directive, member states ensure that at least the tasks defined in this article are

delivered by at least one body, entity or structure. They also notify the Commission on all bodies, entities or structures competent for delivering the tasks. Such legal solution resolving the issue of control and monitoring in the public procurement area may lead to preventing illicit actions by entities. Importantly, in the view of the objectives of a public procurement proceedings, ex ante and ad hoc controls are accessorial in nature. For this reason, the EU legislator decided about the need to introduce procedures for special controls of bodies in each member state (Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement).

5 Control of a Polish Body in the Public Procurement System

Polish regulations on controlling the public procurement could serve here as an example. It involves examining compliance of a public contract award proceedings with the provisions of the Public Procurement Law Act of 29.01.2004. It may be a subject of explanatory proceeded by explanatory proceedings in order to establish a potential breach of the provisions of the Act where such breach could affect the outcome of the proceedings. Control of a public procurement process is not administrative proceedings and does not end with an administrative decision (Gola 2013). Also in this case, activity of the President of the Public Procurement Office cannot be classified to administrative governance manifesting itself in an unilateral declaration of intent of the body, based on the provisions of administrative law and defining a legal position of a specific addressee (Judgement of the Regional Administrative Court in Warsaw of 28.02.2008 (V SA/Wa 2614/07)).

The President of the Public Procurement Office has the right to demand from the manager/director of the contracting party to hand over copies of any documents related to the public contract award proceedings in copies certified true by the same. Furthermore, he also has the authority to request written explanation in matters related to the subject of the control from the contracting party's manager and employees involved in the contract awarding proceedings (Resolution of the National Chamber of Appeal dated 19.03.2010 (KIO/KD 18/10)).

For the purpose of clarifying the matter, he may also request opinions of experts with specialist knowledge, in particular in the area of the subject of the contract. Note that, in this case, requesting such opinion is aimed at determining the facts of the case, its assessment as well as other activities to be performed by the expert who has special knowledge in the field and who is entitled to a fee for his work to the extent as it is applicable to witnesses, court experts and parties in court proceedings (Granecki 2009). The President of the PPO is obligated to establish the facts of a case on the basis of documents collected in the explanatory or control proceedings. In case of a breach of these obligations, the controlled could raise it when supporting his objections addressed to the President of the PPO and, if they are

not taken into account, they shall be forwarded to the National Chamber of Appeal to issue its opinion thereon (Granecki 2009). After a control, report on the control must be drawn up to document all the activities taken during the control.

The control procedures vary in terms of a potential revision of the proceedings. However, the ex-ante control may lead to correction of any oversights in pending proceedings for awarding a public contract. On the other hand, the ad hoc control, performed within 4 years after closing the proceedings, is clearly repressive in nature. The ad hoc control may be initiated upon a justified presumption of a breach of the provisions of the Public Procurement law in the proceedings for awarding the public contract, which could have affected the outcome of the proceedings (Judgement of the Regional Administrative Court in Poznań of 07.02.2012 (ISA/Po 861/11)).

Important role is played by the ex-ante control of contracts or master/general contracts co-financed from the EU funds (Szostak 2011). According to the provisions of art. 169 of the Public Procurement Law, it is conducted before (ex ante) awarding a contract if the value of a contract or a master contract for construction works is equal or higher than PLN (polish zloty) equivalent of EUR 20,000,000 (two million) and for goods and services—when it is equal or higher than PLN equivalent of EUR 10,000,000 (ten million). The ex-ante control is initiated upon serving the President of the Public Procurement Office of a copy of documentation of the proceedings on awarding a contract for the purpose of controlling it (Judgement of the National Chamber of Appeal of 30.05.2012 (KIO 1000/12)). On request of the Managing Authority, the President of the Public Procurement Office may withdraw from conducting the ex-ante control if, according to the institution, the proceedings were compliant with the provisions of the same Act. Information on withdrawing from the control is notified promptly by the President to the contracting party and the applicant.

The control involves assessment of compliance of the procedure followed in the procurement proceedings after examining, scoring and selection of the most favorable bid with the public procurement law act and it is carried out on the basis of the contract documentation forwarded by the contracting party. The contracting party should provide the documentation of the proceedings only after the date for appealing. In case of any appeal from the decision on choosing the most favorable offer, the documentation should be forwarded after a decision is issued by the National Chamber of Appeal (Pieróg 2007). What is more, initiation of the ex-ante control postpones the final date of the bid validity until the control is completed.

6 Conclusion

The public procurement control function has a material impact on preventing pathologies. For this reason, it is also important to introduce respective procedures and legislation governing these issues at the EU level. Conducting a control and reporting on its outcomes may have a "domino effect" which potentially could work as a deterrent for an organization before it even begins considering taking some revision steps. Some institutions may assume that the control may result in a critical

assessment of their operation resulting in taking actions intended at removing the irregularities. The impact intensifies in potential subjects of the control, in particular once negative analysis of other institutions is disclosed (Sierpowska 2003).

Legal instruments of an ex ante control undoubtedly affect reduction of pathologies in the operation of the public administration bodies. They introduce a certain degree of stability for contractors and certainty as to actions taken by the contracting parties (Panasiuk 2005). However, even the best instruments introduced in the public procurement system will not be able to eliminate fully some negative phenomena unless an appropriate model of education and upbringing is introduced, preventing pathological links and connections between the public administration and the private business sector and would make the society more sensitive to the consequences of corruptive actions in the public procurement area (Panasiuk 2005).

Here it's worthwhile to quote Panasiuk (2005), who believed that through ethical behavior of those who operate in the public procurement system, we influence creation of an image of good law instead of taking some legislative measures consisting in creating newer and newer legal structures aimed at enforcement of ethical behavior of individuals. We cannot move away from the need to improve legal standards, even if in connection with ever-changing social and economic conditions of the environment in which participants of the public procurement process participate. However, the entire legislative process must be carefully prepared and thought-over, informed and set creation of a coherent public procurement system as its key objective (Panasiuk 2005).

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Freezing of Assets as a Counter-Terrorism Measure in the EU After Al-Aqsa Judgment of the Court of Justice

Wojciech Szydło

Abstract The judgment of the Court of Justice of the EU ("the CJEU") in the *Al-Aqsa* case is yet another ruling where the CJEU examines the measures of EU secondary law providing for the freezing of assets of persons and entities suspected of financing terrorism as to their compatibility with EU primary law, particularly with the EU fundamental rights. The stance taken here by the CJEU constitutes an occasion to re-think some very controversial issues regarding the EU's fight against financing terrorism, including the following: what is the legal status of UN Security Council resolutions in the EU legal order, and whether and, if so, to what extent the EU courts are authorized to assess the compatibility of these resolutions and/or EU acts implementing them with the EU Treaties, with other sources of EU primary law, or possibly with other points of reference, including some norms or principles of public international law; whether we should accept that the CJEU still lowers the standard of protection of the parties affected by the freezing of assets, especially in comparison with its earlier rulings; and whether the allocation of competences between the EU institutions and Member States in the discussed field is indeed optimal.

Keywords Freezing of assets • Counter-terrorism measure • Al-Aqsa case • Court of Justice of the European Union • UN Security Council resolutions

1 Introduction

The judgment of the Court of Justice of the EU (CJEU) in the Al-Aqsa case is yet another ruling where the CJEU examines the measures of EU secondary law providing for the freezing of assets of persons and entities suspected of financing terrorism as to their compatibility with EU primary law, particularly with the EU fundamental rights (Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008; Faraj Hassan v Council of the European Union and

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European Commission and Chafiq Ayadi v Council of the European Union 2009; The Queen v Her Majesty's Treasury 2010). In the majority of cases, such EU efforts resulting in the freezing of assets are mandated, albeit to a varying extent, by the United Nations (UN) Security Council resolutions, and the EU institutions implement such resolutions by enacting EU legal acts (such as decisions, regulations, and, before the Treaty of Lisbon came into force, common positions). The exact extent or level (density) of determination of EU acts providing for the freezing of assets by the resolutions of UN Security Council may vary in individual instances, but the crucial questions that then appear are always the same: What is the legal status of UN Security Council resolutions in the EU legal order, and whether and, if so, to what extent the EU courts [i.e. the CJEU and the General Court (GC)] are authorized to assess the compatibility of these resolutions and/or EU acts implementing them with the EU Treaties, with other sources of EU primary law (e.g. the Charter of Fundamental Rights of the EU), or possibly with other points of reference, including some norms or principles of public international law? Since the famous Kadi judgment of the CJEU (Gattini 2009; Halberstam and Stein 2009; Menz and Scholz 2009; Johnston 2009; Crosby 2008, p. 7; Lavranos 2009, 2010; Harpaz 2009; Kämmerer 2009; Rathke 2009), it is accepted in the jurisprudence of the Court of Justice that EU institutions should pay due regard to the institutions of the United Nations and, after a given resolution of the UN Security Council is implemented in the EU legal order by means of an act of EU secondary law, account must be taken of the wording and purpose of the Security Council resolution when interpreting the EU act which seeks to implement that resolution. However, this due regard to the institutions of the United Nations cannot result in the EU institutions abstaining from reviewing the lawfulness of the EU measures implementing UN Security Council resolutions in the light of the fundamental rights forming an integral part of the general principles of EU law. On the other hand, EU institutions, including the EU courts, are not authorized to scrutinise the legality of the UN Security Council resolutions.

The assumptions presented above underlie also the judgment of the Court of Justice in Al-Aqsa case, which creates an excellent opportunity to re-think this very controversial issue, and possibly to propose a reconsideration of the established case-law.

The judgment in Al-Aqsa case is also interesting due to the fact that, while examining the conformity of EU legal acts implementing UN Security Council resolutions with EU primary law, the CJEU clearly lowered the standard for protection of the parties whom such freezing of assets concern, especially in comparison with its earlier rulings. It begs the question of whether such a lessening of the standard of protection is the kind of price that should be paid for the very act of subjecting the EU measures implementing UN Security Council resolutions to verification as to their compatibility with the EU fundamental rights, contrary to the stance expressed earlier by the GC (formerly: Court of First Instance, "CFI") (Yassin Abdullah Kadi, Yassin Abdullah Kadi v Council of the European Union and Commission 2005). If so, maybe it is all the more reasonable to consider some

other options of the mutual relations between the UN Security Council resolutions and the EU legal order that might possibly be adopted in practice.

An important part of the judgment in Al-Aqsa case is formed by the considerations of the Court of Justice on mutual relations between the actions undertaken at the national level and at the EU level in the field of combating the financing of terrorism and in the field of freezing the assets of those suspected of such a form of supporting terrorism. This offers an opportunity for analysing whether this allocation of competences between the EU institutions and Member States in the discussed area is indeed optimal, or whether the EU and the Member States should not both play a more active role in the process in question.

2 Factual and Legal Background

On 28 September 2001 the UN Security Council adopted Resolution 1373 (2001) on strategies to combat terrorism and, in particular, the financing of terrorism, by any means. Point 1(c) of the Resolution provides, inter alia, that all States should promptly freeze "funds and other financial assets or economic resources of these individuals who commit, or attempt to commit, any acts of terror or participate in such acts or facilitate the commission of terrorist acts", as well as funds of entities which are "owned or controlled directly or indirectly by such persons"; and of "persons and entities acting on behalf of, or at the direction of such persons and entities" (Security Council resolution 1373 2001). However, the resolution does not list the persons to whom the restrictive measures must be applied.

In order to implement the Security Council resolution 1373 (2001), the Council of the EU adopted, on 27 December 2001, its Common Position 2001/931/CFSP on the application of specific measures to combat terrorism. In consideration of a need for a regulation in order to implement the measures set out in Common Position 2001/931 at the contemporary Community level, the Council adopted Regulation (EC) No. 2580/2001 of 27 December 2001 on specific restrictive measures directed against certain persons and entities with a view to combating terrorism. According to Article 2(3) of that Regulation, the Council, acting by unanimity, develops, drafts, reviews, changes and modifies the list of persons, groups and entities to which this Regulation applies as provided by the provisions of Article 1(4), (5) and (6) of Common Position 2001/931/CFSP. The initial version of the list provided for in Article 2(3) of Regulation No. 2580/2001 was prepared on the basis of the Council Decision 2001/927/EC. The versions of the list that followed resulted from the next Council Decisions repealing the previous Decisions, for example: Council Decision 2003/480/EC of 27 June 2003 implementing Article 2(3) of Regulation No 2580/2001 and repealing Decision 2002/974/EC; Council Decision 2003/646/EC of 12 September 2003 implementing Article 2(3) of Regulation (EC) No 2580/2001 and repealing Decision 2003/480; Council Decision 2006/379/EC of 29 May 2006 implementing Article 2(3) of Regulation No 2580/2001 and repealing Decision 2005/930/EC; Council Decision 2007/445/EC of 28 June

2007 implementing Article 2(3) of Regulation (EC) No 2580/2001 on specific restrictive measures directed against certain persons and entities with a view to combating terrorism and repealing Decisions 2006/379/EC and 2006/1008/EC; Council Decision 2009/62/EC of 26 January 2009 implementing Article 2(3) of Regulation (EC) No 2580/2001 on specific restrictive measures directed against certain persons and entities with a view to combating terrorism and repealing Decision 2008/583/EC. In these Decisions, the name of Stichting Al-Aqsa, established in Heerlen (Netherlands), was mentioned.

By the means of an application filed to the Registry of the GC on 12 September 2007, Stichting Al-Aqsa brought an action, by which it requested the GC to: annul Council Decision 2007/445 in so far as it concerned it, and declare that Regulation No 2580/2001 was not applicable to it. In its judgment of 9 September 2010 the GC annulled that Decision in so far as it concerned Stichting Al-Aqsa, essentially on the basis that sufficient grounds had not given for the Decision (Stichting Al-Aqsa v Council of the European Union 2010). However, the GC did not agree with all the pleas that were raised by Stichting Al-Aqsa, which prompted the latter to request the Court of Justice to set aside the judgment of the GC in so far as the pleas and arguments were directed, in the appellant's name, against the grounds of that judgment, and give a new ruling upholding the claims put forward at first instance, while correcting the grounds on which the judgment under appeal was based. In turn, the Council of the EU, the Kingdom of the Netherlands and the EU Commission requested the Court of Justice to declare the appellant's appeal inadmissible.

3 Opinion of Advocate General

In his opinion delivered on 6 June 2012, AG Trstenjak expressed the view that the appeal brought by Al-Aqsa was inadmissible. It was clear from the statement of appeal that Al-Aqsa's appeal was directed against the grounds of the judgment appealed against and sought to obtain some improved grounds as compared with those on which the judgment under appeal was based. According to AG Trstenjak, such a claim did not and could not satisfy the requirements of Article 113(1) of the Rules of Procedure of the Court of Justice which required that an appeal must be aimed and attempt at setting aside, in whole or in part, the decision of the GC, that is to say, effectively, the operative part of that decision and the grounds on which it is based (Paras. 30–31 of the opinion).

Furthermore, in the opinion of AG Trstenjak, there were no apparent negative consequences to Al-Aqsa in the event of the judgment under appeal became effective and became final and valid (Para. 33 of the opinion). According to AG Trstenjak, in any future proceedings opposing an effort to freeze its assets, Al-Aqsa would freely repeat those pleas in law in which he did not succeed in the first instance and could not be barred from doing so on the ground that the judgment under appeal has acquired the force of res judicata (Para. 34 of the opinion).

In turn, the appeal filed by the Kingdom of the Netherlands, by which it sought to have the judgment under appeal set aside, was declared by AG Trstenjak admissible, but unfounded (Paras. 40–72 of the opinion).

4 Judgment of the Court of Justice

In its judgment, the Court of Justice agreed with AG that the appeal brought by Stichting Al-Aqsa was inadmissible, since this appeal sought not to have the judgment under appeal set aside, even in part, that is to say the operative part thereof, but merely the amendment of some of the grounds of that judgment (Stichting Al-Aqsa v Council of the European Union 2010, paras. 43–50).

Then the CJEU went on to consider the single ground of appeal brought by the Kingdom of the Netherlands, namely that the GC misinterpreted Article 1(4) and (6) of Common Position 2001/931 and Article 2(3) of Regulation No 2580/2001, in considering that, after repealing the Dutch law of 16 May 2002 the Sanctieregeling Terrorisme 2003 (Staatscourant of 7 April 2003, No 68, p. 11)—Regulation on sanctions for the suppression of terrorism 2003, "the Sanctieregeling"—by which the freezing of all the Al-Aqsa's funds and financial assets was ordered, the order of the Dutch court hearing the application for interim measures could no longer serve as a basis for keeping the name of Al-Aqsa on the list established by the Council of the EU on the ground of Article 2(3) of Regulation No 2580/2001. In that regard the CJEU reminded the wording of Article 1(4) of Common Position 2011/931, providing that the list concerned should be prepared on the basis of detailed and specific information or material in the relevant file which indicates that a decision was made by a competent authority regarding the persons, groups and entities concerned, regardless of it concerning the instigation of investigations or prosecution for a terrorist act, an attempt to perpetrate, take part in or facilitate such an act based on serious and credible evidence material or clues, or condemnation for acts of such type. The same provision explains that a 'competent authority' should be interpreted as judicial authority, or in the case or circumstances where judicial authorities are not competent in the area to which this paragraph applies, an authority having equivalent competence in the area. In turn, pursuant to Article 1(6) of Common Position 2001/931, the names of persons and entities on the list in the Annex should be revised and verified on a regular basis and at least once every 6 months to ensure absence of grounds for keeping them included in the list (Stichting Al-Aqsa v Council of the European Union 2010, paras. 64, 66 and 78). Applying these provisions to the facts of the case, the CJEU noted that the repeal of the Sanctieregeling was not based on the emergence of new facts or evidence indicating that the appellant was no longer involved in the financing of terrorism or a change in the assessment of such involvement by the competent national authorities. The sole reason behind that repeal was to prevent an overlap between the measure to freeze national fund, imposed by the Sanctieregeling, and the fund freezing measure

required at the EU level by Regulation No 2580/2001 (Stichting Al-Aqsa v Council of the European Union 2010, paras. 83–84). Therefore the GC misinterpreted the provisions of Article 1(4) and (6) of Common Position 2001/931 by assuming that, after repealing the Sanctieregeling, there was no longer any 'substratum' in national law that justified, to the required legal standard, continued inclusion of the appellant into the list concerned while not having a full understanding of the reason for repealing Sanctieregeling (Para. 91 of Al-Aqsa). Consequently, the CJEU deemed the single ground of appeal raised by the Kingdom of the Netherlands to be founded, with the result that the judgment of the GC was set aside (Stichting Al-Aqsa v Council of the European Union 2010, para. 92).

Next the CJEU made use of the possibility provided for in the second sentence of the first paragraph of Article 61 of the Statute of the Court of Justice and, specifically that if CJEU quashes the decision of the GC, it may give final judgment in the matter where it is so permitted by the advancement or status of proceedings. In the circumstances, the Court of Justice considered that the action for annulment of the contested acts brought by the appellant in the first instance before the GC was ready for judgment and that it was necessary to give final judgment in it (Stichting Al-Aqsa v Council of the European Union 2010, paras. 97–98). The Court of Justice scrutinised five pleas in law raised by Al-Aqsa, and all of them were rejected as unfounded.

The first plea of Al-Aqsa was concerned with the submission that no competent authority had taken a decision in respect of the applicant within the meaning of Article 1(4) of Common Position 2001/931. According to Al-Aqsa, neither the Sanctieregeling nor the order of the court hearing the application for interim measures fit into the categories of decisions mentioned in that provision. The CJEU did not agree and stated that the Council was in possession of precise information and supporting evidence material while manifesting that a decision based on and compliant with the definition in Article 1(4) of Common Position 2001/931 had been taken by a competent authority against Al-Aqsa (Stichting Al-Aqsa v Council of the European Union 2010, paras. 102–103).

By the second plea filed by the appellant that the Council had not looked into the grounds supporting the original decision to freeze the appellant's funds and whether they continued to apply and whether it had still been appropriate to continue to include the appellant on the list at issue, and that it had thus infringed an essential procedural requirement. Rejecting this plea the Court of Justice noted that the judgment under appeal did not clearly demonstrate that there was some evidence material showing that, since the adoption of the Sanctieregeling, the facts of the case or evaluation thereof by the national authorities had changed regarding the appellant's involvement in the financing of terrorist activities. On the contrary, the Council of the EU was not in possession of any evidence which could have prompted it to consider that, after the adoption of the Sanctieregeling, the appellant suspended or stopped to contribute to the financing of terrorist activities, irrespective of the fact that the freezing of its funds rendered such contributions more difficult, if not prevented it entirely (Stichting Al-Aqsa v Council of the European Union 2010, paras. 108–113).

The next two pleas focused on and referred to Al-Aqsa's submission that the contested EU acts infringed its fundamental right to unfettered enjoyment of its property, in infringement of general principles of the EU law. In that regard the CJEU expressed the view that the freezing measure imposed by the contested acts constitutes a temporary precautionary measure not intended at depriving the persons concerned of their property. It does, however, undeniably embed a restriction of the exercise of the appellant's right to property that must, moreover, be classified as significant, referring the general application of the freezing measure and the fact that it was imposed on it for the first time by a Council Decision of 27 June 2003 (Stichting Al-Aqsa v Council of the European Union 2010, para. 120). The CJEU reminded that according to settled case-law, absolute protection is not offered or enjoyed by the right to property under EU law. Consequently, the exercise of the right to property may be restricted, provided that those restrictions in fact correspond to objectives of public interest pursued by the EU and do not represented with regard to the aim of the action or activity, a disproportionate and intolerable interference, causing impairment of the very substance of the right guaranteed in such a manner and through such means (Stichting Al-Aqsa v Council of the European Union 2010, para. 121; Bosphorus Hava Yollari Turizm ve Ticaret AS v Minister for Transport, Energy and Communications and others 1996, para. 21; Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008). With reference to an objective of general interest as fundamental to the international community as the fight by all means, in accordance with the Charter of the United Nations, against the threats to international peace and security posed by acts of terrorism, the freezing of the funds, financial assets and other economic resources of the persons identified in accordance with the rules laid down in Regulation No 2580/2001 and by Common Position 2001/931 as being involved in the financing of terrorism cannot per se be regarded as inappropriate (Stichting Al-Aqsa v Council of the European Union 2010, para. 123). As regards the necessity of the measure, the CJEU noted that the alternative and less restrictive measures put forward by the appellant, such as a system of prior authorisation or an obligation to justify, a posteriori, how the funds transferred were used, are not as effective in achieving the goal pursued, namely combating the financing of terrorism, particularly given the possibility of circumventing such restrictions (Stichting Al-Aqsa v Council of the European Union 2010, para. 125). The maintenance of the appellant on the list at issue by the contested acts cannot be qualified as disproportionate for being allegedly potentially unlimited, since such lists are subject to periodic review so as to ensure that the persons who, and entities which, no longer meet the necessary criteria are removed from the list at issue (Stichting Al-Aqsa v Council of the European Union 2010, para. 129).

The last plea of Al-Aqsa indicated that Council Decision 2007/445 did not meet the requirement to state reasons given in Article 296 TFEU (ex Article 253 EC). The Court of Justice again did not agree and stressed that the statement of reasons notified to Al-Aqsa, alongside Decision 2007/445, set out the individual and specific reasons which led the Council to consider, in accordance with Article 1(4) of Common Position 2001/931 on the basis of information considered to be reliable by a national authority, that the appellant was involved in the financing of terrorism.

Such elements were sufficient for the appellant to be capable of understanding the accusations made against it (Stichting Al-Aqsa v Council of the European Union 2010, para. 142). According to the CJEU, there was nothing to suggest that, since the adoption of the Sanctieregeling, the factual situation or the assessment thereof by the national authorities had changed further to the appellant's engagement in the financing of terrorist activities. Nor does the appellant claim that the Council was in possession of any information which could have led it to consider that, after the adoption of the Sanctieregeling, the appellant had suspended contributing or ceased to contribute to the financing of terrorist activities. Accordingly, it was not necessary to elaborate on the reasons why the Council believed that the grounds which justified including the appellant to the list at issue remained valid. As a result, the entire action of the appellant has been rejected (Stichting Al-Aqsa v Council of the European Union 2010, paras. 145–147).

5 Legal Analysis

5.1 Status of UN Security Council Resolutions in the EU Legal Order in the Jurisprudence of the EU Courts

In para. 126 of Al-Aqsa the Court of Justice held that: "Account must be taken of the wording and purpose of that resolution [i.e. Resolution 1373 (2001) of the United Nations Security Council: W. Sz.] when interpreting provisions of European Union law which seek to implement that resolution". This instrumental role of UN Security Council resolutions in the process of interpretation of provisions of EU law that was underlined by the CJEU in Al-Aqsa provokes the question about the exact position and status of these resolutions in the EU legal order. From the very fact that in the annotated judgment the Court of Justice scrutinised the EU legal acts implementing Resolution 1373 (2001) of the UN Security Council as to their compatibility with the EU fundamental rights and did not grant these acts any immunity in the EU law due to the fact that they originated from the UN legal regime it can be inferred that according to the CJEU the Security Council resolutions exist on a separate plane than EU law and constitute an integral part of an entirely different legal order. This UN legal order is a heterogeneous one in relation to EU law and it cannot affect the primacy of fundamental principles of EU law (De Búrca 2010, p. 24). It is exactly such a stance that was expressly adopted by the CJEU in its famous Kadi judgment where it was emphasised that in Community (now: EU) primary law there were no legal grounds for immunity from jurisdiction for the Community legal acts, as a corollary of the principle of the primacy at the level of international law of obligations under the Charter of the United Nations, in particular those relating to the implementation of resolutions of the Security Council adopted in accordance with the provisions of Chapter VII of the Charter (Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008, para. 300). In consequence, the Community judicature must, in accordance with the powers conferred onto it by the Treaty, guarantee the full review of

the lawfulness of all Community acts in the light of the fundamental rights forming an integral part of the general principles of Community law, including a revision of Community measures adopted with the view to give effect to the resolutions adopted by the Security Council under Chapter VII of the Charter of the United Nations (Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008, para. 326).

This view, underlying the autonomy of the Community/EU legal system vis-à-vis the UN legal order, is in striking contrast to the thesis presented earlier in the same case by the GC (CFI). According to the latter, under the founding Treaty the Community has assumed powers previously exercised by Member States in the area governed by the Charter of the United Nations, and the provisions of that Charter have the effect of binding the Community. By virtue of the EC Treaty itself the Community is required to give effect to the Security Council resolutions, within its powers. Where, acting pursuant to Chapter VII of the Charter of the United Nations, the Security Council, through its Sanctions Committee, decides that the funds of certain individuals or entities must be frozen, then the Community courts have no jurisdiction to review indirectly the lawfulness of such a decision according to the standard of protection of fundamental rights as recognised by the Community legal order. Accordingly, the resolutions of the Security Council principally do not fall under the ambit of the Court's judicial review and the Court has no authority to question or undermine, even indirectly, their lawfulness in the light of Community law. What the Court can do at most is to verify the lawfulness of the resolutions of the UN Security Council with regard to jus cogens, where it is defined as a body of higher rules of public international law applicable to all subjects of international law (Yassin Abdullah Kadi v Council of the European Union and Commission 2005).

However, it was not the last word of the GC (CFI) in that regard, because in some subsequent judgments—albeit delivered yet before the Kadi judgment of the Court of Justice—it introduced a more nuanced distinction between, on the one hand, such UN Security Council resolutions that imposed the freezing of the funds of the parties concerned designated by name, without in any way authorising to provide for any Community/EU mechanism whatsoever for the examination or re-examination of individual situations, and, on the other hand, such UN Security Council resolutions which do not specify individually the persons, groups and entities who or which are to be subject to those restrictive measures. While in the case of the former resolutions the thesis presented by the GC (CFI) in Kadi as regards their status in EU law continues to apply (with an effect that EU measures implementing these resolutions escape the scrutiny as to their compatibility with EU fundamental rights), the latter resolutions imply the exercise of the EU's own powers, involving a discretionary assessment by the EU of the potential addressees of the restrictive measures. As a result, when the EU institutions intend to put these latter resolutions into effect, they are as a rule bound to comply with the EU fundamental rights (Organisation des Modjahedines du peuple d'Iran v Council of the European Union 2006, paras. 99–107; Jose Maria Sison v Council of the European Union 2007, paras. 147–154; Ahmed Ali Yusuf and Al Barakaat International Foundation v Council of the European Union and Commission of the European Communities 2005; Faraj Hassan v Council of the European Union and Commission of the European Communities 2006, para. 92).

The presumptive application of the GC's view to the facts of Al-Aqsa would have the effect that the very content of freezing (restrictive) measures included within the EU legal acts could not be assessed it terms of its compatibility with the EU fundamental right to property, since the content of these restrictive measures is validated by a mandate given by the UN Security Council Resolution 1373 (2001) in the sense that it obliges Member States to apply exactly this form of combating terrorism (albeit without prejudging to whom, designated by name, the freezing of assets should be applied). In turn, as to the compatibility with EU fundamental rights there could be reviewed such actions of the EU and its Member States that consist in the identification of specific persons, groups and entities who or which are to be subject to those restrictive measures; the reason is that these specific addressees have not been strictly determined in Resolution 1373 (2001), and the EU and Member States have a broad leeway in identifying such persons and entities. However, in Al-Aqsa the CJEU did not follow this logic and scrutinised the compliance with the EU fundamental right to property also of the very content of freezing measures (provided for in the contested EU legal acts), that is the measures that under Resolution 1373 (2001) must be applied obligatorily (Stichting Al-Aqsa v Council of the European Union 2010, paras. 120–130). This scrutiny through the lenses of EU fundamental rights shows that the CJEU perceives the EU legal order as an autonomous regime, entirely distinct from the UN legal order, with an effect that the UN Security Council resolutions are not capable to undermine the constitutional principles of the EU law, including fundamental rights. The fundamental rights existing under such an autonomous and separate municipal legal order as the EU law must be strongly protected against any invasion coming from the outside world.

5.2 The Need to Change the Stance of the CJEU: EU Legal Order Between Constitution and International Law

It is submitted that there is a need to reconsider the stance of the CJEU—which was assumed by the latter also in Al-Aqsa—as regards the mutual relations between the EU legal order and the UN legal regime. It must be noted first that the rules and principles of the EU law, including the EU fundamental rights belonging to the general principles of EU law, have been created or declared (recognised) as international obligations of Member States whose will expressed at the international level has led—by means of international treaties, that is the founding Treaties—to the formation of the current EU and its legal order. What should still prevail over such international obligations of Member States are their obligations under the UN Charter, which is mandated by Article 103 of that Charter. That latter provision reads as follows: "In the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter

shall prevail". Article 103 of the UN Charter, considered to be the confirmation of the constitutional character of the Charter as the founding instrument of international legal order in the post-Second World War era (Bernhardt 2002, p. 1292; Fassbender 1998, p. 529), refers to "the obligations of the Members of the United Nations under the present Charter"; this broad formulation encompasses not only the obligations resulting from the UN Charter itself, but also the obligations resulting from the binding decisions of UN bodies acting on the ground of the UN Charter, primarily the obligations stemming from the resolutions of UN Security Council adopted pursuant to Article 25 or to Chapter VII of the Charter (Liivoja 2008, p. 597; International Law Commission 2006, para. 331; International Court of Justice 1992, para. 39). Should the conflict between the resolution of the UN Security Council and any other international obligation of the Members of the United Nations arise, the former takes precedence over the latter, and the Member States of the UN are prohibited from following these other international obligations (conflicting with the resolution of the UN Security Council), without bearing any international responsibility for non-compliance with their aforementioned international obligations.

The reason why the CJEU (also in the annotated judgment) does not accept this precedence of obligations of the EU (and at the same time UN) Member States stemming from the resolutions of UN Security Council over the Member States' obligations arising from the EU founding Treaties is explained by the Court of Justice through the fact that EU law constitutes a separate and autonomous legal order which is outside the reach of the traditional international law, including the UN Charter and the decisions of UN bodies. According to this assumption, the EU legal order has a constitutional character, and by forming an entirely distinct order it cannot be categorized simply as international law. Therefore, the EU legal order does not enter into the common hierarchy existing in the international law, the latter being reflected, among others, by Article 103 of the UN Charter (Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008). As AG Poiares Maduro has, very representatively for this way of thinking, put it in his opinion: "This brings us to the question of how the relationship between the international legal order and the Community legal order must be described. The logical starting point of our discussion should, of course, be the landmark ruling in Van Gend en Loos, in which the Court affirmed the autonomy of the Community legal order. The Court held that the Treaty is not merely an agreement between States, but an agreement between the peoples of Europe. It considered that the Treaty had established a 'new legal order', beholden to, but distinct from the existing legal order of public international law. In other words, the Treaty has created a municipal legal order of trans-national dimensions, of which it forms the 'basic constitutional charter'" (Opinion of Advocate General Poiares Maduro 2008, para. 21).

Contrary to what was quoted above, it is submitted that the constitutional character of the Treaties founding the EU does not deprive them of the qualification of international law agreements (international treaties) to which the traditional international law, including Vienna Convention on the Law of Treaties, still

continues to apply. Since the Treaties founding the EU are treaties concluded between states, these Treaties constitute a subsystem of international law (Hartley 2001, pp. 2–3; Simma and Pulkowski 2006, p. 516; Milanović 2009, p. 107). After all, the Treaties founding the EU are concluded and ratified by Member States, and become binding for the latter exactly in the same manner as any other international treaty does. No single Treaty amending the existing Treaties (e.g. Single European Act, Maastricht Treaty, Treaty of Nice, Treaty of Lisbon, Accession Treaties) would have come into effect, if it had not been concluded and ratified in full accordance with the rules of international law, including Vienna Convention on the Law of Treaties, irrespective of the fact that these Treaties create a legal construct that EU lawyers are apt to call a "constitution". But the question of whether the EU law possesses the character of constitutional law or international law introduces an entirely false dichotomy, because the EU legal order is both at the same time (Weiler and Haltern 1996, p. 417). True, in Van Gend en Loos the Court of Justice admitted that Community constitutes "a new legal order", but at the same time it expressly stated that this is "a new legal order of international law" (NV Algemene Transport- en Expeditie Onderneming van Gend & Loos v Netherlands Inland Revenue Administration 1963, part II.B; Flaminio Costa v E. N.E.L. 1964; Commission v Portuguese Republic 2000, para. 44). Since the founding Treaties still belong to the broader category of international law treaties, irrespective of their constitutional character, the obligations arising from these Treaties for Member States must be categorized as "their obligations under any other international agreement" within the meaning of Article 103 of the UN Charter. In this sense, such obligations of Member States under the Treaties founding the EU give way to their obligations under the UN Charter, including the obligations resulting from resolutions of the UN Security Council.

Exactly the same conclusion can be drawn from Article 351 TFEU which stipulates that: "The rights and obligations arising from agreements concluded before 1 January 1958 (this includes, among others, the UN Charter which was signed on 26 June 1945: W. Sz.) or, for acceding States, before the date of their accession, between one or more Member States on the one hand, and one or more third countries on the other, shall not be affected by the provisions of the Treaties". This line of reasoning, underscoring the precedence of the obligations of EU Member States stemming from the UN Charter over their obligations arising from the Treaties founding the EU, finds its additional support in the wording of the TEU which expressly states on numerous occasions that the EU should have respect for and should act in accordance with the principles of the UN Charter. On purely political plane the EU's respect for supremacy clause laid down in Article 103 of the UN Charter could be in line with the traditional self-presentation of the EU as a virtuous international actor who is open for and faithful to international law ("good international citizen") (De Búrca 2010, p. 24).

This is not to say that all UN Security Council resolutions must, in their entirety, be unconditionally implemented in the EU legal order, without any possibility to verify the implementing EU legal acts as to their compatibility with EU primary law, including the EU fundamental rights. If some provisions of a resolution of the

UN Security Council leave the UN Members a broad leeway in their implementation and give the latter the power to decide on some substantive or procedural issues (e.g. the procedure of identification of persons and entities suspected of financing terrorism), then the UN Security Council consciously abandons its claim to supremacy in this area, with the effect that the implementing EU legal acts deciding on the aforementioned issues must be in full accordance with EU primary law, and can be scrutinised by the EU courts in that respect.

In turn, in the case of those parts of resolutions of the UN Security Council which are drafted in unconditional and strict terms and which do not confer any discretion on UN Members in the process of their implementation (e.g. the content of restrictive measures that consist in the freezing of assets of those suspected of financing terrorism), the EU legal acts implementing those very parts of UN Security Council resolutions cannot be tested against EU primary law, including EU fundamental rights, as the CJEU did, among others, in Al-Aqsa (due to the reasons presented above). At the same time, the aforementioned parts of UN Security Council resolutions can be verified by the EU courts as to their compatibility with human rights which are protected by the UN Charter. The GC (CFI) undertook such a scrutiny under the auspices of jus cogens, understood as a body of higher rules of public international law binding on all subjects of international law, including the bodies of the United Nations, and from which no derogation is possible. The GC assumed that such jus cogens also encompasses human rights, including the right to property, the right to be heard and the right to an effective judicial remedy (Yassin Abdullah Kadi 2005; Ahmed Ali Yusuf 2005). Whether jus cogens indeed includes such human rights is rather doubtful, since the concept of jus cogens should be understood rather narrowly, as encompassing some genuinely peremptory norms that are very few in number. But there is no doubt that the UN Security Council resolutions should be in full conformity not only with the few norms of jus cogens (Orakhelashvili 2006, pp. 423–488; de Wet 2004, pp. 187–191), but also with the human rights which are recognised by the UN Charter itself. There is an important textual argument supporting this view, namely the fact that Article 24(2) of the UN Charter requires the Security Council to act "in accordance with the Purposes and Principles of the United Nations," while Article 1(3) of the UN Charter recognises "promoting and encouraging respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language, or religion" as one of the purposes of the UN (Boyle and Chinkin 2007, p. 230; Akande 1997, pp. 316–317). Obviously, it is not entirely clear what specific human rights the UN Charter protects, and to what extent they can be lawfully restricted (Schott 2007, pp. 61–63, 72–76). Moreover, it is also not clear what courts, if any, are competent to judge on the compliance of UN Security Council resolutions with human rights that are protected by the UN Charter (Franck 1992; Alvarez 1996). It is submitted that since the UN Charter itself does not say that the International Court of Justice or any other court, international or domestic, has the power to do so, and does not say either that the UN Security Council will only and exclusively be the judge of its own powers, it thus follows that the competence to assess the compatibility of UN Security Council resolutions with jus cogens and with human rights protected by the UN Charter rests at least with

every international court before which such an issue, as a preliminary question, arises. Also the CJEU and the GC have such a competence, and they may use it when they review the lawfulness of the EU legal acts implementing such provisions of the UN Security Council resolutions which do not give the UN Member States the leeway in their implementation (with an effect that when such provisions of the UN Security Council resolution do not meet the standard of human rights protection under the UN Charter, then also the EU legal acts strictly implementing these provisions should be deemed unlawful). By checking whether these provisions of resolutions are in conformity with human rights protected by the UN Charter and by pointing out some deficiencies in that regard, the EU courts could further develop the standard of protection of human rights in the UN Charter, and could contribute to an international dialogue about this standard, developing that way a channel for the mutual influence of the EU and UN legal orders (De Búrca 2010, p. 24). Unfortunately, in Al-Aqsa the Court of Justice did not follow this path and—by defending the autonomy of the EU law—it lost another chance to become an active promoter of universal human rights in international community.

5.3 *The Protection of EU Fundamental Rights in Al-Aqsa: A Still Lower Standard?*

In Al-Aqsa the Court of Justice verified the EU legal acts implementing the UN Security Council Resolution 1373 (2001) as to their compatibility with two fundamental rights of the EU: right to property and obligation of the administration to give reasons for its decisions derived from the right to good administration. In the case of both rights, the CJEU apparently lowered the standard of protection of the affected parties, especially if we compare this with some of its previous judgments.

In its earlier judgments, touching upon the issue of compatibility of the measures freezing the assets of those suspected of financing terrorism with the EU right to property, the CJEU accepted that the EU fundamental right to property includes as its inherent element some applicable procedures that must afford the person concerned a reasonable opportunity of putting his case to the competent authorities when it comes to a restriction of a right to property (Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008). The obligatory presence of such procedural safeguards within the fundamental right to property has also been recognised by the European Court of Human Rights, and it is in line with the arguments of human rights scholars claiming that fundamental rights protecting individuals against encroachments of public authorities must include some procedural measures and guarantees available to interested parties; without such applicable procedures the object of the freedom of interested parties is then effectively removed (Alexy 1994, p. 220). Unfortunately, in Al-Aqsa the CJEU is completely silent about this inherent element of the EU right to property. In Al-Aqsa the Court of Justice confirms that the freezing measures in question do

not infringe the Al-Aqsa's fundamental right to property in a disproportionate manner, without even mentioning the aforementioned procedural safeguards and without checking whether these safeguards have been in this case observed (Stichting Al-Aqsa v Council of the European Union 2010, paras. 120–130).

Also the requirement to state reasons in the decisions issued by the Council of the EU—which is a correlate of individuals' right to good administration—has apparently been reduced by the CJEU in Al-Aqsa. First, from its previous judgments it can be inferred that the grounds of the Council decisions freezing the assets must include not only the individual and specific reasons indicating that the addressee was involved in the financing of terrorism, but also some evidence in that regard (Yassin Abdullah Kadi and Al Barakaat International Foundation v Council of the European Union 2008), especially if this evidence, due to the reasons of urgency, has not been notified at an earlier stage of the procedure. In contrast to that, in Al-Aqsa the Court of Justice, while considering the obligatory elements of the statement of reasons that the contested Council decision must include, does not mention the evidence any more (Stichting Al-Aqsa v Council of the European Union 2010, paras. 138–146 of Al-Aqsa).

Second, in Al-Aqsa the CJEU reduced the requirements as regards the statement of reasons that must be included within the subsequent Council decisions prejudging that a name of a given person or entity must still be maintained on a list of those suspected of financing terrorism. From Article 1(6) of Common Position 2001/931/CFSP on the application of specific measures to combat terrorism it follows that the subsequent Council decisions addressed to those persons or entities who or which already are on the list should indicate the main reasons why, after re-examination, the Council considers that there are still grounds for the freezing of that person's or entity's funds. The aforementioned provision implies that the Council must actively seek the actual evidence and reasons in that regard, and then it must communicate them to the interested party so as to substantiate that such grounds justifying his/her/its maintenance on the list actually still exist. In contrast to that, in Al-Aqsa the CJEU stated that in order to still keep a given person or entity on the list it is fully sufficient that there is nothing to suggest that since the inclusion of that person or entity on the list the factual situation or the assessment thereof by the national authorities had changed in relation to the party's involvement in the financing of terrorist activities. In other words, it is sufficient that the Council is not in possession of information which could have led it to consider that, after the first inclusion on the list, the interested party has suspended or ceased to contribute to the financing of terrorist activities (Stichting Al-Aqsa v Council of the European Union 2010, paras. 111–112 and 145). It means that after Al-Aqsa the Council needs not to actively seek evidence indicating that a person or entity who or which already is on the list is actually still involved in financing terrorism (which could be clearly desired, since the assets of that party are already frozen, and consequently the possibilities of that party to finance terrorism are already strongly diminished or even eliminated), because it is sufficient that the Council is not in possession of information indicating that the party concerned has suspended or ceased to contribute to the financing of terrorism. As a result, instead of seeking the

actual and positive evidence indicating that a person or entity already being on the list is still doing something wrong (i.e. is still financing terrorism), the Council may continue to keep that party on a list when it has no information that he/she/it has stopped doing something wrong (i.e. has stopped financing terrorism). There is no doubt that the latter is a much easier task for the Council. However, it strongly diminishes the practical importance of EU fundamental rights for the interested parties.

5.4 The Relations Between EU Actions and the Actions of Member States in the Field of Freezing the Assets

An important message of the CJEU's judgment in Al-Aqsa is that when the competent authorities at the national level quash or annul a decision constituting a 'substratum' in national law that justified in the past, to the required legal standard, the inclusion of a party on a list or the continued inclusion of the party on the list at issue, then it cannot per se mean that the party concerned is no longer involved in financing terrorism. The Council should then take due account of the reasons why the aforementioned decision of a competent national authority was repealed (Stichting Al-Aqsa v Council of the European Union 2010, paras. 78–91). If the decision taken previously at the national level is next repealed due to some purely formal reasons which have nothing to do with the change of the conduct of a party suspected or accused of financing terrorism, then there is no reason at all to remove that party from the list drawn up by the Council. It may even happen that a party was first punished by the competent national authority for financing terrorism, which prompted the Council to include that party on the list, but next the period of punishment has expired or a punished party has been pardoned, or the convicting sentence has been quashed by the court of the second instance and the case has been sent back to the court of the first instance for reconsideration. If in these latter instances the Council is not is possession of information indicating that the interested party has suspended or ceased to contribute to the financing of terrorist activities, then—following the logic of Al-Aqsa—it may still lawfully keep that party on the list.

As far as the allocation of competences in the discussed field between the EU and national levels is concerned, it is submitted that in the future the inclusion of persons or entities on the list of those suspected of financing terrorism should be based not only on the decisions taken at the national level, but also on some materials and evidence gathered by some EU institutions or EU services themselves. True, in Al-Aqsa the CJEU noted that the EU has no means to carry out its own investigations regarding the involvement of a given person in terrorist acts, and therefore it must rely in that regard on the actions of national authorities (Stichting Al-Aqsa v Council of the European Union 2010, para. 69). But contrary to that it seems that while exercising their regular task and competences, the relevant EU

institutions or services (e.g. European Anti-Fraud Office, some other EU agencies, European External Action Service) may receive or obtain some materials or evidence indicating that a given person or entity is actually involved in financing terrorism. Such materials or evidence could be sufficient to include the person or entity concerned on the list drawn up by the Council, provided that the latter would observe some requirements of due process with regard to the affected parties. To that end some changes in the relevant EU legislation are necessary.

It is submitted that de lege ferenda the EU should consider changes in the EU legislation in the discussed field that would result in making the actions of the EU and Member States aimed at combating the financing of terrorism more proactive. First of all, on the ground of Article 28(1) TEU the Council could adopt a decision which could provide for a general framework for the freezing of assets of those suspected of financing terrorism. Contrary to the current state of affairs, when such a decision (before 1 December 2009: common position) is adopted in individual instances to implement a specific UN Security Council resolution (Common Position 2002, 2004), the decision proposed here could be of a general application, activated in all instances when the EU or Member States want to freeze the assets of those suspected of financing terrorism, irrespective of whether this happens as a response to the UN Security Council resolution, or is rather effected on the EU's or Member States' own initiative. Such a decision should be accompanied by the Council regulation adopted pursuant to Article 215 TFEU. The aforementioned EU legal acts should, among others, specify the kinds of situations in which the EU Member States are free to introduce the freezing of assets autonomously, without awaiting the action of the whole EU (e.g. in the case of urgency). On the other hand, the Council of the EU should also be empowered to freeze the assets of those suspected of financing terrorism without the need to wait for the decision of a competent national authority (as argued above). Moreover, the EU legal acts advanced here should be more extensive, effective and reliable in protecting the fundamental rights of the affected parties than it is the case in the current practice of the Court of Justice, as evidenced by the Al-Aqsa ruling.

6 Conclusion

The targeted sanctions against individuals suspected of financing terrorism (as well as targeted sanctions against individuals suspected of other crimes against peace or humanity) constitute a much more preferable restrictive measure than sanctions directed against individual States. The former, as opposed to the latter, do not harm the whole society in a given country, and do not aggravate the problems of poor peoples or countries. However, their legal regime should not only be effective in combating undesired processes, but also sensitive to the fundamental rights of suspected parties, and thus adequately legitimised, especially when it originates from the UN Security Council resolutions. As the latter leave a lot to be desired in that regard, the EU courts should verify their compatibility (or, to be more precise,

their mandatory provisions) with human rights protected under the UN Charter, developing that way the standard of their protection. This postulate cannot be simply dismissed by the argument that this is not the EU's duty to instruct the institutions of other entities whether or not they adhere to their own legal standards, and to create a global order public. The UN legal regime is of great interest also for the EU, not least because it constitutes an important source of inspiration when interpreting the EU legal acts implementing UN Security Council resolutions, which the EU courts themselves admit (Stichting Al-Aqsa v Council of the European Union 2010, para. 126). Instead of strongly defending the autonomy of the EU law as having ostensibly nothing to do with international law, the EU courts could contribute to the global debate on fundamental human rights, especially since, in their case-law, the standard of protection offered by the EU fundamental rights is apparently lowered, as the judgment in Al-Aqsa shows. Also the current allocation of competences in the discussed field between the EU and national levels does not seem to be optimal, and it still constitutes a challenge for the EU legislator.

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The Impact of Pension Reforms on Public Finance in Poland

Katarzyna Owsiak

Abstract The aim of this article is to analyze the impact of pension reforms in Poland on the General Government deficit and debt. This issue is important from the point of view of demographic changes, and the pace of economic development, as well as the current and future state of public finances. These factors are crucial to the security of the pension system and the quality of life of future pensioners. On 19th June 2015, the Ecofin Council decided to retract applying the Excessive Deficit Procedure to Poland. As a result of the Excessive Deficit Procedure being imposed upon it, Poland took steps to reduce its deficit through structural reforms—extending the retirement age to 67 years of age and making the retirement age the same for men and women, and reforming the open pension funds (OFE). However, when assessing the effects of the recent pension reform of 2014, it is worth mentioning the previous reforms. The first pension reform, in place since 1999 has proven to be a serious burden to the state budget due to the high costs of the funded pension scheme (OFE), contributing to an increase in public debt. Therefore, in 2011, the government proposed further changes in the pension system, which turned out to be insufficient to improve the state of public finances. Analyzing the next OFE reform of 2014 it is worth noting that OFE transferred to the Social Insurance Institution (ZUS) assets with a market value of PLN 153.2 billion. This operation transformed Poland's visible public debt into the state's future liabilities towards its pensioners (so called hidden debt).

Keywords Pension reforms in Poland • Open pension funds • General government deficit and debt

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1 Introduction

Generally in the world, a pension system is regarded as an important element of social policy, and within it of social security. At the same time it is still the subject of intense scientific debate and controversy between different political parties which are holding office. The controversy relates to the state's role in the functioning of the modern market economy, but an even greater force in the controversy regarding the state's duties in the sphere of basic social functions. It especially concerns the responsibilities of the state in the process of providing social benefits. The scope of these benefits includes income security of old age citizens (pension schemes). Dilemmas in this area stem from two main reasons: the first is related to population aging, the second reason observed in recent decades is the tendency to commercialization and privatization of goods and social services, and in the context of these considerations, the privatization of pension systems. This trend has its roots in the neo-liberal ideological approach to social issues, according to which—(expressed in extreme terms)—the material (financial) security of people in their old age should be their own private matter, not the duty of the state. Recognizing the growing burden of public funds expenditure on pensions related to the prolonged life of people, we also have to add that the state's complete distancing from this important sphere of society would mean the negation of civilization's attainments, among which undoubtedly is social insurance including public pension systems.

The essence of the problem is that there should be a search for solutions, through which the state is less weighed down by pension benefits, but at the same time, the state becomes involved in the development of rational financial and legal solutions where a part of the retirement security will comes from private income accumulated during people's working lives. The fundamental issue is, however, the scope and pace of changes in the pension systems, as well as the creation of specific solutions (institutions, instruments) in pension system models. Because of the high importance of retirement security, we can even intuitively say that changes that are too radical are dangerous and can, contrary to assumptions, prove not only ineffective, but also expensive for the state (public finance), and indeed for the taxpayer. Unfortunately, in my opinion, this applies to Poland as described and analyzed in this article.

2 Conditions Leading Up the Reforms in Poland

Making changes in the pension system may be easier in countries with a well-established capitalist system and market economy, than in countries that went through a shock change of their economic system (political regime). This is due to the obvious fact that in the prior system (socialist), the state, by the very nature of the system, bore the responsibility for all the social benefits of citizens. Hence the new circumstances, and the associated, actions and functions of the state, requires

much more caution when making changes to social security. Also, we have to take into account the generally slow rate of change in the mindset of the citizens, including the demands made on the state, common under the previous system. We cannot ignore the fact that in the time of transition and especially in the initial stage, a large part of the population was negative or at least pessimistic towards the transformation (privatization) and restructuring of the economy and other areas of social life which were introduced too forcefully and lacked transparency (Blanchard 1997). Also, the privatization of the Polish pension system was made relatively early in 1999.

However the transformation of the political and economic system requires a new perspective on the scope and methods of the implementation of social benefits, because the economic and social nature of the relationship between the state and its citizen is changing. These changes may be based on partial privatization and commercialization of social benefits. However, we have to keep in mind that regardless of whether it is a country with a well-established democratic system and a market economy, or one that has transformed its economic and political system, each country is unique because of its cultural, historical and religious traditions. The evidence of this is the diversity of pension systems. Significantly, rich Western countries have chosen not to privatize pension systems to the extent that it has been done by some of the countries that transformed their political and economic systems, including Poland. In those changes, the key issue is the answer to the question of whether the reforming of the pension system is based on changes to its organization, or mainly due to a change in the relationship between paid premiums and received benefits. This is the primary challenge in reforming the pension system, although the modelling of the organizational structure of the social security system may be important for the central objectives of its reforms.

Not wanting to overrate the practical significance of the noble declaration of the state in relation to its obligations towards the citizens contained in the Basic Law or its equivalent, a useful starting point for the analysis of the pension system and the ongoing changes to it in Poland are the provisions of the Polish Constitution, adopted in 1997. The Constitution does not regulate the details of the scope and means of granting social security, but refers to the provisions of other laws, which regulate, among others, the social security and pension systems (The Constitution of The Republic of Poland 1997).

Regardless of the state's ceremonial declarations concerning the citizens, issues of the funding and optimization of the pension and retirement system are gaining importance due to some civilization challenges according to the European Commission (2012a) like the process of population ageing and the growing activity rate among older people. Moreover important are advances in medicine that prolong human life, demographic problems due to changes in the family model (falling birth rate, increase in single-person households).

European countries which began the transformation of their political system after 1990 experienced the problem of increased spending on social security. In Poland the structural changes, including changes in the nature of ownership, resulted in a drastic increase in unemployment used data from the Central Statistical

Office of Poland (2017), in 1990, the registered unemployment rate amounted to 6.5%; in 1995—14.9%; in 2000—15.1% and in 2005—17.6%. The result was increased pressure on social benefits spendings. In order to limit it, a number of devices were applied, such as early retirement, bridging pensions, unemployment benefits, social assistance benefits, etc. This resulted in an increase in spending related to social security, which was one of the main causes of high budget deficits.

Rising public funds spending on pensions took on a new dimension (meaning) with Poland's accession to the European Union (1st May 2004). It meant a commitment to comply with the convergence criteria laid down by the Maastricht Treaty of 1992. These include two fiscal criteria, including the budget deficit criterion—a maximum of 3% in relation to GDP. Poland at the time of its accession to the EU did not meet this criterion. Therefore, relatively quickly, since 5th July 2005 the Excessive Deficit Procedure (EDP) was imposed on Poland. As a result Poland sought opportunities to reduce the budget deficit. After a thorough reform of the pension system in 1999 and the creation of the fully funded second pillar (OFE), an analysis of its effectiveness led to a surprising conclusion. It turned out that the reform aimed at reducing the burden on public finances, paradoxically led to a dramatic drop in public finances. This raises the question of the sense of such pension reforms (Barr and Diamond 2009). At the same time the increasing operating costs of OFE had to persuade the government to adopt a constructive approach to the functioning of the pension system and to make changes, which indeed happened and will be discussed later in this article.

3 Radical Pension System Reform of 1999

In Poland, the first efforts to change the PAYG (pay-as-you-go) pension system and partly replace it with a funded pension scheme were already proposed in 1991, but they were not part of the official government program. In the mid-90s, the pension system was so overloaded, that the average replacement rate (as a percentage of pre-retirement income) stood at 60–75% between 1990 and 1993. Moreover, between 1990 and 1994 total pension expenditures increased from 8.6% to 15.5% of the GDP. Farmer pensions formally financed by the Agricultural Social Insurance Fund (KRUS), were in fact 95% financed by the state budget (taxpayers). Poland also struggled with the problem of inherited special pension privileges, changes to indexation (Orenstein 2000).

The demographic situation also started to deteriorate. As a result, Poland was affected by a retirement crisis which was part pf a broader public finance crisis. In 1998 the hidden pension debt was 220% of the GDP. The need for social security reform was noticed not only by the government, but also international financial institutions, i.e. the World Bank (1994), which proposed a three-pillar pension system. While keeping these facts in mind, we cannot ignore other specific conditions and circumstances that existed during the period of the intended pension system reforms. Especially, the continued strong pressure on public spending as a

result of the gigantic scale of the ownership and structural transformations to Poland's economy. The concept of pension reform as part of a package of other reforms was also questionable, because each reform was associated with new costs and additional pressure on public resources (spending).

The pension reform was introduced in 1999 along with reforms to the healthcare, administrative and education systems. It is also worth noting that pressure groups had an interest in the establishment of a funded pension scheme in Poland, and the creation of Pension Societies (PTE) as the companies that manage pension funds, which was accompanied by extraordinary interest from foreign institutions.

By the end of 1998, the repatriation system with its defined benefits was in force based on a contract, in which the pension came entirely from the Social Insurance Fund (In Poland, the tasks of the social security are realized by the Social Insurance Institution (ZUS), which is administered by the Social Insurance Fund (FUS). In the case of farmers' insurance, it is the Agricultural Social Insurance Fund). According to the information presented by Ministry of Family, Labor and Social Policy (2014a) the defined-benefit pension plan meant that the pension amount was dependent on several factors: earnings from selected years of working activity, the insurance period and the average wage in Poland. Moreover, this system gave many opportunities for early retirement. This meant, that despite the obligatory retirement age of 60 for women and 65 for men, the effective retirement age was about 5 years younger.

A radical reform of the pension scheme took place in 1999 and was based on the Organization and Functioning of Pension Funds Act 1997, creating a PAYG-funded scheme based on three pillars. This system replaced defined benefits with defined contributions. According to the World Bank (2003) the new pension system was the result of 5–6 year government negotiations, between the government and stakeholders as well as social campaigns. However, the way in which the social campaign was conducted raises many questions. It is thought that use was made of the so-called obfuscation strategy (Müller 2003), which consists of hiding the costs and risks of the reform due to the high sensitivity of the public in this matter.

The main objectives of the reform were: firstly, to encourage a longer stay in the labor market, since the postponement of the decision to retire allows for a significant increase in benefits through a defined contribution formula; secondly, increasing the responsibility of the insured for their income after retirement. It is worth emphasizing the expected educational value of the reform, which was aimed at changing people's attitude towards pension contributions—so they are not treated as a tax but a form of saving for future retirement.

The obligatory and common pension insurance in the first pillar is based on the PAYG system, where the pension comes from workers' current contributions, which are collected in individual accounts administered by the Social Insurance Institution (ZUS). Any shortage of funds collected from premiums in order to pay pensions is covered with a grant from the state budget. In this pillar the pension amount is closely linked with the appropriately indexed sum of the contributions paid in by each insured person during the insurance period and depends when they retire.

Introduced as a part of the 1999 reform, the second private pillar already has a fund structure and its collected and invested contributions are accumulated in individual insurance accounts. The essential feature of this system was its compulsory participation, which gave rise to serious doubts as to its nature—whether it is a private or public system. Controversy arose between the Polish government and the European Commission regarding whether the Open Pension Funds (OFE) were included in the public finance sector or remained outside, because it influenced the size of the balance (deficit) of the public finance sector, which is the basis for the assessment of the fiscal convergence of a country. Due to the fact that the European Commission has consistently rejected the position of the Polish government, it can be assumed that the Commission's position was one of the important causes for the changes in the pension system in 2014. The compulsory character of participation in the second pillar existed until 2014, after which employees could choose between the Social Insurance Institution (ZUS) and Open Pension Funds (OFE).

The Open Pension Funds are managed by private institutions called Pension Societies (PTE). In 2002 according to the Polish Financial Supervision Authority (2002) data there were 16 open pension funds, but their number has changed and since 2014 there are 12 (National Bank of Poland 2014, p. 166). The creation of OFE managed by PTE was meant to bring a new standard of quality to the development of the capital market in Poland and the Warsaw Stock Exchange in Warsaw, as the collected premiums (savings) of future pensioners were to be invested in capital market instruments. The state calculated, for each particular OFE, the rate of return on invested OFE savings, averaged for all pension funds for a period of 36 months. If one of the active OFE did not achieve the average profitability, the difference had to be paid in by the Pension Fund using its own capital. This solution was beneficial for future retirees, as it necessitated achieving profitability of investments for the entire pension funds sector. In practice, however, this solution was actually unfavorable for those insured in OFE. The PTEs fearing lower profitability of their OFE, invested in safe instruments—mainly in government bonds. This portfolio management strategy was too conservative and was yet, another practical reason for departing from the OFE in 2014 as the prevalent solution in the pension system. The behavior of the PTEs could have caused irritation the government since the loss of contributions in ZUS increased the state budget deficit. To finance this deficit, the government issued bonds, which were bought by OFE. These practices meant creating additional costs for the state budget, and the expected pensions could not be high because the savings was invested in low yielding instruments.

The consequence of the introduced pension reform was a fundamental change in the status of the insurance premium, because 7.3% of the pension insurance contributions were transferred to an open pension fund appointed by the insured. Another change was the introduction of an earnings ceiling up to, which contributions are paid to the pension insurance scheme (an amount not greater than thirty times the average monthly wage). The result of this restriction is a loss of contributions transferred to the Social Insurance Fund in the amount of 2.8 billion PLN in 2000 and 6.8 billion PLN in 2015—according to the estimates of the Social

Insurance Institution and presented by the Ministry of Labor and Social Policy and Ministry of Finance (2013, p. 11).

It should be added that, the reform did not include all citizens. Belonging to the pillar depended on age. The reform did not apply to people born before 1st January 1949, while those born between 1st January 1949 and 31st December 1968 had the option to choose pillar I or both pillar I and II. All people born after 31st December 1968 had to participate in the new system. The third pillar is also a fund-based pension scheme and is managed by private institutions. However, it is voluntary and is intended to complement the common base pillars as well as collect the contributions of employees paid by employers within the framework of the Employee Pension Program (PPE), which will be used for pension payments after retirement age is reached or if a person is entitled to receive payments prior to reaching retirement age. The little interest shown of in this pillar by the employers meant that from 1st September 2004 the offer of additional insurance was extended to Individual Retirement Accounts (IKE), and from 1st January 2012 to Personal Pension Security Accounts (IKZE). It is worth noting that the three pillar pension system is supervised by the Polish Financial Supervision Authority.

One of the elements of the pension reform of 1999 was the creation of the Demographic Reserve Fund (FRD), which is organized and managed by the Social Insurance Institution. This fund was established in order to create financial reserves. In this way, the creators of the reform secured the stability of the financial system in relation to the reform and the process of population aging. In the years 2002–2008, the fund accumulated resources which were to be used to pay pensions in the event of a shortage of funds in the Social Insurance Fund (FUS) due to demographic reasons.

4 Further Modifications of the Pension System

The creators of the reform emphasized that in order to launch it, the problem of financing the increased deficit of the consolidated public sector must be dealt with first. In the following years, corrections to the functioning of pension system were performed, which was a response to the burden on public finances and the financial crisis. The effects of these actions had different consequences, varying from the immediate to long-term. The types of changes can be put into three categories:

1. changes resulting in a reduction of pension expenses,
2. changes resulting in an increase in pension expenses,
3. changes not affecting public finances.

For the first group of changes associated with reducing, pressure on pension spending, the most important are

– raising the retirement age, although this was introduced quite late in 2012;
– increasing disability insurance contributions paid by employers by two percentage points, i.e. 8% of the contribution assessment basis in 2012, whereby it is

worth noting that this decision was the result of prior reductions to the social pension contribution in 2007. The case of the changes in the pension contribution is an example of the clash of different concepts on the funding of pensions. Although the reduction in contributions, decreased the burden of labor costs on employers, it increased the deficit of the Social Insurance Fund, which in turn forced the state budget to make additional subsidies to ZUS (FUS);
– the introduction of the so-called bridging pensions for people working in hazardous working conditions (2009).

The changes, that increased pressure on public spending should include:

– extension of the possibility of acquiring the right to an early retirement by the end of 2008;
– the introduction of mining pensions (2005) for people who can retire early under certain conditions (years of worked underground). This solution is one of the measures of state policy in the restructuring of the mining sector, the closure of unprofitable mines and reducing coal mining;
– the introduction of the so-called bridging pensions for people who work in hazardous and dangerous conditions (2009);
– the introduction of teacher compensation benefits for people who decide to take early retirement (2009); this solution was introduced as a result of demographic decline and a decreasing number of students, classes and schools.

A solution that did not impact public finances is the exclusion of uniformed services from the public pension system (2003). This move is important for the financial situation of the FUS (ZUS), which does not deal with uniformed services pensions, but the expenses are borne by the state budget and therefore constitute a burden on the public finances (Ministry of Labor and Social Policy and Ministry of Finance 2013, p. 14). Among other important changes, we have to mention the introduction of the restrictions on the amount of fees charged by the PTE to new members. In the beginning of the reform (1999) according to the information presented by Ministry of Labor and Social Policy (2014b) the amount of these fees in some of the OFE reached up to 10% of the contributions, which should be regarded as a reprehensible practice by the OFE. It puts the government, which for years tolerated such practices, in an unfavorable light. Restrictions were only implemented in 2004 (7%), and then again in 2010 (3.5%). This change reduced the PTE income (profits), while it increased the funds of the pensioners in the OFE accounts. In 2014, the reformed OFE reduced the fee further to 1.75%. Quoting these figures one cannot escape the question of it was done so late, especially that the PTE also charged for asset management, depending on its value.

Since 2005, Poland has not meet the criterion on the convergence of the level of acceptable deficit of 3% of the GDP. Because of this excess, the Excessive Deficit Procedure was imposed twice, in 2005 and 2009, which initiated a number of public finances reforms. There was a change to legislation—a new law on public finance was passed in 2009, in which prudential norms associated with the debt-to-GDP ratio were tightened. Moreover, structural reforms were carried out, which

Table 1 Average pensions in the period of 2000–2015

Details	2000	2005	2010	2012	2013	2014	2015
Average monthly pension (in PLN)	1000	1306	1755	1938	2042	2117	2097
Ratio of average monthly pension to gross average monthly salary (%)	63.7	66.6	62.2	62.9	64.0	64.0	61.5

Source: Social Insurance Institution (2005, 2015)
Note: To calculate the ratio since 1999, the basis (denominator), is the gross average monthly salary compulsory social security contributions (retirement, pension and health) paid by an insured employee

Table 2 Pensions from OFE paid during the period 1.01.2009–31.12.2013

Company name	Average monthly pension (in PLN)	Company name	Average monthly pension (in PLN)
AEGON OFE	61.20	Nordea OFE	61.11
Allianz Polska OFE	93.12	Pekao OFE	68.62
Aviva OFE Aviva BZ WBK	99.31	PKO BP Bankowy OFE	66.98
AXA OFE	67.91	OFE Pocztylion	57.41
Generali OFE	75.96	OFE POLSAT	38.24
ING OFE	108.04	OFE PZU "Złota Jesień"	68.71
MetLife OFE (dawne Amplico)	84.84	OFE WARTA	59.36
Total 81.40			

Source: Polish Financial Supervision Authority (2014). *Annual bulletin. OFE's market 2014*. Warsaw: Polish Financial Supervision Authority

contributed to fiscal consolidation, the process was started for the extension and equalization of retirement age for men and women to 67 years of age (67 for men will be reached in 2020, and for women in 2040) and the reform of open pension funds was implemented. The equalization of the retirement age for men and women was also recommended by the International Monetary Fund (2011). 2009 saw the first payment of pensions from the second pillar. As it turned out, they were alarmingly low (Tables 1 and 2).

The first changes in the way the OFE operated were undertaken in 2011. Until then, the contributions paid to OFE amounted to 7.3% of the base. Since 1st May 2011, the premium transferred to private pension funds was reduced to 2.3%, and the remainder in the amount of 5% was transferred to a newly created sub-account of the insured employee in ZUS. Due to strong resistance from the OFE lobby, the legislature gave in and adopted a solution that over the next few years it will increase the amount of contributions transferred to OFE by 0.5% until it ultimately reaches 3.5%. This solution explains why in 2013 2.8% was transferred to OFE and 4.5% to the ZUS sub-account. From 1st May 2011, charges for changing fund were also abolished and from 2012 a ban on canvassing was introduced.

By the end of 2013 the government came to the conclusion that the previous changes in the OFE are insufficient. Therefore, much more radical changes were made (Amending certain acts in connection with the determination of the principles of pension payments from the funds accumulated in open pension funds Act 2013). These changes were not only of a model nature. A return was made to a model in principally based on solidarity as a basic element of the pension system. In 2014, 51.5% the value of each member's personal OFE account (i.e. liquidation of the OFE T- bond part), were redeemed and transferred to their ZUS sub-account. OFE transferred to ZUS assets with the market value of 153.2 billion PLN. These were mainly government bonds found in OFE investment portfolios. This operation transformed Poland's explicit public debt into future state obligations towards pensioners (i.e. hidden debt). The OFE has kept 48.5% of the value of assets before redemption, which will be invested. Also, since 2014 OFE can no longer invest in government bonds or other debt instruments guaranteed by the State Treasury. Also, a minimum level of investment in shares was set, which for 2016 was 35%. Moreover, a choice was introduced of whether to transfer the 2.92% pension contributions to OFE or ZUS, which caused 80% of Poles to choose ZUS. Once again, the fees charged by PTE (OFE managing institutions) were lowered, setting the maximum level of a contribution fee at 1.75%. Because from 2014 the whole pension will be paid by ZUS, the so-called "safety slider" was introduced, which stipulates that 10 years before statutory retirement age, the funds accumulated in the personal account of an OFE member will be gradually transferred each month to ZUS and recorded in the individual sub-account of the insured. One of the important elements was also the reduction of the fees charged by ZUS for the transfer of contributions to OFE from 0.8% to 0.4%.

5 The State of Public Finances in Poland in the Years 2000–2015

The pension reform of 1999, was aimed at, amongst others, the long-term stabilization of public finances. Subsequent modifications to the pension system were aimed at increasing its efficiency. The data contained in the following tables does not show that this goal has been reached. As mentioned previously, in the beginning of the transformation, Poland was in debt, which in 1990 reached over 90% of the GDP. As a result of the redemption of one third of the debt by foreign creditors, public debt in the 90s decreased and in 2000–2001 amounted to well below the 40% of the GDP. With the introduction of the four major reforms, as well as due to the influence of other factors (business cycle) the situation began to change for the worse (Table 3).

According to the data presented in Table 3, Poland's public finances are characterized by persistent budget deficits. The only exception is 2007, when the economic growth rate of about 7% managed to achieve a balance in public finances.

Table 3 Deficit and public debt in Poland as a percentage of GDP between 2000 and 2015

Year	*General government* Balance	*General government* Debt	Year	*General government* Balance	*General government* Debt
2000	−2.9	37.7	2008	−1.6	46.9
2001	−4.9	38.8	2009	−3.8	49.8
2002	−5.7	43.6	2010	−6.0	52.8
2003	−5.4	48.4	2011	−3.7	53.5
2004	−4.5	46.7	2012	−2.4	52.7
2005	−3.0	47.5	2013	−3.0	53.9
2006	−2.1	47.8	2014	−2.3	48.1
2007	0.1	44.8	2015	−2.5	49.0

Source: Central Statistical Office of Poland (2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014a, b, 2015a, b, 2016). Statistical Yearbook of the Republic of Poland. Warsaw: Central Statistical Office of Poland. Council of Ministers, Budget fulfilment report for (2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015). Warsaw: Council of Ministers

Another important feature of public finances has been, since 2002, the trend of a growing debt-to-GDP ratio. In 2013 it approached 55% of the GDP, which is an important criterion for the safety of public finance as specified by the prudential norms. According to these statutory provisions (Public Finance Act 2009) exceeding the limit of 55% of the debt-to-GDP ratio would lead to considerable difficulties in conducting the fiscal and social policy of the state, because after exceeding this limit, the government cannot draw up a draft of the state budget that contains a deficit. This threat, underlines the government's decision of radical pension reform, which came into force in 2014. As a result of the changes introduced in 2014 there was a reduction of public debt in absolute terms (a decrease of 882 billion PLN in 2013 to 827 billion PLN in 2014), as well as in relative terms in relation to the GDP (Table 3). This is a result of the redemption of the government bonds transferred from OFE to ZUS within the framework of the pension system reform. As previously noted, in 2014 OFE transferred to ZUS assets with a market value of 153.2 billion PLN, which reshaped Poland's explicit public debt into the state's future obligations towards pensioners (i.e. the hidden debt). As already mentioned, because of the GDP deficit excess of 3%, Poland was put under the Excessive Deficit Procedure in 2009. Actions undertaken by the Polish government, including the pension reforms in 2011 and 2014, as well as related measures on both the revenue side and the expenditure side of the state budget led to the lifting of this procedure from Poland in 2015.

On the basis of the data in Table 4 it can be shown that the pension reform, introduced in 1999, put an excessive burden on the state budget. In connection with the transfer of contributions from FUS to OFE, as previously mentioned, FUS created a shortage of funds financed from the state budget. Transfers from the state budget to FUS systematically magnified the state's borrowing needs. Solutions adopted in 2014 are aimed at reducing the borrowing needs of the state budget and

Table 4 The impact of pension reform on deficit and public debt in the years 2000–2015

Year	Transfers to ZUS		The cost of servicing the additional debt		Impact on the reform on *General government* deficit		Impact of the reform on public debt	
	bn PLN	% GDP	bn PLN	% GDP	bn PLN	% GDP	bn PLN	% GDP
2000	7.6	1.0	0.8	0.1	8.4	1.1	12.0	1.6
2001	8.7	1.1	1.8	0.2	10.5	1.3	24.1	3.1
2002	9.5	1.2	3.0	0.4	12.5	1.5	37.7	4.7
2003	9.9	1.2	3.8	0.5	13.7	1.6	52.0	6.2
2004	10.6	1.1	4.3	0.5	14.9	1.6	68.3	7.4
2005	12.6	1.3	5.1	0.5	17.7	1.8	87.1	8.9
2006	14.9	1.4	6.4	0.6	21.3	2.0	109.2	10.3
2007	16.2	1.4	7.0	0.6	23.2	2.0	134.0	11.4
2008	19.9	1.6	7.7	0.6	27.6	2.2	163.7	12.8
2009	21.1	1.6	10.0	0.7	31.1	2.3	196.5	14.6
2010	22.3	1.6	11.4	0.8	33.8	2.4	232.9	16.4
2011	15.4	1.0	12.4	0.8	27.8	1.8	260.6	17.1
2012	8.2	0.5	14.4	0.9	22.6	1.4	279.4	17.5
2013	10.5	0.6	16.6	1.0	27.1	1.6	292.1	17.9
2014	8.3	0.4	10.3	0.6	18.6	1.0	160.8	9.3
2015	3.1	0.1	3.0	0.1	6.1	0.2	166.9	9.3

Source: Ministry of Finance (2013). The Public Finance Sector Debt Management Strategy in the years 2014–2017. Warsaw: Ministry of Finance (2015). The Public Finance Sector Debt Management Strategy in the years 2016–2019. Warsaw: Ministry of Finance

they will improve the financial condition of the FUS due to the fact that higher contributions are paid into the fund.

We have to state the fact that the pension reform of 2014 only partially and temporarily solves the financing problems of the pension system. This is evidenced by the fact that even after these changes, the share of contributions to the state pension is significant, as seen from the data in Table 4 for the years 2014–2015. Additionally, imbalances still exist in the public pension system—such as the significant debt to ZUS that reached about 40 billion PLN at the end of 2015. After a temporary decline in 2014, in 2015 public debt again increased to 877 billion PLN, and the Budget Act 2016 (2015, p. 198) is expected to further increase it to 925 billion PLN. This means that the problem of imbalances in the pension system still requires urgency and there are further proposals to solve it.

6 Demographic Processes as a Challenge to the Pension System

Demographic processes are affected by many factors. According to the prognosis by the Central Statistical Office of Poland (2014a, b), the number of people in Poland will decrease, from 38.4 million in 2015 to 34.0 million in 2050. This

decrease will be caused by many factors, including a drop in the number of births by 30% in 2050.

Population aging is a widespread and possibly irreversible process resulting from both a decrease in the fertility rate and increased life expectancy. This process will not bypass Poland; despite the fact that now its population consists of mainly young people. According to Eurostat data, the median age of the Polish population in 2012 was 38.7 years, while that of the European Union member countries altogether reached 41.9 years. In 2050, a lifespan extension of 9 years for men and 6 years for women will mean that in the cities men will live to the age of 82.5, and women to the age of 87.5. While in rural areas it will be 81.6 and 87.4 years respectively. It is estimated that from 2035 the number of people aged of 65 and over will also increase, and in 2030 the proportion of this age group to the total population will reach 22.6% and 29.7% in 2050. Generally, the cause of this condition is the high birth rates in the second half of the twentieth century.

The demographic burden factor that assesses the severity of population aging (the ratio of post-working age population to working age population) in 2014 was 20.9, which meant that for 1000 people aged 15–64 there were 209 people aged 65 and more. For 2050, this ratio is predicted to reach 51.9, thus for the 1000 people aged 15–64 up to 519 people will be aged 65 or over (Russell 2016).

The analysis of the current trends presents by Central Statistical Office of Poland (2015a, b) seems to confirm these predictions. The pre-working age population (0–17 years) in 1990 amounted to 11.0 million, and in 2014 to 6.9 million people. The working age population (men 18–64 years, women 18–60 years) was 22.1 million in 1990, and 24.2 million people in 2014. The growth of the working age population was accompanied by an increase in the number of people who reached retirement age (men 65 and women 60 and older). In 1990, this number was 4.9 million, and in 2014, 7.3 million (see Table 5).

From the point of view of the anticipated demographic changes, it is important to ask the question about the security of future pensions. The increased life expectancy is certainly a positive result of the progress of civilization, however, with a low replacement rate, it could mean the lowering of pensions. Therefore, we should consider to what level the working age should be raised, and this entails the creation of programs encouraging the employment of people over 50 years of age. An alternative measure should be the increased interest in voluntary forms of savings, which is in turn related to issues such as: the level of income; the level of education of society; the level of financial awareness; tax incentives, etc.

Table 5 Polish post-working age population

Years	Population (in thousands)	Years	Population (in thousands)
1990	4903	2005	5888
1995	5317	2010	6455
2000	5660	2014	7305

Source: Central Statistical Office of Poland (1991, 1996, 2001, 2006, 2011, 2015a, b). Statistical Yearbook of the Republic of Poland. Warsaw: Central Statistical Office of Poland.

With the solutions adopted in 2014, in order to make the pension payments in a timely manner FUS must be continuously subsidized from the state budget, but if the reforms are not carried out, the costs of the system would be even higher for the state budget. It is estimated that since 1999 ZUS has been subsidized with funds from the State Budget to the value of 500 billion PLN. Another threat is the growth of hidden debt, which exists in the form of the balance of the individual sub-accounts in ZUS. Defenders of OFE believe that the funded pillar will be more resistant to demographic changes than PAYG.

7 Conclusions

Reform to the pension system in Poland arouses many emotions in different environments and political groups especially because the government plans further changes. Bearing in mind that the article has raised some aspects related to the functioning of the pension system, we should pay attention to some important facts. Poland started the transformation of the political system in the last decade of the twentieth century. It is, therefore, a country that is building a new economic system in a relatively short time, namely just over 25 years. The effects of these changes were: rapid slump in production in the early 90s, the emergence of hyperinflation, rising unemployment, low corporate profitability, decrease in state budget revenues, and consequently the deepening of budgetary imbalances. As a result of shock therapy economics, Poland experienced a particularly acute crisis in her of public finances in 1991–1992. Gradual recovery of the economy and the recovery from the financial crisis began to be noticeable in the years 1995–2007, when the annual growth rate hovered around 7% of GDP. The subsequent years were also relatively good for the economy, although the economy of Poland lost pace, and the growth of the late 90s fell to about 4%. The debt-to-GDP ratio began to shape up favorably as of 1/3 of the Polish foreign debt was written off. These relatively favorable trends in the economy and public finances were halted at the turn of the century. The economy fell into recession, which can never be ruled out in a market economy. The debt-to-GDP ratio was low, but with the beginning of the first decade of the twenty-first century, we had to reckon with the serious burden on the state budget related to the repayment of the remaining part of the state's foreign debt which had been granted a moratorium by creditors grouped in the Paris Club and London Club. These obvious facts, namely the possibility of an economic downturn (in the years 2001–2002 economic growth was around 1%, and the unemployment rate was close to 20%), and the need to repay the huge amount of debt should have been foreseen when making such radical reforms in the pension system, to which the government decided on in 1999. On top of that, the pension reform was introduced as a package, accompanied by the three other big social reforms to health, education and administration. These reforms were underdeveloped in terms of both concept and finances. The biggest drawback of the pension reform was the lack of a coherent plan for financing the costs of the reform during the transitional period. Certain

expectations were associated with privatization revenues as a source financing of the loss of contributions assigned to OFE. It turned out, however, that these revenues only slightly covered the financial needs of the state associated with the financing of the effects of the pension reform. Another hypothetical source of financing the costs of the reform was supposed to be the income related to the discovery and exploitation of the allegedly vast resources of shale gas. These expectations did not become reality, and the value of the assets of the State Treasury began to shrink rapidly. Over the years, the pension system functioning in Poland, based on the fully-funded pillar, caused increasing financial difficulties for the state. The condition of Poland's economy and public finances after a relatively short period of improvement (2005–2007), fell into a period of further collapse, which was caused by the global financial crisis that affected the European Union. The financial crisis sharply revealed the difficulties that piled up over the years, with the financing of the pension system to such a large extent by the fully-funded pillar (Ministry of Labor and Social Policy and Ministry of Finance 2013).

Also undeniable is the fact that the pension reform of 1999 was carried out under the influence of neoliberal ideas and experiences observed Chile and with the active involvement (lobbying) of international financial institutions to establish a funded scheme in Poland (Oręziak 2014). Stressing the superiority of the funded scheme over the PAYG, the Poles were promised high pensions in the future. However, the European Commission report (2012b) suggests that in the years 2010–2060 the replacement rate (Gross Average Replacement Rate) which is the ratio of the first average pension to the average wage in the economy, will drop by about 30%. This is due to the loss of value of the first average pension in relation to the average wage.

We also need to emphasize that one of the pension reform's main problems was the lack of preparation of appropriate computer information systems to manage the accounts. Analyzing the reforms of the pension system from 1999 to 2014, we should also pay attention to these issues, which continue to cause greatest controversy. Firstly, from the state's financial condition point of view, the increase in the deficit of the FUS and public debt was caused by the outflow of contributions to the OFE as a result of the creation of the second pillar in 1999. Secondly, the gradual reduction in transferred contributions to OFE (by splitting it into two parts—one going to OFE and the other to ZUS) is seen as an "assassination" on the private finance (savings) of a part of the public and is aimed only at helping to rescue the public finance sector. Thirdly, the OFE are criticized as showing too little interest in purchasing shares. OFE's investment policy can be described as cautious belaying, because until the introduction of a statutory ban in 2014, it was dominated by investing the funds in State Treasury bonds. At the same time this policy was permitted by the government. Fourthly, there was a lack of any policy to encourage the development of the third pillar. It is believed that the OFE were privileged entities. Fifthly, the fact of compulsory membership in the OFE was especially criticized. The principle of choice between OFE and ZUS was not introduced until 2014. Sixthly, until 2014, the tax cuts were not a sufficient incentive to accumulate savings through the Individual Pension Insurance Accounts (IKZE).

An analysis of the statistics shows that pension reforms impacted negatively on the level of general government deficit and public debt. It is important, however, to determine the impact in terms of public debt (explicit debt)—the hidden public debt (implicit debt). We should positively assess the creation of the Demographic Reserve Fund (FRD), powered in part by the income from privatization. As a result of the creation of the OFE and the consequent losses, this fund regularly donated money to the FUS since 2009. But this practice did not take place in 2015 and 2016.

Given the aggressive advertising campaign conducted by the Pension Societies on behalf of the OFE and the disappointment caused by the dramatically low first pensions, paid by the OFE after the reforms outlook for future pensioners in Poland is really uncertain, especially considering the unclear announcements of further reforms to the pension system. Not only do the Poles exhibit little understanding of economic and financial matters after a long period of living in another system but to make matters worse, additional confusion is caused by the noise made by the of supporters and opponents of the various pension systems.

Therefore, it is also important to refer to the perception of the changes in Polish society from the viewpoint of economic awareness. It is worth mentioning that awareness related to pension issues emerged in Poland at the turn of the twenty-first century. The transition from a socialist economy to a capitalist one also meant a change in the Poles' way of thinking. Thus, one of the most important challenges for public institutions is to raise awareness of economics through education. A recent survey made by Czapiński and Góra (2016) of a group of 1006, economically active people aged 18–67 showed that knowledge of financial issues related to pensions is mainly derived from newspapers and advertisements, which means that there is no educational activity on the part of public institutions. This should be considered as a serious shortcoming. Besides, 40% of working Poles do not think about retirement and savings are the most popular form of bank deposits. The changes introduced to the pension system in Poland in 2014 caused a big stir in the perception of pension systems and undermined confidence in the ZUS and OFE. Moreover, about 50% of the respondents felt that the best pension system is a mixed one.

Currently, Poland is working on lowering the retirement age. There are also proposals for a Capital Creation Programme (PBK), under which the functioning of the OFE will undergo a major refurbishment. According to the plan, which would come into force on the 1st January 2018, the PTEs managing OFE wolud be transformed into Investment Fund Companies (TFI) and OFE into investment funds holding Polish shares. Money from OFE will would be transferred to the third pillar and the Demographic Reserve Fund (FDR). 75% of OFE assets to the value of about 103 billion PLN in the form of Polish shares would be transferred to IKZ (third pillar) of all the 16.5 million OFE participants. The FDR would receive 35 billion PLN, which would be invested in bonds or held in cash. Part of the FDR could be used to finance the costs of tax incentives for the development of the third pillar. The focus of this program is the development of the third pillar through the introduction of a general system of voluntary employee pension programs, which would also include small businesses (Stańczyk 2016). It is difficult to assess

whether the next proposed redevelopment of the pension system in Poland is a revolution that will contribute to the increase in the security of future pensions. It is certainly meant as an attempt to strengthen the third pillar.

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Cluster Policy in Japan: Experiences and Prospects

Marcin Haberla

Abstract The promotion of cluster structures in Japan has risen in importance in the face of growing global and regional challenges in the field of competitiveness and innovation. Innovation policy-oriented clustering involved central and local government structures, allowing for cooperation with a broad range of public and private organizations and business representatives. The main purpose of this article is to present the cluster policy in Japan and an indication of the role the Ministries of MEXT and METI play in this area. Additionally, this paper will introduce the evolution and prospects of the Japanese clustering policy.

Keywords Cluster • Clusters Policy • Innovation

1 Introduction

Clusters and cluster policies grab attention of many scholars, authorities and practitioners worldwide. Many countries try to support clusters, by seeing in them opportunities for further development of innovation and thus the development of competitiveness of the country. There is no difference in the case of Japan.

The most well-known and widely used definition is the one developed by Porter (1998, p. 78): "clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition". Following Porter definition, many different definitions are made in the literature. Very simple one was proposed by Anderson (1994). According to him, cluster is a net of companies, their clients, suppliers of materials, components or machines, tools or training and financial services. Interesting interpretation is given by European Commission (2008, p. 9): "clusters can be defined as a group of firms, related economic actors, and institutions that are located near each other and have reached a sufficient scale to develop specialized expertise, services, resources, suppliers and skills".

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Cluster policies from the other hand can be defined as regional, industrial, or technological policies that are implemented in the form of targeted subsidization or networking support under any of these aspects (Nishimura and Okamuro 2011). According to Porter (2000), the cluster policy should remove obstacles, relax constraints, and remove any inefficiencies that have negative influence on productivity and innovation in the cluster.

The modern cluster policy in Japan, determined by the need to progress the development of the knowledge-based economy, still requires a profound administrative reform, favoring the decentralization of abilities and resources, in order to set free the locally available initiative and potential, in particular, the intangible one which is the foundation of the research and development action. The expansion of the industrial knowledge clusters' structures, promotes the gradual disuse of traditional channels of knowledge transfer at the macro level which base on material and investment import, in particular from the United States, by intra-industry knowledge transfer within clusters bringing together companies, academia, research institutes and other types of organizations.

Cluster programs in Japan have until now been regarded through the activity of the two ministries, which integrate the policy of research and development: the Ministry of Education, Culture, Sports, Science and Technology (MEXT) with industrial strategies: Ministry of Economy, Trade, and Industry (METI). The complementarity of these two cluster policy pillars is partly declarative, as the joint research projects funded by MEXT are the foundation of practical applications by the business-connected participants, which in turn form the core program of METI. Similarly, METI's involvement steers the research projects funded by MEXT towards product development, creating links between large and small companies that operate locally. Now, after finalizing two programs in the framework of MEXT's operation, other institutions, unengaged or marginally engaged up until now, will start playing an increasingly important role in the cluster policy e.g. Ministry of Agriculture, Forestry and Fisheries (MOFF), Ministry of Internal Affairs, The Centre of Innovation (COI), Japan External Trade Organization (JETRO), EU-Japan Centre for Industrial Cooperation.

2 Economic and Historical Context of Cluster Policy

The Japanese government's policies on technology and innovation aim to progressively decentralize the cluster policy to a regional level and focus on the entities of the SME sector. Specialization and clustering at the regional level are in fact designed to increase innovativeness of the operating small and medium-sized enterprises. In the manufacturing sector, a number of SME companies have been organized into hierarchical vertical-supply chains, configured by the greatest agents of business. Long-term relationships between the vertically integrated participants of the chain supported the shaping and development of niche skills and technological and process capacity in the era of dynamic growth in the Japanese economy.

The shape of the system is gradually evolving, which is reflected e.g. in the decline in the percentage of subcontractors from the SME sector in the engineering industry over the last three decades, from more than 85% to less than 60% (OECD 2007). The challenge for modern, high-tech SME companies will be the development of market-oriented parallel and lateral relations for the sake of a more dynamic R&D—this would mean that many not currently cooperating MSP companies would start subcontracting in the research and development field. As a result the possibilities for small and medium-sized enterprises in the area of product innovation would rise.

The cluster programs currently in action stem from the country's experiences with industry policies. In the 80s a reorientation from heavy industry to high technology sectors occurred. The ambitious Technopolis program became the symbol of this change aiming at relocation of high-tech industry—in particular, the electronic and material branches—out of the major metropolitan areas, in order to develop in these areas high-quality research and education infrastructures. The aim was to create clusterized manufacturing complexes outside of the major urban centers, with the centers offering the potential for internal development, innovation, and technology transfer. Over the years, the program was introduced in 26 areas concentrated around small and medium-sized towns outside metropolitan territories. As a result, some of the less advanced technological processes have been decentralized. It has not contributed, however, to a significant reduction of income disparities between the different regions of the country. For the purpose of optimizing the spatial distribution of hi-tech key industries, in 1988 it has been decided to implement program complimentary to Technopolis—Brains Industry (OECD 2004). The program offers a broad range of design and research incentives for the relocation centers from Technopolis to new zones.

The next decade brought major economic changes, which in turn affected the evolution of the regional aspect of the industrial policy. The development of offshore locations, alongside the emerging East and South Asia markets—India, Singapore, Malaysia and Thailand in particular and the progressive de-industrialization of mature branches of Japanese industry, caused a drop in employment and termination of production plants. The changes in the manufacturing sector adversely affected the relatively active, new industrial zones created within the framework of the Technopolis program. The consequence of this was a change in the outlook on the regional policy—the status of the regional production centers has slowly been replaced by the idea of regional innovation systems. The new approach categorized key resources such as innovative industry specialization, skilled human resources, research infrastructure and advanced networks of chain supply. In the economic doctrine, such regional resources were seen as crucial for recovering the competitive potential of the country.

The cluster policy was aimed primarily at aiding small, local businesses. The SMEs Agency, operating under the auspices of METI has implemented a number of programs and industry initiatives, particularly for the traditional branches, i.e. textiles, clothing and ceramics. These programs were focused on creating a critical mass of small businesses operating in the local manufacturing clusters,

providing them with support i.e. in the field of market information, marketing and retailing. The main difference compared to the programs implemented nowadays was the lack of emphasis on development—on the flow of technology and knowledge between enterprises and research institutions. Moreover, nowadays the reference point for cluster policy are the innovative, technologically advanced SME entities. In the first 5-year plan the government administration had focused its efforts on supporting research and development in order to meet the needs of socio-economic development. Thus, it supported the original and innovative technologies that contributed to economic development, infrastructure expansion, socio-economic development and the creation of new industries.

3 Evolution of Clustering Policy

The table below shows a brief characterization of the evolution of Japan's industrial policy towards clustering, which has begun at the beginning of the 70s. Phase I was characterized primarily by the industrial decentralization and regional development of the large urban centers, and its implementation has been carried out in the years 1970–1995. When analyzing this step, it can be argued that the government's actions were focused on the creation of a geographic, industrial base, centered around large agglomerations with the aim of decentralizing the operation regions of industries with great perspectives and shifting them to the adjacent regions which have been marginalized up until now.

As part of phase II, the Japanese government decided to primarily focus on preventing the decline of the Japanese industry and emphasize the development of promising future branches, and the execution of this agenda was planned for the years 1995–2001. As a result of progressing globalization and the appreciation of the Japanese yen, the industry was looking for overseas cost destinations, prompting authorities to reorient policies in order to revitalize the regional economy. The emphasis on industrial criteria instead of the previously favored geographical orientation, caused the innovation to be shifted to a central place in the industrialization concept, targeted mostly at strengthening the bonds between the sciences and business in Japan.

Since 2001 stage III of the clustering policy has begun being implemented in Japan, and this stage puts emphasis on the development of new, globally competitive businesses. The idea behind this stage is that the withdrawal of selected industries of the country has not been fully stopped, the business environment, however, has rebuilt the confidence in the local potential. The relations between institutions have been strengthened; the legal framework for cluster policy has been formed. Meanwhile, the "cluster wave" at the beginning of the new millennium, observed i.e. in the United States, Britain, Germany, and Finland, suggested the need to stimulate international competitiveness based on the concentration of industry, increasing employment rate, creating new businesses and reactivating of the regional economy. The Japanese government decided to implement more

Table 1 The provisions of law most important for executing the stages of Japanese cluster policy

Stage/Period	Most relevant provisions of law
Stage I (1970–1995)	The Industrial Relocation Promotion 1972–2006 The Law for Accelerating Regional Development based on High-Technology Industrial Complexes, the Technopolis Act The Knowledge-Intensive Industry Location Act Or Brain Centre Site Act 1988–1998 The Law for Comprehensive Development of Regional Core Cities with Relocation of Office-Work Function or Regional Base Law 1992
Stage II (1995–2001)	The Science and Technology Basic Plan1996–2001 The Law on Temporary Measures for Activation of Specific Regional Industrial Agglomerations 1997 The Law Promoting Technology Transfer from University to Industry, TLO Law 1998 The Law to Strengthen Industrial Technology 2000
Stage III	The University-based Structural Reform Plan for Revitalizing Japanese Economy 2001 The Second Science and Technology Basic Plan 2001–2005 The Industrial Cluster Plan 2001 The Knowledge Cluster 2002 Basic Law on Intellectual Property 2003 The New Cooperation Support System or the Small and Medium Enterprises' New Business Activity Promotion Law 2005 The Third Science and Technology Basic Plan 2006–2010

Source: Original research

mechanisms to promote clusters which would encourage the creation of new knowledge-intensive industries, and along with that—revitalize the declining regions using the local potential. Clustering projects are seen in terms of the "strongest card" of the Japanese economy (Ishikura et al. 2003). The aim of the adopted legal solutions was i.e. streamlining processes, implementation and development of cluster initiatives (see Table 1).

The legal regulations presented above do not cover all issues relating to the instruments and means performing a role often complementary to those above, introduced by the authorities at ministerial level, by related agencies and offices that form together a flexible structure that surrounds clusters, adapts to changing economic and social conditions.

4 MEXT Knowledge Clusters

The Knowledge Cluster Initiative prepared by MEXT in 2002 was designed as a counterweight for the industrial clusters, due to the difficult experiences of the 90s, which resulted in insufficient resource flow between the science and industry. As a result, Japan became the first and so far the only country in the world offering the possibility of knowledge clustering.

Table 2 Transformation of cluster policy, 1996–2015

First basic plan for science and technology	1996–2000
The establishment of regional R&D systems	The growing social rank of science and technology, promoting both fundamental and pioneering research—and development, creating infrastructure in science and technology Creation and development of test systems
Second basic plan for science and technology	2001–2005
Starting the cluster policy	The formation of regional knowledge clusters. Implementation of science and technology policy at the regional level, by providing specialized human resources, encouraging coordination and promotion of inter-regional transfers of technology, deepening regional cooperation between sciences-industry-Government
Third basic plan for science and technology	2006–2010
Implementing the cluster policy	Forming regional clusters through selective support in creating world-class clusters for regions with development potential The development of clusters that operate on a smaller scale and utilize local resources
Fourth basic plan for science and technology	2011–2015
Development of cluster policy	Constructing regional innovation systems enabling local communitiesto conduct independent research and develop their own technology Ensuring governmental support for well-operating clusters in networking, security personnel base, intellectual property rights and promoting research—and development

Source: Own study based on MEXT (2012)

The program identified the following priorities: reformation and modernization of regional research and development infrastructure, ensuring a more dynamic flow of knowledge resources within the networks operating at the intersection between business and science, as well as the financing of joint ventures. The idea behind the knowledge cluster, according to the Basic Plan for Science and Technology 2001–2005, is to strengthen the role of regional research organizations—including universities—in the local R&D resource transfer. Thus the emphasis on generating interdependence networks for local human resources and to stimulate interactions between previously separate functioning entities.

Knowledge Cluster Initiative is a component of the Regional Program for Innovation initiated in 2010, simultaneously to the Third Basic Plan for Science and Technology (see Table 2).

The analysis of MEXT's cluster policy in the years 1996–2015 indicates a progressive decentralization of the development policy in order to link the resources and local advantages with the strategic objectives of sustainable growth and social development based on innovations.

5 METI Industrial Clusters

For the purpose of strengthening the competitiveness of Japanese industry on a global scale and revitalizing declining areas, the Industrial Cluster Plan created a network engaging industries and sciences. The tasks of the created networks were focused on the exchange of resources, materials and expertise in order to promote networking between businesses operating within the centers of regional agglomerations that would possess complementary technological resources, as well as the strategic needs for their use. The inspiration for creating this program were the experiences with the clustering program for SME organizations, representing the industries of lower technological intensity on the one hand, and primarily—the desire to integrate the communities of business and science on the other. The METI program was heavily influenced by the ongoing successful initiatives, such as the Technology Advanced Metropolitan Area (TAMA), operating within Tokyo's borders, clustering IT vendors from the area of Sapporo, as well as foreign experience. METI promoted innovation within the network, modernizing the business environment through cooperation with local authorities acting through their own, flexible and locally-oriented Regional Offices (RBETI). The RBETI's task was not only to represent the government in the field but also to search for consensuses between the guidelines received from superiors and local conditions, which highlights independence and the importance of local actors in clustering.

The Industrial Cluster Plan is a long-term project divided into three phases, gradually providing industrial clusters with autonomy. The first stage or the Industrial Cluster Start-Up (2001–2005) was aimed at forming a solid network between science, industry, and government with the main goal being the creation of industrial clusters. They initiated more than 20 industrial cluster projects in close cooperation with central and local authorities, by evaluating local conditions and the industry's potential. The next step was the development of the Industrial Cluster (2006–2010), which focused on the progress of networking and the development of specialized businesses. The reorganization of existing companies was promoted simultaneously. It should be emphasized that the previously launched projects were subject to regular, annual reviews, and subsequently—thanks to the numerous modifications—new initiatives were formed. The final stage of the program is the Autonomous Industrial Cluster Growth (2011–2020). This program is not fully defined but aims at creating financial independence in industrial clusters, to further promote networking and the development of new business initiatives (METI 2005). The fundamental ideas behind the Industrial Cluster Plan include: inducing a chain reaction of innovation with the use of synergies appearing between various industries, developing close horizontal links within the network of industry, science and government, optimization of the industries and strengthening their potential adaptation to changes in the environment, promoting the internationalization of clusters and build the brand created by the products.

During the first phase, 19 projects for local networking have been implemented successfully, involving nearly 9800 SME organizations and 290 universities, with

the support of 81 organizations and 105 cluster managers. In order to support the development of new industries and businesses the industry and academia were encouraged to carry out joint research projects, using the available technology infrastructure. Technological development has been promoted by partnerships with local companies and universities, a policy of support for SMEs and universities in launching new business initiatives.

The second phase of the Industrial Cluster Plan included 17 projects, focusing on the development of practically applied technology at a regional level and creating business incubators in order to start 40,000 new businesses within the next 5 years. In 2007 only the Japanese government subsidized the program with the amount of 20.8 billion yen (Sakai 2007). In summary, the nature of cluster initiatives under the program METI indicates the following typology of clustering regions:

- Type A: metropolitan areas—the revitalization of various high-potential clusters, agglomeration areas, i.e. Kanto, Chubu—Tokai and Kinki, developed virtual megaclusters covering a range of industries e.g. automotive, digital devices, biotechnology, and nanotechnology. The task of METI, in this case, was primarily the revitalization of existing companies and the activation of large enterprises;
- Type B: Science and technology clusters—the idea is to industrialize technology regardless of the working structure of the cluster, alongside a strong central role of the academic and public research institutes; METI focuses on the support for technology transfer, the creation of startups, and a substantial portion of the subsidy is spent on research and development;
- Type C: clusters niche—support for smaller regional agglomerations in terms of clustering niche activities;
- Type D: forming a network between mini clusters—support for the development of smaller-scale clusters located in remote regions of the agglomeration, while ensuring interconnectivity (METI 2005).

6 Prospects of Japanese Cluster Policy

At the end of 2015 the programs being executed through MEXT—Regional Innovation Cluster Program and the Regional Innovation Strategy Support Program—have been finished. They have no direct follow-up, but there are other projects, which will indirectly support networking between science, local authorities, and businesses.

The situation is clearer in the context of METI industrial clusters, where the project will continue until 2020. In the last stage of the project (2011–2020) the cluster policy is focused on supporting the activities of industrial clusters for them to achieve financial independence and autonomous growth. There is also an emphasis on working with local academia and industry, as the basis for further development.

The results of the cluster mapping in 2016 (The EU-Japan Centre for Industrial Cooperation 2016b) showed that during this period the majority of ongoing cluster projects ceased their activities after reaching their objectives or had come to the end of the expected period of incubation. METI still supports existing clusters by providing, among others, financial assistance if necessary. It should be noted, however, that at the government level there is virtually no particular program of policy management and cluster support, with the exception of the third stage carried out by METI, which will be completed in 2020.

These projects that are a somewhat indirect continuation of Ministry of Education, Culture, Sports, Science and Technology actions are: "The regional innovation ecosystem creation program" and "The regional core business creation support program." In these programs, financial assistance is provided, which can also be used for the existing clusters. These programs have a secured annual funding for developing projects aimed at the improvement and development of regional industries. The first project—"The regional innovation ecosystem creation program" is a regional program aimed at building an ecosystem of innovation with the cooperation of the Ministry of Education, Culture, Sports, Science and Technology and Ministry of Agriculture, Forestry and Fisheries and the Ministry of Internal Affairs and Communications. The program was launched after the Knowledge Cluster Building Program and its key points are (1) Supporting an innovative hub center, (2) Supporting networking activities between industry, academic Institutions and local authorities based on the core company in the region. Matching technology need with market needs and (3) Implementing the innovation system (The EU-Japan Centre for Industrial Cooperation 2016a).

The second project—"The regional core business creation support program" is a year-long program, which was launched to financially support the industry in the region, using local networks, market research, human resource development, etc. Local businesses and organizations such like clusters can apply for grants offered by the Bureau of Economy, Trade, and Industry in their region (METI 2016).

Moreover, in the current cluster policy, The Centre of Innovation (COI) program plays an important role. It is one of the main funding programs within the Centre for Innovation Science and Technology based on the radical innovation and Entrepreneurship Program (COI STREAM) which was launched in 2013 by MEXT and is managed by the Japan Science and Technology Agency (JST) (NSF 2016). Another important program supporting the Japanese cluster policy is the Regional Industry Tie-up program to support the internationalization of Japanese regions. It was developed by JETRO and has been operating since 2007 in the Regional Tie-Up (RIT) The activities within the program are focused on the support for networks of enterprises and linking Japanese SME industry clusters (in this case, "cluster" is used to denote an area with a concentration of companies operating in the same sector) and those from overseas. Their aim is to facilitate the export of technology partnerships and joint product development in software, processed foods, as well as the production areas and environmental protection (JETRO 2016).

Table 3 Projects within the Regional Industry Tie-up program

Country	Branch/Economic sector	Participants
Germany	Automotive	Baden-Württemberg and Ibaraki prefecture (Automotive-BW and Hitachi Regional Technical Support Center)
Germany	Industrial facilities and equipment	Baden-Württemberg and Kitakyushu region (Photonics BW e.V. and the City of Kitakyushu)
Germany	Life science	Northern region and Hyogo prefecture (Life Science Nord and Foundation for Biomedical Research and Innovation FBRI)
Germany	Medical devices	Nordrhein-Westfalen and Fukushima prefecture (NRW International GmbH and Utsukushima Next-Generation Medical Industry Agglomeration Project)
Germany	Optical technology	Germany and Hamamatsu ("German side never mentioned" with Public Interest Incorporated Foundation Hamamatsu Agency for Innovation)
Germany	Organic electronics	Saxony and Yamabiki prefecture (Dresden City and Yonezawa Joint Committee on New Industry Creation)
Germany	Renewable energies	Nordrhein-Westfalen and Fukushima prefecture (EnergieAgentur.NRW and Fukushima Prefecture Chamber of Commerce and Industry)
France	Cosmetic	Cosmetic Valley and Saga prefecture (Cosmetic Valley and Japan Cosmetic Center)
France	Pharmaceutical	Ile de France and Toyama prefecture (Polepharma with Toyama Pharmaceutical Association)
UK	Marine renewable energies	Scotland and Nagasaki prefecture (Scottish Development International & European Marine Energy Centre and Nagasaki Marine Industry Cluster Promotion Agency)

Source: Own study based on The EU-Japan Centre for Industrial Cooperation (2016b)

On average, each year, 15 projects are targeted at specific regions of the world and industrial sectors. In the past three years within the scope of the RIT program, JETRO supported cooperation with the eight regions of the European Union (five in Germany, two in France and one in the UK), and in some cases, five clusters with the European Union were also involved in the process, and further two Japanese clusters also benefited from this program (see Table 3).

In cluster policies, it is increasingly important to play up international cooperation carried out by the EU and the Japanese Centre for Industrial Cooperation. This institution has launched a service for the European and Japanese clusters, helping them identify potential partners for cooperation in areas of mutual interest. The centre organizes an annual matchmaking mission to Japan for the clusters from the European Union and their SME members, in particularly in themed missions in the sectors of biotechnology, nanotechnology, and ICT.

The SME's of EU are interested in—among others—transfer of knowledge and technology from Japanese universities and research centers. In contrast, Japanese clusters, mainly in the natural sciences, are generally interested in international

cooperation, in particular with the European clusters. Examples of such cooperation could be, for example (EU-Japan Centre for Industrial Cooperation 2016a):

- Regional Kyushu Bio Cluster and the French Food Cluster F2C Innovation
- Northern Osaka Bio Medical Cluster, that is now Cooperating with the BioXcluster plus project and signed MOUs with FlandersBio (Belgium—biotech), and with BIOM (Germany—biotech)
- Next Generation Automobile Cluster having a MoU with CFK Valley (Germany—composite material), Pôle de compétitivité EMC2 (France—composite material) and NCC National Composites Centre (UK—composite material)
- Pro-Cluster KOBE with Life Science Nord (Germany—Life Sciences).

Concluding the topic, we may venture to say, that in the Japanese cluster policy four organizations will continue to play an important role, despite the fact that in some of these programs the cluster policy came to an end (MEXT). However, there were other activities complementary to the previously pursued policy. These entities have been indicated below:

- METI—Ministry of Economy, Trade, and Industry
- MEXT—Ministry of Education, Culture, Sports, Science and Technology
- JETRO—Provides useful information about industrial clusters in Japan
- EU-Japan Centre for Industrial Cooperation

The area of further cluster policy development is also drawn out. It will consist of areas certainly related to the transfer of knowledge and technology, innovation, life sciences, ICT, biotechnology, and nanotechnology sector. An essential element of the current cluster policy will be the internationalization of cooperation of the Japanese clusters. The collaboration with the local authorities, universities and enterprises will also keep playing an important role in the creation and development of industrial clusters.

7 Conclusions

The aim of the article was to present the evolution and future of cluster policy in Japan. Particular attention was paid to the role of the state (ministries and organizations) that have had and continued to have an impact on the creation, support, and promotion of clusters.

Please note that the promotion of cluster structures in Japan has grown in importance in the face of growing global and regional challenges in the field of competitiveness and innovation. Innovation policy-oriented clustering engaged the structure of central government and local cooperation with a broad range of public and private organizations and business representatives. The current cluster policy in Japan was mainly based on two things:

1. The Industrial Clusters carried out under the auspices of the Ministry of Economy, Trade, and Industry.
2. Knowledge Cluster Initiative implemented under the auspices of the Ministry of Education, Culture, Sports, Science, and Technology.

Up until now, the functions and prerogatives of the two decision-making centers were complementary by assumption, when in practice they partially overlapped each other.

Thus, the cluster programs are seen from the perspective of the actions undertaken by the two ministries, integrating the research and development policy (MEXT) and strategic industry (METI). The complementarity of these two pillars was partly declarative since the joint research projects funded by MEXT also sometimes formed the foundation of practical relations for the participants of business ventures, which, in turn, form the core of the METI program. Similarly, the METI actions supported product development, funded by MEXT, creating links with locally operating large and small-scale businesses. In the new perspective of the Japanese cluster policy in addition to the two above-mentioned ministries (MEXT and METI) also other organizations appear (JETRO and the EU-Japan Centre for Industrial Cooperation), which should strengthen the role of innovation and the creation of the cluster and the internationalization of the cluster and cooperation with units/clusters from other parts of the world, often differing culturally.

It should also be noted that cluster initiatives apply not only to high-tech industries but often to traditional ones, in regions far away from the main cities. Therefore complementarity of support it assumed, both in technology transfer, industrial clusters, the innovation ecosystem and internationalization of business agents should contribute to unraveling the full potential of the Japanese economy. It seems that the clusters, which already constitute an inherent part of the economy of the country and are an economic force will also be an even greater influence, affecting the high international competitiveness of Japan.

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Part II
Regional Studies

Complementarities of Innovation Strategies: Evidence from Transition Economies

George Berulava and Teimuraz Gogokhia

Abstract This paper explores complementarities among innovation strategies in transition economies. Specifically, on the basis of data from the fifth round of Business Environment and Enterprise Performance Survey (BEEPS V), we have investigated the existence of possible complementarities between various types of innovation modes (product, process and non-technological (marketing and/or organizational) innovations) in their impact on the firm's productivity. The study reveals complementarity between the following two combinations of innovations: product/process and process/non-technological innovations. Further, the results of the study show that only those combinations of innovation modes that assume all the types of innovations and/or the combination of process and non-technological innovations have positive and statistically significant impact on the firm's productivity. In the paper, we account for the simultaneous occurrence of different types of innovation inputs—in-house knowledge generation and out-house knowledge acquisition activities—and estimate their joint effects on various modes of innovation. The study results suggest that implementation of internal research and development (R&D) strategy can stimulate not only technological innovations but non-technological innovative activity as well. However, we find that external knowledge acquisition strategy has positive and statistically significant effect on innovation output only when the firm's innovation mix incorporates non-technological novelties.

Keywords R&D • External knowledge acquisition • Innovation • Productivity • Complementarity • Transition economies

1 Introduction

A growing number of studies acknowledges innovation as the main driver of a productivity growth. The relationship between the firm's innovative activity and its productivity performance has gained attention of scholars since the seminal

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research of Griliches (1979) and Pakes and Griliches (1980). In these studies, aimed at estimating returns to research and development (R&D) investments, the authors have modified the traditional Cobb-Douglass production framework by the introduction of a knowledge production function. The main assumption of this approach is that past and current knowledge (R&D investments) are necessary for generating a new knowledge (innovation), which in turn affects the firm's output growth. This line of research has been further extended by Crepon et al. (1998). The model, henceforth referred as CDM, distinguishes innovation input (R&D) and innovation output (knowledge). Employing structural recursive model, CDM explains productivity by the knowledge or innovation output and innovation output by R&D. Applying this model to the sample of French manufacturing firms, Crepon et al. (1998) find that R&D intensity has positive and significant impact on innovation output and that innovation output, in turn, is an important predictor of the productivity of the firm. Recent studies of the link between R&D, innovation and the firm's productivity, based on the CDM model, generally has proved the main findings of Crepon et al. (1998) for the developed countries (Loof et al. 2003; Janz et al. 2004; Mairesse et al. 2005; Griffith et al. 2006; Loof and Heshmati 2006; Hall and Mairesse 2006).

In transition economies, European Bank for Reconstruction and Development (EBRD) and the World Bank Group (the WB) has conducted a comprehensive study of the link between the innovation and firm's performance (EBRD 2014). On the basis of data on more than 15,000 enterprises from the fifth round of Business Environment and Enterprise Performance Survey (BEEPS V), and using CDM model, the study reveals the significant impact of product, process and non-technological innovation on the firm's productivity. R&D is found to be an important determinant of innovation output along with other factors such as the firm's size and age, foreign ownership, education level of employees, usage of communications and access to finance.

Other CDM-based studies of innovation-productivity link in transition economies explore: the possible effect of technological innovation on firm's productivity in Estonia (Masso and Vahter 2008); the strength of innovation-productivity relationship across various sub-branches of the services sector in Estonia (Masso and Vahter 2012); the impact of the government support on the manufacturing firm's R&D expenditures, innovations and productivity in Ukraine (Vakhitova and Pavlenko 2010); the relationship of firm-level productivity to innovation and competition (Friesenbichler and Peneder 2016); the impact of the various types of innovation inputs (internal R&D and external knowledge acquisition) on the different non-exclusive[1] forms of innovation outputs (product, process and non-technological innovations) (Berulava and Gogokhia 2016).

At the same time, some important issues related to the functioning of R&D-innovation-productivity link in catching-up economies still require further attention

[1]Firm performs at least one of the three forms of innovation; the specification does not clearly define which additional forms of innovation accompany the designated innovation form.

of academicians. In particular, the way that various types of innovation strategies (technological and non-technological innovations) interact with each other while affecting the firm's performance is not well studied. Besides, existing researches, while formulating knowledge production function, rely solely on in-house R&D activity as an innovation input variable. The role of out-house knowledge acquisition in promoting the firm's innovative activity remains relatively unstudied as well.

This paper aims at filling this gap by deepening the understanding of the performance of R&D-innovation-productivity link in transition economies. On the basis of the data from the BEEPS V survey, we explore some issues that remained relatively unexplored to the moment. First, we study complementarities between various types of exclusive innovation modes (product, process, marketing and organizational innovations) in their impact on the firm's productivity. Second, we extend traditional CDM model by incorporating external knowledge acquisition (EKA)—an innovation input strategy alternative/complement to internal R&D investments; and by analyzing the joint impact of both input strategies on innovation output.

The rest of the paper is organized as follows. Section 2 examines the relevant literature. In Sect. 3, we turn to a discussion of the research methodology, including empirical strategy and measures. The data set and characteristics of the sample used in the study are described in Sect. 4. In Sect. 5, we discuss the empirical findings. The final remarks are presented in Sect. 6.

2 Literature Review

The concept of complementarity, also known as Edgeworth complementarity, refers to an idea that the economic value generated from simultaneous implementation of a number of activities or strategies is higher than their individual effects. On the basis of the lattice theory of supermodularity, a formal model of complementarity in economics and management area was developed in the works of Topkis (1978, 1987, 1998), Milgrom and Roberts (1990, 1995), Milgrom and Shannon (1994). Following these works and using properties of supermodular functions, an increasing number of studies explore complementarities of various facets of innovation activities: innovation policies; innovation inputs and innovation modes (Mohnen and Roller 2005; Cozzarin and Percival 2006; Schmidt and Rammer 2007; Percival and Cozzarin 2008; Martinez-Ros and Labeaga 2009; Polder et al. 2009; Ballot et al. 2011).

A special interest for the goals of the current paper represents the studies that focus on exploring complementarities between product, process and non-technological innovations. The possible complementarities between the various types of innovation are theoretically well-grounded (Schumpeter 1934, 1942). For instance, introduction of a product novelty (product innovation) may require, on the one hand, establishing new production processes and the acquisition of the

new equipment and skills (process innovation) and, on the other hand, applying new approaches to the organization of business processes (organizational innovation). To be successful at marketplace, all these innovative processes must be supported by relevant marketing strategies (marketing innovation).

Empirically, a number of studies confirm the existence of complementarity between two types of technological innovation: product and process novelties (Kraft 1990; Martinez-Ros 2000; Miravete and Pernías 2006; Reichstein and Salter 2006; Martinez-Ros and Labeaga 2009). Kraft (1990) investigates the relationship between product and process innovations. Using a simultaneous equation model, he tests a hypothesis that these two types of innovation activities are related to each other. The study reveals a positive effect of product-innovation on process-innovation, while no significant effect of process innovation on the likelihood of the firm's engagement in product innovation is found. Miravete and Pernías (2006), using a dataset of the Spanish ceramic tiles industry, empirically explore the existence of complementarity between product and process innovation. The results of the study show that there is significant complementarity between product and process innovations, which is mostly due to unobserved heterogeneity. The authors find also that small firms tend to be more innovative in overall.

Martinez-Ros and Labeaga (2009), utilizing a database of Spanish manufacturing firms, study the role of persistence in the decision of firms to implement product and process innovations and to develop those innovations. The results of the study demonstrate that persistence is important in both innovation decisions and that complementarities between product and process innovations are important too. Similarly, the hypothesis of complementarity between product and process innovation forms has been proved in a number of other studies: Martinez-Ros (2000) study of a large sample of Spanish manufacturing firms; Reichstein and Salter (2006) research, based on a large scale survey of UK manufacturing firms. Owing to the theoretical and empirical evidence, discussed above, we hypothesize that in transition economies:

H1: Product innovation and process innovation are complements in the firm's production function.

Though usually, economic literature focuses on technological aspects of innovation (product and/or process), a number of recent research suggest that non-technological novelties such as marketing strategies and organizational changes can also enhance the firm's efficiency and complement the contribution of technological innovations to productivity growth (Cozzarin and Percival 2006; Schmidt and Rammer 2007; Polder et al. 2009; Ballot et al. 2011; Doran 2012). Schmidt and Rammer (2007) analyze the determinants and the effects of non-technological (organizational and marketing) and technological (product and process) innovations, using the firm-level data from the German Community Innovation Survey (CIS). The study reports that determinants of both types of innovations are very similar, however, technological innovations have a substantially stronger effect on profit margin compared to the effects of non-technological innovations. The study finds that firms which combine technological innovations

(product and process) with both organizational and marketing innovations perform much better in terms of sales and profit margins than those implementing only technological innovations.

Similarly, Cozzarin and Percival (2006), on the basis of the study of Canadian firm-level data, find that innovation is complementary to many organizational strategies and that the complementary strategies differ across industries. Polder et al. (2009), using the Netherlands firm-level data, find that organizational innovation has the strongest productivity effects. The study reveals positive effects of product and process innovation when accompanied by organizational innovation. Also the study provides evidence that product and process innovations are complements in the manufacturing sector only and that organizational innovation is complementary to process innovation in both manufacturing and service sectors.

Ballot et al. (2011), drawing from a large pooled sample of French and UK manufacturing firms, explore the existing complementarities between product, process and organizational forms of innovation. The results of the study suggest that the efficient strategies of innovation combinations are not the same for all the firms and that the nature of complementarities in the performance between the forms of innovation has a national context and are strongly dependent on the resources and capabilities of the firm. The study reveals two main combinations of innovative activities: the technological strategy (product/process innovations) and the structure oriented strategy (organization/product innovations). At the same time, the study does not favor the realization of the combination of the three strategies simultaneously, because of high costs and difficulties of their implementation. Doran (2012), using the Irish CIS firm-level data, estimates a knowledge augmented production function and tests the four different forms of innovation (organizational, process, new to the firm and new to the market innovation) for their supermodularity and submodularity. The study reports that the non-technological innovation, in the form of the organizational innovation, has a strong complementary relationship with the technological innovation. In particular, the study reveals that complementary relationships exhibit the following pairs of innovative activities: organizational and process innovation; organizational and new to the market innovation; and process and new to the firm innovation. Summarizing the existing empirical findings, we hypothesize that in transition economies:

H2: Non-technological innovation and product innovation are complements in the firm's production function.

H3: Non-technological innovation and process innovation are complements in the firm's production function.

3 Methodology

In this paper, we apply an augmented version of CDM model to study the structural relationships between R&D, innovation and productivity and to investigate complementarities between various innovation modes. In particular, the model is modified through accounting for the simultaneous occurrence of different types of innovation inputs—in-house R&D and out-house knowledge acquisition activities—and through the estimation of their joint effects on various modes of innovation. The most of recent empirical innovation research, based on CDM model, focuses mainly on internal R&D activity as a primary innovation input. However, some researchers (Mohnen and Hall 2013) argue that relying only on internal R&D, without investing in the acquisition of machinery, equipment and external knowledge, may be not enough for producing innovation outputs. Thus, studying the role and the impact of these two types of innovation inputs on the firm's capabilities to produce new products or to introduce new processes and structures may have a certain research interest.

The model represents a three-stage recursive system which consists of four equations and where each stage is modeled as a determinant of the subsequent one. The first stage comprises two equations that estimate a firm's decision to get engaged in knowledge development or acquisition activities. As already mentioned above, we modify the conventional CDM model by including a new equation for external knowledge acquisition, which serves as a determinant of innovation output along with internal R&D activity. Besides, the equations that account for the intensive margins of internal R&D and EKA are omitted in this model. The second stage involves the estimation of innovation or knowledge production function. The predicted values of the both innovation inputs, obtained at the previous stage, are used as determinants of innovation output. The innovation output equation employs dummy variables to reflect various exclusive combinations of product, process and non-technological (organizational and/or marketing) forms of innovation, which are similar to those in Polder et al. (2009). The final equation represents the output production function, where predicted values of innovation from the second stage, are used as an input. At this stage, to explore complementarities between product, process and non-technological forms of innovation, we estimate the impact of exclusive combinations of innovation modes on the productivity in an augmented production function. Like in Griffith et al. (2006), the model comprises all firms rather than only innovative ones. The model is estimated sequentially, step-by step, with predicted output of one stage employed as an independent variable at the next phase. Employing predicted values rather than actual ones allows to cope with the potential endogeneity problem. For identification purposes, in each equation (except the last one), some exclusion variables (instruments) are assumed. Besides, to correct the bias that can arise from using the predicted variables, the standard errors are bootstrapped. Below we discuss the specification of the model at each consecutive stage in more detail.

Stage 1: Innovation Inputs (Internal R&D and External Knowledge Acquisition) Equations At this stage, two types of innovation inputs are distinguished: internal R&D and external knowledge acquisition. As already mentioned, unlike conventional CDM model, the actual model accounts only for the firm's decision to invest or not in internal research/external knowledge acquisition and does not consider R&D/EKA intensity decisions. Taking into account the discrete nature of the response variables in both equations and the fact that the decisions to invest in R&D and to acquire external knowledge can be jointly determined, these two equations are defined as bivariate Probit model:

$$\begin{cases} y_{1i} = 1 \; if \; y_{1i}^{*} = \beta_1' x_{1i} + \varepsilon_{1i} > 0; and \; y_{1i} = 0 \; otherwise; \\ y_{2i} = 1 \; if \; y_{2i}^{*} = \beta_2' x_{2i} + \varepsilon_{2i} > 0; and \; y_{2i} = 0 \; otherwise; \end{cases} \quad (1)$$

where y_{1i}^{*} is the latent R&D investment decision variable and y_{1i} is the indicator variable that equals 1 if a firm decides to invest in R&D. Similarly, y_{2i} is dummy variable, which equals to one when a firm makes investments in external knowledge acquisition and y_{2i}^{*} is the latent variable connected with it. The β_1' and β_2' are the vectors of parameters to be estimated, while ε_{1i} and ε_{2i} are error terms which are assumed to follow a joint normal distribution with zero mean and variance equal to 1. Another assumption with regard to error terms is that $\varepsilon_{1i}$and ε_{2i} are correlated with correlation coefficient ρ. The vectors x_{1i} and x_{2i} include the independent variables, which explain the firm's decision to get engaged in R&D and in EKA respectively. In our model, both vectors generally share the same set of variables, with the only exception: while important determinant of the decision to invest in R&D is patent protection, in EKA equation this variable is replaced by intensity of computers usage. The explanatory variables included in x_{1i} and x_{2i} vectors are described in more detail below:

- ***Patent***—is a dummy variable, which shows whether establishment has ever been granted a patent (included in x_{1i} vector but not in x_{2i} vector).
- ***Computers_usage***—percentage of workforce that use computers regularly (included in x_{2i} vector but not in x_{1i} vector).
- ***Financing_wc***—financing of working capital variable. This variable reflects the percentage of the working capital financed by banks and non-bank institutions and is used to control for the imperfections of the financial markets.
- ***University_degree***—percent of full-time employees with university degree, reflects the quality of human capital employed by establishment;
- ***Size***—*firm's* size, which contain three dummy variables: small (6–19 employees), medium (20–99 employees), and large (100 and more employees);
- ***Age***—log of the age of the establishment in years;
- ***Foreign***—dummy variable, which shows whether the foreigners have a majority in the ownership;
- ***State***—dummy variable, which indicates whether the state has a majority in the ownership;

- ***Subsidy***—is a dummy variable, which shows whether an establishment has received any subsidies from the national, regional or local government or from the European Union sources over the last three years.
- ***Country and Industry dummies***[2]—which reflect country and industry fixed effects respectively.

The variable ***Subsidy*** as well as variables ***Patent*** and ***Computers_usage*** is considered as instruments for R&D and EKA indicators.

The two-equation system (1) is estimated simultaneously by simulated maximum likelihood estimation technique. Ignoring parameters to be estimated, the log–likelihood takes the following form:

$$lnL = lnL(y_{1i}, y_{2i}|x_{1i}, x_{2i}) = l_1(y_{1i}|x_{1i})^* l_2(y_{2i}|x_{2i}) \tag{2}$$

The likelihood function (2) is built upon a bivariate probit model. Since the system of Eq. (1) represents seemingly unrelated equations model, the contributions to likelihood function discussed above are connected by the correlation coefficient of the error terms. The log–likelihood function is maximized using the Conditional Mixed Process program (CMP) (Roodman 2011), which applies GHK-type numerical simulation algorithm.

Stage 2: Innovation Output Equation (Multinomial Logit Model) On the second step, predicted values of innovation inputs obtained on the previous stage are used to estimate knowledge production function. Generally, we consider three types of innovation output in this study: product, process and non-technological innovations. However, following Polder et al. (2009) and Ballot et al. (2011), in order to distinguish the firms that implement the different forms of innovation simultaneously, we apply the exclusive combinations of innovation modes. As a result, we obtain eight exclusive combinations of innovation modes, which are represented by the following dummy variables:

- ***Innovation_000***—no innovation form is implemented by a firm;
- ***Innovation_001***—a firm implements only the non-technological type of innovation;
- ***Innovation_010***—a firm implements only the process type of innovation;
- ***Innovation_011***—a firm implements only the process and non-technological innovations;

[2]The countries in the study are: Albania, Armenia, Azerbaijan, Belarus, Bosnia, Bulgaria, Croatia, Czech, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkey, Ukraine, Uzbekistan.

The industries in the study are: Manufacturing (Food; Wood; Publishing, printing and recorded media; Chemicals; Plastics and Rubber; Non-metallic mineral products; Fabricated metal products; Machinery and equipment; Electronics; Precision instruments; Furniture); Retail; Other Services (Wholesale; IT; Hotel and restaurants; Services of motor vehicles; Construction section; Transport; Supporting transport activities; Post and telecommunications).

- ***Innovation_100***—a firm implements only the product type of innovation;
- ***Innovation_101***—a firm implements only the product and non-technological innovations;
- ***Innovation_110***—a firm implements only the product and process types of innovation;
- ***Innovation_111***—a firm implements all the three types of innovation.

Given eight types of innovation modes and following Ballot et al. (2011), in this study we apply multinomial logit model as the estimation techniques. We set the base category to be ***Innovation_000***—the situation when none of innovation form is implemented by a firm. Then the probability that a firm i will choose j innovation mode can be determined as:

$$Prob\ (y_{3i} = j|x_{3i}) = \frac{e^{\beta'_j x_{3i}}}{1 + \sum_{k=1}^{J} e^{\beta'_k x_{3i}}}, for\ j = 0, \ldots, 7, \beta_0 = 0 \tag{3}$$

where x_{3i} is a vector of explanatory variables for a firm i, and β'_j is vector of parameters for the choice j, to be estimated. The vector of explanatory variables x_{3i} includes the following indicators:

- predicted probabilities of the firm's engaging in internal R&D and in EKA activities, obtained from the previous stage;
- ***Main Market***—comprises three indicators—*local*, *national*, *international*—which signify that the main product is sold on the local, national or international markets respectively;
- ***Email***—dummy variable, which means that the establishment uses e-mail for communication with its business partners;
- some explanatory variables used at the previous stage, such as: educational level, access to finance, size, age, ownership of the firm, country and industry controls.

Variables ***Main Market*** and ***Email*** serve as the instruments for innovation.

The model (3) implies computation of seven log-odds ratios of the following form:

$$Ln\left[\frac{P_{ij}}{P_{ik}}\right] = x'_{3i}(\beta_j - \beta_k) = x'_{3i}\beta_j, if\ k = 0 \tag{4}$$

The coefficients of the model are estimated through maximizing the log likelihood function:

$$\ln L = \sum_{i=1}^{N} \sum_{j=0}^{J} d_{ij} \ln P(Y_i = j) \tag{5}$$

where N is the number of subjects on which data have been collected. For each subject, $d_{ij}$is defined equal to one, if a subject i chooses the alternative innovation

mode j, and is defined as zero otherwise, for the J + 1 possible outcomes (Green 2003). Following Polder et al. (2009) and Ballot et al. (2011), we predict propensities for each possible combination of the innovation mode, and use them as innovation proxies at the next stage. To correct for bias, we use bootstrapped standard errors.

Stage 3: Augmented Production Function Equation The last equation of the structural model estimates labor productivity using linear OLS regression. ***Productivity (y_{4i})*** is measured as a log of ratio of total sales to the number of employees and is modeled as a function of exclusive combination of innovation modes and a vector of exogenous variables x_{4i}. The model is formulated in the following way:

$$y_{4i} = \left[\sum\nolimits_{klm} \gamma'_{klm} Innovation(product = k; process = l; non\_tech = m)\right] + \beta'_4 x_{4i} + \varepsilon_{4i}, (k, l, m \in \{0, 1\}) \quad (6)$$

In this model the innovation is presented by the eight exclusive modes discussed in the previous section, where the ***Innovation_000*** mode, which assumes no innovation activity, is used as a reference category. To cope with the potential endogeneity of innovation we employ the predicted propensities of exclusive combinations calculated at the previous stage. Compared to vector x_{3i}, the vector x_{4i} includes two additional variables:

- ***Unofficial competition***—dummy variable, which shows whether the establishment faces competition from unregistered or informal firms;
- ***Location***—dummy variable, which indicates whether the establishment is located in the capital city.

The γ'_{klm} and β'_4 are the vectors of parameters to be estimated, while ε_{4i} is the error term which is assumed to follow a joint normal distribution with zero mean and variance equal to 1.

Testing Complementarities Among Innovation Strategies The concept of complementarity between strategies or policies in the management area, rests upon the theory of supermodularity, developed in the works of Topkis (1978, 1987, 1998), Milgrom and Roberts (1990, 1995), Milgrom and Shannon (1994). According to these papers, the function $f: R^2 \to R$ is supermodular or has increasing differences in (X; Y) (and thus there is the complementarity between the two strategies—X and Y) if for all $X' > X, f(X'; Y) - f(X; Y)$ is non-decreasing in Y. To say distinctly, two strategies are complements of each other when introducing one of them while the other is already being implemented, results in higher marginal increase in the firm's performance compared to the situation when the strategy is being implemented in isolation. The function that relates such strategies to the firm's performance is called a supermodular function.

In this study, we apply, with small modifications, the supermodularity approach, used in Ballot et al. (2011), to test complementarity between product, process and non-technological forms of the innovation strategy. For instance, Ballot et al.

(2011) explore the existence of complementarity between product, process and organizational innovations and distinguish between conditional and unconditional complementarity. According to the authors, any two strategies are unconditional complements if the complementarity between them occurs independently of the presence or absence of the third strategy. In this case, the firm's performance function is supermodular in these two innovation strategies. When the existence of complementarity between two strategies is dependent on the presence or absence of the third strategy, such complementarity is called conditional. Following Ballot et al. (2011) we formulate three slightly modified sets of testable restrictions:

(1) *Complementarity between product and process forms of innovation*:

R0: $\gamma\_110 - \gamma\_010 - \gamma\_100 > 0$ (absence of non-technological innovation)
R0: $\gamma\_111 + \gamma\_001 - \gamma\_011 - \gamma\_101 > 0$ (presence of non-technological innovation)
R1: $\gamma\_110 - \gamma\_010 - \gamma\_100 = 0$ (absence of non-technological innovation)
R1: $\gamma\_111 + \gamma\_001 - \gamma\_011 - \gamma\_101 = 0$ (presence of non-technological innovation)

where, γ_001—is regression coefficient of **Innovation_001** dummy variable obtained from the estimation of augmented production function (6) and which reflects the semi-elasticity of productivity with regard to this innovation mode. Similarly, the terms γ_010; γ_011; γ_100; γ_101; γ_110; γ_111 represent regression coefficients of **Innovation_010**; **Innovation_011**; **Innovation_100**; **Innovation_101**; **Innovation_110**; **Innovation_111** innovation mode dummies respectively. The simultaneous acceptance of the both R0 restrictions indicates the existence of a strict unconditional complementarity between product and process innovation and suggests that firm's performance is supermodular in product and process innovation. If only one of R0 restrictions is true, then complementarity between product and process innovation is conditional on the presence or absence of the non-technological innovation. Vice versa, if one or the both expressions are proved to be negative then product and process innovations are conditional or unconditional substitutes of each other. The same logic applies to testing complementarities between other pairs of innovation strategies.

(2) *Complementarity between product and non-technological forms of innovation*:

R0: $\gamma\_110 - \gamma\_100 - \gamma\_001 > 0$ (absence of process innovation)
R0: $\gamma\_111 + \gamma\_010 - \gamma\_110 - \gamma\_011 > 0$ (presence of process innovation)
R1: $\gamma\_110 - \gamma\_100 - \gamma\_001 = 0$ (absence of process innovation)
R1: $\gamma\_111 + \gamma\_010 - \gamma\_110 - \gamma\_011 = 0$ (presence of process innovation)

(3) *Complementarity between process and non-technological forms of innovation*:

R0: $\gamma\_011 - \gamma\_010 - \gamma\_001 > 0$ (absence of product innovation)
R0: $\gamma\_111 + \gamma\_100 - \gamma\_110 - \gamma\_101 > 0$ (presence of product innovation)
R1: $\gamma\_011 - \gamma\_010 - \gamma\_001 = 0$ (absence of product innovation)
R1: $\gamma\_111 + \gamma\_100 - \gamma\_110 - \gamma\_101 = 0$ (presence of product innovation)

The acceptance of any of R0 restrictions in the first, second and the third sets of constraints, will provide support for the hypotheses **H1, H2**, **H3** respectively, formulated earlier in the literature review section.

4 Sample and Data Description

The main source of the data for the research is the micro-level dataset from the fifth round of the BEEPS[3]. The survey was conducted by the EBRD and the WB for 15,523 firms in 29 countries in the European and Central Asian regions in the period of 2012–2014. The sample was selected using stratified random sampling techniques. The following three levels of stratification were used in all countries: industry, establishment size and region. The more detailed description of the sampling methodology can be found in the Sampling Manual (World Bank Group 2009). However, the final sample used for the analysis is substantially lower than the initial one. Such a drastic reduction in the sample size mainly is the result of non-responses, which in turn is caused by the reasons that are not identified and thus that cannot be analyzed. Since we can only take into account this issue while making interpretation of the study results. Table 1 reports the descriptive statistics for the variables used in the model in different equations.

According to the table, on average 9.7% of firms invest in R&D, while 18.8% of companies prefer to acquire external knowledge. Product innovations have highest proportions among innovation output types (22.3%) followed by marketing innovations (21.1%), organizational innovations (19.6%) and process innovations (17.7%). Generally, 27.5% of firms perform either marketing or organizational innovations. On average, the labor productivity of firms is equal to 63,153 USD sales per employee. More than fifteen percent of the sample has ever been granted a patent, almost thirty-four percent of the employed have higher education and 45.3% of workforce use computers regularly. Only 8.3% of the companies in the sample receive subsidies from the government or EU and almost twelve percent of the working capital of the firms is financed from external funds. The average establishment employs 67 workers and the mean of the firms' age in the sample is approximately 35 years. The highest proportion of the sample represents small firms (52.7%), followed by medium (31.9%) and large companies (12.9%). Almost two percent of the firms are owned by a state and 7.5% by foreigners. The firms mainly operate at local (57.9%) and national (35.3%) markets, while at global markets compete only 6.8% of the sample. About twenty-two percent of the companies are located in the capital city and 37.5% of the firms face with the competition from the unofficial entities. Almost ninety percent of the establishments use email for communication with their partners.

[3] https://www.enterprisesurveys.org/

Table 1 Summary statistics (means and std. deviations) for the whole sample

Variables	Mean	Standard deviation	Number of observations
R&D investments (dummy)	0.097	0.296	15,523
EKA investments (dummy)	0.188	0.391	7181
Product innovations (dummy)	0.223	0.416	15,523
Process innovations (dummy)	0.177	0.382	15,523
Marketing innovations (dummy)	0.211	0.408	15,523
Organizational innovations (dummy)	0.196	0.397	15,523
Non-technological innovations (dummy)	0.275	0.446	15,523
Productivity (USD)	66,153	109,061	11,734
Patent (establishment has ever been granted a patent)	0.153	0.360	7085
Percentage of workforce that use computers regularly	45.35	34.41	6809
University degree (percentage)	33.96	31.41	14,768
Working capital financed from external funds (percent)	12.05	23.44	14,704
Subsidy (dummy)	0.083	0.276	15,368
Firm's age	34.9	202.5	15,514
Firm's size	67.01	274.77	15,418
Small firms	0.527	0.499	15,523
Medium firms	0.319	0.466	15,523
Large firms	0.129	0.335	15,523
Foreign ownership (dummy)	0.069	0.253	15,523
State ownership (dummy)	0.018	0.133	15,523
Main market: local (dummy)	0.579	0.493	15,390
Main market: national (dummy)	0.353	0.478	15,390
Main market: global (dummy)	0.068	0.252	15,390
Email (dummy)	0.871	0.335	15,480
Location in capital (dummy)	0.226	0.418	15,523
Unofficial competition (dummy)	0.375	0.484	14,165

5 Empirical Findings

5.1 Innovation Input Stage

Table 2 presents the estimated results for the first stage of the modified CDM model. This stage comprises bivariate SUR probit model (system of equations 1), which specifies the probabilities of investing in R&D and in EKA. First, the results reveal that these two decisions are interdependent within the establishment, since the residuals of the corresponding equations are significantly correlated with each other. Thus the joint estimation of these two equations seems to be an appropriate decision. Further, we find that possessing of formal protection (patents, trademarks, licenses) and having the educated human resource stimulate investments in R&D (both effects are statistically significant at $p < 0.01$ level).

Table 2 Estimations results for innovation input equations (R&D and EKA) by sectors (bivariate probit regression)

	R&D equation		External Knowledge Acquisition Equation (EKA)	
Variables	Regression coefficients	Marginal effects (Dy/Dx)	Regression coefficients	Marginal effects (Dy/Dx)
Patent (establishment has ever been granted a patent)	0.4074*** (0.0534)	0.1048*** (0.0135)	–	–
Percentage of workforce that use computers regularly	–	–	0.0048*** (0.0007)	0.0012*** (0.00017)
Working capital financed from external funds	0.0031*** (0.0007)	0.00078*** (0.0002)	0.0015* (0.0008)	0.00037* (0.0002)
University degree	0.005*** (0.0007)	0.0013*** (0.00019)	0.0013 (0.0008)	0.00034 (0.0002)
Firm's size (small)	−0.2588*** (0.0547)	−0.0666*** (0.0140)	−0.2878*** (0.0561)	−0.0739*** (0.0143)
Firm's size (medium)	−0.2061*** (0.0503)	−0.0531*** (0.0129)	−0.1752*** (0.0514)	−0.0450*** (0.0131)
Log of Firm's age	−0.0235 (0.0245)	−0.0061 (0.0063)	0.021 (0.0248)	0.0054 (0.0064)
Foreign ownership	0.1159* (0.0642)	0.0298* (0.0165)	0.1916*** (0.0639)	0.0493*** (0.0164)
State ownership	−0.0864 (0.1461)	−0.0222 (0.0375)	0.1568 (0.1413)	0.0403 (0.0363)
Subsidy	0.2911*** (0.0561)	0.0749*** (0.0143)	0.2497*** (0.0577)	0.0642*** (0.0148)
Country effects	Yes		Yes	
Industry effects	Yes		Yes	
Correlation of residuals (Rho)	0.2368*** (0.0277)			
N (number of observations)	6523		6523	

Notes: Bootstrapped Standard errors in parentheses; ***, **, * represent significant at $p < 0.01$ level, $p < 0.05$ level, and $p < 0.1$ level, respectively

The analysis of marginal effects shows that availability of formal patent protection increases probability of R&D by approximately 10% (with a standard deviation of 0.013), while the marginal effect of one percent increase of personal with university degree is 0.001 (0.0001). The regular use of computers, in turn, increases the probability of the external knowledge acquisition (significant at 1% level). In particular, one percent increase in workforce that use computers regularly raises the probability of the external knowledge acquisition by 0.1% (with standard deviation of 0.0001). As expected, the likelihoods of the positive outcome for the both decisions (to invest in R&D and to acquire external knowledge), increase with the size of the firm, availability of subsidies, development of credit markets and foreign ownership.

In accordance with the Schumpeterian approach to innovation and findings from recent studies (Cohen and Klepper 1996; Crespi et al. 2014), the firm's size is the important determinant of the firm's decisions to invest in R&D and to acquire external knowledge. Larger establishments, enjoying economies of scale and scope and having greater market power, possess better opportunities to mobilize necessary financial resources, and thus they show higher propensity for innovation. Small and medium size establishments have substantially lower probability of such investments (statistically significant at 1% level in both equations), compared to large companies. Both R&D and EKA equations reveal similar marginal effects. In R&D equation marginal effects are: −0.06 (0.014) and −0.05 (0.013) for small and medium companies respectively; while in EKA equation the corresponding figures are −0.07 (0.014) and −0.04 (0.013).

As mentioned above, the probabilities of decisions to invest in R&D and to acquire external knowledge are also positively affected by availability of subsidies from government or international sources (statistically significant at $p < 0.01$ in both equations); development of credit markets (significant at 1% level in R&D equation and at 10% level in EKA equation); and availability of foreign ownership (significant at 10% level in R&D equation and at 1% level in EKA equation). These factors increase propensities of innovation via providing access to finance and ensuring transfer of external knowledge and skills (foreign ownership) to the companies.

The comparison of marginal effects shows that both subsidies and credit markets have slightly stronger impact on R&D decisions, while the availability of a foreign owner is a more prominent determinant in EKA equation. For instance, the availability of subsidies increases the probability of R&D by 7% (0.014) and the probability of EKA by 6% (0.015). At the same time, under foreign ownership the probability of EKA raises by 5% (0.016) while the probability of R&D only by 3% (0.017). Other controls, such as a firm's age and ownership type exert no influence on R&D and EKA decisions.

5.2 Innovation Output Stage

The special interest for us represents the effects of two endogenous variables investment in R&D and acquisition of external knowledge on the exclusive combinations of various innovation modes. According to Table 3, internal R&D activity is the important predictor (statistically significant at $p < 0.05$) of innovation output. In-house R&D investments increase probability of occurrence for practically all exclusive combinations of its modes (the only exception is the combination of process and non-technological innovation). Thus, the study results suggest that internal knowledge inputs are, generally, effective in promoting innovation irrespective of their type. We also find that EKA strategy has the positive and statistically significant effect on innovation (at $p < 0.01$ level) only when the exclusive combinations of innovation modes include the non-technological form

Table 3 Estimations results for exclusive innovation output combinations (multinomial logit model)

Variables	Exclusive combinations of Innovation output[a]						
	Non-technological innovation only (Innov_0_0_1)	Process innovation only (Innov_0_1_0)	Process and non-technological innovation (Innov_0_1_1)	Product innovation only (Innov_1_0_0)	Product and non-t technological innovation (Innov_1_0_1)	Product and process innovation (Innov_1_1_0)	All types of innovation (Innov_1_1_1)
Investments in R&D (predicted probability)	3.417*** (0.9996)	3.529** (1.794)	2.234 (1.560)	6.740*** (1.251)	3.696*** (1.063)	6.413*** (1.598)	7.271*** (1.0198)
Investments in EKA (predicted probability)	2.904*** (0.9853)	−0.9308 (2.043)	5.341*** (1.627)	−1.236 (1.456)	3.812*** (1.261)	−0.2322 (1.769)	5.681*** (0.9587)
University degree	−0.0003 (0.0028)	0.0045 (0.0034)	0.0001 (0.0030)	0.0018 (0.0029)	0.0034 (0.0029)	−0.0052 (0.0034)	−0.0047 (0.0026)
Log of Firm's age	−0.0006 (0.0660)	0.1021 (0.1036)	−0.0021 (0.0783)	0.0142 (0.0632)	0.0165 (0.0703)	0.0701 (0.0820)	−0.0020 (0.0673)
Firm's size (small)	1.519*** (0.1995)	1.311*** (0.3072)	1.403*** (0.2238)	1.933*** (0.1977)	1.510*** (0.2598)	1.941*** (0.2383)	1.627*** (0.1832)
Firm's size (medium)	0.0125 (0.1536)	0.0933 (0.2682)	0.0356 (0.1984)	0.3427* (0.1812)	0.0959 (0.1722)	0.2107 (0.1842)	0.3108** (0.1463)

Foreign ownership	0.1040 (0.1909)	0.2613 (0.3350)	0.1143 (0.1997)	−0.0662 (0.1879)	0.4245** (0.1905)	0.2055 (0.2608)	−0.1676 (0.1701)
State ownership	−0.5014 (0.4009)	−0.3471 (2.642)	−0.5313 (0.5670)	−0.3564 (0.4235)	−0.4583 (0.4923)	-−0.2871 (2.2008)	−0.03181 (0.3568)
Working capital financed from external funds	0.0004 (0.0026)	0.0031 (0.0033)	0.0012 (0.0029)	−0.0052* (0.0028)	−0.0007 (0.0028)	−0.0032 (0.0035)	0.0007 (0.0026)
Main market: local	0.2463** (0.1156)	0.1635 (0.1639)	0.2673* (0.1515)	0.3264** (0.1323)	0.1755 (0.1250)	0.2338 (0.1635)	0.0417 (0.1206)
Email	0.5535** (0.2269)	−0.13591 (0.2806)	1.109*** (0.2614)	0.3818* (0.1982)	0.652*** (0.2210)	1.492*** (0.4543)	0.918*** (0.2423)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (number of observations)	6082	6082	6082	6082	6082	6082	6082

Notes: Bootstrapped Standard errors in parentheses; ***, **, * represent significant at $p < 0.01$ level, $p < 0.05$ level, and $p < 0.1$ level, respectively

[a]'No innovation' mode is used as a base category

of innovation. In situation when innovation output strategy lacks non-technological innovation, EKA variable negatively effects the innovation output, but these impacts are not statistically significant. These results of the study, generally, conform (with some exceptions) the findings of Berulava and Gogokhia (2016) study that explores the impact innovation inputs on non-exclusive forms of innovation outputs. Also, in compliance with the existing empirical findings (Polder et al. 2009; van Leeuwen and Farooqui 2008), we find that the appliance of electronic communication promotes the innovation activities of the firm. This conclusion is true practically for all combinations of innovation types with the only exception when process innovation is conducted alone. Electronic communication facilitates the exchange of information between economic agents and in this way, it stimulates the innovation activities of firms.

However, small firms show higher probabilities for innovative activities compared to the large companies. This study result is supported by the existing empirical evidence. For instance, Conte and Vivarelli (2014) suggest that while larger firms are more likely to decide positively on the investment in R&D activity, smaller companies, among those who have already invested in knowledge, are more flexible in terms of producing innovative output. Besides, on the basis of the previous empirical studies (Pavitt et al. 1987) Hall (2011, p. 173) argues that "...the relationship between innovative activity and firm size is largely U-shaped, and that smaller firms show greater innovative activity than formal R&D activity."

5.3 Productivity Stage

The final stage of our empirical model estimates the impact of exclusive combinations of innovation modes on the firm's labor productivity. The results of this stage, presented in Table 4, suggest that the innovation output effects labor productivity positively and statistically significantly only when a firm performs all the three types of innovation or when it combines process with non-technological innovation.

If product and process modes of innovation are conducted separately, their impact on the labor productivity is negative (statistically significant at 5% level). Thus, pure technological innovative efforts, not supported by relevant marketing activities or organizational changes may have undesirable effect on the firm's performance, at least in the short-run. Other combinations of innovation modes have no statistically significant impact on the firm's performance. The results of the study, generally support the existing empirical evidence (Polder et al. 2009). However, there are some contradictions to the finding of Polder et al. (2009) that organizational (non-technological) innovation is the main source of productivity. We find no significant impact of non-technological innovation on productivity when it is conducted in isolation.

Other important predictors of labor productivity are foreign and state ownership, location in capital, and competing unregistered firms. When the majority of the owners of the firm is foreigner, the labor productivity increases by 33%; vice versa

Table 4 Estimations results for production function (OLS regression)

Variables	Log of productivity
Innovation_1_1_1	1.1461*** (0.3717)
Innovation_1_1_0	0.9127 (1.0905)
Innovation_1_0_1	0.2892 (0.7162)
Innovation_1_0_0	−1.2721** (0.5912)
Innovation_0_1_1	3.716*** (1.106)
Innovation_0_1_0	−2.956** (1.222)
Innovation_0_0_1	−0.0462 (0.7266)
University degree	0.0055*** (0.00098)
Log of Firm's age	0.0136 (0.0293)
Firm's size (small)	0.0819 (0.0987)
Firm's size (medium)	0.1114 (0.0748)
Foreign ownership	0.3314*** (0.0864)
State ownership	−0.2917** (0.1473)
Working capital financed from external funds	0.0023** (0.00095)
Unofficial competition	−0.0783** (0.0342)
Location in capital	0.1944*** (0.0488)
Country effects	Yes
Industry effects	Yes
N (number of observations)	4780
R2	0.2555

Notes: Bootstrapped Standard errors in parentheses; ***, **, * represent significant at $p < 0.01$ level, $p < 0.05$ level, and $p < 0.1$ level, respectively

state ownership reduces productivity performance by 29%. Location in capital causes the increase in the outcome variable by 19%; while the competition against unofficial rivals reduces labor productivity by 8%. Human capital and credit market development also have statistically significant impact ($p < 0.01$) on labor productivity, though the magnitude of this effect is comparatively not so big. Besides, we have found no statistically significant effect of firm's age and size on labor productivity.

5.4 Testing Complementarities Between Innovation Modes

In this paper, following Ballot et al. (2011) we test complementarity between three pairs of innovation strategies. In compliance with the existing empirical research, the results of the tests presented in Table 5 reveal no presence of supermodularity between the three modes of innovation. At the same time, we have found a number of cases of complementarity and substitutability between pairs of innovation modes dependent on the presence or the absence of the third innovation strategy.

In support of our H1 hypothesis, we find that the product and process pair of innovation strategies is characterized by complementarity when non-technological innovation is not performed (statistically significant at 1% level); in case when non-technological innovation is implemented, product and process innovations substitute each other (statistically significant at 10% level). It should be mentioned that if the former conclusion is generally in line with the existing research (Polder et al. 2009; Ballot et al. 2011), the latter one finds very scarce support in the empirical literature.

We find no complementarity relations between product and non-technological innovations. However, not in line with previous findings, the results of the tests indicate that these innovation modes are substitutes when the process innovation is present (statistically significant at 1% level). According to the results of this test, joined implementation of product and non-technological innovations does not represent a good option for a firm in transition. Thus, the empirical evidence provides no support for H2 hypotheses.

According to Table 5, process and non-technological innovations complement each other (statistically significant at 1% level), but only in the case when product innovation is not performed. Thus, the research hypothesis H3 is partially supported by the results of our analysis.

Table 5 Tests of complementarities between Innovation types

Combination of innovation types	Test statistics			
	Sign	Chi2	df	P-value
Product/Process Innovation				
All		11.82	2	0.0027
(1) inov_1_1_0 − inov_1_0_0 − inov_0_1_0 = 0	+	7.43	1	0.0064
(2) inov_1_1_1 − inov_1_0_1 − inov_0_1_1 + inov_0_0_1 = 0	−	3.71	1	0.0541
Product/Non-technological Innovation				
All		12.62	2	0.0018
(1) inov_1_0_1 − inov_1_0_0 − inov_0_0_1 = 0	+	2.40	1	0.1214
(2) inov_1_1_1 − inov_1_1_0- inov_0_1_1 + inov_0_1_0 = 0	−	12.20	1	0.0005
Process/Non-technological Innovation				
All		18.11	2	0.0001
(1) inov_0_1_1 − inov_0_1_0 − inov_0_0_1 = 0	+	17.53	1	0.0000
(2) inov_1_1_1- inov_1_1_0- inov_1_0_1+ inov_1_0_0 = 0	−	0.61	1	0.4344

Summarizing three pairwise tests of complementarity, one may conclude that while performing all three innovation modes jointly has a positive impact on the firm's performance, economically preferred options are either to choose pure technological innovation strategy (product&process modes) or to perform strategy oriented on the organizational restructuring, which combines process and non-technological innovations. These conclusions, in general, are similar to the findings of Ballot et al. (2011) study. The only exception is that our research finds process innovation (instead of product innovation) to be a complement of non-technological innovation.

6 Conclusion

This paper explores the existing interrelationships between innovation activities and productivity performance of firms as well as complementarities between innovation strategies in transition economies. Specifically, on the basis of BEEPS V dataset and using extended CDM model, we have investigated the existence of possible complementarities between various types of innovation modes (product, process, marketing and organizational innovations) in their impact on the firm's productivity. The conventional CDM framework has been modified through accounting for the simultaneous occurrence of different types of innovation inputs—in-house R&D and out-house knowledge acquisition activities—and through the estimation of their joint effects on various modes of innovation. In compliance with the results of the previous studies, we have found that CDM model properly describes the existing interrelations between the firm's innovation activity and its productivity performance in transition economies.

The important contribution of this paper is that it tests for complementarity between innovation strategies of firms in transition economies. Our tests reveal complementarity between the following two combinations of innovations: product/process and process/non-technological innovations. These results, generally, resemble the findings for developed (UK and France) markets (Ballot et al. 2011). The only difference is that for UK sample complementarity was proved for product and organizational innovation strategies, while in this paper complements are process and non-technological innovations. Following Ballot et al. (2011), we call the first pair of complementary innovations as technological strategy while the second one as restructuring strategy. Similar to Ballot et al. (2011), the key policy implication of our findings is that while performing all the three innovation modes jointly has a positive impact on the firm's performance, economically preferred options are either to choose pure technological innovation strategy (product & process mode) or to perform organization restructuring oriented strategy (process/non-technological mode).

Concerning the links of various modes of innovation output to the firm's productivity performance, our results show that only the combinations that assume all the types of innovations and process and non-technological innovation have

positive and statistically significant impact on the firm's productivity. Though these results generally support the existing empirical evidence (Polder et al. 2009), we have found no significant impact of non-technological innovation on productivity when it is conducted in isolation. Another vital point of this analysis is that conducting either product or process innovation in isolation will result in a negative productivity performance.

The findings of the study also suggest the firm's decisions on in-house and out-house knowledge development processes are highly interdependent and generally share the same determinants. Both strategies of knowledge generation/acquisition require the availability of finance which can be ensured through: an easy access to financial markets; subsidies from a government or international donors; foreign direct investments. The latter may represent not only the important financial source but the source of advanced knowledge and know-how transfer as well. However, the primary supplier of finance necessary for stimulating innovations is the firm itself. We find that large firms substantially outperform small and medium enterprises in terms of innovation activity. According to Schumpeter, such an advantage of large firms in knowledge development process can be explained first of all by their capabilities to mobilize necessary financial resources. We think that main policy implication stemming from these study results is that providing ease access to financial resources is a crucial prerequisite for promoting knowledge development activity in transition economies. In support of the existing findings, we reveal that internal R&D activity is highly dependent on the patent protection. Thus, the enhancement of the legal framework and establishing the rule of law that secure the property rights can be considered as important ways for stimulating firm's R&D investment decisions. Further, the study results show that the implementation of internal R&D strategy can stimulate not only technological innovations but non-technological innovative activity as well. Also, we have found that EKA strategy has the positive and statistically significant effect on the innovation output only when the firm's innovation mix incorporates non-technological novelties.

This study provides some new insights on the functioning of the extended CDM model and on the complementarity between innovation strategies in transition economies. Still, cross-sectional nature of the dataset used in this study limits understanding of some important issues such as the impact of the firm specific factors on its innovation and productivity performance, dynamic relationships between R&D, innovations and the firm's performance. We think that the appliance of panel data sets will allow scholars to clarify these issues.

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Housing Problem in CEE Countries: Similarities and Differences

Liudmila A. Guzikova and Ekaterina V. Plotnikova

Abstract Housing is a key condition and a factor of human life because it satisfies the wide range of basic human needs. But the housing problem is one of the most pressing problems in the contemporary society. The scale of the problem is large and the forms of its manifestation differ, depending on natural-climatic and socio-economic environment of the country. Methods of the housing problem solving, the forms of central and local authorities' participation, the extent and mechanisms of financial support depend on certain situation. The main factors are the level of economic development of the country; standard of living, availability and affordability of housing; state of the housing stock; mortgage lending development; terms of residential mortgage loans; state of housing construction sphere; features of the legislation regulating the housing sector. Though some features of contemporary housing problem in CEE countries have common genesis the others are specific and formed in previous period as well as in transition. The objective of the current paper is to compare of the main features characterizing the housing problem and the ways of its solving in CEE countries. Research methodology includes analysis of theoretical and applied scientific publications on financial-economic aspects of the housing problem and analysis of official statistics by comparisons and identifying structural and tempo proportions. The data of Eurostat are used. The study considers the theoretical positions related to the economic and financial aspects of the housing problem, implements the analysis of the current situation and trends of the housing problem in CEE countries. The explanation of some differences is suggested and recommendations for practical application of theoretical positions are made.

Keywords Housing • Housing problem • Homeownership • Homes • Apartment • Renting • Mortgage

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1 Introduction

Four criteria indicate the housing problem in contemporary society: presence of the homelessness; housing disparity with the minimal quality standards; overcrowding; forced accommodation in the cost overburden housing (UN HABITAT 2015). In every country, in each social situation and each social system the housing is always a subject of the first necessity, but people's attitudes towards the housing in spite of external similarity may be different. It can be explained by different value orientations, different ways of life, material resources, and more. All this, in turn, defines the requirements for housing and living conditions and the efforts that people are willing to do for their improvement.

Researchers use to examine the role of housing from three different standpoints associated with three main stages of the housing problem perception (Chubarova 2004): (1) the first standpoint can be conditionally characterized as sanitary-epidemiological and ecological. Initial form of the housing problem was largely associated with public health; (2) further the housing was declared as the social right and the new form of the housing problem supposed the minimal housing standard that should be provided for all residents; (3) now the housing is taken as an economic category and the subject of the wide range of economic relations. It should be mentioned that the housing situation including that of the least prosperous part of population is very important from the standpoint of social stability. It should be noted that the concept of housing quality has evolved from the adequacy of the living space and the availability of the minimum facilities to high housing comfort criteria, including requirements for the immediate environment and the quality of services.

The countries under consideration belong to Central and Eastern Europe (CEE) countries geographically and became the members of European Union (EU) before 2014. The list includes 11 countries: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. All these countries belonged in the past to the socialist camp. Countries except Bulgaria, Hungary, Poland and Romania appeared as the result of the collapse of larger states. In CEE countries before the market reforms most of the urban housing was in public ownership and the market of housing services was monopolized by one or more large enterprises (Govorova 2004). Long stay outside the field of market economy, the change of the state system and the crisis in the economy and social sphere put imprint on the current state of the housing sector and the housing problem in these CEE countries.

Study of the housing problem in CEE countries is the field of activity of international organizations such as the working group "Eastern European housing and urban policy", created in 1990 in the frames of the European network of researchers (European Network for Housing Research), which unites research centers and institutes, large real estate companies, foundations, publishers and public organizations and individual members, and the Housing Finance Agency for Countries in Transition. The objective of the current paper is to identify common features and the differences in the housing problem and the ways of its solving in the countries under consideration.

2 Methodology

The analysis undertaken in the current research was implemented by qualitative and quantitative methods. Research methodology includes analysis of theoretical and applied scientific publications on financial-economic aspects of the housing problem and analysis of official statistics by comparisons and identifying structural and tempo proportions. Since an adequate comparison of the situation in the countries can be provided by using relative rather than absolute data structural ratios and indices were used. The data is collected from Eurostat covering 2015.

3 Basic Provisions and Results

3.1 Housing Problem in CEE Countries

The need in housing is strictly connected to the population quantity and the structure of households. By the end of 2015 the population of CEE countries EU members under consideration was equal to 95,099,073 people. The most populated countries are Poland and Romania whose population constituted 39.56% and 20.58% correspondingly. Dynamics of population demonstrates progressing depopulation in CEE countries. The most rapid depopulation takes place in Lithuania and Latvia. Only in Slovenia, Slovakia population increased both in 2014 compared to 2013 and in 2015 compared to 2014. In the Table 1 negative rates of change are highlighted. Depopulation can affect the housing problem by two ways. On the one hand it releases the housing stock, but on the other hand it leads to degradation of the housing stock because reallocation mechanism does not allow occupation of the released housing in short time and unoccupied housing has tendency to lose quality and dilapidation. It worth to mention that for the working age people poor housing and the lack of opportunities to improve can work as decisive factor to leave the country while good housing can play contrary role. It should be also mentioned that depopulation caused by leaving of the working age people has long-term multiplicative effect.

The information on households in CEE countries EU members is shown in the Table 2 (the extremum values are highlighted). Tendency to the smaller household size presents in the seven countries (Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, and Slovenia) and is most clearly expressed in Bulgaria. In six of these countries (except Lithuania) the tendency is accompanied by the tendency to increase of the share of single person households which takes place in Poland, Romania and Slovakia where the average household size is stable. It can be noticed that in 2015 Romania remained the only country with the share of single person households less than 20%. The situation in Lithuania is difficult to explain and requires special study: on the background of diminishing size of households the share of single person household diminishes also. It's necessary to say that in 2010

Table 1 Population of CEE countries (by the end of the year), people

Country	2010	2013	2014	2015	Change (%)		
					2014–2013	2015–2014	2015–2010
Bulgaria	7,421,766	7,284,552	7,245,677	7,153,784	−0.53	−1.27	−3.61
Czech Republic	10,462,088	10,516,125	10,512,419	10,553,843	−0.04	0.39	0.88
Estonia	1,333,290	1,320,174	1,315,819	1,315,944	−0.33	0.01	−1.30
Croatia	4,302,847	4,262,140	4,246,809	4,190,669	−0.36	−1.32	−2.61
Latvia	2,120,504	2,023,825	2,001,468	1,968,957	−1.10	−1.62	−7.15
Lithuania	3,141,976	2,971,905	2,943,472	2,888,558	−0.96	−1.87	−8.07
Hungary	10,014,324	9,908,798	9,877,365	9,830,485	−0.32	−0.47	−1.84
Poland	38,022,869	38,062,535	38,017,856	37,967,209	−0.12	−0.13	−0.15
Romania	20,294,683	20,020,074	19,947,311	19,759,968	−0.36	−0.94	−2.63
Slovenia	2,046,976	2,058,821	2,061,085	2,064,188	0.11	0.15	0.84
Slovakia	5,390,410	5,410,836	5,415,949	5,426,252	0.09	0.19	0.66

Source: Eurostat (http://ec.europa.eu/eurostat/data/database)

Table 2 Characteristics of households

Country	Average size of household, people		Share of single person households, %	
	2010	2015	2010	2015
Bulgaria	2.9	2.5	24.32	25.48
Czech Republic	2.5	2.4	27.62	28.83
Estonia	2.3	2.2	29.88	37.01
Croatia	2.8	2.8	24.85	21.99
Latvia	2.5	2.4	23.76	25.71
Lithuania	2.4	2.3	34.21	22.11
Hungary	2.6	2.3	25.20	29.83
Poland	2.8	2.8	23.94	24.80
Romania	2.7	2.7	17.63	19.04
Slovenia	2.6	2.5	22.00	26.84
Slovakia	2.8	2.8	20.33	20.35

Source: Eurostat (http://ec.europa.eu/eurostat/data/database)

that was taken as the base for comparison the share of single person households was exclusively high in Lithuania. The possible explanation is that the number of such households diminishes due to mortality and emigration, and the diminishing of the household size takes place due to destruction of larger families. Black et al. (2010) showed that EU enlargement caused the flow of labor migration from CEE countries. The tendency to household atomization is most profound in Estonia where the average size of household is minimal while more than 37% of people belong to single person households. Croatia is the only country where the average household size stayed unchanged and the share of single person households decreased. It should be mentioned that formally atomization reflects the improvement of average housing situation because single person housing usually is satisfactory from the standpoint of living area.

In general population decrease results in the reduction of households and promotes to release of the housing stock. But increasing atomization, in our opinion, in not far future can give the new character to the housing problem in CEE countries because on the one hand the large dwelling can become too expensive for reduced families, but from another hand the changes of the housing stock structure will become topical to provide its correspondence to the structure of population. The latter will affect the construction plans and in longer time will preserve the atomized structure of households.

Analyzing the housing ownership structure in the countries under consideration (Table 3) we can observe high level of the owned occupied housing in the most countries excluding Czech Republic and Latvia. It is necessary to remember that the most part of housing owners have got their right as the result of sweeping privatization. Rent sector as the whole is not developed—it concerns both to social and private rent sectors. The social rental housing sector in CEE was characterized as a no man's land (Priemus and Mandič 2000). The same was said for private renting and was

Table 3 Structure of housing by ownership, %

Country	Social rent	Private rent	Owner occupied	Cooperative housing	Other
Bulgaria	18.3		81.7		
Croatia	1.8	3.0	89.4		5.8
Czech Republic	22.4		55.9	9.4	12.3
Estonia	1.7	7.3	82.0		9.0
Hungary	3.0	4.0	92.0	1.0	
Latvia		12.6	58.8		28.6
Lithuania		11.4	88.6		
Poland	7.6	0.8	75.4	16.2	
Romania	1.5		98.2		0.3
Slovakia	3.0	3.0	90.5		3.5
Slovenia	6.0	3.0	77.0		14.0

Source: Composed by authors according to Pittini et al. (2015)

highlighted that it is usually considered as an extension of the owner-occupied sector and needs truly professionalization. Recent 15 years did not change the situation.

In Poland and Czech Republic cooperative housing constitutes the perceptible part mostly as the heritage of socialistic period. Also the absence of social rent housing in Latvia and Lithuania requires paying attention. In our opinion the situation observed in Czech Republic, where in the housing stock structure, alongside the share of private dwellings, the shares of rental and cooperative sectors are clearly expressed, seems more socially focused.

Material quality of the housing stock is reflected by the level of deprivation. It should be mentioned that the data of Table 4 shows the assessment made by means of surveys. As the whole the problem of housing deprivation is concentrated in rent sector. Among the owners the share of those living in housing with serve deprivation diminished significantly by 2015 compared to 2010. The highest values are marked with bold in the Table 4. The situation seems in general more favorably in Czech Republic and Estonia though these countries differ significantly by the structure of housing ownership. Exclusively high share of the severe deprivation takes place in Romania where the problem touches more than one fifth of the total housing. But only in market rent sector the share of people living in housing with serve deprivation has grown since 2010. The large share of housing stock without necessary amenities determines the specific form of housing problem requiring the adequate technical, economic and financial decisions. In the most CEE countries large-scale modernization and reconstruction should be implemented simultaneously with new construction to improve the housing stock. By opinion of some researchers in CEE counties the housing problem appears mostly and as the problem of engineering and construction while in Western Europe it appears primarily as the problem of legislation and regulation (Shomina 1999).

The indicators of overcrowding in all CEE countries exceed the EU average. The shares of owners and tenants living in overcrowding and under-occupation are

Table 4 Severe housing deprivation rate by tenure status (%)

	Owners. with mortgage or loan		Owners. no outstanding mortgage or housing loan		Tenants of rent at market price		Tenants of rent at reduced price or free	
Country	2010	2015	2010	2015	2010	2015	2010	2015
Bulgaria	15.2	16.0	12.5	8.9	11.8	16.9	31.9	22.7
Czech Republic	2.4	1.7	2	2.2	15.3	8.8	13.0	5.7
Estonia	6.8	1.9	11.2	2.6	17.6	4.3	18.1	4.4
Croatia	11.4	6.1	11.1	6.7	24.9	15.0	19.9	11.9
Latvia	11.1	6.9	19.6	12.9	33.7	26.7	41.0	30.8
Lithuania	3.1	5.3	13.8	7.0	6.3	28.7	24.9	25.9
Hungary	15.4	11.9	15.5	13.4	31.3	32.2	39.0	31.3
Poland	3.5	3.0	11.0	7.7	22.3	19.8	27.0	25.3
Romania	28.6	1.6	24.8	19.2	30.3	53.0	50.8	34.5
Slovenia	11.6	3.5	12.8	4.2	39.7	18.9	20.7	8.5
Slovakia	2.1	3.2	3.3	3.6	10.1	7.6	4.4	21.6

Source: Eurostat (http://ec.europa.eu/eurostat/data/database)

shown in the Table 5. Taking into account that more than 20% of households in Bulgaria, Croatia, Hungary, Latvia, Lithuania and Romania are single person can be concluded that more than a half of people belonging to non-single households suffer from overcrowding in these countries. The most favorable and balanced situation from the standpoint of overcrowding for all ownership statuses has place in Slovakia where in each category the share of overcrowding is less than 20%. High level of overcrowding exists in Bulgaria, Czech Republic, Estonia, Croatia, Latvia, Lithuania and Hungary. The maximum level is in Bulgaria, where more than half of housing owners with mortgage or loan live in overcrowded housing. In the countries listed above high level of overcrowding among the owners regardless of mortgage burden or loan can generate the exclusively severe problem in spite of whether they can repay their borrowings or not. The higher rate of overcrowding is observed in rent sector, but taking into account that rent sector is minor it can be concluded that in general the problem of overcrowding is shifted to the housing owners.

High levels both of overcrowding and under-occupation among the housing owners in Czech Republic, Estonia and Lithuania can be interpreted as the indicator of social polarization by the access to material wealth. Partly it was fixed by privatization from the very beginning of transition to market economy. The highest rate of under-occupation in total and among the owners has place in Slovenia so in part the growth of population in this country can be connected with the relatively good housing situation. In our opinion though under-occupation is the manifestation of the material wealth concentration this phenomenon should not be assessed as unambiguously positive for CEE countries because it is accompanied by depopulation.

Table 5 Overcrowding and under-occupation rates in 2015, %

Country	Overcrowding				Under-occupation		
	Owners, with mortgage or loan	Owners, no outstanding mortgage or housing loan	Tenants, rent at reduced price or free	Tenants, rent at market price	Total	Owners' sector	Rent sector
Bulgaria	53.6	37.8	50.3	82.0	10.7	11.2	0.4
Czech Republic	41.3	38.2	54.9	61.9	22.1	26.1	3.9
Estonia	38.9	40.1	55	65.2	29.2	31.0	6.2
Croatia	37.4	49.1	63.5	81.0	10.1	10.3	4.9
Latvia	31.2	38.2	53.7	63.3	11.1	12.5	2.0
Lithuania	31.2	39.8	66.5	71.2	20.1	20.7	5.6
Hungary	30.2	35.7	56.9	61.6	8.2	8.8	2.0
Poland	18.0	24.6	44.3	62.6	12.9	13.6	1.0
Romania	14.2	13.3	25.0	40.9	5.5	5.5	2.9
Slovenia	12.8	10.2	19.8	38.5	29.5	32.1	4.5
Slovakia	12.4	11.9	19.4	18.4	11.2	12.2	1.2

Source: Eurostat (http://ec.europa.eu/eurostat/data/database)

Table 6 Share of the housing owners with income lower than 60% of the median, % of all housing owners

Country	2010	2015
Bulgaria	81.1	78.4
Czech Republic	57.5	51.6
Estonia	74.4	69.0
Croatia	87.3	88.2
Latvia	72.1	70.5
Lithuania	87.9	81.9
Hungary	84.2	77.1
Poland	74.9	76.6
Romania	96.6	94.8
Slovenia	64.5	57.9
Slovakia	80.8	82.1

Source: Eurostat (http://ec.europa.eu/eurostat/data/database)

The important side of the housing problem in the market economy is the financial burden of housing. In the Table 6 we can see that the share of housing owners whose income is lower that 60% of the median value in CEE countries is very high and in no one country it is less than 50%. For comparison it can be mentioned that in 2010 this indicator for EU had average value 52.6%. In Croatia, Hungary and Poland the situation got worse since 2010. The effect of low income owners is expressed exclusively in Romania where 94.8% of housing owners had the income lower than 60% of the median in 2015. The low income level will not

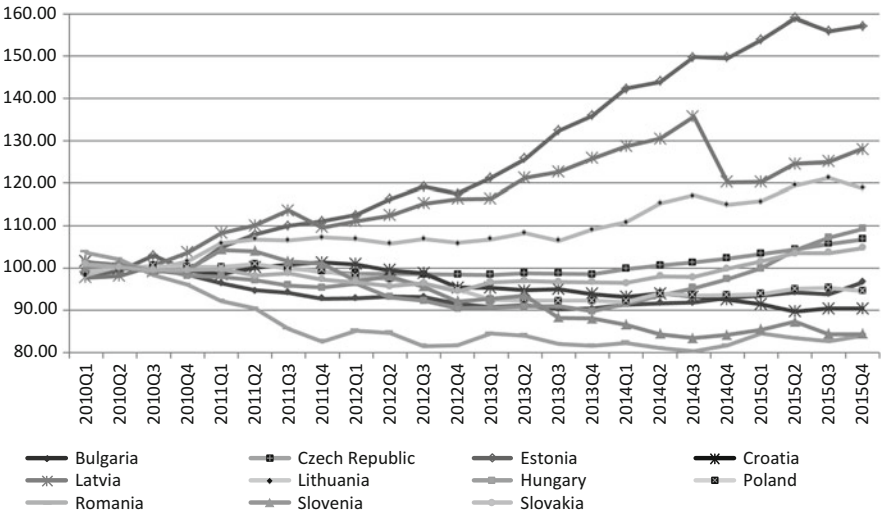

Fig. 1 Price indices of the housing market, % (basic year—2010, 100%). Source: Composed by the authors according to Eurostat (http://ec.europa.eu/eurostat/data/database)

allow adequate service and maintenance of housing by its owners and does not allow opportunity to improve housing situation in case of overcrowding.

Figure 1 shows the dynamics of housing price indices for the total market. The countries under consideration separated in two evident groups. The first group includes the countries where the price in 2015 became higher compared to that in 2010, and the second group is composed by countries where the price became lower. Analyzing the price trajectories of the first group we can see that in Estonia the housing price grew sustainably with insignificant short term corrections and as the result its level became more than by 50% higher. In Lithuania the price had no significant changes in 2011–2012, then after short term drop it continued growing. In Latvia the price rapidly fell down in the second half of 2013, then continued growing but did not reached the former level by the end of 2015. In Hungary, Slovakia and Czech Republic housing price index came to the moderate growth after approximately 3 years long slope and staying lower than in 2010. In the countries of the second group the housing prices demonstrated sustainable downward trend with insignificant short term corrections. In these countries high rate of price growth prevents the access to the housing for housing purchase "from zero" and for improving housing conditions.

It should be mentioned that according to data available for the period since 2000–2014, only three countries demonstrated sustainable growth of civil engineering index. Compared to 2010 as the base by the end of the mentioned period it was equal in Estonia to 124.93%, in Lithuania—134.41%, in Latvia—125.93%. In Hungary this indicator sloped down till 2014 when it grew to 122.64%. The situation in Baltic countries—Estonia, Latvia and Lithuania—seems surprising

Table 7 People at risk of poverty or social exclusion (% of total population)

Country	Total		Owner, with mortgage or loan		Owner, no outstanding mortgage or housing loan		Tenant, rent at market price		Tenant, rent at reduced price or free	
	2010	2015	2010	2015	2010	2015	2010	2015	2010	2015
Bulgaria	49.2	41.3	30.6	31.1	47.1	40.4	31.9	23.3	71.3	52.2
Czech Republic	14.4	14.0	7.7	5.6	12.0	10.7	32.2	31.8	25.0	24.6
Estonia	21.7	24.2	12.1	7.6	20.9	25.2	32.3	33.0	37.7	39.9
Croatia	31.1	29.1	19.2	15.1	31.6	29.1	38.6	29.9	32.4	37.9
Latvia	38.2	30.9	24.9	9.3	35.3	29.8	53.8	39.2	61.4	50.1
Lithuania	34.0	29.3	14.3	9.8	33.3	29.2	56.5	46.7	67.2	45.5
Hungary	29.9	28.3	30.8	27.3	27.2	25.0	45.0	43.3	44.8	47.5
Poland	27.8	23.4	8.7	8.1	26.5	22.6	35.0	35.3	40.5	37.8
Romania	41.5	37.3	25.6	17.1	41.0	37.0	53.1	61.5	76.4	45.0
Slovenia	18.3	19.2	12.6	11.4	16.4	16.0	37.8	45.4	22.9	27.9
Slovakia	20.6	18.4	12.7	14.7	19.5	17.4	37.9	27.0	24.8	42.4

Source: Eurostat (http://ec.europa.eu/eurostat/data/database)

because the high rate of depopulation is accompanied by the housing price growth on the background of housing construction growth. In our opinion this paradox can be partly explained by the high rate of urbanization. The population of these countries concentrates in the capitals and larger towns. This process can change the format of housing problem and social situation in the nearest future.

In CEE countries the homelessness appeared as noticeable social phenomenon in the 1990 when drastic changes put many people out on the street. As stated by the European Commission, homelessness and housing deprivation are perhaps the most extreme examples of poverty and social exclusion in society today. The Table 7 shows the shares of population by ownership status being under the risk of poverty and social exclusion. Though in all countries except Slovenia in 2015 compared to 2010 the situation slightly improved in total it is obvious that risk has tendency of reallocation to the rental sector. The most crucial situation takes place in Bulgaria for owners without mortgage as well as for the sector of reduced rent or rent free housing.

In all countries except of Hungary the share of housing owners without outstanding mortgage or loans being under risk of poverty and social exclusion is significantly (up to three times) bigger than that of the owners with mortgage or loan. In our opinion the explanation can be found as the result of age structure study. The owners who have neither mortgage nor loan burden obtained their housing through privatization and now belong to the elder generation. Owners with mortgage or loan represent the younger generation and have active economic position and higher income and usually use mortgage to improve living conditions.

European statistics give no exact data on homelessness in CEE countries so some specific approaches are required to examine this side of housing problem. But while the level of poverty risk is high the volume of homelessness problem can increase in the nearest future without appropriate means.

3.2 Housing Solutions in CEE Countries

The housing situation including that of the least prosperous part of population is very important from the standpoint of social stability. And it's critical for every country to avoid negative affect on the housing situation and to find the own perspective and ways to improve it (Arskaya 2004). Due to large social importance of housing it is assumed that the authorities should make efforts for housing problem solving. Housing policy is a form of state intervention in the construction, distribution and use of housing, regulation of housing that affect the location, type, availability and affordability of housing, without regard to the form of its ownership. The goals and objectives of housing policy should be formed with the overall goals and objectives of social policy.

In every country, in each social situation and each social system the housing is always a subject of the first necessity, but people's attitudes towards the housing in spite of external similarity may be different. It can be explained by different value orientations, different ways of life, material resources, and more. All this, in turn, defines the requirements for housing and living conditions and the efforts that people are willing to do for their improvement. In all CEE countries construction of social housing is financed by local authorities. In Bulgaria, and Romania social housing is publicly owned only and financed from the municipal budgets only or in some cases with limited complementary funding from the state budget. De facto the situation is the same in the Czech Republic.

The causes of state intervention to the housing sector are investigated by Hoek-Smit and Diamond (2003) and the following target priorities of the state housing policy are listed: increase of housing provision as a factor of social stability; formation of normal living conditions in areas of permanent residence; increase the housing availability, overcome the drawbacks of the housing market (such as monopoly, low construction rate, insufficient supply of housing in the market, including housing for middle-income groups, and others.); economic growth stimulating through the housing sector. All these means are topical for all countries under consideration.

Methods of the housing problem solving, the forms of the central and local authorities' participation and the extent and mechanisms of financial support depend on many factors. The main factors are the level of economic development of the country; standard of living, availability and affordability of housing; condition of the housing fund; development of mortgage lending; terms of residential mortgage loans; state sphere of housing construction; features of the legislation regulating the housing sector.

Housing policy instruments that can be used to stimulate both private and social sector of the housing are shown in the Fig. 2. They include allocation of the land plots and the system of privileges, preferences, governmental guarantees and other means for support all kinds of developers—construction companies, housing associations and individuals,—allowing to stimulate housing construction of the required quality at a certain level of price. These means allow creating a private sector of housing as well as rental—private and public—and social housing sectors.

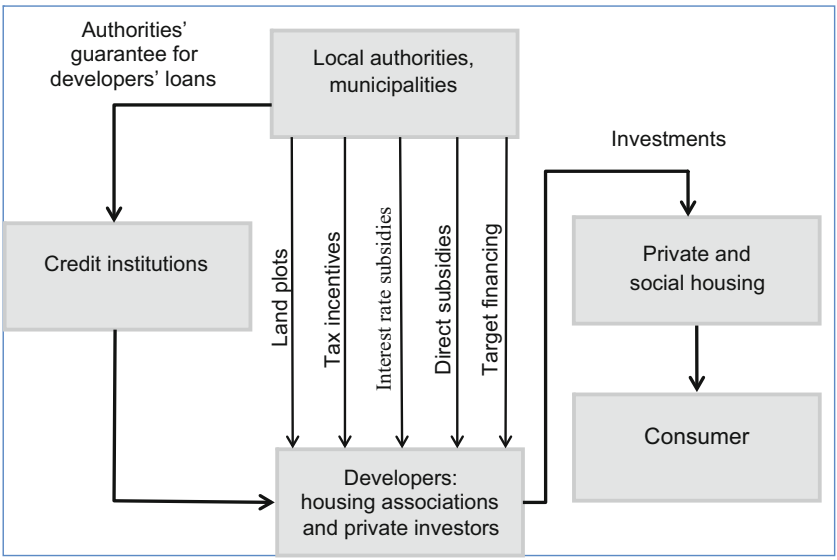

Fig. 2 Model of housing financing by local authorities and municipalities. Source: Composed by the authors

4 Conclusions

The positions worked out in the current paper, in our opinion, can be useful in process of the housing police working out both on central and local levels. The conducted study enabled to formulate the following conclusions:

1. In all CEE countries the housing problem is very acute due to: poor condition of the existing housing fund and low level of housing construction, changes in social and housing policies which have transferred the main burden of housing service and maintenance to mostly low income consumers; reduction of social housing; advent of homelessness.
2. The differences in housing problem in CEE countries are not fundamental from the standpoint of its factors as well as its manifestations and possible effects in near and more far future.
3. Two demographic trends impact significantly on the housing problem in CEE countries: depopulation and atomization of households. These trends predetermine forms and manifestations of the housing problem in future.
4. The financial burden of housing in the countries under consideration is large and in the most countries the situation tends to get worse due to (a) high level of housing deprivation; (b) the housing price growth; (c) high level of the people at risk of poverty.
5. Genesis of the housing problem in CEE countries determines its current manifestations and predetermines the similar ways of its solving. The leading role in

this process should belong to the state authorities. The certain tasks to be solved in the central and local levels and should be focused (a) on construction, reconstruction, repair and service of the housing stock to provide its adequacy to current standards; (b) on creating and supporting financial affordability of housing using the range of direct and indirect financial means.

6. The way of the housing problem solving CEE countries is in the field of general economy. Until the income of the most part of population have not grown significantly the concept of the preference of private ownership for the most part of housing fund should be revised in favor of social housing with guaranteed living standards and terms.

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How Generous Are Contemporary Pension Systems? A Comparative Study of the European Countries

Edyta Marcinkiewicz

Abstract As a result of deteriorating demographics and associated fiscal problems, many European countries face reforms that are believed to reduce pension system generosity. However, despite the fact that generosity is a term that is very often used in reference to the social policy outcomes, the current literature does not define it precisely, relying instead on its intuitive meaning. The paper aims at identifying and discussing different approaches to the concept of pension system generosity as seen from the microeconomic and macroeconomic perspective. It also attempts to evaluate and compare the generosity of pension systems in the European countries. The empirical research covers aggregated data for 27 states and employs selected indicators of pension system generosity associated with its identified dimensions. Statistical correlation analysis is also used to compare the convergence of the results of the generosity assessment from different perspectives. Consequently, this paper presents and collates several rankings of the studied countries in terms of the generosity of their pension systems. The main finding of the study is that the concept of pension system generosity is multidimensional and the perspective chosen affects the results of the assessment.

Keywords Pension system • Generosity • Adequacy

1 Introduction

The past two decades saw significant reforms of the pension systems in many European countries. The changes implemented were of both parametric and systemic nature. Nonetheless, the common driver for these reforms was the unfavourable demographic situation. This is reflected by the growing number of pension beneficiaries in relation to the contributors to the pension system. According to Eurostat, the average proportion of the elderly to the working-age population in European countries in 1990 was around 20%, whereas in 2015 it reached nearly 29%. There are some countries such as Italy, Latvia, Lithuania and

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Malta, where the increase was 12 pp during that time, and only one country, Norway, where the tendency was slightly reversed, as there the proportion of the population 65+ to the population aged 15–65 was reduced by 0.7 pp. The Eurostat demographic projections show a further increase in this ratio up to 40% in 2030. The impact of population ageing on public finances is considerable and threatens the sustainability of pension systems, especially publicly managed PAYG systems. As a result, most of the countries are constantly reforming their pension systems. Some of these reforms, such as cutting pension benefits, a closer relation of the benefits to the previous earnings, abolition of pension privileges and a raise in the pensionable age, which makes the period of receiving benefits shorter, are believed to reduce pension system generosity i.e. people can no longer expect that they obtain that much from the pension system as much they would before these changes. This can be related to a single agent or the population level.

Despite the fact that generosity is a term that is very often used in reference to the social policy outcomes, the current literature does not define it precisely, relying instead on its intuitive meaning. The origins of this notion, when used in regard to the pension policy, can be found in Esping-Andersen (1990). He identifies three welfare state regimes that can be distinguished on the basis of decommodification level. Decommodification is a term used to determine the scope of social entitlements provided by the state. It reflects the role of the state versus the role of the market in welfare states. Esping-Andersen categorizes the liberal regime, which is characterized by a low level of decommodification, the corporatist regime, with a moderate level of decommodification, and the social democratic regime, with high level of decommodification. As stated by Scruggs (2014) decommodification can be identified with the generosity of social protection programs.

This study aims to evaluate and compare the generosity of pension systems in the European countries. The contribution of this work to the current literature is twofold. First, it summarizes and discusses different approaches to the notion of pension system generosity. Second, in the empirical framework it compares the European pension systems in terms of generosity as seen from the microeconomic and macroeconomic perspectives. The empirical research covers aggregated data from 27 European states and employs selected indicators of pension system generosity associated with its identified dimensions. Statistical correlation analysis is used to compare the convergence of the results of the generosity assessment from different perspectives. The paper supports the view that the generosity cannot be identified solely with pension system adequacy, as such an approach is far too simplified, especially in cross-country studies.

2 The Concept of Pension System Generosity

The most common view is that pension system generosity can be identified with the adequacy of pension benefits. There are many studies that refer the meaning of generous pension system to the replacement rate, which is a key adequacy indicator

(see for example Grech 2015; Wolf et al. 2014; Meyer et al. 2013; Zohlnhofer et al. 2012; Clark and Craig 2011; Plesniak 2011; Andrews and Rashid 1996). The replacement rate is the ratio between pension benefit and earnings from work. More generous pension systems provide higher benefits in relation to earnings than less generous pension systems. Andrews and Rashid (1996) state that due to the fact that pensions are financed out of a tax on wage earnings, the replacement rate reflects the cost that current workers bear to finance pension benefits of the retired. However, replacement rates can be constructed in a number of ways. Borella and Fornero (2009) as well as Grech (2013) identify several types of this ratio. In the most traditional approach, the replacement rate is empirically determined using actual micro data, usually obtained from household panel surveys. However, the aggregation of the information may be based on cross-section data or longitudinal data. In the first case, the replacement rate is set as the ratio between the average pension benefit in the current elderly population and the average earnings in the current working-age population. It can be perceived as an indicator of the economic position of the elderly in society by comparing their incomes with the incomes of the working population. In the second case, the replacement rate reflects changes in the level of income in an individual's life cycle, as the present pension benefits are compared to the past earnings. The longitudinal replacement rates are of lower comparability across countries, because they do not account for different dynamics of change in income levels over a given time span. Another type of this ratio is the theoretical and simulated replacement rate, which can be useful when assessing the generosity of pension system from the current contributors' perspective. It is computed for model agents based on the current pension system rules and a set of assumptions. Such a simulated replacement rate does not require collection of empirical data and, in contrast to other indicators of pension system generosity, refers solely to the current pension system design. This can be seen as an advantage, because when most of the pension systems are in the transition process—which means that pensioners population and working-age population or even different cohorts within these populations are subjected to the different pension system rules—the simulated replacement rate allows the influence of the past conditions to be disregarded in the generosity assessment. However, despite this important advantage, replacement rate does not capture the whole complexity of generosity. Rajevska (2016) states that the pension wealth indicator can be an alternative to the replacement rate. Whereas the replacement rate refers to one payment in time, although average, the pension wealth indicator reflects the whole flow of pension payments that depends on the expected longevity and the level of pension benefits. Pension wealth, similarly to the replacement rate, can be developed in a retrospective manner using micro survey data or can be estimated through simulations. Nonetheless, the replacement rate as well as pension wealth limit pension generosity assessment to the individual income level, as they concern the microscale.

A broader concept of pension system generosity accounts for a whole range of additional factors, for example the factors that determine the intergenerational fairness in the actuarial sense. To illustrate this problem, one can use a simple

example. Let's suppose that in two countries the replacement rates from a pension system are equal, but in one country the pensionable age is 65 and the pension contribution rate is 20%, whereas in the second country the pensionable age is 67 and the contribution rate amounts to 22%. Intuitively, the first pension system is assessed as more generous despite the same benefit adequacy, i.e. it gives beneficiaries more relative to their contributions. However, the practical application of such approach in generosity assessment is associated with a number of problems. Pension systems are very rarely stable in the long run in terms of rules and parameters, so the old age population is a mixture of cohorts that paid their pension contributions while of working age according to different rules. Thus, it is very difficult to develop a simulation model that accurately estimates the relation between the contribution to the system of a generation and the benefits obtained.

Generosity perceived in macroscale can refer to the intergenerational division of the output. This approach is a direct reference to the pension system definition in macroscale, which states that the pension system is a tool of the current GDP division between the working-age generation and the generation of pensioners (Gora 2008). Consequently, this division can be perceived as more or less fair for any of these competing generations. However, fairness may refer to the previously mentioned actuarial sense but it also may concern the sizes of both generations. From this second perspective, the generosity assessment provides an answer to the question whether the old-age generation receives an adequate part of GDP relatively to its size. The part of national product consumed by the elderly is the pension expenditure. In fact, it is often defined as a pension sustainability indicator. However, after adjustment for the size of the elderly population in relation to the working age population, it can serve as a generosity measure. For example Plesniak (2011) employs the ratio of pension expenditures (as a percentage of GDP) to the demographic pressure associated with the generation of retirees explicitly as a generosity indicator. Chybalski (2014) as well as Marcinkiewicz and Chybalski (2014) also use a very similar concept of pension expenditure expressed as a share of GDP to the old-age dependency ratio. Although they do not directly refer to the idea of generosity, they state that the discussed ratio can be identified with "macroscale adequacy". This kind of adequacy is not associated with the individual retiree level, but to the whole generation. It measures the share of GDP that is assigned to the elderly population in reference to the working age population. The more GDP is consumed by the generation of the elderly, the less, relatively, is assigned to the working age population. In this sense, the adequacy in a microscale determined by the replacement rate does not necessarily converge with the abovementioned macroscale adequacy. Theoretically, pension benefits in terms of the replacement rate, measured as the relation between current benefits and past earnings, can be high because of the GDP growth over time. However, at the same time the share of GDP assigned to the old age generation can be unfavorable in comparison to the share assigned to the working age generation as far as the sizes of both populations are concerned.

Measuring pension generosity with the use of pension expenditure as a share of GDP and standardized with respect to the relative size of the elderly population has

its limitations. This indicator is a very good tool for comparative analyses of different pension systems, however the interpretation in terms of its values is not easy. One can tell which of the compared pension system is more generous, and which is less, but identifying the optimal levels of pension generosity is a much more complex task. That is because the pension generosity concept, as seen in a broader, macroeconomic context, is situated between three categories: pension system adequacy, sustainability and intergenerational redistribution.

The approach to the pension generosity similar to the above mentioned is presented in Andrews and Rashid (1996). Apart from the replacement rate, which corresponds to the narrower concept of pension generosity, they propose an indicator called the transfer ratio. It is supposed to reflect the transfer of income from pension contributors to pension beneficiaries. The transfer ratio is a product of two components: the replacement rate and wage share. The latter is defined as the ratio between the average wage and the national product per contributor. The higher the transfer ratio, the more generous the pension system is.

A somewhat different perspective in the assessment of pension system generosity is shown by Scruggs (2014). Following the methodology of the Esping-Andersen decommodification index, he presents a pension generosity sub-index, which is a component of an overall social generosity score that includes unemployment, sickness and pension benefits. The pension generosity sub-index is a synthetic indicator which is the sum of several normalized values, i.e. the standard and social pension replacement rate, life expectancy beyond retirement, the number of years of insurance needed for a standard pension and the proportion of employee to contributions for the pension. All of these are adjusted for the pension beneficiaries coverage rate. The scores for the pension generosity index, computed for a sample covering more than 20 countries, are provided by the Comparative Welfare Entitlements Dataset (CWED2). However, this dataset does not include mandatory private pension schemes, but only mandatory public ones.

3 Data and Methods

This study aims at generosity assessment in 27 European countries: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. The selection of countries was conditioned by the data availability in the Eurostat database, which serves in this study as the main source of the statistical information needed for generosity assessment. The empirical analysis includes a dynamic approach, as it captures changes in time. The time span of the conducted research covers the years between 2006 and 2013.

Four different generosity indicators are used:

1. aggregated replacement rate (ARR)
2. replacement rate (RR)
3. pension expenditure (PE/GDP/ODR)
4. transfer ratio (TR)

Aggregated replacement rate is an indicator provided directly by Eurostat. It is defined as the ratio of the median individual gross pensions of 65–74 age category relative to median individual gross earnings of the 50–59 age category, excluding other social benefits. ARR is available in the EU-SILC database, which means that it estimated on the basis of household panel surveys, and the incomes are equalized.

The second replacement rate subjected to the analysis (RR) is constructed in a slightly different manner than ARR. It is obtained from the following formula[1]:

$$RR = \frac{Average\ pension}{Average\ wage} \tag{1}$$

where the average wage was obtained from the Structure of Earnings Survey (SES) and it reflects net earnings. The average pension is estimated by dividing old age pension expenditures taken from the ESPROSS database by the number of old age pension beneficiaries at the end of a given year.

The next indicator of pension system generosity is pension expenditure adjusted for the size of the population proposed by Marcinkiewicz and Chybalski (2014):

$$\frac{\frac{PE}{GDP}}{ODR} = \frac{PE}{GDP} \times \frac{popul_{15-64}}{popul_{65+}} = \frac{\frac{PE}{popul_{65+}}}{\frac{GDP}{popul_{15-64}}} = \frac{PE\ per\ pensioner}{GDP\ per\ employed} \times \frac{COV}{EMP_{15-64}} \tag{2}$$

where PE expresses pension expenditure, popul.15–64 denotes the size of the working-age population i.e. between 15 and 64, popul.65+ is the population aged 65 and over, COV denotes the pension coverage rate defined as the share of the pensioners in the 65 and over age cohort, EMP15–64 is the employment ratio in the 15–64 age group. Decomposition of the PE/GDP/ODR indicator expressed in formula (2) shows that it is a ratio of the average pension and labor productivity adjusted for the pension take-up rate and the rate of the working population that actively contributes to generating the output.

The transfer ratio is calculated according to the following formula (Andrews and Rashid 1996):

$$TR = RR \cdot WS = RR \cdot \frac{Average\ wage}{GDP\ per\ employed} \tag{3}$$

where RR is the replacement rate expressed as a ratio of average pension benefit to average wage, and WS denotes wage share, which is the ratio between the average

[1]This kind of replacement rate is sometimes called the benefit ratio (see Grech 2015).

wage and GDP per employed person.[2] To obtain the estimates of TR in this analysis, the replacement rate expressed by the formula (1) is used. WS is provided in the Eurostat database (national accounts—GDP main aggregates) as the share of wages and salaries in GDP.

The set of chosen pension generosity indicators does not include the generosity sub-index from CWED2 discussed in the previous section, due to the incompatible country coverage. Additionally, this dataset provides the estimates of the index only until 2010.

To answer the question whether the results of the four selected generosity measures are consistent, the correlation analysis for each pair of indicators is applied. The study employs the Pearson correlation coefficient as well as Spearman's rank correlation coefficient to account for both linear and nonlinear relationships. Additionally, to examine the convergence of the whole set of four indicators in creating rankings of the studied countries in terms of generosity, Kendall's W concordance coefficient developed by Kendall and Babington Smith (1939) is employed. It is typically used in the Delphi studies for the assessment of the similarity of two or more rankings. Kendall's W takes values between 0 and 1, the closer to 1 the greater the consensus in the rankings. The corresponding chi-square test statistics is also applied to verify the null hypothesis that rankings are independent (random).

4 Empirical Results

The first stage of the research includes estimation of the four generosity indicators i.e. the Eurostat aggregated replacement rate (ARR), the replacement rate (RR), pension expenditure adjusted for the old-age dependency ratio (PE/GDP/ODR) and the transfer ratio (TR). They all are computed for the annual data covering 27 European countries.

Figure 1 presents the average values of the developed generosity indicators. A common tendency can be identified. On average, there is an upward trend as far as the generosity of the pension systems in the studied sample of 27 countries is concerned, and this tendency is confirmed by all of the indicators. The mean values of the indicators rise steadily between 2006 and 2013. The variability around the mean in the analyzed sample is also quite moderate as the dispersion coefficient expressed as a ratio of the standard deviation and the mean in the prevailing number of cases is below 20% and does not exceed 30% in any case. A closer look at the particular values for each country allows the outliers to be distinguished. For example, for four countries out of 27 a decrease in ARR is reported: Austria, Ireland, Latvia and Sweden. When considering RR, seven countries experienced

[2]Originally, in the study of Andrews and Rashid (1996) GDP/contributor is used. However, due to the data availability in this study it GDP/employed is analyzed as a proxy.

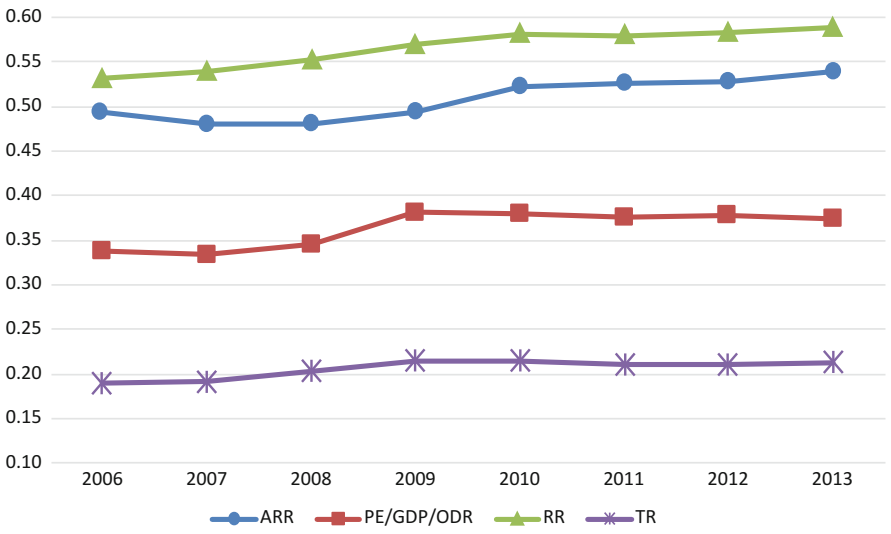

Fig. 1 Dynamics of the average generosity indicators. Source: Own elaboration based on the Eurostat database

declines in the period 2006–2013: Belgium, Bulgaria, Denmark, Ireland, Poland, Sweden and Switzerland. Three countries, Germany, Poland and Denmark, reduced their pension expenditures (adjusted for population size) during the time span studied. The transfer ratio decreased in five countries: Belgium, Denmark, Ireland, Poland and Switzerland.

Figure 2 presents the generosity rankings of the studied countries developed for the latest available data i.e. 2013. As shown, the rankings constructed on the basis of different indicators converge only to a moderate extent. Some countries can be distinguished that are characterized by quite high values of all generosity indicators: Austria, Luxembourg, Portugal, Italy and France. The least generous pensions are offered in Latvia, Lithuania, Switzerland, Estonia and Bulgaria. There are also some cases of noticeable differences in rankings when taking particular countries into account. For example, Luxembourg is one of the top countries in the ARR, RR and TR rankings, however it is in 20th position in the PE/GDP/ODR ranking. This means that despite the quite high adequacy of the pension benefits relative to wages, the pension expenditures of the state are quite small compared with the proportion of the elderly to the working population. An opposite situation is observed for the United Kingdom, which has one of most generous pension systems according to the PE/GDP/ODR indicator, but it is in the middle of the ranking as far as ARR or TR are concerned, and at the bottom when RR is taken into account. Two other opposite cases are also Denmark and Romania. The first one is in the top ten most generous countries when considering RR, PE/GDP/ODR and TR, but it has relatively low aggregated replacement rate. In contrast, the Romanian pension system is characterized by a high aggregated replacement rate, but other generosity indicators take on relatively low values.

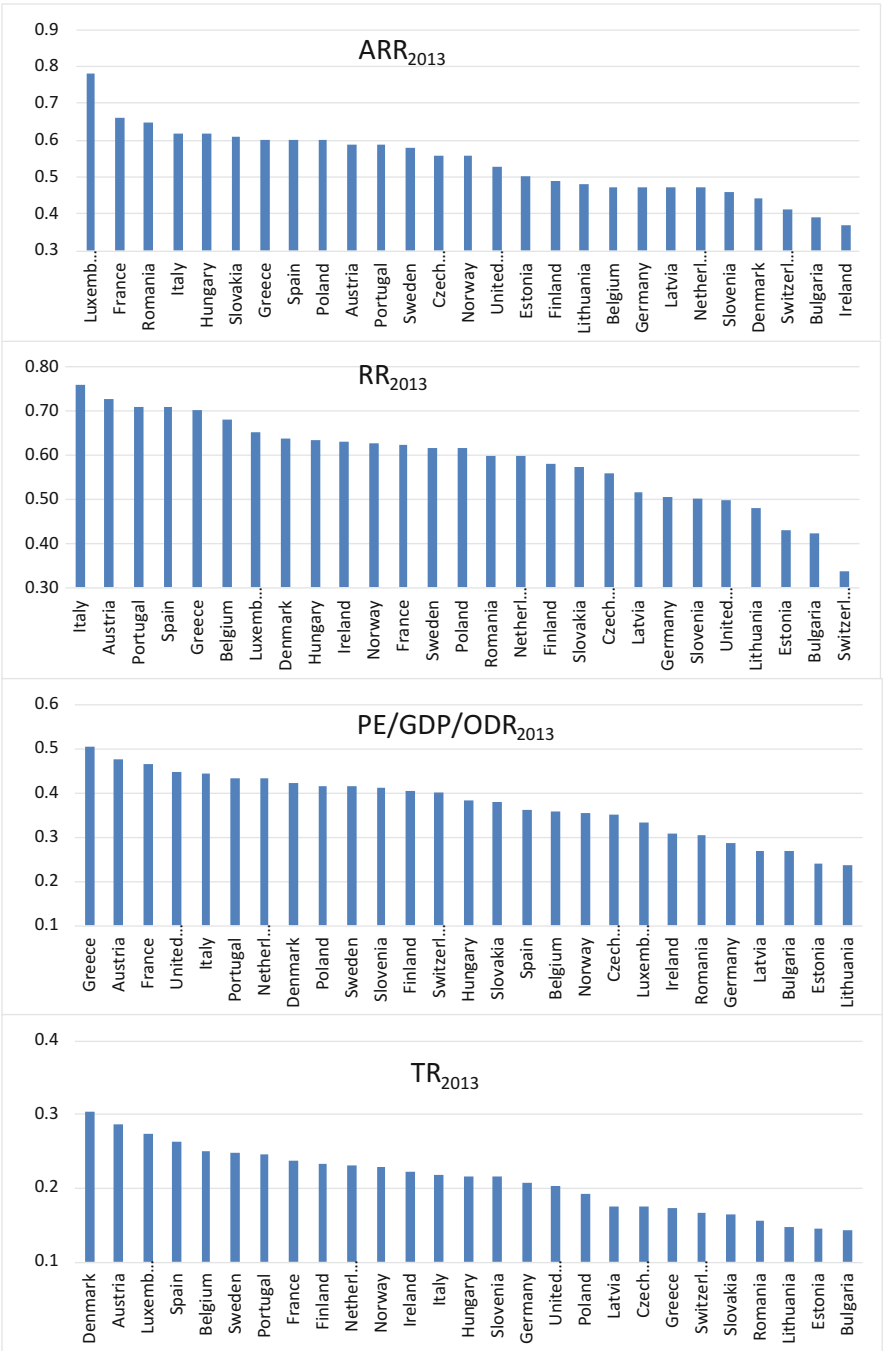

Fig. 2 Generosity rankings for 2013. Source: Own elaboration based on the Eurostat database

To have a deeper insight into the problem of the inconsistency of the pension generosity rankings obtained with the use of different generosity indicators the correlation analysis is applied. Table 1 presents the Pearson correlation coefficient computed for each pair of the studied variables. As shown, the strongest positive relationship is reported between RR and TR. The Pearson coefficients for all of the studied periods are above 0.6. However, this is not surprising, because the formula of transfer ratio employs replacement rate. The most intriguing thing is a weak relationship between the two replacements rates—ARR and RR—in 2006, 2010 and 2011, and quite moderate in the rest of the periods. They both are determined on the basis of different formulas but they share a common concept i.e. comparing average pension benefits to average wage. Thus, one could expect more consistency between these two adequacy indicators. There is also a very weak linkage in the case of two pairs: ARR and PE/GDP/ODR as well as ARR and TR.

To account for nonlinear relationships the analysis is extended by the Spearman's rank correlation coefficients. However, the results are very similar to those obtained with the use of the Pearson correlation coefficients. As reported in Table 2, again the greatest consistency is observed for ARR and RR. The pairs that include indicators representing the narrower concept of pension system generosity (ARR or RR) as well as its broader concept (PE/GDP/ODR or TR) in general are characterized by the weaker relationship (except the pair RR and TR) than the pairs from the same category.

To develop the overall assessment of the consistency of all four rankings, not just the pairs, the Kendall's concordance coefficient is applied.[3] According to the results presented in Table 3, the values of the coefficient indicate quite moderate, but significant concordance of rankings. Due to the fact that two variables, RR and TR, are highly correlated, the coefficient of concordance is also calculated for three rankings (excluding RR). As shown in Table 3, this exclusion lowered somewhat the values of W. For 2010, it is even below 0.4, which indicates a very low concordance of rankings.

5 Conclusion

The question how generous are the pension systems or how generous they will be in the future is often asked by the policymakers and their opponents, especially when the substantial pension reforms are considered. However, the answer depends on how generosity is understood. This study attempts to present different views at this concept and examine in the empirical framework whether they are convergent.

The generosity of the pension system can be perceived in a narrower sense that limits it to the generosity of the pension benefits concerned in a micro-perspective. It answers the question how much the system offers to a single beneficiary, but

[3]The employed formula accounts for ties.

Table 1 Pearson correlation coefficients

Pearson correlation coeff.	2006	2007	2008	2009	2010	2011	2012	2013
ARR and RR	0.27	0.48**	0.57***	0.45**	0.27	0.33*	0.46**	0.55***
ARR and PE/GDP/ODR	0.29	0.33*	0.45**	0.29	−0.03	−0.02	0.17	0.31
ARR and TR	0.09	0.31	0.32	0.24	0.00	0.09	0.21	0.22
RR and PE/GDP/ODR	0.37*	0.41**	0.39**	0.28	0.21	0.36*	0.44**	0.51***
RR and TR	0.83***	0.77***	0.73***	0.61***	0.68***	0.70***	0.65***	0.65***
PR/GDP/ODR and TR	0.41**	0.43**	0.35*	0.30	0.27	0.41**	0.43**	0.49**

Note: *, **, and *** denote statistically significant at the 0.10, 0.05, and 0.01 levels, respectively

Table 2 Spearman's rank correlation coefficients

Spearman correlation coeff.	2006	2007	2008	2009	2010	2011	2012	2013
ARR and RR	0.24	0.50***	0.51***	0.43**	0.22	0.31	0.45**	0.50***
ARR and PE/GDP/ODR	0.22	0.25	0.34*	0.16	−0.03	0.02	0.28	0.31
ARR and TR	0.16	0.40**	0.36*	0.24	−0.01	0.06	0.17	0.14
RR and PE/GDP/ODR	0.30	0.39**	0.38**	0.30	0.18	0.32	0.41**	0.49***
RR and TR	0.81***	0.78***	0.74***	0.66***	0.75***	0.74***	0.64***	0.71***
PR/GDP/ODR and TR	0.39***	0.39**	0.32	0.25	0.23	0.37*	0.41**	0.46**

Note: *, **, and *** denote statistically significant at the 0.10, 0.05, and 0.01 levels, respectively

Table 3 Kendall's *W* coefficients of concordance

Concordance of rankings	2006	2007	2008	2009	2010	2011	2012	2013
Kendall's W	0.52***	0.59***	0.58***	0.50***	0.42**	0.48***	0.54***	0.58***
Kendall's W (excluding *RR*)	0.50**	0.56**	0.56**	0.48*	0.37	0.43	0.52**	0.53**

Note: *, **, and *** denote statistically significant at the 0.10, 0.05, and 0.01 levels, respectively

without taking into consideration the wider, macroeconomic context. In a broader sense, the generosity is referred to other factors, such as the size of the elderly population or the share of wages in the national output. These two approaches to the pension generosity assessment can lead to contradictory findings.

In this study, four different indicators of the pension generosity are analyzed. Two of them, i.e. replacement rates based on different formulas, reflect the narrower concept of pension generosity. The further two, pension expenditure adjusted for the size of the population and transfer ratio represent the broader context. In the course of the conducted empirical research, one can formulate the conclusion that the narrower concept of pension generosity is not very closely related to the broader understanding of this phenomena. Consequently, caution is needed when assessing the effects of pension reforms in terms of the generosity.

The conducted analysis also allows the conclusion that in general the generosity of the studied pension systems in 27 European countries tends to rise slightly. All the four employed indicators confirmed the average growth reported for the period 2006–2013. However, some countries can be distinguished i.e. Ireland, Sweden, Belgium, Denmark, Poland and Switzerland, for which at least two of the four indicators show a decline in their pension systems generosity. These countries can be perceived as outliers from the common trend.

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Unemployment and Social Exclusion in the Republic of Macedonia

Remzije Rakipi

Abstract The Republic of Macedonia received EU candidate status in 2005, and although the negotiations for its accession and the EU agenda are widely supported, the country is still struggling to comply with EU socio-economic standards. One of the challenges relates to the level of inclusiveness of the labor market and high unemployment among marginalized segments of the country. The aim of this study is therefore to examine structural disparities confronting the Macedonian labor market. This, specifically as it relates to unemployment as a common source of social exclusion. The study examines unemployment at multiple levels for various periods from 2004 to 2014. Despite several interventions by Government to reduce unemployment and to ensure a more inclusive labor market, findings show that the country is still struggling with high unemployment. Certain segments of the country are much more vulnerable to unemployment. The study observes that youth and citizens with Albanian or Roma origin are much more vulnerable to unemployment and at much higher risk of social isolation. Findings suggest notable regional disparities, but no notable disparity between male and female unemployment rates.

Keywords Labor market • Unemployment • Social exclusion • Social inclusion

1 Introduction

Unemployment is a painful problem faced by many countries. It is a problem that touches all segments of society and often not on an equal basis. Groups such as females, youth, ethnic minorities and specific geographic areas such as rural areas tend to be much more vulnerable to this phenomenon. Besides the commonly known negative effects of unemployment such as economic and social expenditures and low economic growth, unemployment also raises other challenges in society, as is the fight against poverty, social insecurity, low quality of life and social exclusion.

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Such notions are evident more or less in all societies, but often more emphasized in less developed countries. The Republic of Macedonia is a good example of this.

The Republic of Macedonia declared its independence in 1991, while the period that followed implied a transition from central planning to a market economy, which in itself should have resulted in increased prosperity. However, this did not seem to be the case entirely. With the change of ownership from public to private ownership, it is generally expected that investments increase and unemployment decrease because of job growth, but for the Republic of Macedonia this was not entirely the case. Investments have been moderate and the unemployment remains very high. According to Kjosev et al. (2006), both foreign and domestic investment in the period following the independence, with the exception of the textile and steel industry, were quite low due to the high level of political instability in the country and the entire Balkans. In recent years, the country began to show some progress in terms of economic reform, decentralization and social development, especially after receiving EU candidate status. However, despite the progress and the fact that negotiations for its accession and the EU agenda are widely supported by civil society and the Government, the country is still struggling with high unemployment and the ability to comply with EU socio-economic standards. In this context, not only the high unemployment raises a big concern but also the level of inclusiveness of the labor market and substantially high unemployment among marginalized segments of the country. According to Blazevski et al. (2009), similar to other Western Balkan countries, the labor market in the Republic of Macedonia is insufficiently inclusive, even though there is legislation in place on labor relations, gender equality, and anti-discrimination and equal employment opportunities. More than 10 years have passed from the acceptance of the Republic of Macedonia as an EU candidate and the start of a reform process aimed to bring the country closer to acceptance as a full member of the EU. Hence, the aim of this study is to observe labor market trends for the period 2004–2014 (to the extent official data is available), with a specific focus on unemployment, and to examine disparities confronting the Macedonian labor market today.

2 Concepts and Definitions: Social Exclusion

Among other factors, unemployment stands out as a main cause of poverty and social exclusion. Job creation for the most vulnerable groups in society is a key component in the fight against social exclusion, and the most effective way to provide vulnerable groups a sense of independence, financial security and a sense of belonging.

The terms “social exclusion” and “social Inclusion”, for that matter have in the recent years come to occupy a central place in the discussion of social policy and inequality, this especially in Europe. While the concepts have acquired significant strategic implications, by emphasizing cultural/social and structural processes, the exact meaning of the term remains somewhat elusive and the definition of the

concept varies among countries, different school of thoughts and different experts and researchers (Bradshaw et al. 1998; Silver and Miller 2003).

The terms social inclusion and exclusion are closely related, and it is difficult to discuss social inclusion without discussing social exclusion. While some view social inclusion and exclusion as two faces of the same coin, it is important to understand that social exclusion is not the converse of social inclusion. Silver and Miller (2003) argue that there is not a zero-sum relationship in which greater exclusion means less inclusion. Rather, both processes are interrelated and can occur simultaneously. The terms are multidimensional and there are very few people completely excluded in all dimensions at once. Social inclusion and exclusion are the inverse of each other only if it is a one-dimensional concept (Silver and Miller 2003).

The concept of social inclusion and exclusion is important both from a social and economic perspective. Social exclusion can be demoralizing for individuals' lives and the chance for their children to live a decent life, but it also inflicts enormous costs on the economy and society. These concepts allow us to view the vulnerable groups in society beyond the single dimension such as poverty and to consider systematic and process issues that affect the marginalization of various groups in society (Atkinson and Marlier 2010). In other words, these concepts allow us to better understand and study vulnerable groups in society and the causes of inequality and marginalization. According to Atkinson and Marlier (2010), this kind of understanding has already proven useful and served a powerful tool for many European countries who have taken advantage of this level of understanding to identify vulnerable groups within their communities, to tailor their government policies and programs in for the fight against social exclusion, and to develop more effective approaches to service delivery to vulnerable groups.

Finally, from a pure economical perspective, social exclusion presents costs to not only individuals, i.e. not realizing their educational potential, higher risks of unemployment, poor physical and mental health. It also presents a cost to taxpayers. The cost of social exclusion does not only touch individuals living in disadvantaged circumstances; it touches everybody through their taxes, i.e. through the funding of social initiatives, programs and policies. Social exclusion inflicts a tremendous cost also to the overall economy through its effect on economic performance and competitiveness, i.e. shortage of skilled workers, reduction in customers/the countries spending power, and early withdrawal from the labor market and ageism.

3 Methodology

To understand unemployment, especially among vulnerable groups of society, it is essential to consider the development of the labor market from a much broader perspective and to observe changes in the labor market in general. Warranted in this case is also a close look at other labor market indicators such the rate of economically active population and employment trends. A valuable source in the

capturing of events in the labor market is the Labor Force Survey (LFS); executed annually by the State Statistical Offices of the Republic of Macedonia and the National Employment Agency. Hence, for the sake of this study, official data published from these two national institutions for the period 2004–2014 form the primary basis for our observations and conclusions.

4 Data Analysis

The overall labor force participation rate in Republic of Macedonia is despite an increase by approximately 5% point still relatively low, reflecting also a low employment rate coupled with high unemployment rate. As shown in Table 1, a notable disparity exists in activity rates when observed by gender. Observations show that the activity rate of females is lower than males by 24% point, which is a relatively large gap. According to Blazevski et al. (2009), several factors influence the low labor force participation of women in Macedonia; emphasizing among others tradition and cultural habits in the country, low education and skills, ethnicity combined with the education, availability and cost of childcare services, care for older family members and general labor market discrimination against female.

Similarly, to labor force participation, observed data in Table 1 for employment show also an increasing trend in the study period with an overall increase of 8.4% point. However, the registered employment rate in 2014 (41.2%) still displays a very low rate as per international standards and more importantly, it presents a very large gender gap with a female employment rate 17.7% point lower than the registered male employment rate for the same year. Positive and noteworthy in this context is that no spillover effects seem to have been witnessed on female and male employment following the global economic crisis in 2008/2009.

The unemployment rate in Republic of Macedonia (Fig. 1) has decreased substantial in the study period and has been registered at record low rate of 28% in 2014 and overall decrease of 9.2% point in the study period. Although this is quite an impressive decline, the overall unemployment rate is still quite high as per international standards. The decrease of the unemployment rate can be attributed to

Table 1 Activity and employment rates in Republic of Macedonia in 2004, 2009 and 2014

	2004	2009	2014
Activity rate	52.2	56.7	57.3
Male	63.5	69.6	69.3
Female	40.9	43.7	45.3
Employment rate	32.8	38.4	41.2
Male	40.2	47.5	50.1
Female	25.4	29.4	32.4

Source: State Statistical Office of the Republic of Macedonia (2015)

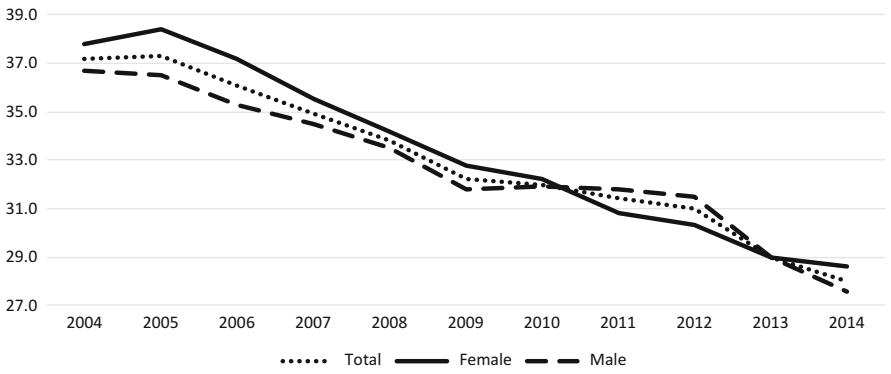

Fig. 1 Unemployment rate in Republic of Macedonia by gender 2004–2014 (%). Source: State Statistical Office of the Republic of Macedonia (2016)

several employment programs, which in recent years were part of the macroeconomic policy of the Government of Republic of Macedonia.

As observed in Fig. 1, both female and male unemployment rates show a downwards trend in the study period. While, the female unemployment rate has steadily decreased throughout the entire period, the male unemployment rate registered a temporary stagnation in the period 2009–2011. The gender gap in the observed period is relatively minor. As can be observed in Fig. 1, the largest gap between male and female unemployment rates is registered in 2005 and 2006, while there was barely any in gender gaps registered in 2010 and with equal unemployment rates in 2013. Noteworthy is that the gender gap although relatively minor has always been in favor of male unemployment rates expect in the period 2010–2012 where the gap was in favor of female unemployment registering slightly lower rates than the male unemployment.

Although the high level of unemployment among females in the Republic of Macedonia can be explained by the general causes of unemployment, the demanding role of women in the household and the difficulty in entering and remaining in the labor market is one aspect that is often underestimated. World Bank (2013) reported that the opportunity cost of work for most women is higher than their potential wage in the labor market. While this does not explain the reason for the high unemployment in Republic of Macedonia, it touches some key aspects hindering women to enter the labor market and actively pursue jobs such as access to childcare, pay gaps, etc. According to Blazevski et al. (2009), policies to improve the level of education of women, especially ethnic minorities, and in terms of price, providing accessible and affordable services for childcare and care of others can increase the activity of women and therefore their employment.

Observed by age groups, unemployment in Republic of Macedonia portrays a much harsher reality with notable disparities among various age groups and extreme high youth unemployment rates. As presented in Fig. 2, the population aged 15–24 are hit hardest by unemployment throughout the study period,

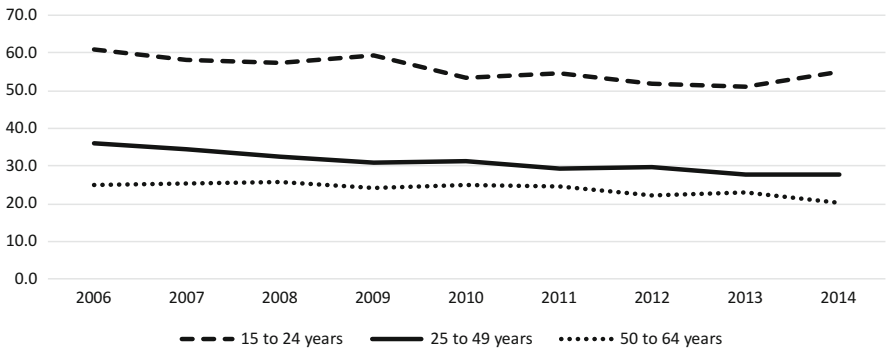

Fig. 2 Unemployment rate in Republic of Macedonia by age 2006–2014 (%). Source: State Statistical Office of the Republic of Macedonia (2016)

2006–2014, with a registered unemployment of 53.1% in 2014. The data show clearly that the younger generation are much more vulnerable to unemployment with rates registered at levels more than double than that of other age groups throughout the study period.

Youth unemployment has been and remains very serious problem that requires great efforts to ensure that the younger generation are not excluded from society or seek opportunities abroad. This situation is worrying because youth workers represent a significant group that can contribute to a more dynamic economic development of the country through their knowledge and creative abilities (Kjosev 2007). The alarmingly high youth unemployment can be partly explained by employment in the grey economy. According to data from the State Statistical Office of the Republic of Macedonia (2016), the grey labor market in Republic of Macedonia is of significant size and estimated that the informal employment represents approximately 45.5% of the total youth employment.

The lower the educational attainment the more vulnerable do people in Republic of Macedonia seem to be towards unemployment. As presented in Table 2, the unemployment rate for lower levels of education attainment decreased in the study period, 2006–2014, while the unemployment rate for the population with tertiary education has been fluctuating up and down and remains app. at the same level in 2014 as observed in the start of the study period. The highest decrease has been observed among unemployed with less than primary, primary and lower secondary education (levels 0–2) with a decrease of 14.9% point from 2006 to 2014. Though, despite the decease it still remains at a very high level, 30.2%, slightly higher the unemployed with upper secondary and post-secondary non-tertiary education (levels 3 and 4) and 9.1% point higher than the unemployed with tertiary education (levels 5–8). In regards to the latter, it is noteworthy that the unemployment rate for people with tertiary education lies at e level 0.8% point higher in 2014 compared with 2006, with the unemployment rate for this group reaching its high in 2013 at the rate of 24.5%. Although the rate has decreased to 21.3% in 2014, the relatively high unemployment within this group of people is quite worrisome as this group is

Table 2 Unemployment rate in Macedonia by educational attainment 2006–2014 (%)

Education level/year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Less than primary, primary and lower secondary education (levels 0–2)	45.1	44.0	41.7	39.7	34.9	37.3	39.2	32.3	30.2
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	35.9	34.9	32.6	33.0	31.7	32.8	29.7	28.7	29.1
Tertiary education (levels 5–8)	20.3	18.7	20.8	19.4	23.2	22.7	23.4	24.5	21.1

Source: State Statistical Office of the Republic of Macedonia (2016) and Eurostat (2016)

more likely to contribute to economic and social growth. The relatively high unemployment for this group specifically presents another societal challenge in terms of the inability of the country to absorb enough quantities of highly educated people; forcing them either to accept whatever job is available, register as unemployed or in worst case scenario to leave the country and pursue life opportunities in more developed countries. According to the National Employment Agency of the Republic of Macedonia (2016), the number of registered unemployed with tertiary education in 2014 was 989. This number is not high in itself, but compared to the registered unemployed with tertiary education in 2010 recorded at 310 people, the increase is 209%.

On the other hand, there may be a significant number of unemployed people with limited employment opportunities due to lack of educational qualifications and skills. To address the problem of unemployment in this category, better conditions should be created for them to gain new skills and qualifications. This especially for the younger generations, as it may be difficult for the older generation to return to education.

Main labor market indicators for Republic of Macedonia (Table 3) show notable disparities between various regions in the country in terms of activity, employment and unemployment rates. According to observations, in this context from 2010 to 2014 only due to lack of official date, people living in the Polog Region, the South West Region, and the Northeastern Region appear to have much more difficulty in entering the labor market than other regions in the country. As of result of this, there may be grounds for the regions to at higher risk of social exclusion. In this context, it is worth mentioning that both regions are commonly known as being predominately populated by people belonging to the Albanian ethnic group and with a highly representation of the Roma community as well. This as opposed to the other regions that are less populated by these two marginalized groups and predominately populated by the Macedonian community. The latter community representing the majority in the country and holders of the main power and institutions in the country. In terms of activity rates, noteworthy is that both previously named regions have experienced a downwards trend from 2010 to 2014, while more or less all other regions have registered higher levels of activity rates in the same period.

Table 3 Main labor market indicators in Republic of Macedonia by region 2010–2014 (%)

	Activity rate		Employment rate		Unemployment rate	
Regions	2010	2014	2010	2014	2010	2014
Vardar region	59.1	61.4	37.2	44.5	37	27.6
East region	58.6	63.6	49	50.8	16.4	20.1
Southwest region	55.5	54.6	36.5	34.7	34.3	36.4
Southeast region	69.9	66.9	61.9	52.9	11.5	20.8
Pelagonia region	63.8	65.3	42.4	53.1	33.6	18.7
Polog region	46.7	46.1	32.3	32	30.8	30.7
Northeast region	58.3	54.2	21.7	30.3	62.8	44
Skopje region	54.7	56.3	36.7	40	33	29

Source: State Statistical Office of the Republic of Macedonia (2016)

As similar pattern is notable also when observing employment rates. While all regions predominantly populated by the Macedonian community have registered increased employment rates, except for the Southeast Region, both the Polog Region and the Southeast Region (predominately populated by the non-majority in the country) have registered decreasing employment rates. This with the exception of the Northeast Region, which has registered an increase of 8.6% point from 2010 to 2014.

The highest unemployment rates in 2014 have been observed in the Northeast Region, the Polog Region and the Southwest Region at 44, 36.4, and 30.7% respectively, and all regions predominately populated by the Albanian community and highly represented by the Roma community. Limited data exists on unemployment based on ethnic affiliation in the Republic of Macedonia, at the least official data, however as suggested by the World Bank (2008) and the European Training Foundation (2013), the Roma, Turk community and the Albanian community in Republic of Macedonia are severally vulnerable to unemployment and thus at high risk for social exclusion.

The trend in unemployment rates from 2010 to 2014 in various regions has been both upwards and downward with no distinct disparity when observing unemployment trends in regions with consideration for ethnic affiliation. The highest increase in unemployment rate from 2010 to 2014 is observed in the Southeast region (9.3% point) where the unemployment rate increased from 11.5% to 20.8%; the second lowest in the country. The highest decrease in unemployment in the same period was observed in the Pelagonia Region, which registered a decrease of 14.9% point reaching 18.7% in 2014 and thereby registering the lowest unemployment rate in the country.

Observations from Table 4 shows no notable disparity when examining unemployment in rural and urban areas. Data shows that unemployment rates lie at same levels for both people living in rural areas and people living in urban areas with only minor differences. Noteworthy observations indicate that there are no notable disparities evident either when cross-examining for gender. Another interesting observation, in 2014 rural women registered a lower unemployment rate than urban

Table 4 Unemployment in Republic of Macedonia in rural and urban areas 2010, 2012, 2014 (%)

	2010			2012			2014		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Urban	31.6	31.7	31.5	30.8	31.5	29.7	29.2	29.0	29.4
Rural	32.6	32.1	33.6	31.4	31.4	31.4	26.5	26.1	27.3

Source: Own compilation based on data from State Statistical Office of the Republic of Macedonia (2016)

women; registering also the highest decrease by 6.3% point from 2010 to 2014 in comparison to urban women in the same period but also urban and rural men.

5 Conclusion and Recommendations

Observed labor market indicators for Republic of Macedonia show notable disparities in various segments of the labor market; clearly indicating that not all are vulnerable to unemployment or at risk of social exclusion on the same basis. Most vulnerable to poor social conditions on the grounds of unemployment, but also activity and employments rates, are youth and regions predominantly populated by members of the Roma and Albanian communities. Thereby, purporting that such communities are at a much higher risk of social exclusion than the majority and that government is falling to implement more inclusive reforms and policies addressing this segment of the county.

Interestingly, observations shown no notable disparities, although relatively high unemployment rates, when cross examining unemployment for gender, educational attainment, and based on their place of residence (urban or rural).

Unemployment rate is declining and has reached the lowest level ever since the independence of the country with a registered unemployment rate of 28%, but it still remains a very high level and poses a big concern that needs to be addressed effectively.

It should however be recognized that lowering unemployment in the country is a difficult task and that there is no easy or quick way to do this. It is important to understand that unemployment is a multidimensional concept with both quantitative and qualitative challenges. It is likewise also important to recognize that unemployment and social exclusion comes with a cost to society that may be difficult to explicitly quantify or measure in financial terms such as the individual hardship that comes along with unemployment or belonging to a marginalized group in Society. As such, the furthers understanding of these phenomenon's, both individually and their correlation, in the Republic of Macedonia is imperative so that the institutional framework governing the labor market and social policy in the country can develop effective and efficient measures to address unemployment within marginalized groups or segments in the country. Future policies and

measures should be inclusively, targeted, and encompass interventions at both macro and micro level encompassing among other areas such as:

- Attraction and diversion of direct foreign investments to more vulnerable regions to generate more jobs in these environments,
- Development of labor market policies that can close gaps in labor demand and supply,
- Ensure equal access to education and training in order for marginalized groups to be able to compete and enter the labor market on equal terms. This especially from an ethnic perspective due to the demographic compilation of the country.
- Provide better child care facilities allowing women to join the workforce and use their productive potential effectively;
- Provide balanced household benefits that would serve as incentives for women to join the Labor market;
- Foster, promote and provide incentives for self-employment/entrepreneurship;
- Increasing ALMP budgets and introduce more efficient ALMP aimed specifically towards marginalized groups

The importance of measures to be inclusive and across all regions and marginalized segments of society such as youth, Roma, Albanian, and other minority ethnic groups, etc. cannot be stressed out enough. Any non-inclusive measure will fail to address unemployment and social exclusion effectively and efficiently, and will ultimately lead to increased public expenditure and slow economic growth. Unemployment remains a serious challenge for Republic of Macedonia; a long-term solution to this issue requires the implementation of structural reforms that will contribute in creating new jobs, better match skills with the needs of the labor market and better inclusion in labor market.

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Britain and Its Colonies: Remembering the First World War (WWI)

Mallika Das and E. Wanda George

Abstract The First World War (WWI), referred to as the Great War, claimed over 16 million lives and involved over 70 countries, affecting the course of history in many parts of the world. This paper presents partial results from a larger study (n = 2490) investigating global opinions about remembrance of WWI today, and focuses on how respondents from Britain (n = 184) differed from those from three of its colonies—Australia (n = 104), New Zealand (n = 34), and Canada (n = 194). Differences between respondents from these countries are presented regarding three variables: (1) how they describe WWI, (2) factors that influence their memories of WWI, and (3) reasons for wanting to keep the memories of WWI alive. Data were collected over a period of 6 months in 2012 through an online survey. Researchers defined and tested six descriptors of WWI, eight factors that influence respondents' memories of WWI, and seven reasons to for keeping the memories of WWI alive. Data were analyzed using the SPSS package. T-tests and ANOVAs were used to examine the differences between respondents. Results indicate that respondents from the colonies differ from their British counterparts on all three variables. Implications for organizations that promote tourism to WWI heritage sites are also discussed.

Keywords First World War • Great War • War Memories • War Heritage • British Colonies

1 Introduction

In 2014–2018, the world remembers and commemorates the Centennial of the First World War (1914–1918), which is described by many as the greatest catastrophe of the twentieth century, involving and impacting over 70 countries around the world. There has been extensive planning of commemorative events and activities in various countries which is expected to result in an increase in visitation to the war heritage landscapes and other sites of remembrance. The First World War

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(WWI), a war that was anticipated to last less than a year, became the 'Great War' that lasted over 4 years, resulting in staggering costs in terms of lives lost and financial resources. Historians estimate total casualties of WWI, including those killed or died (from diseases or flu), wounded, taken prisoner or missing, to be over 22 million and with a financial cost of over 125 billion (Simkim 2016). This war changed the course of history, restructured Europe and reshaped the world, as we know today. It was considered to be 'the war to end all wars', but as history has shown, this was not to be.

Considerable research has been produced about WWI (Kovacs and Osborne 2014), which has examined and presented a myriad of multidisciplinary perspectives to help explain the 'Great War'. Much of the research has focused on understanding what motivates people to visit war sites; other researchers have investigated the importance of collective (or social) memory (e.g., Winter 2006, 2009; Paez and Liu 2009) and how such memories are selected and shaped (Baddeley 1999; Carlyon 2006); others have discussed war heritage sites as 'memoryscapes' (Jansen-Verbeke and George 2015) and examined visitor satisfaction at such sites (Das and George 2014). Little has been discussed, however, about how individual memories of war—and in particular, the First World War (WWI)—are created and shaped. What do we remember? From where do memories of this catastrophic event come? What influences one's memories of this past event? Do the factors influencing our memories of WWI vary by demographics? Why is it important to keep the memories of the past alive? And how do these memories affect one's intentions and motivation to visit WWI heritage sites? How do the answers to these questions differ between countries?

This paper attempts to examine the above questions by analyzing and comparing the views of four subgroups of respondents who participated in a large, multinational study related to WWI that was carried out in 2012 by a group of researchers from the World Heritage Tourism Research Network. These subgroups come from four countries that played major roles in WWI—Britain (UK), and three of it colonial territories, Canada, Australia and New Zealand. In this paper, we provide a brief review of relevant literature, the research methodology, results of the study, some implications of the findings and conclusion.

2 Literature Review

Numerous scholarly articles have been written about various topics related to WWI as shown in a recent bibliography by Canadian scholars (Kovacs and Osborne 2014). However, few studies have focused on the specific topics under investigation in this exploratory study i.e., a comparison of the views held by Britain and its colonies about how they remember WWI in the present day—how they describe WWI sites, how their memories of WWI are influenced and framed, and why they want to keep the memories of WWI alive. To establish a context for this paper, we first provide a brief overview of British colonization and the involvement of and

impact of the war on Britain and three of its colonies, Canada, Australia and New Zealand and other literature relevant to this study.

2.1 Britain and Colonialism

History reveals a long period of British and European colonization, dating back to the mid-1700s. During this process, Britain gained status as the dominant world power. At the beginning of the twentieth century, it had amassed the largest empire the world had ever known (Simkim 2016) . Britain had acquired Canada, Australia, New Zealand, India, South Africa, Hong Kong and other various colonies. Although still part of the British Empire, Canada, Australia and New Zealand were considered self-governing territories called Dominions; self-governing territories had a choice in whether or not they would enter a war on behalf of Britain. However, because of the strong ties (e.g. export/trade routes) and personal relationships with Britain, when WWI broke out, the Dominions remained loyal to their 'mother' country. Moreover, when Britain declared war on Germany and the Central Powers in 1914, most of its colonies were enthusiastic and excited about the 'glory and adventure of a war,' which was anticipated to be a short duration.

The impact of the First World War on the colonies was profound and many-sided (Koller 2008). There was a strong dependency between these imperial outposts and Britain, the world's foremost imperial power at the time. The call-up to the British world for help gave it a huge reserve of military and other resources upon which to draw to support its war effort, including support from Canada, Australia and New Zealand. Recruits from Australia and New Zealand became known as the Anzacs.

2.2 Britain and the Colonies in the First World War

In 1914, Britain's longstanding status as the dominant world power was weakening, threatened by the rise of Germany as a competitive power. As explained in well-known historical accounts not discussed here, Britain declared war on Germany in August 2014. Britain was a major combatant in WWI, and located geographically close to the battlegrounds of Flanders and France. While there are various statistical accounts that tend to differ slightly, the U.K. National Archives (2016) reports there were 886,000 British fatalities in the First World War. Nearly another two million were permanently disabled (Historic England 2016). WWI brought about social change in Britain (Marwick 1968) but the human and financial cost was great.

The war had a major impact on Canada. From a population of only 8 million at the time, more than 600,000 Canadians served in WWI and close to 61,000 Canadians lost their lives: another estimated 172,000 were wounded (Canadian War Museum 2016). Many claim it as a defining moment in the birth of Canada as a

nation and an international player (Barris 2007). The Canadian War Museum (2016) notes that

> Canada emerged from the First World War a proud, victorious nation with newfound standing in the world. It also emerged grieving and divided, forever changed by the war's unprecedented exertions and horrific costs (The Canadian War Museum 2016, p. 1).

The war united most Canadians in a common cause even though the enormity of national effort nearly split the country apart. Few had expected such a long struggle or heavy death toll. When the First World War broke out, Australia had a population of less than 5 million. From an enlistment of 416,809 men, 60,000 were killed and 156,000 wounded, gassed or taken prisoner (The Returned and Services League of Australia New South Wales Branch 2016). It was a heavy loss for the country as:

> World War I left behind a vast legacy of sorrow that was felt for generations. The loss of 60,000 Australians meant that scarcely a family in Australia was left untouched (National Archives of Australia 2016, p. 1).

For Australia, WWI remains the costliest conflict in terms of deaths and causalities (Australian War Memorial 2016). The Battle at Gallipoli in Turkey in 1915 was significant in Australia's WWI history; the failed campaign took a heavy toll on the Anzacs. An annual commemoration of those who lost their lives at Gallipoli is part of the Australian and New Zealand ethos. Each year on Anzac Day (April 25), Australian and New Zealand 'pilgrims' make their way to the memorial sites in Gallipoli. Since 1990 the numbers of Australians attending Anzac Day services on the battlefields has constantly grown (West 2010). For the 90th anniversary in 2005 there were a reported 20,000 foreign guests in attendance. For the Centenary of the Battle of Gallipoli in 2015, it was anticipated that tourism numbers would increase to 50,000. Several researchers and authors have written extensively about the Australian-WWI experience and the memorialization of Gallipoli (Bean 1916, 1924, 1952; Castles et al. 1988; Cobber 1918; Inglis 1998, 1999; McKenna and Ward 2007; Scates 2006; Bollard 2013, Winter 2011).

New Zealand was greatly affected by WWI. According to New Zealand government statistics, about 18,500 New Zealanders, from a population of barely 1 million, died in WWI. In addition, over 41,000 were wounded or fell ill in the flu pandemic during 1914–1918 (New Zealand WW100 2016). New Zealand's lost was enormous—5% of its military age men were killed and many wounded; in the Battle of Gallipoli alone, 2779 New Zealanders died (McGibbon 2012). As McGibbon (2012, p. 1) notes that "known at the time as the Great War and later as the 'war to end all wars', the First World War is the most traumatic event in New Zealand's history. It involved a national effort unprecedented at that time, and it proved more costly, in terms of lives lost, than any other war New Zealand has fought".

2.3 *Collective/Social Memory*

How people remember the past is connected to a society's collective memory or social memory. Schuman and Scott (1989) argue that collective memory is widely shared knowledge of past social events that have never been personally experienced but are collectively constructed through communicative social functions. It has both positive and negative connotations. How people remember a past event, as a collective or shared experience, has been another way to approach war tourism. Collective memory is transmitted through such things as the construction of war memorials, monuments and other public memorials. Often, these public places tend to become the equivalent of shrines; they can also serve as ways in which nations choose to select certain events and places to remember, and even to aid in nation building and to invoke a sense of patriotism e.g. the National War Memorial in Ottawa, where special events are held to commemorate past events, and a site open to public visitation.

Through collective memory, social representations of the past are elaborated, transmitted and observed in both interpersonal (popular and informal), and institutional (formal) communications (Paez and Liu 2009). At the more formal level, these communication processes include official histories and educational texts as well as commemoration ceremonies, constructed monuments and traditional rituals. At the popular level, collective memory is disseminated though magazines, newspapers, television, films, and more recently, through digitized outlets—the Internet and various social media—where memories are converted into visuals that are circulated through a wide range of communication networks. How digitization may or may not alter the process of 'collective memory' is the subject of other research and not discussed in this paper. At the informal or tacit level, knowledge is transmitted through conversations, oral stories, letters, diaries, postcards and photos, private collections of memorabilia, etc. (Olick and Robbins 1998; Vinsina 1985).

Concepts of collective memory are useful to our research in helping to explain what influences one's memories of WWI. Certainly, collective memory will be different based on which side of the conflict a country belonged—whether that of the victor or defeated, but also from the perspective of those from different countries who found themselves fighting on foreign soil on behalf of another country, in this case, Great Britain. In this research, we get a glimpse into the collective memories of Great Britain subjects as well as those held by three of its former colonies- Canada, Australia and New Zealand.

Another term often used synonymously for 'collective memory,' the term 'social memory' is defined by Crumley (2002, p. 39) as "the means by which information is transmitted among individuals and groups and from one generation to another. Not necessarily aware that they are doing so, individuals pass on their behaviors and attitudes to others in various contexts but especially through emotional and practical ties and in relationships among generations."

The notion of 'social memory' is relatively new to the historical profession (French 1995). It is a concept used by historians and others "to explore the connection between social identity and historical memory; it asks how and why diverse peoples come to think of themselves as members of a group with a shared (though not necessarily agreed upon) past" (French 1995).

As noted in the literature review, the concepts of collective or social memory relate to one's sense of national identity—in this case, how WWI has helped define what it is to be British, Canadian, Australian, New Zealander, etc. Moreover, Winter (2006, 2009) states that social memories are rehearsed (to retain them and to avoid forgetting) through ceremonies, such as the laying of wreaths and other ritual practices e.g. The Last Post. Also pertinent to the discussion of collective/social memory is the perception that tourism to these public war memorials and rituals helps affirm and advance 'collective memory,' especially among people who have had no direct connection to the war and to whom the war is a distant past event (Das and George 2014).

2.4 Memorialization: Memorial Events, War Memorials and Monuments

In Canada, as well as in several other countries, in support of the ongoing collective memory process, November 11 (the day the WWI was ended in 1918) of each year has been declared an official Day of Remembrance, a time to recall and commemorate those who sacrificed their lives for their countries in past and ongoing wars. In Britain, Remembrance Sunday, the second Sunday in November (November 13, 2016), is the main day of commemoration to honor participants of war. As mentioned earlier, for Australia and New Zealand, April 25 is Anzac Day, a national day of war commemoration. All four countries have erected numerous war memorials, monuments, museums, and use wartime symbols, such as the red poppy, etc. to help memorialize WWI.

Why is keeping memories of this war alive so important? Why are war memorials important? Page (2010) suggests there are five possible explanations: imperial loyalty; the warrior cult; guilt at the loss of so many young people in a seemingly senseless fashion; the demise of formal religion; and the insecure nature of nationalism. In this research paper we analyze and compare responses by Britain and its colonies, Canada, Australia and New Zealand as to how they describe WWI today; what factors influence their memories of WWI, and 3) what are their reasons for wanting to keep the memories of WWI alive. This research may offer new insights and explanations about WWI and its importance in history.

To summarize, past literature indicates that our collective memories of an historic event are shaped by many factors including the media, memorial events, visits to memorial sites, and what we learn through school lessons and other factors. This paper attempts to identify the impact of these factors on our memories of WWI

and also whether our intention to visit WWI sites is affected by how our memories are shaped. The next section will provide information on the research methodology used in this study.

3 Research Methodology

As part of a larger study on how people today see WWI, data was gathered from respondents across the world through an on-line survey in 2012. The survey was hosted through the research network, the World Heritage and Tourism Research Network (WHTRN) based at Mount Saint Vincent University in Halifax, Canada. Invitations to respond to the survey were sent out using mailing lists of journals and organizations in related fields (e.g., Business, Tourism, History, and Geography). The 22-page questionnaire included questions on a range of issues related to WWI including how people today describe WWI sites, their reasons for keeping the memories of WWI alive, and the factors that shaped their memories of WWI. In addition, demographic information (e.g., age, gender, and education), emotional and institutional proximity[1] and information related to tourism (e.g., visits to WWI sites, attendance at WWI events, and plans for future visits to WWI sites) were also gathered. See Table 1.

Respondents could choose to answer the survey in one of four languages (English, French, Dutch, and German). It was administered during a 6-month period in 2012; the survey was sent to email lists gathered from scholarly journals in the fields of tourism, business, history, heritage studies, and through mailing lists obtained from government and non-government agencies involved in WWI, tourism, or heritage-promotion. Respondents were also asked to pass on the survey link to others they thought might be interested in the topic. Thus, the sample is in part a snowball sample, which seemed an appropriate strategy considering the scope of the study. The questionnaire was emailed through the lists mentioned above three times. The final sample consisted of 2490 responses. This paper looks at a subset of these responses (n = 517), from Britain (n = 184), Canada (194), Australia (n = 105), and New Zealand (n = 34). The survey received ethics clearance from the Canadian university where it was hosted. The Statistical Package for Social Sciences (SPSS) was used to analyze the data. The sample consisted of more males than females (62% vs. 38%); respondents were more likely to be over 50 than under 50 (61% vs. 39%), and highly educated with over 65% having a graduate-level university degree or higher (Table 1). Chi-square tests indicated that the country

[1]Proximity refers to the nearness in terms of space, time or relationship (Oxford Dictionaries 2016). As well as recognizing geographical and temporal proximity aspects, one considers a measure of "emotional proximity" (relational aspect), which refers to an emotional connection to people who were affected by a crisis or a sentimental association to the crisis location (Huang et al. 2015).

Table 1 Sample characteristics

Variable	Overall (n = 517)	U.K. (n = 184)	Australia (n = 135)	Canada (n = 194)	N. Z. (n = 34)	Chi-square significant?[a]
Gender	468 (100%)[b]	164 (35%)	98 (21%)	177 (39%)	29 (6%)	No
Female	176 (38%)	58 (35%)	47 (48%)	60 (34%)	11 (28%)	
Male	292 (62%)	106 (65%)	51 (52%)	117 (66%)	18 (62%)	
Age	467 (100%)	164 (35%)	97 (21%)	177 (38%)	29 (6%)	No
18–29	40 (9%)	16 (10%)	8 (8%)	13 (7%)	3 (10%)	
30–39	47 (10%)	18 (11%)	9 (9%)	18 (10%)	2 (7%)	
40–49	12 (20%)	37 (23%)	15 (16%)	33 (19%)	7 (24%)	
50–59	145 (31%)	50 (31%)	35 (36%)	53 (30%)	7 (24%)	
60+	143 (31%)	43 (26%)	30 (31%)	60 (34%)	10 (33%)	
Education	455 (100%)	158 (35%)	97 (21%)	171 (38%)	29 (6%)	
Undergrad or less	160 (35%)	59 (37%)	27 (28%)	65 (38%)	9 (31%)	
Grad +	295 (65%)	99 (63%)	70 (72%)	106 (62%)	20 (69%)	
Emotional proximity[c]	510 (100%)	180 (35%)	103 (20%)	193 (38%)	34 (7%)	Yes $X^2 = 39.87$
Yes	335 (66%)	138 (77%)	73 (71%)	95 (19%)	29 (85%)	d.f.=3
No	175 (34%)	42 (23%)	30 (29%)	98 (51%)	5 (15%)	$P < 0.001$
Institutional proximity[d]	471 (100%)	162 (34%)	100 (21%)	178 (38%)	31 (7%)	Yes $X^2 = 8.25$
Yes	236 (50%)	92 (57%)	42 (42%)	91 (51%)	11 (36%)	d.f. 3
No	235 (50%)	70 (43%)	58 (58%)	87 (49%)	20 (65%)	$p < 0.05$
WWI sites motive?	484 (100%)	171 (36%)	99 (21%)	183 (38%)	31 (6%)	Yes
Primary	177 (37%)	82 (48%	36 (36%)	50 (27%)	9 (29%)	$X^2 = 22.66$
Secondary	176 (37%)	57 (33%)	40 (40%)	69 (38%)	10 (32%)	d.f. = 6
No	131 (27%)	32 (19%)	23 (23%)	64 (35%)	12 (39%)	$p < 0.001$
Future visits	487 (100%)	170 (35%)	103 (21%)	183 (37%)	32 (7%)	Yes $X^2 = 9.32$
Yes	248 (51%0	106 (62%)	48 (47%)	83 (46%)	11 (34%)	d.f. 12
No	239 (49%)	64 (38%)	55 (53%)	99 (54%)	21 (66%)	$p < 0.05$

[a]No chi-square test had 10% or more cells with expected frequencies less than 5
[b]Percentages may not add up to 100 as the numbers are rounded off
[c]Emotional proximity is defined as being born in one of the WWI battlefield countries or having a parent or grandparent born there, or having a close relative living there now
[d]Institutional proximity was defined as being employed in the armed forces or in the tourism industry or in government institutions related to tourism/heritage

samples did not differ from each other in terms of gender, age, or education in a statistically significant way.

Given the small sample size from New Zealand, the data from Australia and New Zealand were first examined to see if respondents from these nations differed from each other on the key variables of interest (descriptions of WWI, reasons for keeping the memories of WWI alive, and factors influencing respondents'

memories of WWI), and since there were no statistically significant difference, the data from these countries were combined for the rest of the analyses. It should also be noted that troops from Australia and New Zealand fought together in Gallipoli and were called the Anzacs, and as both the countries celebrate ANZAC day to commemorate the contributions of those who served in WWI and other wars. One-way ANOVA tests were conducted to examine the differences between the three groups of respondents (British, Canadian, and Anzacs (those from Australia and New Zealand).

4 Findings and Discussion

To examine the differences between respondents from Britain and its colonies (Canada, Australia and New Zealand) on the key variables of interest (descriptions of WWI, reasons for keeping the memories of WWI alive, and factors shaping their memories of WWI), one-way ANOVAs were conducted with country of residence as the independent variable and the others as the dependent variables. The results of these are discussed below, followed by a discussion on the findings related to the questions on tourism to WWI sites.

4.1 Descriptions of WWI Sites

As can be seen in Table 2, of the six descriptions of WWI, the respondents differed on five (Places of pilgrimage, Reflection, Education in world history, Honoring sacrifices, and Remembrance); the only variable that the responses did not vary significantly on was 'Spiritual healing'. On all the five descriptions with statistically significant results, British respondents had lower mean scores (indicating stronger agreement) than Canadians or Anzacs. In all but one instance ('Places of reflection'), the mean scores for Canadians were lower than those for Anzacs indicating that Canadians agreed more strongly than those from Australia and New Zealand on all these descriptions. Closer examination of the results shows there are strong similarities too: respondents from Britain and its colonies agree that the best description of WWI sites is that they are places of remembrance; the second and third reasons were the same for all respondents (though the order varied slightly); all of them see WWI sites as places of education in world history and as places of reflection. Overall, respondents feel that the descriptions do apply to WWI sites as the average mean scores are below 2 (showing that respondents checked 'agree' or 'strongly agree') in four of six instances. The findings indicate that respondents from Britain and its colonies—in spite of some overall agreement—do differ in how they describe WWI sites.

Table 2 Descriptions of WWI Sites

Description of WWI sites	Britain Mean (n)	Australia + NZ Mean (n)	Canada Mean (n)	Overall Mean (n)	One-way ANOVA results
1. Pilgrimage	2.20 (163)	2.67 (128)	2.35 (178)	238 (469)	$F = 6.412$, $df = 2.466$, $p < 0.002$
2. Reflection	1.35 (179)	1.54 (131)	1.56 (179)	1.48 (474)	$F = 6.351$, $df = 2.466$, $p = 0.007$
3. Education in world history	1.39 (163)	1.67 (131)	1.44 (178)	1.49 (472)	$F = 6.708$, $df = 2.469$, $P < 0.001$
4. Honoring the sacrifices of millions	1.48 (165)	1.94 (130)	1.58 (178)	1.64 (473)	$F = 10.293$, $df = 2,470$, $p < 0.001$
5. Remembrance	1.24 (165)	1.50 (131)	1.40 (178)	1.37 (474)	$F = 6.733$, $df = 2,471$, $p < 0.001$
6. Spiritual healing	2.65 (164)	2.87 (128)	2.66 (178)	2.78 (470)	$F = 2.025$, $df = 2,467$, $p =$ n.s.

(n) number of respondents

4.2 Reasons for Keeping the Memories of WWI Alive

To examine whether British, Canadian, and Anzac respondents vary in their reasons for keeping the memories of WWI alive, one-way ANOVAs with country of residence as the independent variable and seven reasons as the dependent variables ('event that shaped the world', 'to learn about the warfare of WWI', 'to remember the sacrifices of millions', 'as a deterrent for future conflicts', 'to promote inter-cultural exchange', 'to strengthen national identity', and 'to encourage visits'). As Table 3 shows, respondents from Canada and Australia/NZ differed significantly from British respondents on only three of the seven reasons ('learn about warfare', 'strengthen national identity', and 'encourage visits'). In two of these cases, the mean score for the British was lower than that for its former colonies indicating a higher level of agreement among British respondents than for others. But in the third ('strengthening national identity'), Canadians had a much lower score (2.52/5) than the others; the others had scores above three indicating that they did not see strengthening national identity as important a reason to keep the memories of WWI alive. Interestingly, findings in the study tend to support Page's (2010) theory, noted earlier, as to why we keep the memories alive: imperial loyalty (to Britain); guilt at the loss of so many young people in a seemingly senseless fashion (remembering the sacrifices) and the insecure nature of nationalism (strengthen national identify).

Table 3 Reasons for keeping the memories alive

Reason	U.K.Mean (n)	Australia+ NZ Mean (n)	Canada Mean (n)	Overall Mean (n)	One-way ANOVA results
1. Event that shaped the world	1.38 (178)	1.40 (134)	1.34 (191)	1.37 (503)	F = 0.382, df = 2,500, p = n.s
2. To learn about the warfare of WWI	1.84 (177)	2.10 (135)	1.95 (191)	1.95 (503)	F = 3.089, df = 2,500, p = 0.046
3. Remembering sacrifices of millions	1.38 (179)	1.56 (135)	1.52 (191)	1.48 (505)	F = 1.966, df = 2,502, p = n.s
4. As a deterrent for future conflicts	1.63 (177)	1.61 (136)	1.67 (191)	1.64 (504)	F = 0.169, df = 2,501, p = n.s.
5. Promote inter-cultural exchange	2.05 (177)	2.07 (133)	2.15 (191)	2.09 (501)	F = 0.613, df = 2,498, p = n.s.
6. To strengthen national Identity	3.10 (178)	3.32 (134)	2.52 (191)	2.94 (503)	F = 16.885, df = 2,502, P < 0.001
7. To encourage visits to WWI sites	2.10 (179)	2.48 (135)	2.04 (191)	2.10 (505)	F = 8.395, df = 2,502, P < 0.001

(n) Number of respondents, *n.s.* not significant

Once again, there were similarities between the groups that have to be noted. The top three reasons were the same across countries: all saw WWI as an event that shaped world history which makes it important to keep its memories alive; the second and third reasons were also the same—to remember the sacrifices of millions and as a deterrent for future conflicts. The least important reason in all cases was 'to strengthen national identity'.

4.3 Factors Shaping Respondents' Memories of WWI

Of the three key variables, this was the one of most importance to the researchers as understanding how memories of formed and shaped can help us ensure that the memories of this historic even stay alive in the minds of future citizens. Also, we wanted to examine if how respondents' memories are shaped affects their decision to visit a WWI site in the future and their travel motivations. Respondents were asked to state on a 5-point scale (1 = very important; 5 = not at all important) how important each of the following eight factors were in shaping their memories of WWI: school lessons, movies, television documentaries/news, literature and artistic

works, the internet, visits to WWI sites, story-telling by family/friends, and inheritance of WWI memorabilia.

The results of the one-way ANOVAs (with country of residence as the independent variable and the factors shaping memories of WWI as the dependent variables) conducted are provided in Table 4. Of the eight factors shaping memory included in the study, the results were significant for six (at the $p < 0.05$ level or higher); in one instance ('Internet'), the result was significant at $p < 0.10$ level, showing that the mean scores were marginally different. Respondents' mean scores differed significantly on the following: school lessons, movies, television documentaries/news, literature/arts, visits to WWI sites, and inheritance of WWI memorabilia. Thus, the three groups varied on the importance they gave to these variables.

Based on the average scores (lower = more important), while the top two factors were the same across the board (Literature/arts and Television news/documentaries), there were differences between the groups on the top factor. Canadians felt that the most important factor that shaped their memories of WWI was television (documentaries and news), while to the British and Anzac respondents, the most important factor was literature/arts. This is particularly interesting as all

Table 4 Factors Shaping Respondents' Memories of WWI

Factor	U.K. Mean (n)	Australia+ NZ Mean (n)	Canada Mean (n)	Overall Mean (n)	One-way ANOVA results
1. School lessons	2.60 (178)	2.68 (136)	2.24 (189)	2.48 (503)	F = 6.235, df = 2,500, p = 0.002
2. Movies	2.76 (175)	2.60 (136)	2.36 (188)	2.57 (499)	F = 6.280, df = 2,496, p = 0.002
3. Television documentaries, news	1.95 (177)	2.21 (136)	1.95 (189)	2.02 (502)	F = 3.542, df = 2,499, p = 0.03
4. Literature or artistic works	1.82 (177)	2.01 (136)	2.08 (188)	1.97 (501)	F = 3.411, df = 2,498, p = 0.034
5. Internet	2.50 (176)	2.83 (132)	2.69 (188)	2.66 (496)	F = 2.866, df = 2,493, p = 0.06
6. Visits to WWI sites	2.01 (177)	2.57 (136)	2.36 (185)	2.29 (498)	F = 7.603, df = 2,495, p = 0.001
7. Story-telling by Family/friends	2.59 (174)	2.73 (135)	2.78 (189)	2.70 (498)	F = 0.919, df = 2,495, p = n.s.
8. Inheritance of WWI memorabilia	2.40 (176)	2.73 (176)	2.86 (189)	2.66 (502)	F = 4.424, df = 2,499, p = 0.012

(n) number of respondents

three countries have strong publically funded television channels (British Broadcasting Corporation (BBC), Canadian Broadcasting Corporation (CBC), and Australian Broadcasting Company (ABC), and if anything, the BBC is probably the most respected of the three across the world. There were differences in the factors considered least important; for the British respondents, it was movies while for the Canadians it was inheritance of WWI memorabilia, while for those from Australia and New Zealand, it was a tie between story-telling and memorabilia.

4.4 Factors Shaping Memories, Intentions to Visit a WWI site and Motivation for Travel

As mentioned earlier, a key objective of this paper was to examine if respondents' intentions to visit a WWI site was related to how their memories were shaped. Discriminant analysis (step-wise, Wilks' Lambda) was used for this purpose with intention to visit a WWI site within the next 5 years (yes/no) as the grouping variable. The discriminant function was significant ($F = 40.433$, $df = 3,454$, $p < 0.001$) and included three factors: visits (0.848), internet (0.396), and movies with a negative coefficient of −0.313. The function correctly classified 73.2% of the cases. Finally, the survey also included a question 'is visiting a WWI site a motive for travel?' Respondents could choose between 'yes, primary motivation', 'yes, secondary motivation', or 'no, not a motivation'. Again, discriminant analysis (step-wise, Wilks' Lambda) was used to examine if the factors shaping respondents' memories could be used discriminate between these respondents. The discriminant function was significant at $p < 0.01$ level, but could only correctly classify 57.3% of the cases. Hence, next, we compared those who said that visiting a WWI site was a primary motivation to those who said it was not a motivation for travel. The resulting discriminant function was significant ($F = 45.45$; df- 5,258, $p < 0.001$). Five factors were in the final discriminant function: visits (0.799), school lessons (−0.195), Internet (0.258), movies (−0.186), and inheritance (0.153), with 82.8% of the cases being correctly classified.

In summary, the discriminant analyses indicate that the way our memories are shaped may influence our intentions to visit WWI sites and affect our motivation to travel. Visits to WWI sites and the Internet came out as significant factors in both these instances. Interestingly, movies had a negative loading on the discriminant function indicating that those whose memories of WWI are shaped by movies are less likely to visit a WWI site or consider visiting WWI sites a key motivation for travel. School lessons also had a negative loading (in motivation to travel).

5 Conclusions and Implications

The aim of this paper was to examine if there were differences in the way people from Britain and three of its colonies—Canada, Australia and New Zealand—see WWI today. In particular, we were interested in finding out if they would describe WWI sites differently, had different reasons for keeping the memories of this war alive, and what shaped their memories of WWI. The findings indicate that while there are similarities in the responses from these countries all of the above, there are also significant differences. For example, while the top three descriptions of WWI were the same across countries, the individual scores varied significantly; in all cases, the mean scores of the British respondents were lower (indicating stronger agreement with the description).

They are more likely to strongly agree that WWI sites are places of reflection, honoring the sacrifices of millions, remembrance, and education in world history than those from the former colonies. Post-hoc tests (Tamahane; equal variances not assumed) indicate that the responses of the British varied from those of both Canadians and Anzacs on two descriptors (places of remembrance and reflection). Thus, it is clear that British still have stronger feelings towards WWI sites than respondents from its colonies. However, when it comes to reasons for keeping the memories of WWI alive, there were fewer significant differences between respondents from these countries and when they did differ, the patterns were different. Canadians were more likely than the others to want to keep the memories alive to strengthen national identity and to encourage visits. Perhaps this reflects the greater role that WWI seems to play in Canadians' minds—WWI, more so than WWII—is seen as the event that brought Canada to the international stage (albeit as a colony of Britain) and is seen as a 'coming of age' event for the country—birth of a nation (Barris 2007).

The third issue—how memories of WWI are shaped—showed significant variation between the nations and a different pattern. The mean scores of respondents varied on six of the eight factors (seven if a significance level of $p < 0.10$ is used). Again, while there were similarities (the top two factors were the same across nations), there were interesting differences too. Canadians' memories of WWI seem to be shaped more by movies and school lessons. The first, perhaps reflects the impact of being closer to the US and having greater exposure to American movies. For instance, the older classic Hollywood movie, All Quiet on The Western Front, was frequently mentioned in the survey responses; the more recent movies, e.g. Passchendaele, Warhorse, were mentioned but less so. The second, school lessons, perhaps is another indication of the greater importance of this event in Canadian history and national identity. It also emphasizes the important role of social memory; as noted earlier, each November 11th is celebrated across Canada as Remembrance Day and is a national holiday. Children from across the country are relieved of regular school duties to take part in remembrance ceremonies. As well, in Canada, the Royal Canadian Legion, Dominion Command, conducts a nation-wide "Let's Remember" program aimed at all grades of school children,

which involves an art and literature competition. Our findings indicate that war memorials, monument and such rituals as Remembrance Day ceremonies—along with school lessons—help shape our collective memories of WWI and ensure WWI will not be forgotten. In addition, by transmitting them to a new generation, these reinforce our collective/social memory of this event.

Finally, how we learn about an event such as WWI—or what shapes respondents' memories of the event—seems to be a significant factor in deciding whether it motivates their travel choices and also whether they plan to visit a WWI site in the near future. While movies shape our memories of historic events, this study indicates that these may not motivate us to travel and visit historic sites. Learning about historic events such as WWI, in school also does not seem to increase the chances of a person visiting sites related to the event. In contrast, the Internet, serves not only as a shaper or memories but also this seems to lead to both an increased motivation to visit WWI sites and increases the chances of a future visit. Perhaps this might be the result of targeted information searches on the Internet by people interested in tracing their heritage. Regardless, online promotions with linkages to key heritage-tracing sites should be considered by those interested in promoting tourism to WWI sites. Moreover, it is inevitable that the new technologies of digitization will change the way we advance collective/social memory. Certainly, there will be both positive and negative connotations; the impact of digitization on collective memory will be the subject of further research.

It is worth noting that previous visits to a WWI site seems to increase the chances of repeat visits to a WWI site in the future and also seems to make visiting a WWI site a primary motive for travel. While the Internet played a significant role in shaping respondents' memories of WWI and seem to have an impact on their plans to travel to a WWI site within 5 years and make traveling to a WWI site a primary motivation for travel, it is the importance of visits on both the variables (motivation and future visits) that stands out. This has implications for tourism agencies and for WWI sites as tourist destinations. The fact that once a person visits one WWI site, he/she is more likely to visit another site indicates that this niche group (people who have visited a WWI site at least once before) should be targeted effectively. This can be done through special promotions aimed at known visitors (through collection of email/other contact information at the sites), and also through cross-promotion strategies involving other WWI sites that might also appeal to this target group. Further analyses on the demographics and characteristics of this 'niche' group could be useful. Tourism to WWI sites may provide positive benefits in helping keep the memories alive.

There are limitations to the study. This paper reports only partial (a very small part) of the results of a large-scale global study on WWI; in this case, only data collected from respondents in four of the many countries which participated in the survey project were analyzed. There is much more analyses to be done to better understand the connections between memory formation, what we remember, why it is important to keep the memories of WWI alive, and the dynamics of these in relation to the tourism potential of WWI sites. The data used for this paper may not be representative of the subject populations (Britain, Canada, Australia and

New Zealand) as a whole due to many reasons: the smallness of the samples, the method of data collection – (which lead to a higher than average representation of academics and people interested in tourism and hospitality). A broader, more representative sample is required before the findings can be generalized to a country's entire population.

While this paper compares selected perspectives on differences and similarities between Britain, and three of its former colonies, Canada, Australia and New Zealand, more insights will be revealed from further analyses of the data collected in the larger research study. For instance, it will be interesting to examine the views of citizens in countries where the actual battlegrounds of WWI were located (e.g., Belgium and France) in comparison to citizens of the various foreign nations, which fought there. It will also be interesting to look at the specific demographics and characteristics of visitors, who have previously travelled to WWI sites, and which sites are considered most popular to visit; this could provide important information to tourist agencies marketing war destination sites. Further, it would be most interesting to the tourism industry to consider lesser-known war-related sites that have been identified in the research survey as meaningful sites worthy of a visit.

Finally, if we are to keep the memories of WWI alive, we need to understand how new technologies can impact, both positively and negatively, the concepts of collective/social memory and future remembrance. Will the use of new technologies enhance or distort our collective memories of WWI? The ongoing analysis of data collected during this survey (2012) will make an important contribution in better understanding twenty-first century perspectives and memories of the First World War (WWI).

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Trade Regionalism of Tomorrow: Entanglement of Mega-Regionals Versus WTO

Sebastian Bobowski

Abstract The aim of the article is to study the implications of mega-regional trade agreements, namely, Trans-Pacific Partnership (TPP), Trans-Atlantic Trade and Investment Partnership (TTIP), Regional Comprehensive Economic Partnership (RCEP), Comprehensive Economic and Trade Agreement (CETA) and Free Trade Area of Asia-Pacific (FTAAP) on the multilateral trade system under the auspices of the World Trade Organization (WTO). The regional trade agreements (RTAs) tend to perceived as manifestation of regionalism, however, both in terms of building or stumbling blocks. The World Economic Forum defined mega-regional trade agreements as deep integration partnerships taking the form of regional trade agreements (RTAs) engaging countries or regions accounting for major share of world trade and foreign direct investment (FDI). The emergence of mega-regionals might potentially threaten the relevance and centrality of WTO, undermining the greater inclusiveness of the multilateral trade system. Thus, evolution of the latter would be a logic consequence of mega-regionalism in trade.

Keywords Trade regionalism • Mega-regionals • WTO

1 Introduction

Mega-regional trade agreements, termed as mega-regionals, characterize the global trade landscape of the second decade of twenty-first century. It seems that after decade of proliferation of bilateral regional trade agreements (RTAs), enhanced by turbulent, sluggish trade negotiations under Doha Development Round, key global actors, namely, China, Japan, EU and the United States, proved to be ready to establish/enter mega-regional blocks. The aim of the article is to study the implications of mega-regional trade agreements, namely, CETA, FTAAP, RCEP, TTIP, and TPP on the multilateral trade system under the auspices of the World Trade Organization (WTO).

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On the one hand, replacing bilaterals with mega-regionals would reduce noodle bowl effect, on the other hand, establishment of trade blocks accounting for large shares of the global GDP and exports, such as Trans-Pacific Partnership (TPP), Trans-Atlantic Trade and Investment Partnership (TTIP), Regional Comprehensive Economic Partnership (RCEP), Comprehensive Economic and Trade Agreement (CETA) or Free Trade Area of Asia-Pacific (FTAAP), might challenge WTO system. For instance, two US-led trade hemispheres, namely, TPP and TTIP, if successfully established, would engage 40 countries from four continents accounting for, when combined, 53.52% of global exports and 60.71% of global GDP. Recent information regarding deadlock in ratification process of TPP, however, would threaten the progress of TTIP, and the latter may affect the ratification process of already signed CETA by 28 EU members. According to author, potential winner of such situation might be China-led RCEP, that would speed-up negotiations to fill the vacuum left behind, as well as WTO, that may attract more attention of developed world again. The emergence of mega-regionals might potentially threaten the relevance and centrality of WTO, undermining the greater inclusiveness of the multilateral trade system. Thus, evolution of the latter would be a logic consequence of mega-regionalism in trade.

The structure of the article is as follows: the role of WTO in the multilateral trade system, progress of Doha Development Round, bilateralism and mega-regionalism in trade, relationship between mega-regionals and multilateral trade system by WTO, policy recommendations.

2 WTO's Role in the Multilateral Trade System

As of 15 November 2016, World Trade Organization (WTO) involved 164 countries (recently, in July 2016, Afghanistan and Liberia accessed WTO), maintaining its role as global organization in charge of trade liberalization. This international organization, currently governed by Roberto Azevêdo from Brazil, was established in January 1995 as the consequence of the Uruguay Round of GATT—General Agreement on Tariffs and Trade.

Major functions of WTO are as follows:

- monitoring trade agreements and national trade policies;
- conducting trade negotiations;
- handling trade disputes;
- providing technical assistance and skill development for developing countries;
- enhancing dialogue with the other international organizations.

GATT, predecessor of WTO, signed by 23 countries on 30 October 1947 in Geneva, was aimed at liberalization of the world trade through negotiation rounds. It has been perceived as a step toward establishment of International Trade Organization, the third pillar of the international economic cooperation, next to the

International Monetary Fund and World Bank, however, the concept of ITO failed then.

GATT proved to be successful in terms of tariff reduction—the average tariff in commodity trade dropped from 40 to less than 5% till 1994. In years 1947–1994 there were eight negotiation rounds, however, four were found as particularly important:

- Geneva Round (1947)—7 months; 45.000 tariff concessions provided;
- Kennedy Round (1964)—37 months; anti-dumping issues addressed;
- Tokyo Round (1973)—74 months; tariff reductions by over 300 billion USD agreed; and
- Uruguay Round (1986)—87 months; the World Trade Organization, Agreement on Trade-Related Aspects of Intellectual Property Rights, and agreement on free trade in textiles established, reduction of tariffs and agricultural subsidies agreed.

3 Doha Development Round

At the Fourth Ministerial Conference in Doha, Qatar, in November 2001 a decision was made to initiate the first negotiation round under the auspices of WTO, addressing the trading prospects of developing countries, thus, informally it has been labeled as Doha Development Round. The main objective was to improve the international trading system through reduction of tariff and non-tariff barriers and implementation of fairer rules of trade. The Doha Ministerial Declaration assumed around 20 areas of trade to be covered, providing negotiation mandate with regards to already discussed fields of agriculture, intellectual property and services, as well as the other issues i.e. trade in non-agricultural market access, trade and development, trade and environment, trade facilitation, dispute settlement understanding, last but not least, WTO rules. Furthermore, ministers agreed to address the problem of implementation of the current WTO agreements by developing countries.

The former US trade negotiator, Robert Zoellick, perceived the new negotiation round as a prospective source of growth, development and prosperity (Stiglitz and Charlton 2005), however, far-reaching, ambitious agenda proved to be a curse of WTO, considering the rule of single undertaking, under which nothing is agreed until everything is agreed as a product of compromise. The basic source of the dispute among negotiating parties was the liberalization of trade in agri-food, access to the markets of developed countries for products (including non-agricultural) originating from developing countries. The following ministerial conferences in Cancun (2003), Hong Kong (2005), Geneva (2009, 2011) lacked any consensus, except for more or less unambiguous declarations of policy makers regarding the will to proceed with talks.

Cancun meeting in September 2003 resulted in impasse due to disagreement between the so-called Quad countries, namely, Canada, Japan, the European Union

and the United States, and two consolidated blocks of developing countries, namely, G20 (enlarged to G20 Plus, G21, G23, established in August 2003, embracing countries as follows: Argentina, Brazil, Bolivia, Chile, China—as the consequence of accession to WTO, as well as Taiwan at the Fourth WTO Ministerial Conference, Cuba, Ecuador, Egypt, Guatemala, India, Indonesia, Mexico, Nigeria, Pakistan, Paraguay, Peru, Philippines, South Africa, Tanzania, Thailand, Uruguay, Venezuela, Zimbabwe, last but not least, a block of the poor and least developed economies G90 (including, among others, African, Caribbean and Pacific states—ACP, as well as least developed countries—LDCs). Over one hundred developing and least developed WTO members decided to break off talks to resist modification of negotiation agenda pushed by the Quad countries, willing to shift away from the tough issue of market entry for labor-intensive, mainly, agricultural exports from developing world and removal of subsidies toward the so-called Singapore issues, namely, investment regime, competition policy, government procurement and trade facilitation. However, the message as follows: better no agreement than a bad one, appeared to miss the addressee, since the EU Commissioner for Agriculture Franz Fischler responded as follows: "if the G20 wanted to do business, they should come back to Mother Earth. If they choose to continue their space odyssey they will not get to the stars, they will not get the moon; they will end up with empty hands" (Stiglitz and Charlton 2005, p. 64).

Under the July Agreement established in Geneva, July 2004, negotiating parties made only a little step forward by drawing a roadmap of talks and concessions to be addressed at the Sixth Ministerial Conference in Hong Kong in December 2005 however, the latter ended with the commitment in regards of elimination of export subsidies in agriculture by the end of 2013, however, under condition of successful completion of the Doha Round. Another ministerial conference in Geneva in July 2008 resulted in impasse due to the lack of agreement on the special safeguard mechanism authorizing developing countries to increase tariffs in the circumstances of the increase in imports of agricultural products or significant decline in their prices.

Similarly, both Seventh and Eighth Ministerial Conference in Geneva, November-December 2009 and December 2011 held under the global financial and economic crisis originated in the United States made no breakthrough in terms of advancing trade negotiations, while producing political declarations concerning the status of talks. At the meeting in the late 2011 WTO members successfully finalized accession talks with the Russian Federation, pointing at the window of opportunity associated with the forthcoming presidential elections in the United States.

It should be noted, however, that lengthy Doha talks are challenged by both external geopolitical conditions, as well as internal attributes of organization, including the WTO decision-making mode and contradictory interests of the members. There is an important context of political circumstances that cannot be neglected, namely, electoral cycle of the WTO member states, including the problem of the pace of negotiations with respect to the election calendar of the key actors e.g. the United States—for example, prolonged conversation pose a risk to modify

the agenda due to changes in US trade policy, or the EU—elections in most member states and the Community bodies including the European Commission and Parliament.

The protracted negotiations have encountered new challenges arising from the global financial crisis and economic, resulting in intensification of protectionism. As a result, WTO members have focused efforts on tackling the crisis in the country, realizing more and stronger regional cooperation at the expense of multilateralism. Regarding internal attributes of WTO, decision-making processes engaging over 160 states and observers tend to follow two aforementioned technical rules of negotiations, namely, compromise and single undertaking. Considering ambitious negotiating agenda, organization is threaten by paralysis, however, abandonment of these rules would create a another threat, namely, it would limit the influence of the smaller states at the level of WTO, providing another argument to alter- and anti-globalists.

Worth mentioning, in contrast to the GATT, which was dominated by the interests of the US and the EU, the WTO system of forces is quite different, namely, the aforementioned Quad countries are not able to push their stance without the approval of developing countries, which in turn are better prepared, consolidated and determined, especially in regards of agriculture. Paradoxically, many developing countries were not favorable to the full liberalization of trade in agri-food industry considering termination of the mechanism of special and differential treatment in trade. As a result, various developing countries differ depending on the individual optics, competitive position and potential. On the other hand, strong support for the liberalization of agricultural trade has been declared by major agricultural exporters of the Cairns Group—established in August 1986 in Australia, before the Uruguay Round, accounting for 23% of the global agricultural sales, engaging the states as follows: Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Pakistan, Paraguay, Peru, Philippines, South Africa, Thailand and Uruguay, leaving South Africa and Pakistan skeptical. The formula of liberalization proposed by the WTO was opposed by China and India, as well as many developed countries i.e. Japan, Switzerland and Norway. Importantly, among the EU countries optics is diversified—from favorable (i.e. The United Kingdom), to skeptical (i.e. France and Poland).

Two promising episodes of Doha Development Round took place in December 2013 and December 2015, resulting in the so-called Bali Package and Nairobi Package. At the Ninth Ministerial Conference in Bali, Indonesia, all WTO members signed the first global agreement ever addressing a part of the Doha's negotiation agenda, with special regard to trade facilitation issues, i.e. cutting red tape and simplifying port clearances, as well as development-related aspects of trade for developing and least developed countries, including food security and cotton. This component of the Bali Package obliged the countries to speed up the movement of goods across the border, with an indication of transparent customs procedures and criminal penalties, including required documentation and scope of the powers and authority of veterinary and phytosanitary services (WTO 2013). According to the

International Chamber of Commerce, it would reduce trade costs by 10–15%. Moreover, signatory parties committed themselves to reduce significantly agricultural subsidies and liberalize the trade in agricultural goods imported through quotas. According to declarations, Bali Package was a response to the Doha Development Round's impasse and escalating protectionism induced by the global financial and economic crisis 2007–2009, supposed to bring the world economy even 2.3 billion US dollars of profit, 21 million new jobs, increase in trade volume by 11%, last but not least, increase in the global GDP by 1%. Noteworthy, 55% of additional global GDP would benefit developing countries, as well as 18 of 21 million of new jobs.

As one of the most striking examples of protectionism after 2008 was Argentina, which in January 2013 raised tariffs on 100 types of goods to the maximum level allowed by the WTO—35%, while Brazil reached for the non-tariff measures, i.e. 30% tax reliefs for automotive companies transferring some production lines to the country or using Brazilian components (a preference for this type of company in national tenders, similar to Argentina and India), raising the rates of customs duty in addition to the production of electronic, steel and wood products from an average of 2–18 to 14–25%. Meanwhile, Russia has used phytosanitary services to restrict imports from countries such as Lithuania, and Poland, also deciding on a unilateral modification of duties for up to 370 tariff lines and recycling fee on foreign cars. Ukraine at the same time raised tariffs on 131 tariff lines, seeking to renegotiate the contract with the WTO, Indonesia introduced an embargo on food imports, depending on the needs of domestic producers. Finally, the EU imposed a 11% duty on the Chinese solar panels, protecting German manufacturers, preferring well as domestic biofuel producers by imposing stringent environmental standards on Argentine suppliers. According to the European Commission, till the end of 2013, in response to the global financial and economic crisis, 688 new trade barriers were introduced, involving 31 major trading partners of the EU. Interestingly, only six emerging markets, namely, Argentina, Brazil, China, Indonesia, Russia and South Africa, accounted for over 70% of newly established trade restrictions.

Nairobi Package has been agreed at the Tenth Ministerial Conference in December 2015 in Nairobi, Kenya, the first ever WTO meeting in Africa, embracing six ministerial decisions regarding agriculture, cotton and issues related to least developed countries, including, a commitment to abolish export subsidies for farm exports. Among agriculture-related issues, there was a public stockholding for food security purposes, special safeguard mechanism for developing countries, as well as new measures associated with cotton policy. Finally, ministers agreed on the preferential treatment for least developed countries in the field of services and exports. Noteworthy, in case of agriculture exports developing countries were provided with extended period to maintain subsidies in the field of marketing and transport costs until the end of 2023, while the least developed and food importing countries would be able to delay cuts in export subsidies.

Another significant component of Nairobi Package was the expanded Information Technology Agreement (ITA) originally concluded by 53 developed and developing WTO members in July 2015, covering 201 products that will enjoy

duty-free market access and benefit all the member states (WTO 2015). While Bali Package was termed as a milestone in terms of global agreement on trade facilitation, Nairobi Package seemed to be historic due to consensus over elimination of subsidies for farm exports, however, in both cases ratification process at the level of national parliaments is still ahead.

Finally, ministers noted the strong commitment of all WTO members to advance negotiations on the remaining Doha issues, even though opinions regarding the future of negotiation round differ. Azevêdo urged member states to face the problem of fundamental divisions that have inspired a series of impasses since 2001, while reaffirming the role of WTO as the global forum for trade rules setting and governance in the context of expanding bilateralism and mega-regionalism in trade. Furthermore, ministers acknowledged the role of WTO's Committee on Regional Trade Agreements (CRTA) in terms of assessment of systemic implications of RTAs for the multilateral trading system and WTO rules of trade. As it was stressed, RTAs should be complementary to, not a substitute for, the multilateral trading system (WTO 2015).

4 From Bilateralism Toward Mega-Regionalism

Regional Trade Agreements (RTAs), aimed at reduction or elimination of tariff barriers, take the form of reciprocity-based free trade agreements (FTAs) or preferential trade agreements (PTAs). The latter assume asymmetry in terms of signatories' gains, namely, developed countries provide developing countries with a set of concessions at unilateral basis, while lacking mutuality—an example of such was the Lóme Convention signed among the European countries and their former colonies. The legal source of RTAs is the Article 24 of GATT, requiring that such an agreement should cover substantially all trade among signatory parties, without harming the third countries (Bobowski 2011; Ravenhill 2008) (for further studies on trade regionalism see: Bobowski 2015, 2017). Importantly, under Enabling Clause agreed at the Tokyo Negotiation Round in 1979, developing countries, including least developed countries (LDCs), do not have to comply with the Article 24 when designing RTAs. Meanwhile, there is an expectation, that trade barriers would not be raised and the future reduction or elimination of tariff and non-tariff barriers would not be threatened due to RTAs signed (Ravenhill 2003; Hamanaka 2008). What has become a concern is that Enabling Clause-based RTAs enhanced protectionism and cost manipulation on the side of dominating signatory parties, willing to exclude sensitive sectors from tariff concessions. Due to lack of WTO's definition of the developing country, emerging markets, such as China, provide asymmetrical preferences, while maintaining political umbrella over industries such as agriculture, textiles or automotive industry (Hamanaka 2010). Nevertheless, RTAs used to be an attractive instrument of trade policy of states.

As of 1 July 2016, 635 notifications of RTAs (covering goods, services and accessions separately) had been received by the GATT/WTO. Of these, 435 notifications were made under Article 24 of the GATT 1947 or GATT 1994, 43 under the Enabling Clause and 157 under Article 5 of the GATS. Furthermore, of the total 635 notified RTAs, 423 were in force (WTO 2016).

Addressing definition of mega-regionals by World Economic Forum, they are "deep integration partnerships in the form of RTAs (regional trade agreements) between countries or regions with a major share of world trade and FDI (foreign direct investment) and in which two or more of the parties are in a paramount driver position, or serve as hubs in global value chains (i.e. USA, EU, Japan or China)" (Meléndez-Ortiz 2014, p. 13). Therefore, the distinctive feature of mega-regionals is the size both in terms of trade volume, GDP, as well as geographical coverage. To date, two mega-regionals were signed, namely, Trans-Pacific Partnership (TPP)—on 4 February 2016, and Comprehensive Economic and Trade Agreement (CETA)—on 30 October 2016, while Trans-Atlantic Trade and Investment Partnership (TTIP), Regional Comprehensive Economic Partnership (RCEP), and Free Trade Area of Asia-Pacific (FTAAP) are still negotiated/considered (see Table 1).

Among the presented mega-regionals FTAAP, embracing 21 APEC member states, would be the largest trade block both in terms of shares in the global exports and GDP—46.41% and 59.6%, respectively. Purely hypothetical sequence might look as follows: successful ratification of TPP would attract new entrants from ASEAN region, starting with Indonesia, Thailand and the Philippines, encouraged by most advanced agenda of cooperation when compared to RCEP, that, in turn, may lead to gradual inclusion of the latter to US-led block instead of advancing competitive framework in parallel to TPP. Thus, presence of both China and the United States within a single framework would enhance FTAAP project. However, agenda of the newly established block would have to challenge the problem of membership of non-APEC states such as three less developed ASEAN members, namely, Cambodia, Lao PDR, Myanmar, as well as India (for further studies see Bobowski 2017). Interestingly, mega-regionals' shares in the global GDP do not necessarily translate into the shares in the global exports—for instance, TPP's shares in the global GDP amounted to 37.96%, then, more than CETA and RCEP, however, TPP's shares in the global exports proved to be the lowest, namely, 22.3%. Mega-regionals involving EU and/or United States, then, CETA, TTIP, FTAAP would overshadow China-led RCEP.

However, recent controversies around TPP resulting of presidential election in the United States in November 2016 might leverage the Regional Comprehensive Economic Partnership at the expense of impasse around TPP's ratification. Namely, president-elect, Donald Trump, announced on 22 November withdrawal of the United States from TPP on his first day in office. The Japan's Prime Minister, Shinzo Abe, questioned utility of TPP without the U.S. (Woolf et al. 2016). Vietnam's Prime Minister Nguyen Xuan Phuc announced on 17 November, that his government is tabling any steps forward to ratify the TPP. Meanwhile, Singapore's Prime Minister Lee Hsien Loong at a meeting with the leaders from

Table 1 Mega-regionals in the global economy

	CETA	FTAAP	RCEP	TPP	TTIP
Number of participants	29	21	16	12	29
Member states	Canada, EU-28 (Austria, Belgium, Bulgaria Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland Portugal, Romania, Slovakia, Slovenia, Spain, Sweden)	Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong, China, Indonesia, Japan, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, The Philippines, Republic of Korea, Russia, Singapore, Chinese Taipei, Thailand, The United States, Vietnam	Australia, China, India, Japan, New Zealand, Republic of Korea, ASEAN-10 (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, The Philippines, Singapore, Thailand, Vietnam) Thailand	Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, The United States, Vietnam	The United States, EU-28 (Austria, Belgium, Bulgaria Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland Portugal, Romania, Slovakia, Slovenia, Spain, Sweden)
Share of the global exports (%)	33.53	46.41	27.87	22.30	39.71
Share of the global GDP (%)	24.79	59.60	31.60	37.96	47.43
Current status	Signed (30 October 2016)	Proposed (November 2014)	Negotiated (15th round in October 2016)	Signed (4 February 2016)	Negotiated (14th round in July 2016)

Source: Own calculations based on IMF (2016)

11 other Pacific Rim countries on 19 November declared a will of ratifying TPP as quickly as possible (Othman 2016).

Following Meléndez-Ortiz (2014), mega-regionals are expected to improve market access and compatibility of business and investment regimes. However, as Bhagwati (2008) argued, mega-regionals as large-scale RTAs may enhance protectionism and new barriers in international trade due to internal distribution of preferences going beyond multilateral framework of WTO at the expense of third parties. Consequently, central role of WTO in the global trade system may be challenged by preferential liberalization that, in turn, would threaten inclusiveness and development of multilateral trade regime. Bhagwati coined the term of stumbling blocks and building blocks when making a critical assessment of trade regionalism in 1991.

There are three major arguments for emergence of mega-regionals, namely, disappointing results of WTO process, domino theory, and geopolitical premises. Firstly, WTO member states seek for alternative paths of trade dialogue considering ineffective multilateral process under consensus rule with minimal common denominator (Low 2011). Thus, two already signed mega-regionals i.e. TPP and CETA go beyond WTO frameworks in terms of regulatory cooperation and may be assessed through the prism of long lasting Doha Development Round faced by series of impasses and deadlocks, while Asia-Pacific Economic Cooperation established in 1989 was perceived by as counteraction to the impasse of Uruguay Round of GATT. Secondly, establishment of mega-regionals may be studied in the context of domino theory of Baldwin (1995), attempting initially to explain the proliferation of bilateral and plurilateral RTAs since the late 80s. Referring to the issue of mega-regionals, non-signatory parties might seek for membership in such trade frameworks to eliminate disadvantages or to establish a competitive agreement, potentially broader in terms of scope and geographical coverage, as it happened in case of US-led TPP and China-led RCEP (Bobowski 2011).

Thirdly, there is an important geopolitical determinant of mega-regionals. The latter may be understood as an emanation of changes in the global governance system and relocation of the gravity pole of the economic system in terms of trade and capital flows to the East. The so-called pivot to Asia under Barack Obama administration 2008–2016 and TPP served as a toll to encircle China and tame its regional economic expansion. Importantly, mega-regionals are characterized by exclusiveness, thus, US-led TPP excluded China, while China-led RCEP excluded US (for further studies see Bobowski 2015), last but not least, proposal of FTAAP given at the APEC meeting in Beijing 2014 has been met by US leaders without enthusiasm (Tiezzi 2014). On the other hand, as Basu Das (2014) stated, RCEP centered around ASEAN would enable the coexistence of regional powers i.e. China, Japan, India and Republic of Korea within a single trade block, while acting as counterbalance to TPP and TTIP from the China's perspective. Following Akman et al. (2015), TTIP may be the last opportunity for both EU and USA to set multilateral rules of trade in the twenty-first century.

Assuming, that TPP may be dismantled prior to ratification, projections made by Petri et al. (2014) as to emergence of FTAAP on the path of enlargement of TPP up

to 17 members (TPP Plus China, Indonesia, The Philippines, Republic of Korea, Thailand), enlargement of RCEP (however, under condition of achieving high standards expected by advanced economies), eventually—through umbrella agreement between RCEP and TPP existing in parallel, seems to be less probable than a few months ago.

5 Mega-Regionals Versus WTO

According to Low and Chai Ming (2016), there are five important areas of influence of mega-regionals for WTO, namely, negotiation resource diversion, fragmentation of multilateral trade regime, preferentialism, rules of origin costs and increase in regulatory divergence. Meanwhile, however, negative consequences of mega-regionals for the third parties might be addressed under multilateral process of WTO, able to absorb experiences and concepts of trade regionalism in such a form.

Firstly, as argued by World Bank (2005), mega-regionals as well as bilaterals engage scarce negotiation resources of countries, with special regard to less developed, gaining attention of policy makers at the expense of WTO's multilateral process. Perfect example was the prolongation of Uruguay Round due to NAFTA (North American Free Trade Agreement) talks engaging Canada, Mexico and the United States.

Secondly, mega-regionals contribute to fragmentation of the global trade regime, however, consolidation and multilateralization of bilateral RTAs may reduce transaction costs and the so-called noodle bowl effect related to rising complexity of regulations and rules of trade imposed by numerous overlapping RTAs. A serious threat is mutual rivalry among mega-regionals and inward orientation, that was termed as our market is large enough syndrome by Bhagwati (1993). As argued by Petri and Plummer (2012), mega-regionals would induce trade diversion to the larger scale than bilaterals, affecting negatively international productivity, as well as trade creation and reconfiguration of capital flows within mega-regional blocks.

Thirdly, rivalry among mega-regionals may threaten global political stability due to reduction of economic interdependencies between the member states and third parties. Furthermore, mega-regionals provide new rules of trade and capital flows that change the status quo and make the global system more unpredictable and unstable.

Fourthly, an important attribute of contemporary RTAs are the rules of origin, that provide the goods originated on the territory of the member states with preferential treatment within the block. Rules of origin used to be found as a major source of noodle bowl effect by Munakata (2006) (for further studies see Bobowski 2011; Estevadeordal et al. 2007). Namely, numerous RTAs signed by individual states increase administration and time costs of business willing to use preferences under concrete RTAs that put into the question attractiveness of the latter, especially when considering the presence of i.e. duty drawback system,

export processing zones etc. In case of mega-regionals there is a problem of cumulation of rules of origin in order to cover the goods manufactured in a few countries with preferential treatment.

Fifthly, regulatory diversity used to be a challenge these days in the non-price field. Regulations might be found as exclusionary due to the fact that both business and governments may be not able to fulfill the guidelines and requirements, the content of regulations may result of historical legacy, finally, third parties may be intentionally disadvantaged. The two former premises may be addressed through training and infrastructural support, as well as coordination of trade policies within mega-regional block, while the latter requires anti-protectionist reform of regulations against diversified interests of individual member states. It seems that regulatory divergence might be solved through mutual recognition agreements instead of significantly tough and long lasting negotiations in regards of harmonization. On the other hand, mutual recognition cannot take place between the states that differ in terms of standards, risk perception and degree of state interventionism, thus, represent asymmetry in the level of income and development indicators.

Importantly, exclusionary effects of mega-regionals may not induce multilateral dialogue at the level of WTO due to the fact that the major powers of the global trade regime, namely, China, Japan, EU and the U.S. are already engaged in formation of such blocks, therefore, interest in advancing multilateral dialogue might erode. Importantly, negative implications of preferentialism manifested through emergence of mega-regionals did not encourage any serious debate of policy makers so far.

Assuming successful conclusion of mega-regionals, there is a serious threat of concentration of both trade and investment relations within the newly established blocks at the expense of multilateral process under the auspices of WTO. The mega-regional trade agreements used to be faced by numerous challenges that influence on the negotiation process, putting into the question feasibility of the project, or, if being implemented, further enlargement in terms of membership.

Aforementioned Trans-Pacific Partnership, finally signed on 4th February 2016, awaiting ratification, dealt effectively with difficult issues, including, among others, liberalization of the Japan's agricultural sector, the U.S.' automobile industry, as well as Canada's dairy production. Negotiations on the Trans-Atlantic Trade and Investment Partnership face the problem of standard diversity in the European Union and the United States and controversies around the Investor-State Dispute Settlement (ISDS), being a core of discussion also in the context of already signed Comprehensive Economic and Trade Agreement between EU and Canada, repeatedly termed as the younger sister of TTIP. The Regional Comprehensive Economic Partnership raises the concerns in regards of relativity of approach to liberalization of trade, intrusiveness of the agreement, last but not least, its implications for the region's prosperity.

Any probable tensions between the mega-regionals being in operation could advantage and favor WTO, as well as revitalization of the Doha Development Round (Mehrotra and Wingfield 2014). In case of the latter, there is no convincing arguments for, even though some progress has been made in Bali and Nairobi. On

the other hand, WTO could maintain its attractiveness if using dispute settlement and RTAs' monitoring mechanism effectively. The final failure of Doha Development Round would undermine the role of WTO's negotiation scheme and legitimacy of the multilateral trade regime. Thus, in order to secure the centralist role of WTO in the global trade system, there is an urgent need of repairing Doha Development Round, establishing program of multilateralizing regionalism, internal institutional changes, as well as an update of the agenda.

Firstly, WTO should address geopolitical challenges resulting of changes in the balance of power, alike mega-regionals did. It seems to be crucial to maximize the benefits of engaged parties through more adaptive and flexible approach to Doha agenda to keep all the parties by the multilateral table.

Secondly, WTO should enforce more discipline of regional trade agreements in order to secure compliance with WTO rules, while fighting against discrimination of the third parties and promoting inclusiveness. Twenty years ago Barfield (1996) shared an idea of establishing mechanism that extend mega-regionals' rules on the other WTO members under non-conditional most favored national clause (MFN) within an agreed period. Baldwin and Low (2009) suggested gradual, consensual incorporation of existing RTAs into the non-discriminatory WTO frameworks to prevent fragmentation of the global trade system into the blocks. Thus, instead of bottom-up approach and fusion of trade agreements, there would be a top-down holistic approach to avoid conflicts arising between signatory and the third parties. The concept of critical mass may also apply here, as it was already addressed in post-Uruguay Information Technology Agreement. Namely, agreement could be workable and enter into force when being approved by the major actors of the multilateral trade system, even though some smaller WTO members could exclude themselves from the commitments. In other words, lack of widespread discipline would not dismantle the deal, securing gains for all the WTO members.

Thirdly, challenges of the twenty-first century cannot be addressed effectively by the Trade Policy Review as well as Transparency Mechanism of WTO. As Low (2014) argued, there is a need to shift away from the hard to soft approach to the law, assuming voluntary exclusion from the concrete disadvantageous, too formalized cooperation schemes in the interest of establishing more positive relations between WTO members. Another critical aspect of internal institutional reform is the voting system based on the rule of consensus. Both majority voting and weighted voting system raise numerous concerns of the smaller WTO members being afraid of instrumental treatment. On the other hand, any blocking coalition should be requested to substantiate its statement officially and unambiguously. This might be accompanied by support mechanism aimed at convincing opponents to change their stance in the name of consensus.

Fourthly, Doha Development Round agenda requires update and partial modification in order to adapt it to the challenges of the twenty-first century. Among the prioritized issues to be addressed there are as follows: government procurement regulations, investments, subsidies, nontariff barriers, e-commerce, competition policy, last but not least, global value chains (Stoler 2013). Unquestionably, finalization of Doha Development Round appears to be critical for the future of WTO.

6 Conclusion

Mega-regionals attracted a lot of attention, mainly due to potential economic and geopolitical implications of probable establishment of trade blocks accounting for massive shares in the global exports and GDP. Large-scale trade initiatives going beyond WTO frameworks absorbed negotiation assets of both developing and developed countries, threatening further progress of multilateral process, with special regard to 15-year-old Doha Development Round. However, CETA, RCEP, TTIP and TPP trade talks, engaging, when combined, 50 countries representing North and Latin America, Western, Eastern and Central Europe, as well as East Asia and Oceania, proceeded in parallel to supposedly groundbreaking WTO conferences in Bali and Nairobi.

As already stated, WTO needs to redefine its role as the center of governance of the global trade system, addressing such issues as soft approach to the law, critical mass concept and update of Doha agenda. Unquestionably, trade regionalism manifesting itself at bilateral and plurilateral level, at sub-regional, regional and mega-regional scale, might be perceived in terms of opportunity for multilateral trade system, assuming effective mechanisms of incorporation of numerous RTAs into the non-discriminatory frameworks of WTO in the name of enhancing inclusiveness. On the other hand, successful mega-regionals might discourage key global players from advancing Doha negotiations, making such newly established blocks substitute for multilateral regime. Cancun meeting indicated the scale of consolidation of developing world against unfavorable proposals of EU, Japan, Canada and the United States, as well as lack of alternative for further concessions of the developed world to avoid another impasse. Critical aspect here is whether further expansion of membership would be probable after a given mega-regional trade agreement enters into force, moreover, whether peaceful coexistence of a few mega-regionals is feasible, especially in the context of regional and global rivalry engaging such powers as China, the European Union, Japan, Russia and the United States. Collision of established mega-regional blocks, alike the failure of negotiation or ratification processes—the latter probable these days in the context of TPP, maybe also TTIP—would potentially benefit multilateral forum of WTO as the gravity pole of the global trade system.

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Poland and India in the Light of Hofstede's Cultural Dimensions

Aleksandra Kuźmińska-Haberla

Abstract The problem of cultural differences in business is the focus of interest of both practitioners and scholars interested in international relations. According to many studies, helpful in understanding the characteristics of foreign markets may be the typologies of national cultures. One of the most interesting and widely used ones are the Hofstede cultural dimensions. The main purpose of the paper is to compare Poland and India in the light of cultural dimensions and to verify the importance of particular dimensions from the point of view of doing business by Polish companies in India. Furthermore, the purpose of the paper is to draw conclusions for Polish companies interested in taking business activities in Indian market, basing exactly on dimensions. Poland and India differ significantly in many aspects. The crucial differences relay to hierarchy perception, individualistic versus collectivist approach or the degree of uncertainty avoidance. Although both countries exhibit high level of Power Distance, in India there is much more respect for hierarchy. Poles as individualistic culture, may be surprised with the strong group, family in particular, orientation and influence on individual's decisions. Indians seem to be much more relaxed than Poles, not everything has to go according to the plan or schedule. Patience and long-term relations are important. All these differences are visible in negotiation process, project management and implementation, everyday cooperation and subordinate/superior relations.

Keywords Culture • Cultural differences • Cultural dimensions

1 Introduction

A foreign expansion is becoming an indispensable element of successful existence of enterprises in many countries, including Poland—more and more local companies are seeking to conquer foreign markets. Although most companies are looking so far for their chances on the European markets, it seems that the number of

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companies reaching more distant countries is growing. Among markets that are in the focus of Polish enterprises are definitely Asian countries including China, Thailand or India. It can be mirrored in the government's promotional actions—programs like GoChina were developed in order to support Polish companies in reaching these markets.

Entering new countries, especially those exotic ones, requires the adequate preparation. Both, practitioners and scholars usually focus on economic or legal issues connected with foreign expansion. However, cultural differences also appear on the list of problems connected with company's internationalization. The importance of national culture has become increasingly important in the last three decades, largely as a result of the work of Hofstede (1994). National culture has been shown in the research of the impact on major business activities, from capital structure to group performance (Leung et al. 2005).

Cultural issues in business refer to many areas and not only to the end of the negotiation and signing the contract. Many problems actually appear already in the implementation phase of the project—communication within the project group/suppliers, delivery time/deadlines, feedback giving, relations with superiors/subordinates, etc. The cultural sensitivity must also be bared in mind when planning marketing strategy. It is impossible to be prepared for everything, however entrepreneurs should spend some time on getting to know local customs, traditions, ways of behavior or communication which are integral elements of national culture. Good preparation can save trouble, time and money.

According to many researchers one of the ways of getting to know and understanding national cultures are cultural dimensions (orientations/typologies). These dimensions are the sources of valuable information about sociocultural conditions, helping in better preparation for business operations on unknown markets. Typologies refer to the culture of individual nations, which can be seen and evaluated from different perspectives (Skulski 2014). These dimensions can be perceived as some kind of signposts helping to navigate in the intercultural world. There are many typologies, which were developed based on experiences and scientific research. The most popular ones were developed by Hofstede et al. (2011), Gesteland (2012), Hall (1959), and Hampden-Turner and Trompenaars (1997).

In the literature there are lots of studies focusing on general analysis of Hofstede's dimensions, its usefulness in business operations. It is also possible to find some analysis of different countries through his dimensions. But there is not many, if at all, analysis comparing Poland and India in the light of Hofstede's typology. On the Polish market, there are some materials available concerning cultural issues on doing business in India, but they are rather general, usually focusing on communication, building relations with partner, negotiation tips or "do's and don'ts". The main purpose of the paper is to compare Poland and India in the light of Hofstede's dimensions and to verify the importance of particular dimensions from the point of view of doing business by Polish companies in India. Furthermore, the purpose of the paper is to draw conclusions for Polish companies interested in taking business activities in Indian market, basing exactly on dimensions.

The paper, in the first part, employs secondary data collected from the relevant literature concerning national culture, cultural differences, cultural dimensions, Hofstede in particular. In the second part results of empirical studies are presented. The author conducted a series of IDIs (In-depth Interviews) among Polish companies cooperating on different fields with Indian counterparts.

2 Theoretical Issues

Cultural considerations require defining culture, cultural differences and cultural dimensions. The term culture is very wide and can be interpreted in many different ways. Only in the twentieth century around 150 definitions were developed. One of the first definitions characterizes culture as "(. . .) complex whole which includes knowledge, beliefs, arts, morals, law, customs, and any other capabilities and habits acquired by [a human] as a member of society" (Logan 2016). Adler (1997, p. 14) quotes another definition: "Culture consists of patterns, explicit and implicit, of and for behavior acquired and trans-mitted by symbols, constituting the distinctive achievements of human groups, including their embodiment in artefacts; the essential core of culture consists of traditional ideas and especially their attached values (. . .)". Another definition underlines that culture consists of concepts, values, and assumptions about life that guide behavior and are widely shared by people. All these elements are transmitted generation to generation, by parents and other elders (Storti 1997).

According to Hofstede culture is a collective programming of the mind which distinguishes the members of one group from another. People learn culture, not inherit it. It is important to distinguish culture (collective programming of the mind) from human nature (universal level of programming of the mind), which is common for all the people and is acquired with gens, and from personality (individual programming of the mind) which is acquired partly with gens and partly influenced by collective programming and own experiences (Hofstede 1994).

Definitions of culture were also proposed by Polish authors. For example Szczepański (1966) defines culture as the whole of products of human activity, tangible and intangible, passed to other groups and next generations. According to Kłoskowska (1980), culture is shaped by generations an external world of things and thoughts, which affects people. It cannot be a creation of the individual human, it is the product of co-existence and cooperation, and it develops and enriches thru lasting for generations. Culture is defined in many ways, but all of them have some common elements: culture is something shared with other members of society, it is learned and passed from generation to generation (Czinkota et al. 1994).

Apart from definitions, culture is very often compared to different phenomenon. The most popular one is the metaphor of an iceberg. Just as an iceberg culture has a visible section above the waterline, and invisible section below the water line, which is much larger. Culture has some aspects that are observable and others that can only be suspected or intuited. Also like an iceberg, that part of culture that is visible is

only a small part of a much bigger whole. What is more, there is a relationship between those elements that are over the water line with those that appear under the surface ones—the surface behaviors are influenced by beneath the surface values, assumptions and belief (Storti 1997). Very similar idea is behind the metaphor of a tree—the visible part of a tree (branches, leaves etc.) represent the visible part of culture (dress, music, literature, food etc.), however the roots, which are not visible over the surface, determine what the tree looks like—the same is with culture.

It is also worth mentioning Hofstede's "Onion Diagram". According to him cultural differences can be compared to an onion. The same as an onion culture has layers, the more you "peel it" the more inner layers you see. In the most inner part there are values defined as inclinations to make a specific choice. The outermost part is represented by symbols (words, gestures, pictures which have a special meaning and are recognizable by members of a given culture). The intermediate layers are heroes (characters that represent features especially valued in a given culture and at the same serve as role models) and rituals (collective activities which are perceived as socially necessary) (Hofstede et al. 2011).

3 Hofstede's Cultural Dimensions

Hofstede, Hofstede and Minkov are authors of cultural dimensions, which, it can be argued, are one of the most important findings in the field of cultural research. The idea proposed by the author is used in sociology, psychology, anthropology and business relations.

Hofstede, Hofstede and Minkov developed six cultural dimensions basing on the research conducted among employees of IBM company. In the research they wanted to show how values in the workplace are influenced by culture. The original survey was conducted in more than 70 countries, but only data from 40 countries with the biggest number of respondents was used. Later on, the analysis were extended to 50 countries and 3 regions. Further studies validating the earlier results included other groups of respondents. In the latest edition of the survey, scores on the dimensions are listed for 76 countries, partly based on replications and extensions of the IBM study on different international populations and by different scholars (Hofstede 2016a).

The original questionnaire included 160 positions, 63 of which were related to work. The questions can be divided into five thematic groups: satisfaction, perception, personal goals and convictions, demographics (Matsumoto and Juang 2012). At this point he defined four out of six cultural dimensions: Power Distance (PDI), Individualism (IDV), Masculinity (MAS) and Uncertainty Avoidance (UAI). The fifth one, Long Term Orientation (LTO), was developed basing on a survey conducted by a group of researchers called Chinese Culture Connection led by Bond (1987). The last one, Indulgence (IND), was added lately by Minkov (2009) inspired by the research made by Inglehart et al. (1998).

The Power Distance Index relates to how a society handles inequalities among people. People in societies with high Power Distance accept a hierarchical order in which everybody has a place, in societies with low Power Distance, people strive to equalize the distribution of power and demand justification for inequalities of power. The Individualism relates to a people's definition of themselves as "I" or "we", individual or a part of a group. High IDV means a social framework in which individuals are expected to take care only of themselves and their immediate families. Its opposite, collectivism, represents a preference for a framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. The Masculinity stands for a preference in society for competition, achievement, assertiveness and material rewards for success. Its opposite is Femininity, which represents cooperation, modesty, caring for the weak and quality of life. The Uncertainty Avoidance Index expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. Countries that score high in this dimension maintain rigid codes of belief and behavior, usually create lots of rules and regulations. Low UAI means that societies maintain a more relaxed attitude in which practice counts more than principles. The Long Term Orientation, also named Confucian Dynamism, relates to the links that every society has with its own past while dealing with the challenges of the present and the future. Low LTO means that people prefer to maintain time-honored traditions and norms while viewing societal change with suspicion. High LTO, on the other hand, takes a more pragmatic approach: they encourage thrift and efforts in modern education as a way to prepare for the future. The last dimension, the Indulgence relates to being happy and indulging the pleasures of life. Indulgence stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun. The opposite one—restraint, stands for a society that suppresses gratification of needs and regulates it by means of strict social norms (Hofstede 2016a; Hofstede et al. 2011).

The research made by Hofstede and his co-workers were also criticized. The biggest objections relate to the fact that they based the research only on the IBM employees, and most of the respondents were men. Another objection was that the research was made from the point of view of western sociologists. Also, it was pointed out, that they didn't give the information about the localization of companies, while it is possible that within one nation there can occur different dimensions (Subocz 2012) (for example many European countries are heterogeneous—large number of immigrants in France, UK or Germany can bring different cultural patterns in the country). Despite of all the criticism of Hofstede's work, his input into intercultural research is undeniable.

4 Poland in Comparison with India

Poland wasn't originally taken into consideration in Hofstede's survey. The results for Poland were based on research projects conducted by other researchers or have been derived from data representing similar countries in combination with practitioner experience (Hofstede 2016a). India, on the other hand, was included in the research from the very beginning.

The first dimension that will be analyzed is Power Distance. The scores for both countries are quite similar, 68 for Poland and 77 for India. This results show that both countries indicate high Power Distance, however, in reality the differences are quite significant, especially in the perception of hierarchy—India is more hierarchical, with more respect to superiors, older and experienced, than Poland.

The Polish score of 68 exhibits acceptance for hierarchy in an organization which is perceived as reflecting inequalities, centralization is popular, subordinates expect to be told what to do and the ideal boss is a benevolent autocrat (Hofstede 2016a) junior colleagues usually show respect to their superiors and it is important to cultivate relationship at senior level. Furthermore, people that achieved higher status like to demonstrate it, office work is valued much higher than physical work, there are significant differences in wages between higher and lower positions in companies.

At this point it is necessary to make a few comments about Polish Power Distance attitude. First of all what is important, Poland in the last three decades has been going through major changes that made a huge impact on many aspects of people's life. The generation of young people in their thirties or twenties is much different than the generation of their parents who remember communism regime. The mentality has changed, young people are much more opened, feel more free, they have opportunities that were impossible for their parent's generation. They have no problems with giving their opinions, even contradicting superiors and it seems that young generation has less respect for older or authorities. Also children are raised in a different way than it was 30 years ago—they are taught to think independently, they can contradict parents, learn on their own mistakes, older children are often treated as partners.

Furthermore, these attitude differences between the older generation and the new generation who has entered the workforce since end of the communist era, is noticeable in work places and human management approach. As Poland is still a transition country, it doesn't have a well-established endemic business culture yet. There are three different types of business structures: ex-state monopoly enterprises—large companies, still remembering former system, lots of bureaucracy and inertia; foreign capital subsidiaries—this branch offices will usually reflect the approach of the parent company; local start-up companies—usually set up by young people, will often share the hallmarks of such companies worldwide, fast-moving, lacking in process and with a short-termism in approach (World Business Culture 2016a). It is also necessary to remember about Polish, traditional

companies, managed usually by older members of family—more paternalistic, autocratic approach, where the high PDI is more visible.

It seems that the power distance and autocratic approach is stronger and more visible in state owned and traditional, family-run companies than in the case of foreign transnational corporations or young and dynamic startups.

India is strongly hierarchical (some people argue that the mostly hierarchical in the world, the caste system is still present) in all aspects of life or business. People are not perceived equal, they know well their places and are not even attempting to abolish them. Their place in society is prescribed by karma. Indians show the respect to age, gender and social position, it is expected that younger will be submissive to the elders (Gesteland 2012). Employees are strongly dependent on the paternalistic, authoritarian boss, they follow directions, without any questioning, even if the directions or orders seem to be senseless or incorrect—subordinates don't contradict the boss. This kind of behavior could be perceived as disrespectful. This attitude results in taking the full responsibility for the failure or the success of a company by the superior.

A boss has strong position, is supposed to be respected and doesn't get involved in "meaningless" activities reserved for people on lower positions. Superior is expected to give clear directions to the employees what to do, vague requests for action, with the expectation that staff will show initiative are likely to end in inaction, as staff will be left confused (World Business Culture 2016b). Employees or contractors will rarely take an initiative, it is not appreciated. The boss is the one who is responsible for solving the problems and giving answers. Real power and decision making is centralized at the top, lower management or average employee is not entitled to make decisions. It is important when doing business in India to liaise as near to the top as possible.

In recent years many young Indians have decided to acquire education outside India, especially in USA and Great Britain. This has an impact on business approach. Very often young high-tech companies represent more westernized attitude than traditional, family-run enterprises. This concerns also Power Distance.

The second dimension is individualistic versus collectivistic approach. Poland scores 60 in this dimension, which means that it is individualistic society, contrary to India, which scores 48 and is perceived as partly collectivistic and partly individualist one. The difference between countries is seen for example in the approach towards family: Poles care about their immediate family only, that consist usually of parents, one or two children, sometimes grandparents are included. Siblings need to take care of themselves, not to mention further family, like cousins, aunts etc. In India from the other hand a family is a base of an existence, people take care about the extended family, close relations and acceptance or opinion of other family members is important.

The collectivistic and individualistic approach is very visible in the work place. Poles care about their own achievements, work promotion and employment. They like to be perceived and treated by their superiors as individuals, that bring their own impact and added value to the organization. Hiring people depends on the merit, the same with promotion—it should be based on results, merit and individual

achievements (Hofstede 2016b). It has to be noted that there are situations where employees are hired because of connections or some other social relationships. This kind of behavior (for example nepotism) however, is not perceived positively, it is discouraged, criticized and in some institutions, especially public ones, is forbidden.

There is a negative correlation between Power Distance and Individualism. Countries that score high in PDI usually score low in IDV—high Power Distance goes hand in hand with Collectivism. Poland is an example of an exemption from that rule. Even though Poles like hierarchy, they also like to be treated individually. This requires special approach from the manager or a team leader—employees need to know that everybody is important for the organization, within the hierarchy (Hofstede et al. 2011). Again, this contradiction is especially true in the case of older generations, younger Poles are less Power Distance sensitive.

Indians as partly collectivistic feel very well as members of a group, social framework. An individual is not perceived as a separate person, rather as a part of a group (Deresky 2000). People perceive themselves as a part of a strong, consistent structure, that in exchange for loyalty will protect them. "We" is more significant than "I", the most important are rights and needs of a group (Reynolds and Valentine 2009). This translates into a strong influence on individual's actions by a group, a family in particular. People count and respect groups opinions. The hiring process relays very often on personal relations, hiring member of family is a common thing. Contrary to Poland it is not perceived in a negative way. The same situation is in finding a partner for business or suppliers—Indians relay strongly on social networks and relationships.

The individualistic side of Indians refers to their religion—Hinduism. It is believed that people can rebirth in the life and death cycle. Their next incarnations are dependent on their previous lives and actions. People are, therefore, responsible for their behaviors and deeds in preceding life (Hofstede 2016c). This makes an interesting combination: on one hand Indians rely on a group and recon with group's opinion, on the other hand, they take their own responsibilities for actions.

Referring to the third dimension, Masculinity, it can be noticed that India and Poland are quite similar, although Poland scores higher. According to Hofstede's research it means that both countries are masculine. This cultures stress assertiveness, competition and material success. In work place managers are expected to be decisive and assertive (Jandt 2013). Indians are very masculine in stressing and displaying their success and power (it can be argued that it is stronger than in Poland). From the other hand it has to be noted that India is a spiritual country with various religious philosophies. It is also an ancient country which gives it the ample lessons in the value of humility and abstinence. This often reigns in people from indulging status displays to the extent that they might be naturally inclined to (Hofstede 2016c).

In masculine societies there is usually lower share of women on professional work market. In the case of Poland the situation is definitely better than in India. Polish women made huge strides in business, commerce, industry and politics. They are present in all aspects of professional life, but still the most senior

management positions are occupied by men. Although in India more and more women is paving the way to higher positions in transnational corporations (TNC), still many of them have problems with the access to education, or/and are not allowed to work professionally. Most of the managerial positions are occupied by men. It is worth to notice that the situation is changing, also because of the presence of TNCs in the country.

Hofstede's four dimension is Uncertainty Avoidance. Poland scores 93 in this category (is one of the countries with the highest results) and thus has a very high preference for uncertainty avoidance. Poles don't like uncertain situations, are less tolerant for unorthodox ideas or behaviors. People exhibit nervous stress, they are impatient, they need predictability and rules. Poles create tons of procedures, both written and unwritten, but not necessary obey them. They create rules mostly in order to have them "just in case", they feel safer if they are "guarded" by rules. Very often these rules are inconsistent or exclusive. People seem to be always busy, especially at workplace, they work hard. Time is money, there are deadlines, schedules, punctuality and being precise are curtailed. Poles seem to be stressed and always "on run", especially in big cities.

India in this dimension scores 40, which makes the country medium in the preference in uncertainty avoidance. But if you compare India to Poland, the differences are significant. In India nothing has to go perfectly as planned, time, punctuality and schedules are not as important as in Poland, people seem to be more relaxed, are more contemplative. Indians are patient, unexpected is not threatening. There are rules and laws, but people often circumvent them. The best example are traffic rules—they exist but it seems that Indians don't really care about them. Passing a red light, forcing the right of way, too many passengers in a car or on a scooter is a norm (this translates into high rates of traffic accidents). Indians don't feel the need to be busy all the time, taking an initiative and action is not valued.

Next dimension—Long Term Orientation also highlights some differences between Poland and India. The first country scores 38, which means that Poland represents Short-Term Orientation. India from the other hand, scores 51, which is intermediate result. This means that it is difficult to place it definitely in any of the two extremes. Polish society according to Hofstede's research seems to be normative, people have strong concerns about establishing the absolute Truth. Poles are strongly attached to traditions and the past. They care about quick results, also in business: profits gained now are more important than those in 10–20 years. The situation of India is more complicated. Indians believe in the concept of "karma", people's deeds determinate future experiences. Time is not linear, and thus is not as important as to western societies. Countries like India have a great tolerance for religious views from all over the world. There is an acceptance that there are many truths and often depends on the seeker. Because of this pragmatic approach people are willing to forgive a lack of punctuality, a changing game-plan based on changing reality (Hofstede 2016c; Hofstede et al. 2011).

The last dimension is Indulgence. Both countries score low in this dimension (29 for Poland and 26 for India) which means that both societies are Restraint. According to the author people from restrained countries are more pessimistic and

cynic. When we take a look at Poland and India it might seem true especially for Poland—people like to complain, it is even said that complaining is a "national feature" of Poles, people are pessimistic and don't smile that often. In the case of India it seems that people always can find a reason to smile, even if their position is not good. Countries that score low in Indulgence dimension don't follow their needs and desires freely, they find it somehow wrong. Their desires, sometimes hidden, are limited by social, religious norms (Hofstede 2016c; Hofstede et al. 2011). The vast majority of Poles are Roman Catholics. The religion imposes many restrictions and norms on the faithful, who follow then. Any violation of the norms, any deviation is badly perceived, especially by conservative members of the society. In both societies children are raised to control their actions and desires.

5 The Empirical Research Methodology

To verify the actual importance of Hofstede's Dimensions from the perspective of Polish companies the In-depth interviews were conducted.

An In-depth interview is a qualitative data collection method. It is a loosely structured interview, that allows freedom for both the interviewer and the interviewee to explore additional points and change direction of the conversation, if necessary. In-depth interviews offer the opportunity to capture rich, descriptive data about people's behaviors, attitudes and perceptions, and unfolding complex processes. They can be used as a standalone research method or as a part of a multi method design. The interview is more of a guided conversation than a stiff question and answer session. The IDI is conducted using a discussion guide which facilitates catching respondent's views through open ended questioning (B2B International 2016).

The main purpose of the IDI research was to define if the cultural differences are important from the point of view of Polish-Indian business cooperation, which of them are the most problematic and, the most important, to verify the actual significance of Hofstede's Dimensions from the point of Polish entrepreneurs/companies engaged in business operations with Indians. For the realization of the above aim the following research questions were put:

- to what extent the cultural differences are a barrier in conducting business, especially with companies from India,
- what elements of the international business are the most sensitive and problematic in a multicultural environment,
- which elements of culture are the most problematic from the point of view of Polish-Indian cooperation,
- is the concept of Hofstede's dimensions recognizable/known among interviewed Polish entrepreneurs,
- which of the dimensions are the most relevant/problematic from the business operations point of view,

- is the Hofstede's concept helpful in understanding differences and doing the business.

The research was conducted with 20 Polish representatives of enterprises cooperating with Indian companies. Among the respondents were small, medium and large companies. The spectrum of their operations was quite wide—there were companies engaged in IT operations, trade (import and export, for example gadgets, cloths, furniture and spices), production (clothes), consulting, banking. Among respondents were company owners (especially in the case of small and medium enterprises), project managers, team leaders, marketing and trade director.

Most of the interviewed companies cooperate with more than one country. Except India they do business with other Asian countries, including China, Thailand, Taiwan, Hong Kong, with European countries, including Germany, Czech Republic, Slovakia, France, Great Britain, Russia and Turkey, and African—Nigeria.

The survey was conducted among companies from all over the country between October 10th and October 28th 2016.

6 Results of the Empirical Study

In the first part of the interview respondents were asked about the biggest barriers in doing business internationally, with the special focus on India. The responses were quite similar. First of all, the most important are the formal, legal and administrative differences, followed by financial barriers. Respondents also drew attention to the cultural differences, time differences and geographical distance, logistical problems, the fluctuation of exchange rates, problems with the dates of execution of orders. According to one of the respondents: "(. . .) The most important barriers are the language, distance, lack of knowledge of the legal system. Lack of knowledge of the culture. Especially in countries such as India it is much more difficult to establish contacts, even though they speak English there. It is culturally different country. . . In addition, the distance itself is a problematic issue".

The next question regarded cultural differences as barriers in intercultural cooperation. According to respondents cultural differences can be an issue, especially when doing business outside Europe. In their opinion within Europe countries are very similar culture wise, and do not cause big issues, the respondents don't have any negative experiences in that field. Problems arise when the geographical and cultural distance is bigger. In regions such as Africa or Asia respondents experienced difficulties with communication, business etiquette, timing and keeping deadlines, relations with employees and peers, the role of women in business. One of the interviewed managers claimed: "In my opinion cultural barriers are an issue in the case of Asia, India is no exception. We cooperate with few countries in this region, and especially at the beginning the differences were quite significant. Right now we have permanent partners, and we overcame the problems. I remember that for

example in China the negotiation process was difficult, the business etiquette was very different and we didn't know how to behave. And the communication—it is so difficult to understand what they mean and it is not only the language. It seems that people in Asia are not very. . .clear or honest. They say one thing and do another. Now we know how to deal with it, but at the beginning it was problematic".

Respondents claimed that the biggest issues appear at the beginning of cooperation: establishing first contact and negotiation process. Problems appear also in the project realization phase: keeping deadlines, cooperation with peers, team management. Few of the respondents pointed out on relocation issues—it was very difficult to deal with completely new country with unknown culture.

The following part regarded questions about India in particular. First, respondents were asked about general cultural issues that Polish companies experience on this market. According to interviewed the biggest problems are connected with communication. Communication is understood by respondents as all language issues, both verbal and non-verbal, and all matters connected with different understanding of concepts, commands, being clear or vague (direct and indirect communication).

Even though English is official language in India and is widely spoken by business people, the problem for Poles is the accent, which is specific and very often causes misunderstandings. Another problem is non-verbal communication. Few of the respondents pointed out on different gesturing, especially on "head moving" which is a common thing in India—Poles have problems with decoding the meaning of such non-verbal signs.

For all the respondents very big issue, if not the biggest one, was the indirect communication. Interviewed managers and entrepreneurs pointed out that their Indian counterparts very often seem to say one thing and do something completely different, they agree on something, promise to do the job or complete a task, but in reality it doesn't happen. Indians have problems with saying "no" and that causes many issues, especially at the beginning of the cooperation. According to one of the respondents: "Right now I can read between the lines and understand when they say "may be" or "I will try". It probably means that they will not do what they are asked for. But at the beginning of our cooperation it was very frustrating. Now I know what questions to ask and how to ask them". Another respondent claimed: "Sometimes they just don't give the answer or change the topic—they don't want to talk about problems or they say that there is no problem. In Poland in my company we try to resolve issues not to avoid them".

Another difference is the time perception. Interviewed Poles say that it happens that the deadlines are not kept (according to few of the respondents it could be connected with communication misunderstandings and problems with saying "no"), meetings don't start on time or business associates don't come on time without any explanation or notice. Furthermore the problem is that Indians can change the date or hour of the meeting with very short notice by email or text, the same thing can happen with meeting confirmations. It seems that Indians have time for everything, are not in hurry and always assure that "there is no problem".

The issues are also caused because of differences in boss-subordinate relations. According to many of the respondents (especially those who work together with Indians on a common project) Indians show much respect and are even afraid of their supervisors, leaders and bosses. One of the respondents said: "(. . .) I remember a situation when there was a small problem with our project. The guy from Bangalore made a mistake. I said that I have to report to our project leader because it influences the deadline. The Indian guy was begging me not to tell the boss. Similar situation happened few other times (. . .)".

Among other cultural issues (which were mentioned by only few of respondents, mostly those that lived in India for a certain period of time) were completely different religion, values and customs. Few people mentioned differences in establishing and maintaining relations, family and group perception or different cuisine.

Next part was devoted to Hofstede's orientations. Respondents were asked if they know Hofstede's dimensions. Only five of them heard of this concept: two of them heard about Hofstede's idea at university, one at some intercultural training, and other two read about it in books or on internet. The rest of the respondents were not familiar with the name Hofstede, but few heard about particular dimensions like Power Distance or Individualism. Only two of the respondents was able to explain in more details the meaning of few concepts, in particular Power Distance, Individualism and Collectivism and Long Term Orientation.

In the following part the concept of Hofstede's dimensions was explained to the respondents. Surveyed managers/entrepreneurs were then asked to point out which of them have the biggest influence on their business operations with Indians. The respondents agreed that differences in Power Distance are important. According to interviewed managers the hierarchy is very visible in India in all business activities—people show much respect to someone who is higher or have some advantages. Few of the respondents pointed out that even being an European gives some kind of an advantage and leads to greater respect from the Indian site.

According to the respondents another issue is the lack of taking initiative by Indian employees without a clear order. One of the project managers said: "Now I understand why they don't take an initiative and don't solve the simplest problems on their own! We had few situations when there was a small problem with the project and I asked people in India to solve it. There was no reaction at all. When I involved their manager the situation was different". Few entrepreneurs also noticed that involving top management or a company owner in final decision making also speeds up the process significantly—it is important to get as high in the hierarchy as possible.

The importance of collectivism in Polish-Indian business relations was noticed especially by entrepreneurs that buy or produce on Indian market. They pointed out that family ties were very visible. According to one of the respondents: "They have huge families. Indians consider their aunts, cousins or second cousins as the closest family, which is very odd. And this family is often engaged in the business. I had one supplier who kept asking me to cooperate with his cousin's company, only because they made similar products".

Next dimension—Masculinity—according to the respondents isn't an issue in business relations. However, few respondents noticed that it is true that in Poland there is much more women in management positions. In India decision makers are usually man, women occupy less prestigious positions.

Surveyed Poles agreed that Uncertainty Avoidance makes a difference in their business relations. Indians don't care that much about the deadlines or punctuality, very often they don't stick to the plans and schedules, it takes long time to get things done. One of the respondents noticed: "(. . .) They always have time on everything and are not in a hurry. It is very frustrating, especially when we have to finish a project or do things as soon as possible. Sometimes I think that my Indian partners are not organized at all. But on the other hand I agree that they are less stressed and. . .healthier (. . .)".

According to the respondents the remaining two dimensions—Long Term Orientation and Indulgence—are not important from their point of view.

The last question regarded the usefulness of Hofstede's Dimensions in understanding cultural differences and doing business with Indians. Almost all respondents agreed that this kind of concepts can be helpful, especially in understanding why people behave in a certain way. It helps in raising cultural awareness, and hence can translate into better cooperation. According to the respondents the only problem is that the concept doesn't give tools or measures how to deal with the differences. One of the surveyed managers noticed: "I think that this kind of concepts can be useful to some extent. It can help to see and understand why people in India behave in a different way than we do. But still it doesn't give any answers how to deal with it. . . I think that there are missing some ready-to-use ideas how to overcome this differences, what to do when for example Indians don't take the initiative and are waiting for a boss to give an order. This is the biggest issue I think". Only two of the respondents claimed that the concept seems to be too theoretical and isn't very helpful in business operations.

To sum up it seems that the interviewed companies are aware of the influence of culture on business operations, especially in India. The biggest issue seems to be communication, but also orientations pointed out by Hofstede make a difference. Power Distance and Uncertainty Avoidance were indicated spontaneously in the first part of the research, when respondents were asked about general cultural issues in Polish-Indian business relations. Both of them plus Collectivism were also underlined as important in the second part of the research, when the Hofstede's dimensions were considered. Polish manager and entrepreneurs confirm that the concept developed by Geert Hofstede can be useful in making business with other culture, but not all of the dimensions are of the same importance.

7 Conclusions

It might seem that in globalized world cultural differences are becoming blurred and less important. Although they are not the biggest barrier in global expansion, they still influence doing business, and good knowledge of local customs, traditions and behaviors helps in better cooperation on a foreign market. A good preparation is crucial, especially in the situation when the business is done between such a distant countries like Poland and India.

Examination of literature, business guides and empirical research confirm that the concept of cultural dimensions developed by Hofstede can be a good starting point for intercultural preparation. It is worth noticing that dimensions give a general knowledge, and each country is fitting differently within them, so further research is recommended. Although the model is not perfect, it can give a general idea about some essential, from the business point of view, differences between countries. If the relation with foreign partner will become long-term Hofstede's dimensions can help in understanding why people behave in certain way. Doing business guides usually give ready information on how people act in certain situations and what to expect, and don't explain why.

Poland and India differ significantly in many aspects, also within Hofstede's dimensions. The biggest differences focus on the perception of Power Distance, Collectivism and Uncertainty Avoidance. There are few crucial business conclusions for Poles doing business with Indians driving form comparison between these cultures.

First of all Polish businessmen need to be prepared for different negotiation process. Because of the huge role of hierarchy it is important to reach the decisive person, and not to waste the time with some middle level managers, who will not be able to make a decision anyway. This rule applies for both business and public institutions. Being a foreigner gives some kind of an advantage. It is easier to access top managers or authorities, who can be helpful in getting things done. It is also important to be aware of the fact who is higher or lower in the hierarchy of the organization. Poles, especially younger ones, that are not that strongly attached to hierarchical order, may be surprised by behavior of their Indian counterparts, who show great respect and even obsequiously to the superiors, and other people higher in the hierarchy. They behave the way they are expected to behave, because they are Indian, they need to respect status differences. Hierarchy is so important that Indians can ask personal questions about social or business status to foreigners. In Poland this kind of questions are not welcome.

The differences in Power Distance perception are also visible in superior-subordinate relations. As Indians expect directions from a boss, they will not take an initiative themselves. This fact may be problematic, if a Polish supervisor expects employees to resolve a problem or propose a new solution. Indians also exhibit a strong fear of negative feedback given from their boss. In Poland adding subordinate into CC in the email has usually an informative meaning—boss needs to be updated. In India the same thing can be perceived as negative evaluation of a

person's work. It seems that Poles should be not only oriented who has the highest position in the hierarchy, but also be sensitive about how to communicate and give feedback within the hierarchy.

Another important conclusion that flows from Hofstede's cultural dimensions is the Indians strong family attachment and loyalty. Family ties are visible in business relations during negotiations, hiring process or company acquiring or establishing. In many industries foreign capital is welcome, while all the financial and administrative control stays in the hand of Indian families, top management positions are reserved for family members. Poles who value independence, may be surprised by the group's influence on individuals actions and decisions. It is a common thing to ask an older member of one's family to pass a negative feedback or bad news. As Indians are indirect communicators and handle getting a bad feedback wrong, this can be a good tip for rather explicit Poles.

Poles as a culture that exhibits high Uncertainty Avoidance, may have a hard time to accept more loose and relaxed attitude towards time, plans and rules. Indians can change plans or meeting dates in the very last moment, don't stick precisely to deadlines or schedules. Poles might perceive them as not organized or even irresponsible. These differences have to be taken into consideration whatever it is negotiation, project implementation or waiting for delivery. It is important to notice, however, that many Indian businessmen try to be time-conscious and follow Western approach to time and punctuality.

But still, doing business in India requires lots of patience form Polish entrepreneurs. Quick profits are not the case. Indians as long-term oriented culture pay much attention to build long-term relationships and business strategies based on trust and partner knowledge.

Indian market and economy are developing. The country promises benefits and prospectus future to foreign companies, including Polish enterprises. But to be successful it is crucial to remember and learn about the differences and possible pitfalls resulting also from the cultural issues.

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How Did European Union Influence Business Environment in Czech Republic?

Dusan Litva

Abstract Study described and analyzed in these papers is focused on perception of Czech entrepreneurs, executives and managers of companies from different regions, legal form, economical classification of business area or number of employees, regarding accession of Czech Republic to the European Union and its consequences on entrepreneurship area. Investigated areas were total evaluation of accession to the European Union, indebtedness, accessibility and qualification of labor, impact on corruption or in general biggest advantages or disadvantages of European integration. In general, most of the respondents has agreed that accession to the European Union had more positive than negatives. Open European market supported trade, cancellation of boarders and duties, accelerated supply chain and logistics, increase opportunities to enter other markets, reach out foreign capital, most of respondents agreed on positive impact on business results. On the other hand, opened market has supported globalization, caused increase of competitiveness on Czech market, increase pressure at effectiveness resulting in close out of inefficient companies or even industries. Most of respondents did not agree with acceptance of Euro, while those who agreed had been estimated 2020 as ideal year to access Eurozone.

Keywords Eurozone • European Union • Economic impact • Accession • Entrepreneurship

1 Introduction

When looking back in the history of Czech Republic, it has been for a couple of years part of communism based Eastern European block. However, after 1989 there have been many wishes and voices for coming back to Western Europe requested by people all over the Czech Republic (Klvana 2014). European Union was key forming institution in Europe and hence in 90s Czech politicians started to plan return of Czech Republic to Europe and so application to the EU has been submitted.

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Economic benefits from the European integration occurred already after application of Czech Republic to the EU and hence before 2004 when Czech Republic finally accessed EU (Philips and Wheat 2011). Positive news about admission have helped to increase credibility of Czech Republic as a trustful partner for foreign investors. It has resulted into significant increase of foreign direct investments. It helped Czech Republic to accelerate growth of GDP and increase competitiveness. After 2004 economy of Czech Republic became even more open which enable further growth and significant increase of exports (Roman and Sargu 2013). Structural, cohesive and other forms of Euro funds from EU has helped Czech Republic to improve infrastructure, support small and medium businesses, donate agriculture via subsidies, extend research and development capabilities through major investments, decrease unemployment rate, enable unification via standardization with other EU countries and many other advantages which contributed to convergence of the Czech Republic to the EU (Pesek and Smejkal 2005).

Czech Republic membership has been granted from many reasons like good geographical locations in Central Europe and hence strategical meaning for transportation, capable and technically well educated people, low wages of workers, great potential to grow or stable economic situation (Hajek 2008).

2 Theoretical Part

Macro-economic analysis, dynamic models and probability scenarios use typically quantified data which are based on historical information or expertized estimates. There are hence existing a lot of theoretical analyses and studies regarding European integration. However, what is subjective perception of economic reality by key stakeholders of entrepreneurship area—executives, owners, shareholders or managers of the companies? What is the influence on non-quantified parameters like company culture or corruption? Thus, this was a key area of questionnaire investigation of the Czech companies of different size, legal form, economic activity or region as a base for upcoming analysis looking for relations between answers and all the categories. Research questions have been hence—what is total evaluation of accession to the EU, what was the impact on indebtedness, company culture, availability of labor, possibilities to use Euro funds and subsidies, trending of GDP. Respondents have been also asked if they agree with Euro acceptance and in which year ideally.

Main goal has been to find answers for above mentioned questions, understand consequences and real situation in entrepreneurship area, which were caused by European integration. In general, it can be assumed that accession to the EU brings advantages mostly for big international companies or export oriented companies and opposite—disadvantages for smaller companies and independent entrepreneurs or ineffective companies which will be not able to apply profits from extension. In the study is hence used investigation questionnaire to investigate perspective and opinion of entrepreneurs, executives and managers for various companies.

3 Methodology

To evaluate subjective perception of respondents regarding accession of Czech Republic to the EU for areas and questions which are not easily quantified I decided to use qualitative research and hence form of questionnaire.

Questionnaires have been sent to the companies' executives, owners and managers. Companies differed in sizes, area of business, geographical regions and legal forms. Main goal of questionnaire investigation was to define perception of accession to the EU by different companies within different categories and sectors in Czech Republic. Questionnaire has been created out of 14 questions while 11 have been closed with opportunity to choose one of 5 choices of scale of agreement. Two questions have been opened and one has been half-opened. One of the questionnaire main targets have been to find out subjective opinion of entrepreneurs in areas which are very difficult to measure and quantify like company culture, perception of competition and competitiveness, possibilities to raise outside capital, perception of corruption or ideal year for Euro acceptance. Hence quantification of subjective measures evaluated by questionnaire would be ideal fulfillment of easily measured and quantified data like macroeconomic analysis. Questionnaire has been answered by 146 respondents. Questionnaire evaluation is including percentage expression of the answers to all closed questions and the most frequent answers for open questions grouped to several representative statements. In questionnaire are not included physical objects or companies which were established after 2004 as I believe they would not be able to asses with relevance impact of accession to the EU. I emphasize that questionnaire was not addressed to ordinary people but to different business representatives and hence questions are always referring to impact of accession to the EU on entrepreneurship area and not to the common economic welfare or perception of quality of life by ordinary citizens.

4 Results and Discussion

All the answers collected from respondents for the questions formulated in questionnaire have been summarized to be put to graphical chart for visualization and better understanding of the results for each individual question. Each question is discussed and evaluated in context with theoretical part and expected answer.

According to question 1 (Fig. 1) most of the respondents agree with statement, that access to the EU has overall positive impact and hence positive effects were stronger than negative. This quasi aggregate question in which each respondent is expressing its overall attitude is a key question of full study.

In question 2 agreed in total 76 % of respondents with statement that accession to the EU has increased competition at home market (Fig. 2). It is hence in agreement with expectations during accession period when open market, Schengen creation or uniform legislation enabled accession of foreign companies to Czech market which

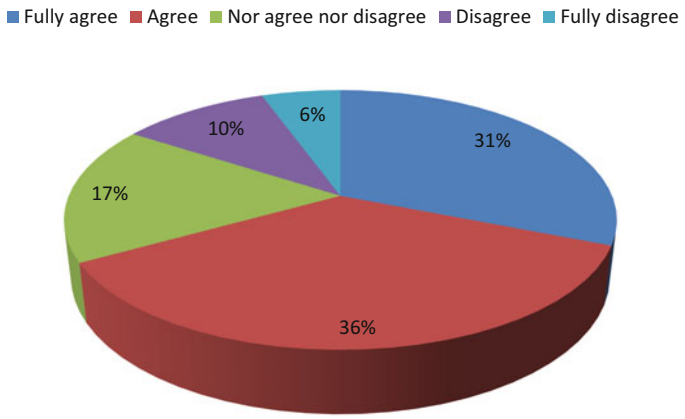

Fig. 1 Answer to question 1: accession of Czech Republic to the European Union has overall positive impact on entrepreneurship area. Source: Own elaboration

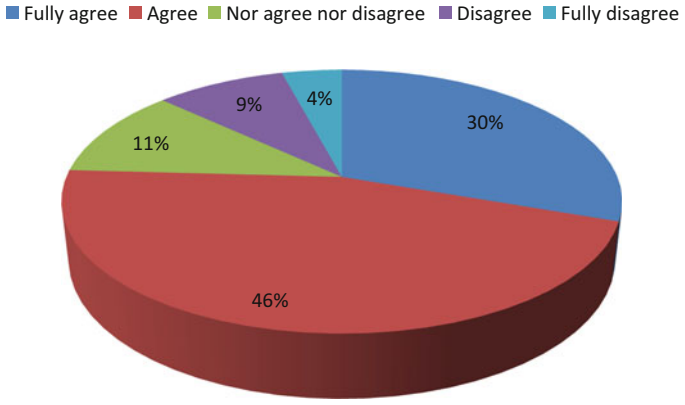

Fig. 2 Answer to question 2: due to accession of Czech Republic to the European Union has been competition on Czech Market increase. Source: Own elaboration

lead to increase of competition (Marek and Baun 2009). It is also obvious that accession and enlargement of European market has contributed even more to globalization tendencies and greater role of international companies and corporations which started to utilize even more profits from scale for new markets. Removal of barriers in the markets has supported even more export policy. Pressure for efficiency has been hence since accession to the EU enormous which has showed up in close out of many small and middle size companies, which were not able to leverage advantage of profits from scale or increase efficiency sufficiently. Several traditional industrial sectors which were not efficient has been hence devastated.

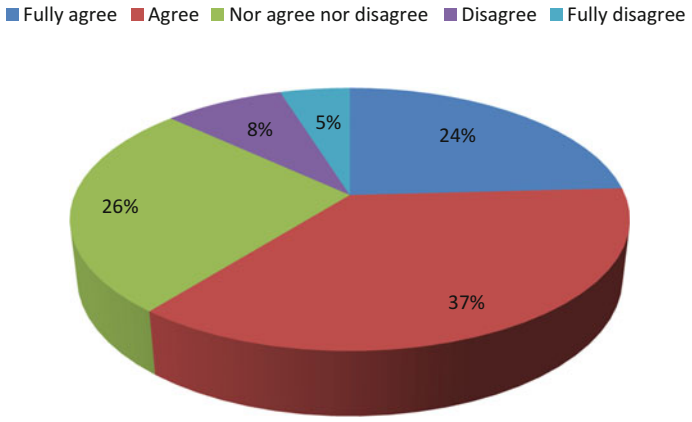

Fig. 3 Answer to question 3: accession to the European Union has contributed positively to increase probability to succeed in foreign markets. Source: Own elaboration

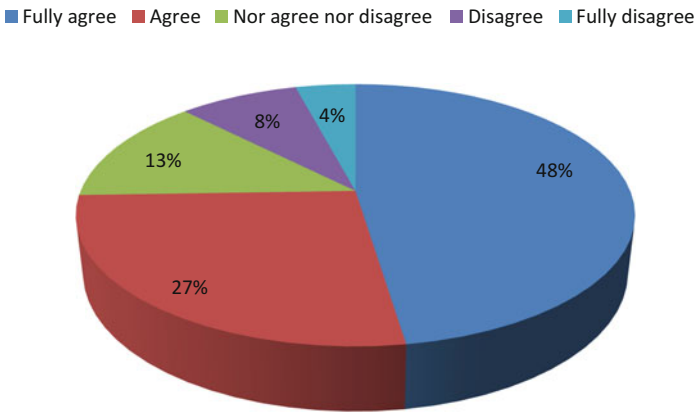

Fig. 4 Answer to question 4: accession to the European Union has negative impact on administration, legislation and bureaucracy in entrepreneurship area. Source: Own elaboration

Outcome of question 3 is that 61 % of respondents agreed with statement that accession to the EU had overall positive impact on possibilities to succeed at foreign markets (Fig. 3). However, it is important to notice that this was an advantage mostly for big international companies and also export companies. For local companies it has not been any advantage and just opposite they had to face increased competition of foreign companies in Czech Republic which is one of the main reasons of Euro-negative attitude of smaller companies.

Figure capturing results of question 4 is showing that accession to the EU has in total negative impact on increase of legislation and administration (Fig. 4). At one side is obvious harmonization of the norms which become unified. On the other side has many of the companies obvious constrains related to the application of

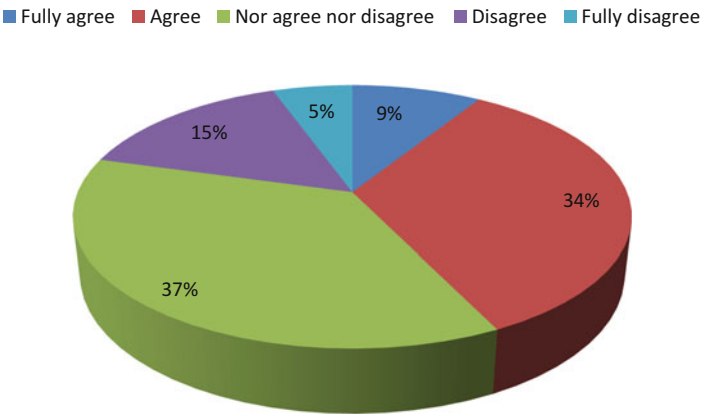

Fig. 5 Answer to question 5: opportunities to raise outside capital for financing has been improved due to accession to the European Union. Source: Own elaboration

European norms to Czech local conditions while for most of the respondents these norms are not many times applicable or they are not adding value, regulation is inappropriate and work with officers very frustrating.

Main target of question 5 was to find out and evaluate impact of accession to the EU on possibilities to gain foreign capital and results are shown on Fig. 5. It was assumed that raise capital will be much easier with more opportunities for financing. This assumption has been confirmed in this question where most of the respondents agreed with statements that accession to the EU made process of accessing outside capital easier with increase amount of opportunities to obtain capital. European capital seems to be much easier to access for many of big international companies. However, this does not have to be necessary the case for small and medium companies where influence of European financial and capital market might be much smaller.

Figure 6 representing question 6 express opinion of respondents in the way that raising Euro funds is obviously problematic and not sufficiently transparent process which seems to be for most of the entrepreneurs as complex and unfortunately also corrupted process. Based on statement of many respondents, it provides competitive advantage to those who reach Euro funds and disadvantage to those who did not access them from different reasons. This makes market disturbances and misbalances even deeper. It is opposite to expectations and Euro funds purpose as they should have closed or minimized regional differences (Heimpold 2008). Overall seems to be this area in unhealthy shape which is also indicated by amount of not used funds in recent period. Governments' subsidies are considered to be a disaster and misbalance mechanism at the market for many respondents. In general, has been Euro funds capital funding very long and complex process which was highlighted by many respondents as well. Full process is accompanied by huge and inappropriate legislation and administration which is pushing deadline terms and drop off dedicated financials.

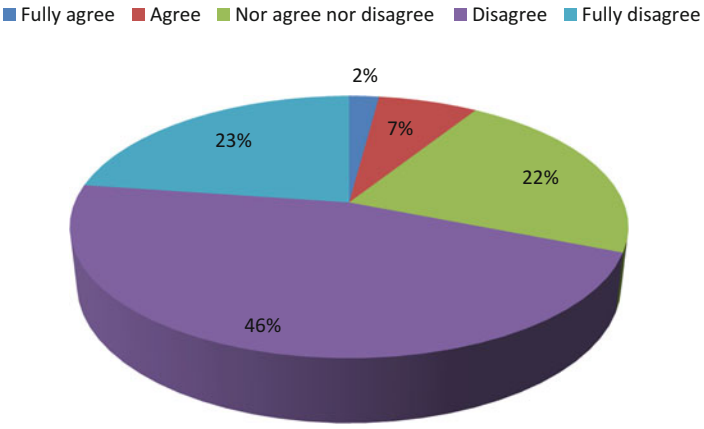

Fig. 6 Answer to question 6: obtaining of Euro funds and subsidies was easy and transparent. Source: Own elaboration

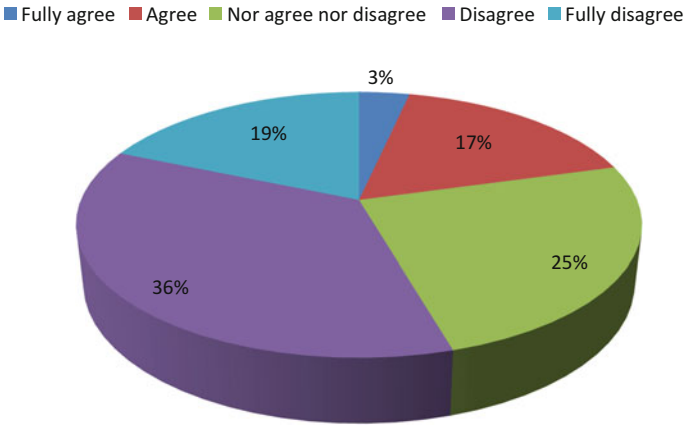

Fig. 7 Answer to question 7: qualification and availability of labor resources has been improved after accession of Czech Republic to the European Union. Source: Own elaboration

From the question 7 is obvious that accession to the EU did not bring positives in area of accessibility of qualified labor forces (Fig. 7). Opening the market contributed to the leave of qualified and capable workers for higher salaries, wages and benefits abroad. These workers might have been replaced by not so qualified or cheaper workers from Eastern Europe or poor countries which is was expected already during accession period (Strielkowski et al. 2004). This can have negative impact on future competitiveness or inflow of direct external investments as without sufficient amount of qualified workers it will be not feasible to cover sufficiently the need of labor market. Answer at this question is clearly showing importance of quality educational system.

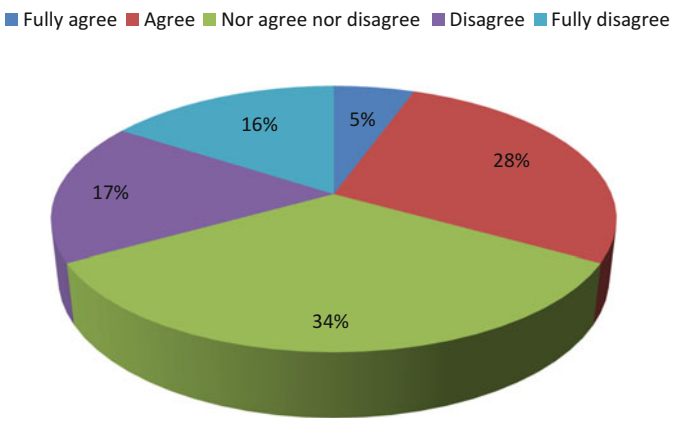

Fig. 8 Answer to question 8: accession to the EU has contributed positively on your company culture. Source: Own elaboration

In question 8 most of the respondents disagreed with statement that accession to the EU had positive impact on company culture in spite of free movements of people, labor, goods or capital (Fig. 8). Significant part of respondents perceives European culture as Brussels legislation and bureaucracy, respectively leave of qualified and talented workers. Most probably European methods and ways of management has not been sufficiently penetrated and shared to the Czech entrepreneurship area or they were not perceived as a positive. In this area is no clear convergence to the EU as it was expected (Zdarek 2011).

Question 9 is underlying that most of the respondents do not think that accession to the EU had positive impact on transparency of government contracts or corruption. One of the most critics area by European Commission is corruption. Hence is it said to say that not even European institutions, accession interviews or change in legal forms did not improve this area. It looks like European norms and legislation are deeply required in entrepreneurship area however they are not successfully implemented in upper government spheres. Results of this question are shown at Fig. 9.

The main target of question 10 has been identification if impact of accession of Czech Republic to the EU on profits while there are existing many factors which could influence this parameter. Most of the respondents reply that accession to the EU has positive impact on profit (Fig. 10). Open European market, zero trade barriers, increase of competition and pressure for effectivity increase brought more positives than negatives (Toth 2014). On the other hand there is still existing almost 1/3 group of respondents, which expressed in a negative way.

From respondents' replies at question 11 is obvious that most of the respondents has relatively neutral attitude and hence is can be justified that accession to the EU did not have direct impact in indebtedness which could be linked with European integration or impact would be more negative than positive. Results are captured at Fig. 11. It can be assumed that Euro funds and government subsidies has substituted

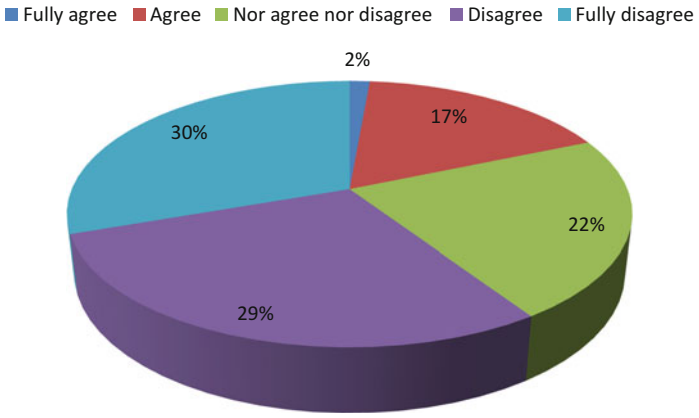

Fig. 9 Answer to question 9: transparency of government contracts has been improved and corruption decreased after accession to the EU. Source: Own elaboration

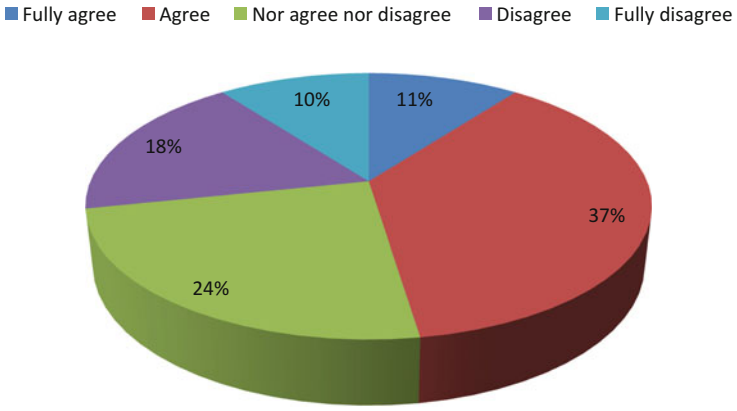

Fig. 10 Answer to question 10: accession to the EU has been contributed positively on company profits. Source: Own elaboration

partially financing of projects via loans which does not increase indebtedness as an impact of accession to the EU (Machova 2011).

Question 12 asks "What do you consider as biggest advantage of accession to the EU on entrepreneurship area?" I left this question as an open question as I did not want to limit respondents by forced selection. Key advantages of accession to the EU are grouped based on replies as follows:

- Schengen, opening of the boarders, cancellation of duty union, faster transfers and logistics
- Easier access to the European market, access to the new segments of the market, new market opportunities for export
- Removal of trade barriers and barriers for accession to the market

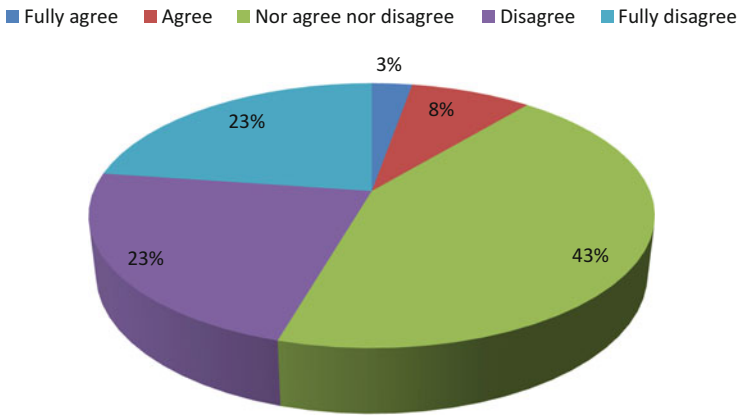

Fig. 11 Answer to question 11: accession to the EU has been contributed positively to decrease indebtedness of your company. Source: Own elaboration

- Bigger customer portfolio
- Overall cultivation of entrepreneurship area and political environment
- Wider portfolio of suppliers
- EU trademark as competitive advantage
- Free movements of people, goods, services and capital
- Better opportunity to cooperate geographically, financially and in a human way
- Positive impact on diversity and company culture
- Unified norms and certifications, harmonization of legislation
- Easier to look for and hire labor force
- Easier development of qualifications of employees—change of roles, internships, external workers
- Positives in banking area, decreasing of currency risk
- Opportunities to obtain European subsidies, accessibility of European capital, inflow of investments
- Penetration of new technology to Czech market

Question 13 examines the disadvantages of accession to the EU on entrepreneurship area. Same as previous question I formulated also this question as an open while grouping the most frequent answers.

- Exaggerated bureaucracy, administration, legislation, many times higher requirements than before
- Work culture of officers "monitor and control"
- Regulation from EU which are not accommodated to Czech market and hence many times inappropriate and not applicable
- Not relevant environmental requirements for manufacturing which do not have practical impact on health or environment
- Negative impact on wage increase of labor
- Leave of qualified labor outside of Czech Republic

- Hidden protection of several countries and markets (in a way of forms and prescription)
- Increase of competition at Czech market due to impact of foreign competitors
- Creation of better conditions for global player, loss of national sovereignty, devastation of Czech industry
- Advantage only for big companies, small and medium size company only minimum, liquidation of small and middle size companies
- Unfair handling during allocation of subsidies, positive discrimination, quotes, corruption
- Subsidies from EU which are providing competitive advantage to the companies which gained them and disadvantages to the company which were not successful
- Incorrect prioritization and selection of the projects, sources used unequally and unclearly
- Commands from Brussels, loss of possibility to decide about future, loss of identity, permanent controlling of activities
- Not existing average real wages, fictive propaganda, figure out numbers
- Not stable legal environments, not clear vision of future direction, disunited Europe
- Production based on need of EU
- Language barriers mainly for older entrepreneurs

It is possible to conclude that accession to the EU has been for most of the entrepreneurs of small and medium size companies perceived negatively which was highlighted already during accession period (Jacobsen 2002). Current migration crisis, Greece debts and unified contribution of all member states, corruption of governments and also European structures, non-transparent funds raising and government subsidies obtaining, opening of the market and related increase of competition, liquidation of part of Czech traditional industry, leave of qualified labor, inappropriate regulations, exaggerated bureaucracy, fear from loss of national identity and possibilities to decide about future, commands from brussels, inferior German politics, unclear vision and directions, non-actionable European politics, hidden protectionism in forms of local norms and restrictions, non-flexible European structure this all contribute to obvious dissatisfaction.

Slightly more respondents disagree with Euro acceptance than agree (Fig. 12). Reasons are fear from loss of national identity, worries from negative influence on quality of life as a citizen, loss of control for exchange rate or interest rate as a tool of monetary policy, full control of financial and bank sectors by European institutions (Fidrmuc and Horvath 2008). On the other side, obvious positives are decrease risk of exchange rate fluctuation as it is not needed to fix it against Eurozone, lower transaction costs, simplification of trade (Rodriguez et al. 2007). Several respondents has stated as a reason for not accepting Euro indebtedness of several countries and potential requirements to participate and redeem the debt.

Part of question 14 was also evaluation of ideal year for Euro acceptance. According to figure bellow is obvious that most of the respondents would prefer year 2020 as in this period should be Czech entrepreneurship area ready for this important milestone (Fig. 13).

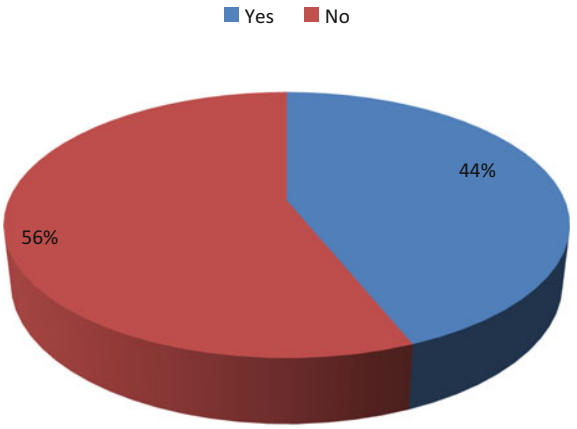

Fig. 12 Answer to question 1: Do you agree with Euro acceptance? What do you think would be appropriate period? Source: Own elaboration

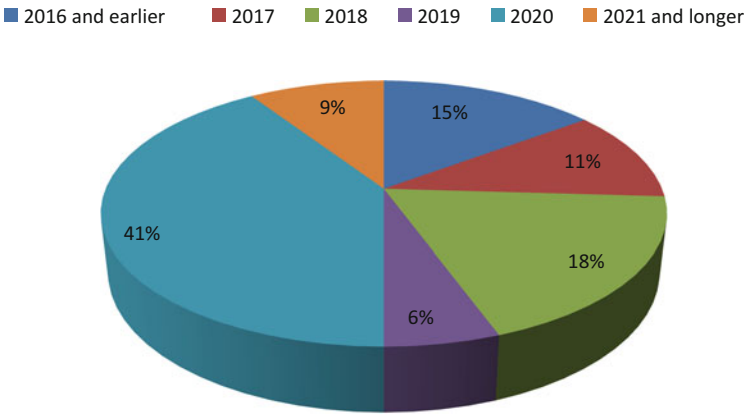

Fig. 13 Answer to question 14: Do you agree with Euro acceptance? What do you think would be appropriate period?Source: Own elaboration

5 Conclusion

From the questionnaire analysis is obvious that European integration was beneficial for most of the entrepreneurs despite of numerous constrains. Most of the respondents also agreed with statement that accession to the EU has positive impact on business profit. In general, it is possible to conclude that accession to the unified market has been improved trade conditions, exchange of goods and movements of people or capital which is supposed to be advantage mostly for bigger companies based in many countries or trading with its partners outside Czech Republic. On the other accession to the European market enlarge playground for global players

which could leverage even more profit from scale and no barrier market, better trade conditions has opened door to globalization even more. It was reflected in increase of competition at Czech market and pressure at effectivity. This lead to bankrupt of ineffective companies or even areas of Czech industry. The most negative impact has been hence on small size companies. From macroeconomic analysis point of view are not obvious significant discrete changes in trends for most of the parameters around 2004 which is in contract with dramatic almost immediate economic changes due to world economic crisis. It is hence possible that accession to the EU as an institutional change did not have any direct impact on economics in a short term. Big international companies could increase a profit against small and medium size companies but due to restructuring of the market this equal offset might not be reflected in change of trends. Important was also impact of qualification and management competencies of the owners of small and medium size companies which seem not to be sufficient in many areas. On the other hand, most of the respondents has highlighted that overall qualification and availability of labor force has been worsen. This can be considered as one of the next consequences of open market while best workers have been leaving out of Czech Republic. It is quiet surprising that most of the respondents did not report any improvement of company culture in their companies since accession to the EU in spite of growing opportunities to become integrated in European market. Credibility of Czech Republic as a member of unified European community which has been reflected in increased amount of external investments to Czech Republic. Czech entrepreneurs could use also EU trademark for their exports and trades. Chances to obtain external capital, Euro funds or government subsidies have been increased. Opening the market has contributed also to open the gates for easier penetration of new technologies to Czech industry. Obvious disadvantage has become also European legislation, administration and bureaucracy. Indebtedness of the companies has not been changed due to accession to the EU. Raising of Euro funds takes too long and is non-transparent, according to respondents also very often linked with corruption. Euro funds as such provide advantage to the companies which obtained and disadvantage to those which were not so successful. Most of the respondents has considered them to be more as misbalance mechanism on the market causing disequilibrium. Very frequent has been also reservations against flexibility and ability to act for Brussels organization, inappropriate and inadequate regulation, in many cases not justified. Most of the respondents disagree with Euro acceptance. Those who answered positively would prefer in average acceptance of Euro in 2020. Obvious was opinion that Czech citizen would have to contribute and redeem debt of the countries as for example Greece, they will be not able to define direction of Czech Republic, lose control about its currency. Specifically, this question seems to be answered more from the point of view of citizen than entrepreneur and also fear from loss of quality of life.

Based on the obtain results from questionnaire I would suggest following recommendations. At first, I would recommend to reform European legislation and administration, think of regulations and norms and their practical application in local, many times different conditions of different countries. I would recommend

also creation of programs for education of managers of small and middle size companies, network or communication channels, where they could better exchange information and reach synergies, leverage positives from European companies and apply them in their own companies, alive company culture. Taking into consideration transparency, unequal distribution and allocation of finance, complex and complicated process bringing misbalances to the market, it would be useful to think of any other form of utilization of money which are protected in Euro funds. Important feature in the future will be also qualification and availability of labor force. Czech Republic should focus attention on education system improvements, mainly in technical sectors, create wider basement future qualified labor. Taking into consideration current migration issues and indebtedness of some Eurozone countries I do not recommend to accept Euro earlier than in 2020.

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Impact of the Customs Union of Belarus, Kazakhstan and Russia on Regional Trade

Bulat Mukhamediyev and Azimzhan Khitakhunov

Abstract In 2010 Belarus, Kazakhstan and Russia formed a Customs Union. This union is known as a new generation of regional organizations in the post-Soviet space. The reasons of formation of such kind of Union are either economical or political. In 2015 all the above mentioned core countries formed Eurasian Economic Union with the inclusion of Armenia and Kyrgyz Republic. Statistical analysis shows that Customs Union had a significant impact on regional trade. Internal trade boosted during 2011–2012 and then tended to decline due to slow-down of Russian economy. Russian economic decline negatively impacted on regional growth and trade. Thus, objective of this paper is to determine the impact of Customs Union on regional trade with application of gravity model. By using data for the period of 2000–2015, we show that impact of Customs Union on regional trade was negative, but insignificant. These results can be explained by the structural problems of the regional economy, unfavorable external conditions, low level of economic diversification and a short period of the Customs Union functioning.

Keywords Kazakhstan • Regional integration • Eurasian Economic Union • International trade • Gravity model

1 Introduction

In 2010 Belarus, Kazakhstan and Russia formed a Customs Union (CU). This union is known as a new generation of regional organizations in the post-Soviet space. The reasons of formation of the Union are either economical or political. In 2015 all the above mentioned core countries formed Eurasian Economic Union (EAEU) with the inclusion of Armenia and Kyrgyz Republic. Creation of the CU and its first expansion led to significant tariff changes. Despite Baldwin (2014) rejects the significance of tariffs in the world trade, tariffs still play significant role in developing countries. Thus, Sect. 1 describes key tariff changes.

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Regional integration is one of the most popular areas where debates are still ongoing. Since Viner's (1950) classical work, the concepts of trade creation and trade diversion became central in this debate. But trade effects are wider nowadays. Thus, Sect. 2 of the paper is devoted to the trade effects of the EAEU.

To assess those trade effects a gravity model was used. Our results show that impact of Customs Union on regional trade was negative, but insignificant. These results can be explained by the structural problems of the regional economy, unfavorable external conditions, low level of economic diversification and short period of the Customs Union functioning. These and other results are described in Sect. 3. The final section concludes.

2 Tariffs Before and After the Customs Union

In 2010 a CU of Belarus, Kazakhstan and Russia was formed after the failure of all previous forms of integration (Mukhamediyev and Khitakhunov 2017). This Union was called a new generation of regional trade agreements. Creation of the Union was accompanied with strong debate between its opponents and proponents despite the official view of all integrating countries presidents. Opponents view the Union as the integration of developing resource based economies. Proponents insist on its economic opportunities as market expansion, economies of scale and terms of trade improvement (Khitakhunov et al. 2016). Statistical analysis shows that impact of the EAEU was high. These changes happened due to tariff changes (Fig. 1).

The common external tariffs (CET) are mainly Russian which were identical to tariffs of Belarus. As Khitakhunov et al. (2016) indicate Russia left unchanged 82% of its customs tariffs, lowered 14% and increased 4% of its tariffs. The corresponding shares for Kazakhstan were 45, 10 and 45%. Due to World Trade Organization (WTO) in 2009, the simple average most favoured nation (MFN) applied tariffs for Belarus, Kazakhstan and Russia were equal to 10.6%, 5.9% and 10.5% respectively (WTO 2010). CET substantially raised the level of tariffs of Kazakhstan. According to World Bank (2012), Kazakhstan's tariffs increased from an average of 6.7 to 11.1% on an unweighted basis and from 5.3 to 9.5% on a trade-weighted basis. Dynamics of tariffs of Belarus and Russia were approximately identical. Tariffs on agricultural products substantially exceed other tariff lines and reached 15% in Belarus. This is very common practice as many or all agricultural products are excluded from liberalization or protected by common policies as Common Agricultural Policy of the European Union (EU). However, CET of the EAEU tends to decrease since 2013.

Tariff changes by product groups are indicated in following Table 1. Kazakhstan, the most affected member, increased its tariffs on animal and dairy products, sugar and confectionery, fish and fish products and chemicals. Tariffs on mineral products and metals, wood and paper, textiles and clothing, electrical, non-electrical and transport equipment have increased substantially.

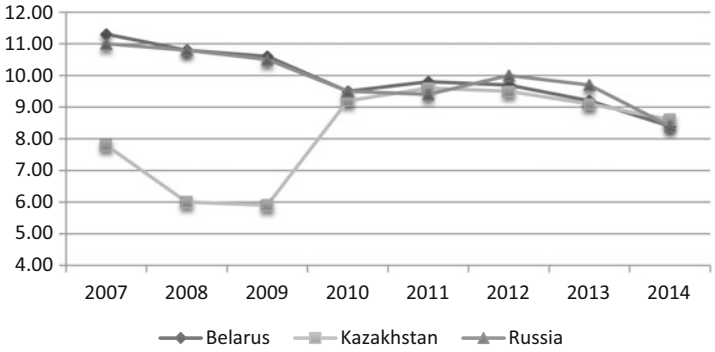

Fig. 1 Tariff changes in EAEU. Source: Based on WTO (2010, 2015)

Table 1 Tariffs of Kazakhstan by product groups, 2009 and 2014, %

Indicator	MFN applied duties, 2009 (%)			MFN applied duties, 2014 (%)		
Product group	AVG	Duty-free	Max	AVG	Duty-free	Max
Animal products	18.2	24.7	127	19.7	17.5	96
Dairy products	15.7	1.0	27	16.7	0	23
Fruit, vegetables, plants	10.3	0.8	17	9.7	4.8	39
Coffee, tea	7.5	12.5	20	7.5	20.8	25
Cereals and preparations	13.1	5.1	37	11.2	3.5	85
Oilseeds, fats and oils	8.7	0.7	20	7.5	16.3	19
Sugars and confectionery	10.3	13.1	41	13.0	0	50
Beverages and tobacco	35.1	0	332	27.6	4.4	278
Cotton	0.0	100	0	0.0	100	0
Other agricultural products	4.9	1.8	5	5.3	7.4	18
Fish and fish products	6.8	0	15	9.8	0.9	76
Minerals and metals	5.8	10.6	15	8.8	6.9	20
Petroleum	5.0	0	5	4.3	13.1	5
Chemicals	4.8	14.3	30	5.7	8.8	18
Wood, paper, etc.	6.0	18.6	19	11.5	6.5	55
Textiles	7.4	1.8	47	10.0	0.9	36
Clothing	5.3	0	23	14.6	0	50
Leather, footwear, etc.	7.2	2.2	46	7.5	9.8	37
Non-electrical machinery	0.7	89.0	15	3.2	65.7	19
Electrical machinery	1.2	83.3	30	6.4	27.4	29
Transport equipment	2.0	71.3	10	9.6	18.1	105
Manufactures, not elsewhere specified	5.7	27.2	20	9.4	18.1	20

Source: Based on WTO (2010, 2015)

Tariff rates on fruits and vegetables, plants, cereals, oilseeds and petroleum changed insignificantly, but on beverages and tobacco significantly decreased. Thus, a significant increase of CET made Kazakhstan's economy more protectionist. This may easily lead to trade diversion. However, this can help to launch new enterprises and stimulate industrialization process in premature de-industrialized country. Kazakhstan's operating firms can also benefit through economies of scale as CU solved small market size problem of Kazakhstan.

3 Trade Effects of CU

Formation of CU substantially impacted on internal and bilateral trade flows. Figure 2 shows that the CU had a positive impact on the volumes of internal trade. It shows an increase in domestic trade in 2011 and the achievement of the maximum level in 2012 equaled to 6.23%. In the following years, a decrease is observed. But in 2015 this ratio achieved the maximum level that was equal to 6.49%.

Formation of the CU has had a significant impact on mutual trade of Kazakhstan and its partners. In the period of 2005–2010, the value of trade deficit of Kazakhstan with Belarus fluctuated in the range of 200–300 millions, then from 2011 onwards the figure has grown rapidly. In 2011, the trade deficit with Belarus exceeded 500 million, and in 2014 amounted to 712 million US dollars (Fig. 3). Despite significantly increasing trade deficit with Belarus, it has insignificant share in Kazakhstan's total imports. Kazakhstan is also a weak exporter to the market of Belarus. While Belarus supplies to Kazakhstan's market a wide variety of industrial products, Kazakhstan's exports mainly consists of mineral products such oil and oil-related goods.

In trade with Russia there is a similar situation after 2010 (Fig. 4). In the period from 2005 to 2008 the trade deficit increased. The global economic crisis has contributed to a decrease in this indicator through the reduction in aggregate

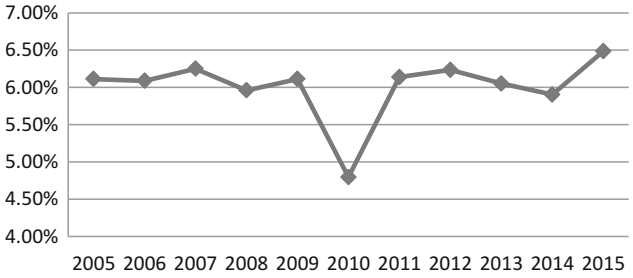

Fig. 2 Changes of CU internal trade to the world level. Source: Authors calculation based on International Trade Centre (2016)

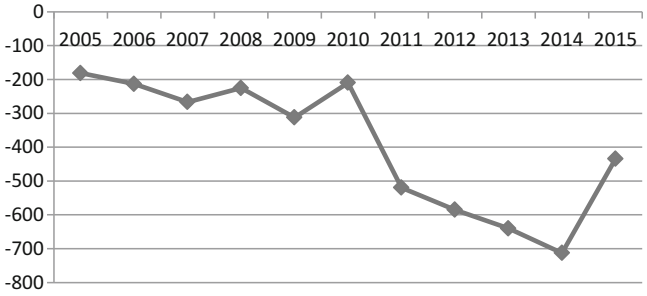

Fig. 3 Kazakhstan's net export to Belarus, USD, million. Source: Authors calculation based on International Trade Centre (2016)

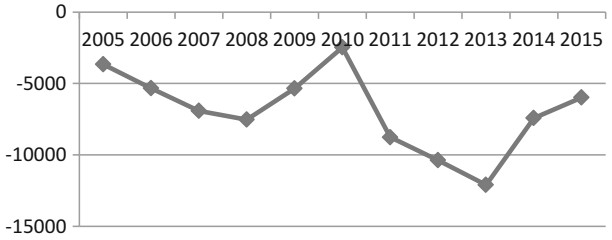

Fig. 4 Kazakhstan's net exports to Russia, USD, million. Source: Authors calculation based on International Trade Centre (2016)

trade levels. Starting from 2010 there has been a rapid growth in trade deficit with Russia.

So, if in 2010 the figure was about 2.5 billion, then in 2011 the trade deficit has exceeded 8.7 billion US dollars. The maximum value this figure reached in 2013, exceeding the level of 12 billion US dollars. The slowdown of the Russian economy and the external pressure contributed to a decrease in turnover and record trade deficit in 2014. But Russia is recognized as the main importer in the Kazakhstan's market which has significant market share and market power. So, opponents of the EAEU insist that creation of the Union will strengthen Russia's position in Kazakhstan's market and will make Kazakhstan more dependent on Russia's producers. Moreover, ability of Russia to control foreign economic activity of its partners will give Russia additional advantages both economic and political.

Commodity structure of mutual trade confirms the known fact that Kazakhstan is a country with low diversification of the national economy (Table 2). For example, Kazakhstan's share in trade in live animals is 1.28%. The comparable figure in Armenia amounted to 14.4%, Belarus—23.27%, Kyrgyzstan—7.29%. The share of Kazakhstan in the food trade, amounting to 3.56%, is considerably below Armenia (46.84%), as well as Belarus and Russia. However, its share in the trade of raw materials and mineral products, and metals remains high, which is a significant drawback. Their combined share amounts to about 60%. The share of industrial

Table 2 Commodity structure of mutual trade of CU countries, 2015, (% total volume of trade)

Section	Armenia	Belarus	Kazakhstan	Kyrgyzstan	Russia
Live animals	14.40	23.27	1.28	7.29	0.98
Vegetable products	11.85	5.07	4.06	8.98	0.95
Foodstuffs	46.84	6.67	3.56	2.63	5.49
Mineral products	1.01	5.32	42.03	8.23	42.97
Chemicals and allied industries	1.87	3.94	9.13	0.38	5.48
Plastics/rubbers	0.98	7.52	1.13	2.04	4.93
Wood and wood products	0.09	1.85	0.02	0.02	1.13
Textiles	10.86	5.59	0.85	10.38	1.35
Articles of stone, plaster, cement; ceramic products; glass	1.64	2.39	0.18	2.39	1.72
Base metals and articles thereof	1	6.45	17.04	1.40	11.44
Cars and equipment	3.09	12.79	2.84	3.85	9.75
Vehicles other aircraft, vessels	0.18	10.62	0.88	3.39	5.30
Miscellaneous manufactured articles	0.27	3.42	0.22	0.57	1.54
Other	5.92	5.1	16.78	48.45	6.97

Source: Compiled by authors according to Eurasian Economic Commission (2016). It is noted that significant amounts are not allocated by goods in Kyrgyzstan

products also shows a significant lag from its partners in the EAEU. Nevertheless, Kazakhstan has advantages in the chemical industry, and its share in total trade is a leading one.

Tariff changes in the EAEU led to import changes. Following Tables 3, 4, and 5 show dynamics of imports of CU member countries from various regional trade agreements (RTAs).

Dynamics of imports of Kazakhstan affected significantly by tariff increase. The most affected partners of Kazakhstan are members of the European Union. EU's share in Kazakhstan's market achieved 30% in 2010. But in 2011 it dropped to 19% and continued to decrease. But CU's share jumped substantially from 24% in 2010 to 44% in 2011. This could be a classical trade diversion due to increase in tariffs. Increase in CIS and BRICS groups' shares can be explained by increasing share of Russia. Other RTA's were not significantly affected by tariff changes.

Belarus and Russia were not affected due to favorable tariffs. Insignificant fluctuations in imports can be explained by post-crisis recovery.

4 Assessment of the Impact of the CU on Regional Trade

The most frequently used model to assess the impact of regional trade agreements is a gravity model of international trade. Simple gravity model takes the following form:

Table 3 Kazakhstan's imports from RTAs (% of total imports)

Year	ASEAN	BRICS	CIS	EU 28	MERCOSUR	NAFTA	CU
2004	1	45	48	28	1	5	39
2005	1	47	47	25	1	8	39
2006	1	48	47	27	1	5	40
2007	1	47	44	25	1	6	37
2008	1	50	46	23	1	6	37
2009	1	45	43	27	1	6	33
2010	1	41	33	30	1	7	24
2011	1	58	52	19	1	5	44
2012	1	57	50	17	1	5	40
2013	2	55	47	19	1	5	38
2014	2	53	43	21	1	6	35

Source: Authors calculation based on International Trade Centre (2016)

Table 4 Belarus' imports from RTAs (% of total imports)

Year	ASEAN	BRICS	CIS	EU 28	MERCOSUR	NAFTA	CU
2004	0	70	72	20	1	1	68
2005	1	63	67	22	1	2	61
2006	1	62	65	23	1	1	59
2007	1	63	66	22	1	2	60
2008	1	64	66	22	1	1	60
2009	1	63	64	23	1	2	59
2010	1	58	59	22	4	1	53
2011	1	60	61	19	4	1	54
2012	1	65	64	20	1	1	59
2013	1	60	58	24	1	1	53
2014	0	57	59	32	0	0	54

Source: Authors calculation based on International Trade Centre (2016)

$$Trade_{ij} = \frac{A\left(GDP_i GDP_j\right)^{r_1}}{D_{ij}^{r_2}}, \tag{1}$$

where $Trade_{ij}$ is a trade volume between countries i and j, GDP_i и GDP_j—GDPs of countries i and j accordingly, D_{ij} is a distance between two countries that include transaction and transport costs, A—is a constant, and r_1 and r_2—elasticity figures. The model assumes that the size of the economy, represented by the GDP of the two countries has a positive impact on mutual trade, and the distance between the two countries has a negative impact on trade between the two countries.

In practice, different forms of gravity models are used. For example, a simple gravity model of Anderson (1979) is as follows.

Table 5 Russia's imports from RTAs (% of total imports)

Year	ASEAN	BRICS	CIS	EU 28	MERCOSUR	NAFTA	CU
2004	2	9	23	46	2	5	13
2005	2	11	19	45	3	5	9
2006	2	12	16	45	3	5	8
2007	2	15	15	44	3	6	7
2008	2	16	14	44	2	6	6
2009	3	17	13	46	3	6	6
2010	2	20	14	41	3	5	6
2011	2	18	15	40	2	5	7
2012	3	19	14	42	2	6	7
2013	3	19	12	43	2	6	6
2014	3	20	11	41	2	7	7

Source: Authors calculation based on International Trade Centre (2016)

$$M_{ijk} = \alpha_k Y_i^{\beta k} Y_j^{\gamma k} N_i^{\xi k} N_j^{\int k} d_{ij}^{\mu k} U_{ijk} \tag{2}$$

where M_{ijk}—the value of goods flow or the flow factor k from the country i to the country j, and Y_j—incomes of countries i and j, and N_j—population in the countries i and j, d_{ij} is the distance between countries, a U_{ijk} is an error. Anderson (1979) showed a theoretical basis for the gravity model. Further development of the gravity model was in the works of Bergstrand (1990), McCallum (1995), Deardoff (1998), Anderson and Wincoop (2003), Baldwin and Taglioni (2006), Baier and Bergstrand (2007), and Egger and Pfaffermayr (2013).

Thus, a large number of studies devoted to the influence of the European Union on the European trade. Aitken (1973) was one of the first who used the gravity model to assess the influence of the EU and European Free Trade Association (EFTA) at the European trade during the 1957–1967 periods. He determined that the two organizations have a statistically significant impact on trade, and that the EU has had a negative impact on the EFTA countries and the EFTA influence on the EU was insignificant. Sapir (2001) showed that the integration of the EU and EFTA positively impacted on European trade. Baier et al. (2008) found that EU membership has been economically and statistically significant impact on the participants of European integration, and the EFTA influence was negligible. Gil et al. (2008) have shown that the expansion and deepening of integration within the EU has significantly increased trade flows, and that the new members make the same contribution to the rate of growth of regional trade. Lee et al. (2008) showed that regional integration associations in the average increase global trade through increase of trade in the integration association, and do not cause harm to foreign trade. Freund (2010) analyzed six integration associations and concluded that the regional association does not divert trade with third countries. Egger and Pfaffermayr (2013) found that the creation of trade through the creation and expansion of the EU has been significant, especially in the initial period of integration. As a result of the expansion and liberalization of trade between the EU and the EFTA, the effect of

creating trade began to decline to new members; the effect of trade creation of the northern EU enlargement was higher than that of the south; the impact of integration on trade between the center and periphery was positive. Montalbano and Nenci (2014) showed that the EU and EU trade agreements (ENP—European Neighborhood Policy) have a positive impact on trade in the EU. Thus, gravity models are the most common to evaluate the impact of integration processes on international trade.

To assess the impact of the Eurasian integration on the mutual flows of trade, a gravity model was chosen. On the basis of this problem, we plan to evaluate the model of the following form:

$$\exp_{ijt} = \alpha_0 + \alpha_1 GDP_{it} + \alpha_2 GDP_{jt} + \alpha_3 Dist_{ij} + \alpha_4 CB_{ijt} + \alpha_5 CU_{ijt} + \gamma_i + \omega_j + \theta_t + \gamma\omega_{ij} + \varepsilon_{ijt}, \quad (3)$$

where $\exp_{ijt}$—export from the country i to the country j in the moment of time t; α_0—intercept; $Dist_{ij}$—distance between the capitals of the trading countries expressed in kilometers; CB_{ijt}—a dummy variable that takes the value of 1, if the countries have a common border, 0—otherwise; CU_{ijt}—is also a dummy variable equal to 1, if the countries are the members of the Customs Union, 0—otherwise; θ_t—time-specific effect, γ_i и ω_j—country-specific effects, $\gamma\omega_{ij}$—country-pair fixed effects, ε_{ijt}—a random error.

Based on the experience of other integration associations, the hypothesis is that regional integration agreements, in this case, the CU/EAEU, have a positive effect on trade between member states. Data for these models was taken from the following statistical sources:

1. GDP of the countries—from the World Bank's World Development Indicators;
2. The values of exports and imports of countries—from the UN Comtrade data base;
3. For the dummy variables and distance CEPII Research and expertise on the world economy were used.

The model considers the annual data from 2000 to 2015. For the model, data is used on mutual trade in 17 countries, such as Armenia, Azerbaijan, Belarus, Georgia, Germany, Iran, Italy, Kazakhstan, Kyrgyzstan, China, Moldova, Poland, Russia, Tajikistan, Turkmenistan, Turkey, Uzbekistan, Ukraine, and France.

Based on the above model, five calculations have been made, in particular:

1. Calculations without fixed effects;
2. Calculations with the inclusion of only time effects;
3. Calculations with the inclusion of only fixed effects for country pairs,
4. Calculations with the inclusion of country fixed effects and time effects;
5. Calculations with the inclusion of a full set of fixed effects.

The results of the estimated gravity model are presented in Table 6.

Equation (1) estimated without fixed effects. Assessed results show that GDP of exporter and importer have a positive impact on trade. Distance variable confirms

Table 6 Gravity model results

	1	2	3	4	5
Exporter GDP	0.711***	0.734***	0.488***	0.143	0.148*
	(54.71)	(55.64)	(7.48)	(1.68)	(2.07)
Importer GDP	0.560***	0.584***	0.580***	0.234*	0.238**
	(39.35)	(38.19)	(10.88)	(2.24)	(2.92)
Distance	−0.749***	−0.781***	−0.501***	−1.053***	−0.827***
	(−15.70)	(−16.02)	(−8.85)	(−20.05)	(−6.93)
CU	0.298*	0.518***	−0.116	0.170	−0.00862
	(2.09)	(3.50)	(−1.54)	(1.07)	(−0.11)
CB	1.041***	0.987***	2.336***	0.0403	1.191***
	(15.77)	(15.03)	(10.25)	(0.58)	(6.05)
Const	−7.454***	−8.080***	−4.743***	10.88***	17.13***
	(−14.35)	(−14.99)	(−7.83)	(3.66)	(7.58)
Country specific f.e.	No	No	No	Yes	Yes
Time effects	No	Yes	No	Yes	Yes
Country-pair f.e.	No	No	Yes	No	Yes
N	1631	1631	1631	1631	1631
R^2	0.749	0.755	0.950	0.908	0.953

Note: t-statistics in parentheses *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. All variables are in logs

that distant countries trade less. Existence of common borders increases mutual trade flows. Dummy variable CU is positive. This indicates that formation of the CU positively impacted internal trade.

Columns 2–4 show changes of the model results after inclusion of fixed effects. But gravity models need the inclusion of full sets of fixed effects, including time effects, country-specific effects, country-pair fixed effects.

This set of fixed effects controls for heterogeneity and endogeneity connected with unobservable trade costs ("multilateral resistance"). Country-specific effects control time-invariant country characteristics, time effects—cyclical impact, country-pair fixed effects—geographical, historical, cultural and political influence which can divert trade normal trade level between country-pair.

Column 5 estimated with the inclusion of full set of fixed effects. Estimated coefficients show that exporter-importer GDP's and existence of common border have positive impact on trade flows. Model confirms that distant countries trade less. Dummy variable is negative but insignificant.

Thus results of the model don't allow to make some conclusions about the impact of the CU on mutual trade. These results can be explained by the following reasons:

1. Short period of CU functioning;
2. Intensive external pressure, slow growth of Russia, low demand for main export products.

Thus, results of the model show that conclusions about impact of the CU on trade based on aggregate data (*in current period*) are incomplete. So, there is a need to use other techniques able to assess the impact of the CU on regional trade.

5 Conclusion

This analysis was one of the first attempts of assessment of trade effects of the newly created EAEU. Gravity results show that analysis based on aggregated trade data is incomplete to distinct pure effects (*in current period*) of the CU. This is explained by significant external pressure and structural economic problems of the region. In addition, it can also be explained by a short period of CU functioning. Thus, determination of pure effects of the CU (*in this period*) requires other techniques as analysis of trade structure which can help to determine benefiting and losing economic sectors.

We understand that our model has restrictions due to data unavailability. So, in the future this research will be continued with the inclusion of more data and factors. However, according to statistical analysis, increase of CET made Kazakhstan's economy more protectionist and led to trade diversion. The most affected partners of Kazakhstan are members of the European Union. EU's share in Kazakhstan's market dropped in 2011 and continued to decrease while CU's share jumped substantially. Belarus and Russia were not affected by CET changes.

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Regional Managerial Decision-Making Based on Housing Stock Assessment

Liudmila A. Guzikova and Ekaterina V. Plotnikova

Abstract The housing stock, its qualitative and quantitative characteristics, is indicator that ensures sustainable development of the regions. State housing has a direct impact on the national economy; quality of life; conditions for the formation and development of human capital; management of the structural balance and the introduction of innovative processes. Due to this fact the housing stock assessment and management decisions on the basis of it are actual problem. The article presents a historic aspect of housing stock management and analysis of housing stock as object of management. Also, the authors propose to introduce the term "quality of the housing stock", which evaluate its quality. The proposed algorithm is being tested, and then on the basis of algorithm it makes management decisions to improve the state of housing at the regional level.

Keywords Housing stock assessment • Region • Decision-making • Quality of housing • Optimization

1 Introduction

Sustainable development of Russian regions implies balancing of social and economic goals in the terms of limited resources. The development is based on the principles of population's needs satisfaction and improving the quality of human life. One of the most difficult social and economic problems, influencing negatively on sustainable development of regions in Russia, is the state of the housing stock.

Housing stock is an essential element of population life-support. Also it is the factor, determining the set of socio-economic processes that influence on the sustainable development of the regions. Current state of housing stock in the Russian Federation is determined by the historic aspect. It is characterized by

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profound regional differentiation. At the same time, it can be identified as a common problem of housing development and reflecting regional specificities.

Effective management of housing development, which includes its creation and usage, contributes to sustainable social and economic development of the regions. For these purposes, it is required to work out appropriate tools, which take into account regional characteristics, as well as the general-purpose-oriented development of the country. Both local authorities and organizations involved in the process of housing management should follow the same principles and use scientific methods and models for the benefit of population. Nowadays, management of housing development in the regions of the Russian Federation does not meet conceptual and methodological unity. Scientific validity of decisions needs to be improved as well.

The main areas of research in the field of housing development are the issues of housing distribution among the population (Glazunov and Samoshin 2008; Khachatrian 2000), the models of assessment of housing affordability for the population (Svyatlovsky 2000; Guzikova 2010; Sternik and Apalkov 2014), the methodology of forecasting of the real estate market development in Russia (Sternik and Sternik 2013; Ovsyannikova 2005). The issues of housing stock assessment and management are not investigated sufficiently.

The relevance of the study and the lack of models of assessment and management of the housing stock predetermined the choice of the research theme and led to its goal, objectives, object and subject of study. The goal of the study is to develop the tools of housing circumstances assessment oriented on monitoring and management of sustainable economic and social development in the regions of Russia. Object of study is housing stock in Russia as a factor of sustainable social and economic regional development.

2 Housing Stock as Object of Management

Housing stock as an economic category and as an object of management can be represented by a complex set of concepts (Fig. 1).

Economically housing stock is presented as national wealth (Andrianov 2006), investment object (Ovsyannikova 2005), real estate (Minyakova 2012) and specific product (Sazhina and Chibrikov 2001). From a technical point of view, housing stock is a set of construction and engineering systems (Belobragin 2001). From the social standpoint, housing stock is a base of human life (Dyatlov 1996; Belyaeva 2009). Thus, housing stock management can be represented as management of complex and fundamentally important object. In the research, housing management features were investigated, exactly—the historic aspect of housing stock management was analyzed (Table 1).

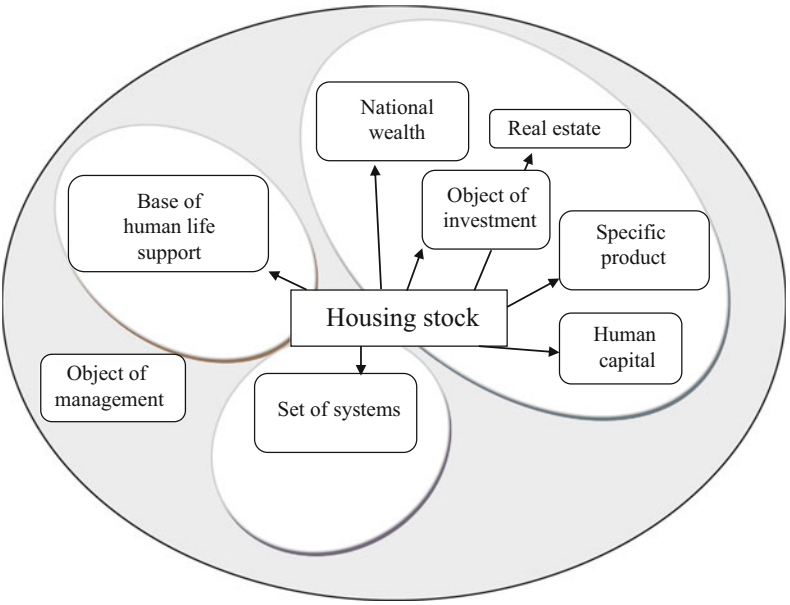

Fig. 1 The region housing stock as a complex object of socio-economic relations. Source: Composed by the authors

Table 1 The historic aspect of housing stock management in the Russian Federation

Indicator	Nineteenth—the beginning of twentieth century	Soviet Union	Present time
Financing sources	Private investments	Government investments	90%—private investments
Structure of housing fund	Private one-family house (50%) Private profitable house (40%) Social housing (10%)	Private one-family house (20%) Apartment house (70%) Cooperative (10%)	Private housing (87%), municipal, state housing (13%)
Population distribution in housing fund	Social uniformity	Social heterogeneity	Formation of tendencies to social uniformity
Regulation of housing fund	Market mechanism	Non-market mechanism	Interaction of market and non-market mechanisms
Problems in housing area	Lack of housing fund	Lack of housing fund	Lack of housing fund

Source: Composed by the authors

Three stages of housing problem solving were distinguished.

The first stage is the end of nineteenth century. This period was characterized by the following aspects:

– the construction was financed by private investments;
– the government did not take part in housing market at all;
– the regulation of housing market was carried out through market mechanisms;
– the most popular type of construction was the profitable apartment house.

The second stage is the time of Soviet Union. The government played active role in housing market. It used non-market mechanisms. The most popular type of construction was multifamily house. Most of the houses were owned by local authorities. The feature of this period was the prevalence of mass construction.

The last stage is the present time. Nowadays the structure of housing financing is similar to European countries. More than 90% of construction is financed by private investments. The authorities participate in the rent model. The authorities rent financed privately objects and annually pay rigidly established rent.

The research of a housing stock current state reveals the following:

1. The structure of the Russian housing stock is unbalanced. Nowadays, the emphasis is made on private property and most of the housing is financed by private investment. In our opinion, the structure of the housing fund should be balanced by forms of ownership and by structure of the population.
2. According to the survey (Public Opinion Foundation 2014), one-third of the population appreciates their living conditions as good, 48% of them found their living conditions satisfactory and 16% of them assert that their living conditions are bad. On February 2014, bad living conditions were pointed by 20.5 million people. To satisfy their needs, it is necessary to construct at least 410 million square meters. For comparison, annual construction constitutes only 21.24% of the required volume.
3. The growth of indicator, the total area per capita, may be explained by the following: the rate of construction exceeded the rate of population growth of the country.
4. The level of housing livability in Russia is equal to 61.4%. It is below the European average. This means that today one third of the population lives in housing stock, which is fully or partially lacking of water supply, sewerage, heating, hot water, gas, and bathrooms. The most comfortable in Russia are the Central, North-Western and Urals federal districts. The least—are Southern and North Caucasian Federal District.

As a result of housing stock analysis, the following characteristics of housing were identified for its assessment at the regional level: types of housing, population satisfaction level, construction level, and characteristics of housing (Fig. 2).

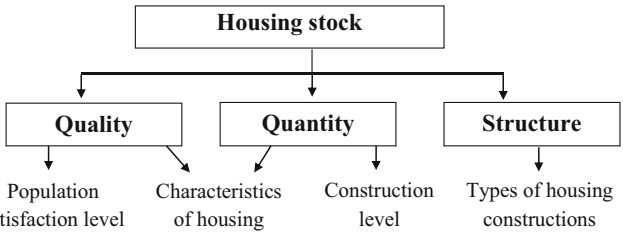

Fig. 2 The main characteristics of housing stock. Source: Composed by the authors

3 Methodological Approaches for Housing Stock Assessment

Methodological approaches for housing stock assessment in the region in construction, service, financing, monitoring and accounting fields are investigated (Table 2). The blocks in the Table 2 shows the area of the use for terms characterizing the housing.

It revealed the following:

– 84% of the analyzed indicators use the only housing stock characteristic—the level of housing livability; 15% of the indicators in the scope of its applicability include the level of customer satisfaction; 15% of the use to implement the structure of housing stock; indicators mainly take into account the quantitative and qualitative characteristics of the housing in the areas of construction and service; in the areas of financing, monitoring and accounting; they take into account as much as possible the characteristics of the housing stock.

As a result, the lack of integral criterion of assessment and management of the housing stock condition was found. Beginning from the time of Aristotle's research, many scientists gave in their writings the definitions of "quality". Having analyzed a sufficient number of definitions, the authors proposed to use the indicator "quality of housing." Under this concept, it means a set of technical structural quantitative consumer characteristics of the housing stock, which determine the suitability of housing to meet the requirements of population.

Management of the housing stock in the region, in our opinion, should be based on the following methodological principles:

1. the principle of combining the system, normative and positive approaches in the management of socio-economic development of the region;
2. the principle of using a complex integral index "quality of housing" together with an assessment of its constituent differential indicators;
3. the principle of the comparability of territorial units of different levels, and space-time intra-regional and inter-regional comparability;

Table 2 Methodological approaches for housing stock assessment in the region

Term	Construction level	Characteristics of housing	Types of housing	Population satisfaction level
Construction				
Building regulations				
Comfortable housing Normal condition of the housing stock Overhaul Maintenance Depreciation of property				
The old state housing Total area of residential premises				
Obsolescence of the housing				
Technical passport of the dwelling				
The density of the housing stock				
Service				
Gas supply Hot water Heat supply Sewerage Power supply The degree of livability Overhaul Maintenance Physical wear of housing Rules of technical operation				
The old state housing Emergency housing				
Obsolescence of the housing				
Financing				
Assessment of housing stock[a]				
Monitoring and accounting				
Requirements for residential premises				
Registration of the housing stock				

Source: Composed by the authors
[a]Partial housing stock

4. the principle of the assessment independence (housing stock assessment should be objective and should not be taken into account explicitly the interests and opinions of any group, except population;
5. the principle of information: on the one hand, an assessment based on data generated within certain structures of the region, on the other hand, these structures use the results of this assessment;
6. the principle of priority: housing development priorities are determined on the basis of an assessment of its condition, and the basis of resource allocation;
7. the principle of attainability: the target of indicators should be achievable within the available resources.

On the base of the proposed methodological principles, the assessment model of housing quality in the regions of the Russian Federation, which used an integrated indicator of the housing quality, was developed. It consists of 15 coefficients, which contain the indicators of the housing quality (Table 3).

As the base for regions' comparison, the authors of the study take the ideal conditional region whose values of indicators are the best, which is the maximal, values achieved in some certain region. This method of determining the ideal does not conflict with a systematic approach. So we analyze the connection of the system (a specific region) with the external environment (a set of other regions).

Assessment model of housing quality is based on the arithmetic mean value of the aggregate housing comfort factors, characterizing the structure of stock (share of public, municipal and private housing), the stock characteristics (total area per capita, share of the housing fund equipped by water-supply, sewerage, heating, bath, gas, electric range, hot-water supply, share of the dilapidated and abnormal housing fund) and the satisfaction level of population (share of the families, received the housing, share of the families, are registered as being in housing need, share of unsatisfied households).

$$HQ_{ij} = \frac{\left(C_{ij}\,\text{structure} + C_{ij}\,\text{characteristics} + C_{ij}\,\text{satisfaction level}\right)}{3} \quad (1)$$

The advantages of the proposed factors are the possibility of their spatial-temporal comparisons, objectivity and accuracy of the data. The calculated assessment varies

Table 3 The indicators of the housing quality

No.	Indicators	Extreme level
1	Share of public, municipal and private housing	20%:20%:60% (Matveeva 2012)
2	Total area per capita; share of the housing fund equipped by water-supply, sewerage, heating, bath, gas, electric range, hot-water supply, share of the families, received the housing	max (X_{ij})
3	Share of the dilapidated and abnormal housing fund; share of the families, are registered as being in housing need, share of unsatisfied households	min(X_{ij})

Source: Composed by the authors

in the range from 0 to 1. Its increase indicates an improvement in housing fund conditions. The greater value of assessment has region, in which the living conditions reach most favorable level.

4 Model of Housing Quality Assessment

The proposed model of housing quality assessment was tested in regions of Russia (Federal State Statistics Service 2013). The model was applied for the 80 regions in 2013 (Fig. 3). Today, Murmansk region is recognized as the leader in housing quality. Altai Republic is considered as lagging. In 11 regions of Russia, living conditions were considered as good and comfortable. In the other 69 regions, the state of the housing stock was found to be satisfactory. It was also revealed that in the Eastern federal district, the quality of housing is relatively higher than in other federal districts.

In order to identify priority areas of housing stock development in the regions of the Russia, to identify opportunities for application of housing quality assessment and to improve regional socio-economic monitoring, using factor analysis was proposed. In this case, we deal with a deterministic, multi-stage, static, retrospective factor analysis.

Multistage factor analysis is determined by three stages of assessing the impact of indicators on the result:

- impact of factors on housing comfort factors
- impact of housing comfort factors on housing quality assessment
- impact of factors on housing quality assessment

Fig. 3 Assessment of housing quality in regions of Russia. Source: Composed by the authors

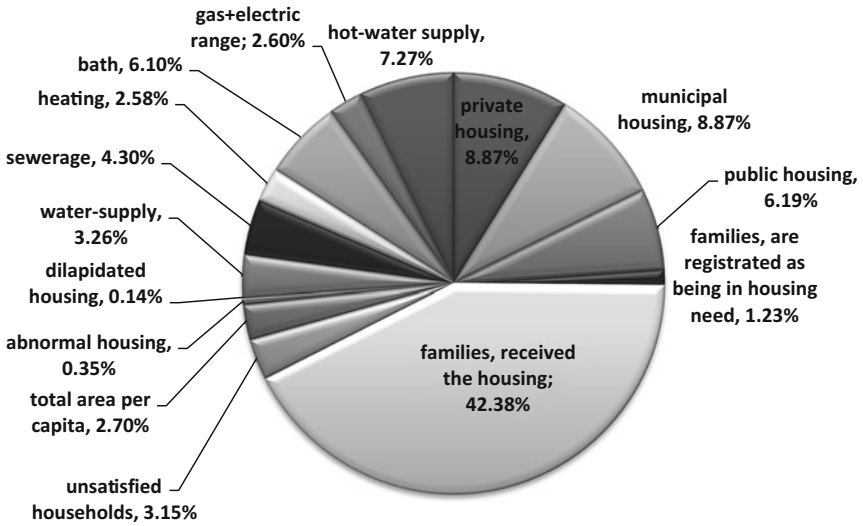

Fig. 4 The influence of factors on the assessment of housing quality in Russia in 2013. Source: Composed by the authors

As a result of implementation of the factor analysis, the following is revealed (Fig. 4):

The influence of set of the calculated indices on housing quality assessment is inversely proportional to their values. This means that when impact factor achieves an acceptable level, its influence on assessment of housing quality tends to a minimum. The indicators, which values reflect a lack of attention from the users of information, have a strong influence on the assessment. Today the greatest influence on the formation of housing quality assessment has an indicator of share of the families, who obtained the housing in the given period, the lowest influence has the share of the abnormal housing fund. During the process of planning the users of information need to take into account the individual characteristics of the region, the general trends and areas of region's development, also they should take into account the year to year changes.

The supposed algorithm of making managerial decisions based on the use of housing stock assessment. The algorithm was tested on the data of St. Petersburg. Using Excel program flap diagrams we identify problem areas (Fig. 5).

The first chart contains information of the value of each indicator in St. Petersburg. The second chart shows the impact of indicators on the assessment of housing quality. The government and different types of organizations involved in the process of the housing stock management, can be at the same time both users and generators of information. During their activities, organizations may affect on one or the other indicators of housing stock.

The charts on the screen revealed as problematic areas of the region the following aspects: small share of the families, who obtained the housing, unbalanced housing

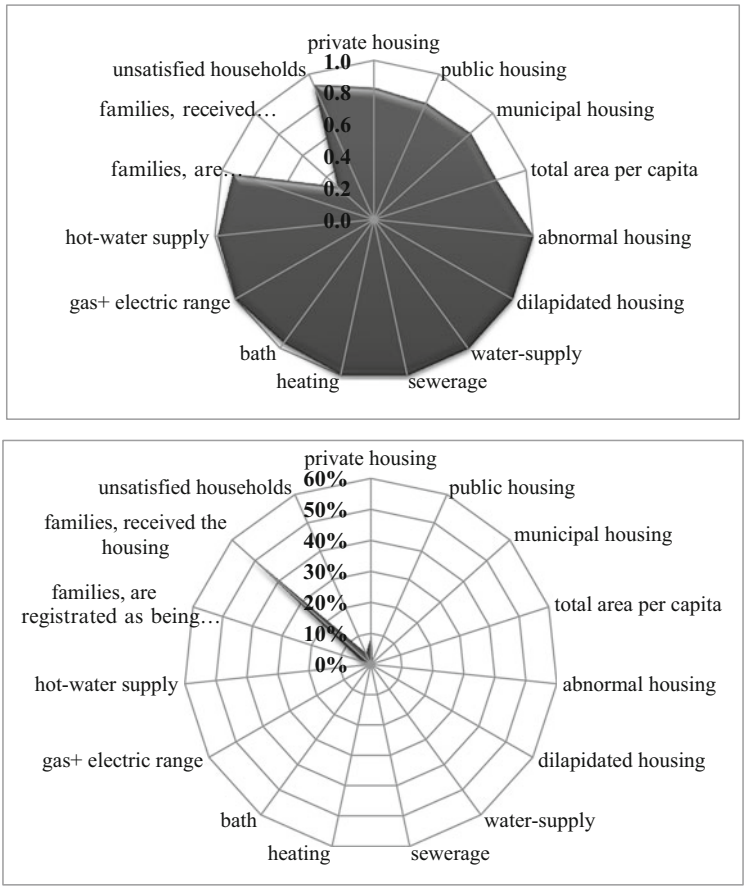

Fig. 5 The meanings of the indicators (1) and their influence on the assessment of housing quality (2) in St. Petersburg. Source: Composed by the authors

structure, low standard of total area per capita. Based on the limited resources in the region, organizations of the housing sector in the first place should pay attention to the lowest value of the indicator, which reflects the share of the families, who obtained the housing and its greatest impact on the assessment of housing quality.

The results of expert survey and optimization task solving led to the following conclusions about the housing quality in St. Petersburg: the priority of housing construction to its renovation; the creation of the municipal housing stock; the resources in 2014 (total 30,991,000 thousand rubles) should be distributed as follows:

- 5,593,200 thousand rubles—providing the houses by shower or bath;
- 664,066 thousand rubles—providing by gas or electricity;
- 3,507,600 thousand rubles—providing by hot water;
- 21,226,134 thousand rubles—the construction of housing to meet the needs of families who are registered as in need of accommodation.

5 Conclusion

The theoretical significance of the research is the following: The study extends the theoretical concepts of the housing stock as object of management and economic category. Then it expands the conceptual framework in the field of housing management. Also, it formulates a conceptual approach to and the principles of management of the housing stock. Finally, the study contains information on the requirements for housing quality assessing at the regional level.

The practical use of the research is the following: the results can be used by the construction companies in planning; by the credit institutions in mortgage housing crediting; the government in housing programs financing and assistance to low-income families. In general, it leads to living standards improvement, increases the competitiveness of national and regional economies and provides the sustainable development of Russian regions.

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The Types of Pathology in the Financial Markets in Selected Western European Countries: Analysis of Statistical Data

Joanna Brzezińska

Abstract The purpose of this article is to present two main pathology of a financial nature: money laundering and forgery, from the perspective of the frequency of their implementation, the general scale indicated phenomena and their level of intensity in selected Western European countries (France, Belgium). The proposed in the article juxtaposition indicated pathology is expedient, because they represent some of the most dangerous economic phenomena affecting the destabilization of economies of state at the macroeconomic. Presented in article analysis is to determine whether the countries that in economic and financial terms have many similarities, are also similar in the scale of pathogenic events. According to data provided by the Traitement du renseignement et action contre les circuits financiers clandestins (TRACFIN) in France the number of suspicious transactions, using money laundering continues to increase. In 1996 estimated value was approx. 9785 while in 2006 this number increased to 13,206 and in 2014 reached the level of 29,508. Meanwhile, for comparison with the data presented by the Cellule de Traitement des Informations Financières [Belgian Financial Intelligence Processing Unit] (CTIF) in Belgium, the number of suspicious transactions in 2010 reminded at the level 17,122 and in 2012 increased slightly to 19,152. Already, therefore, the preliminary findings confirmed that these threats etiology financial maintain upward trend, albeit with varying intensity.

Keywords Money laundering • Suspicious transaction reports • Statistical data

1 Introduction

Among numerous pathologies of economic etiology, two of them cause losses that are particularly severe for the state economy; they are: money laundering and forgery of goods (Hotte and Hemm 2004). In order to perform complex assessment of the separated phenomena, it is necessary to consider cumulatively two basic planes: macro- and microeconomic one. From the macroeconomic perspective, the

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negative impact of the indicated economic irregularities will be reflected in a drop of the generated budgetary resources of the state as well as in disturbance of its economic and financial stability (Broyer 2002). Systematic hiding or leading out of significant sums of money, accompanying money laundering, results in a decrease of the inflows of the state from the fiscal liabilities due to it, weakening its financial capabilities and its economic position (Foumdjem 2011). On the other hand, from the microeconomic perspective, forgery of products will contribute to strengthening of the inequalities between the taxpayers, resulting in the need to pay tax obligations of higher value by the entities acting in compliance with the law. Moreover, the dirty business of forgery of goods will support disturbance of competition between business entities on the market.

Due to the scale and scope of the negative consequences that may be caused by money laundering and forgery of products, the purpose hereof will be firstly, brief normative characteristics of the indicated crimes, and next, also assessment of the dimension and frequency of occurrence of the analyzed pathologies in the French-speaking states of the Western Europe: France and Belgium (Koutouzis and Thony 2007).

2 Money Laundering: Legal Aspects

The crime of money laundering certainly constitutes one of the most serious and at the same the most popular financial crimes in the world (Vernier 2013; Benissad 2014). Depending on the normative conditions, the European legislators establish its penalization in a different way; sometimes, they do it in a synthetic way, so that the provision typifying the discussed criminal offence is transparent, and some other time, due to the need to take into account its differentiated phases, they extend the scope of the provision, wanting to make the regulation as complex as possible. The provisions typifying the crime of money laundering in the French and Belgian Penal Codes will be determined below (Jerez 2003).

In compliance with art 324-1 of the French Penal Code (Code pénal 2015), money laundering is a behavior that consists in facilitation of any hiding of the illegal origin of goods or income coming directly or indirectly from a crime. A behavior consisting in participation in the operation of investment, transfer or conversion of income coming directly or indirectly from a crime is also money laundering. The culprit of the indicated crime is subject to the penalty of 5 years of imprisonment and a fine in the amount of EUR 375 thousand.

On the other hand, in compliance with art 505 of the Belgian Penal Code (Code penal 2015), the following persons are subject to the penalty of 15 days—5 years of imprisonment and a fine in the amount of EUR 25–100 thousand:

1. persons who hide the objects taken, misappropriated or obtained as a result of a crime, in their entirety or in a part,
2. persons who bought, obtained as a result of an exchange or obtained free of charge the possession, supervision or management of the objects provided for in

art. 42, 3° or know the origin of these objects from the beginning of the performed operations,
3. persons who performed conversion or transfer of the objects determined in art. 42, 3° in order to hide or change their illegal origin or provision of help to any person that is engaged in realization of the crime which these objects come from, in order to avoid legal consequences of such actions,
4. persons who hide or change the nature, origin, location, arrangement, circulation or ownership of the objects determined in art. 42, 3°, i.e. the ones that know the origin of the indicated objects from the beginning of the operations realized with their participation.

Due to limited frames hereof, looking at the presented regulations, it seems to be necessary to make only two fundamental comments. Firstly, the French and the Belgian legislators adopt completely different methods of penalization of the crime of money laundering (Moulette 2003). The first of them makes synthetic characteristics of the crime, indicating the most important forms of its realization, while the other determines the differentiated cases of money laundering in a casuistic way, extremely accurately, characterizing its circumstances, different phases of the crime, forms of its realization and even origin of the objects that the culprit has at their disposal. A look at such differently determined provisions allows for noticing that the French legislator focuses in fact on the provision containing maximally general characteristics of the features, making it highly transparent and at the same time universal. Another method was used in the Belgian Code, which in art. 505 determines in a very accurate way over a dozen of differentiated cases of money laundering, trying to take into account almost each of the circumstances accompanying the analyzed crime in an detailed manner.

Not deciding here in advance on rightfulness of any of the adopted methods of typing of the crime of money laundering, it should be emphasized that even though the manners of its normative characteristics may be different, they allow for formulation of a fundamental conclusion that such different formulas of penalization of the same crime result from the response to the degree of complexity of its nature, disclosing the fact that it is one of the crimes that are the most heterogeneous in its structure and thus hard to typify. In order to capture its enormous diversity, the legislator may either try to create its fundamental outline through compilation of the general features, creating the space that will be filled in by the culprit, or try to determine all of its forms with reference to differentiated phases, in which it may appear. However, due to the heterogeneity of the structure of the crime itself it is hard to assess which method of its typing is the most appropriate.

3 Forgery: Legal Aspects

The crime of forgery always constitutes a display of illegal violation of intellectual property rights. It may be manifested on two basic planes since it relates to copying or counterfeiting of a product without any right to such actions. The essence of the

crime of forgery is counterfeiting of such elements of the product that determine its identity (Roig 2015). In France, the scope of the regulations aimed at counteracting of the forgery of goods is extremely expanded and covers the provisions in the field of commercial law, intellectual property and penal or financial law (Lemarié et al. 2015; Ventre 2011).

Undoubtedly the most important groups of French regulations aimed at combating the phenomenon of product forgery is the provisions of the Code of Consumption. According to art L 213–1 Code of Consumption (Code de la consommation 2015) of the said Code: anyone who is or is not a party to the agreement deceived or attempted to deceive the contracting party, through the use of any means or method, or did so even indirectly, by the action of others interfering:

1. in the nature, species, origin, substantial features, composition, content, in principle, of each of the goods used, also
2. in the number of delivered goods or their identity by delivering goods other than the goods marked as the subject of the agreement, and finally
3. in the expiry date or in the rules relating to the use of the product, checks carried out or provided means for safe consumption of the product, shall be subject to 2 years in prison and a fine in the amount of 300,000 Euro.

In compliance with the provisions of L 213–1 Code of Consumption (Code de la consummation 2015) the subject of the agreement between the contracting parties are always 'goods' demonstrating specific substantial features (e.g. quantity, weight, length) and material structure. In order to expand the scope of the analyzed provisions in a maximum way (taking into account also other objects that may be exposed to forgery), the French legislator rightly uses in its content also additional denominations of the term: 'goods', such as objects (2) or products (3) (Ambroise-Casterot 2008).

On the other hand, in Belgium the Act on Penalization of Forgery and Piracy of Intellectual Property Rights (Loi relative a la repression de la contrefacon et de la piraterie de droits de propriete intellectuelle 2007), promulgated on 15 May 2007 and published on 18 April 2007, is in force. The purpose of this regulation is to create the measures aimed at more effective combating of the manufacture and trade of forged goods. This Act contains the provisions allowing for implementation of Regulation N 1383/2003, dated of 22 July 2003, which permits intervention of customs authorities and taking of relevant measures in order to combat all violations of the intellectual property rights. Thus, in this Act introduction of a separate category of a customs crime (art. 5), sanctioning introduction of the products that were made with violation of the intellectual property rights to the territory of Belgium and their exportation is provided for. It is subject to the penalty of 3 months—3 years of imprisonment and a fine in the amount of EUR 500–500 thousand. This Act makes it possible for the Belgian customs authorities to commence cooperation with other European states in order to build tight borders of the European Community against the trade of the counterfeited goods.

Moreover, the 2007 Act changed the previous penal regulations in the field of forgery of marks, brands, drawings and patterns as well as rights of the possessor,

patents and additional protection certificates. The penalties for the indicated crimes were aggravated and differentiated due to continuous development of the discussed crime (art. 8), so the penalty of 3 months—3 years of imprisonment and a fine in the amount of EUR 100–100 thousand is provided for (additionally, it is possible to apply the confiscation of the objects used for commitment of the crime, destruction of the counterfeited goods and closure of the plant used by the convicted person). In the Belgian law, forgery is perceived as a theft of a determined category of rights, misappropriation of concepts and ideas used for development of the intellectual property right of their author, so the legislator provides for severe penalties for its commitment.

4 Money Laundering in France and in Belgium: Statistical Perspective

The crime of money laundering in France is subject to two basic trends. As it results from the chart presented above (Fig. 1), in years 2003–2012 the frequency of its realization was increasing all the time. Even though in years 2003–2004 from 90 to 105 cases of the analyzed crime were realized (the basic type and the modified types in total), already from 2005 over 150 crimes of the analyzed category were reported

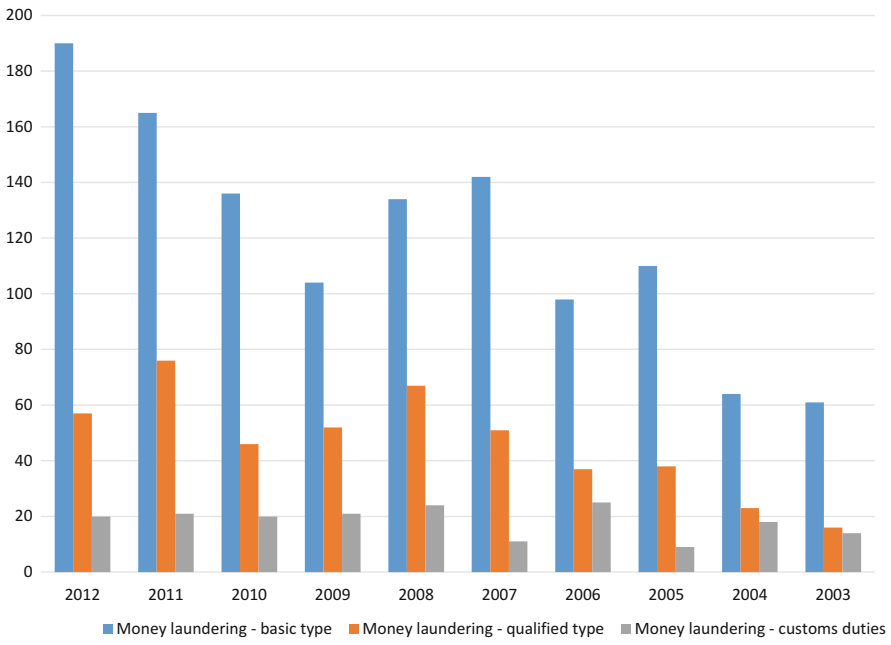

Fig. 1 Money laundering in France in the years 2003–2012. Source: TRACFIN (2014)

in France (increase in relation to the previous period by 50%). Year 2007 was a turning point of sorts, when increase of the cases of money laundering were reported in the statistics for the first time above 200 disclosed cases (204 crimes; increase in comparison with the level reported in years 2003/2004 by 200%). Further evolution of realization with an increasing trend was possible to be observed in years 2011/2012, when the level of the disclosed cases of money laundering reached respectively 262 and 267 crimes (almost 2.5-time higher level of the crime in relation to the one at the beginning of the examined period).

In years 2003–2012, radical increase of the frequency of realization of the crime of money laundering was reported in France. Even though in 2003 fewer than 100 cases of this form of economic crime were committed, in 2013 already 270 of them were reported (almost threefold increase). Moreover, in the entire examined period (Fig. 1), the trend of realization of money laundering in the basic form dominated, then, on a much lower level there was the frequency of money laundering in the qualified type (penalized in a more rigorous way). As it results from Fig. 1, the lowest level of the examined crime was reported in case of realization of its features in relation to customs transactions.

In Belgium, the phenomenon of money laundering fails to maintain a homogeneous trend from the point of view of the frequency of its realization. On the chart presented above (Fig. 2), the analyzed crime has a clearly dominating nature in the primary phase consisting in performance of illegal operations on income obtained

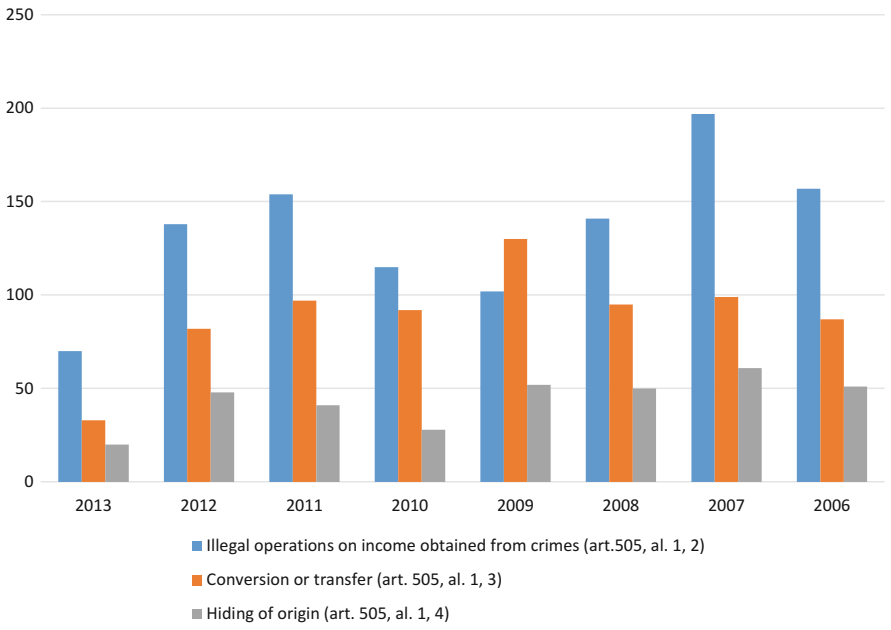

Fig. 2 Money laundering in Belgium in the years 2006–2013. Source: GAFI (2015)

from other crimes. It should be noted that in years 2006 and 2007 from 157 to almost 200 of its cases were identified, next in years 2008–2010 a significant drop of this category of money laundering was reported to the level of about 100 crimes in 2009 (by almost 100% in comparison with 2007), to achieve then a minor increase of the frequency—in years 2010–2011 and next another significant drop in years 2012–2013, up to the level of 70 cases. On the other hand, the frequency of money laundering realized in the phase of conversion or transfer achieves much lower level than in the previously analyzed phase. The number of cases in years 2006–2009 was fluctuating in the range from 87 to 130 (optimum), to achieve then, in years 2010–2013, a firm decreasing trend (33 cases in 2013). Moreover, it should be emphasized that the crime of money laundering achieves decidedly lowest frequency of realization in the last of the phases, consisting in hiding of illegal income. Even though in years 2006–2009 from 50 to 61 cases of this category of crime were reported, in years 2010–2013 its drop was clear and was on level of 20 cases in 2013 (drop by 60%).

While characterizing the crime of money laundering, also the scale, on which the so-called Suspicious Transaction Reports are realized, should be determined. They are transactions with the use of the means coming from a crime, which may be performed in the circumstances of excessive complexity level or which have no economic justification or alternatively the amount of which is suspicious. The specification of the Suspicious Transaction Reports in France in years 2010–2013 is presented on the chart below (Fig. 3). It should be emphasized that in the examined period the entities performing the indicated category of transactions the most often were: banks and credit institutions (from 13,206 transactions in 2010 to 21,950 in 2013), exchange offices (from 3251 transactions in 2011 to 1199 in 2013), insurance institutions (from 1169 transactions in 2013 to 808 in 2013), and among the freelancers: notaries public and accountants as well as statutory auditors.

While observing the frequency of the realized Suspicious Transaction Reports in France, the worrying trend should be emphasized, consisting in their decisive increase among the entities, which should be ensuring of financial safety of citizens, i.e. banks and credit institutions. At the same time, it should be noted that in Belgium in years 2010–2013 (Fig. 4), the scale of Suspicious Transaction Reports was much smaller than in the analogical period in France. Among the entities that committed them the most often, the following ones should be determined: exchange offices, credit institutions and banks, casinos and post institutions, as well as notaries public, accountants and statutory auditors.

What is interesting, whereas the number of Suspicious Transaction Reports performed in exchange offices was almost constant (from 11,491 to 12,364), among other categories of entities realizing them a constant increasing trend was reported, yet it was the most visible in case of banks and credit institutions (from 3870 transactions in 2010 to 5690 in 2013; increase by 45%) and post institutions (from 471 transactions in 2010 to 1085 in 2013).

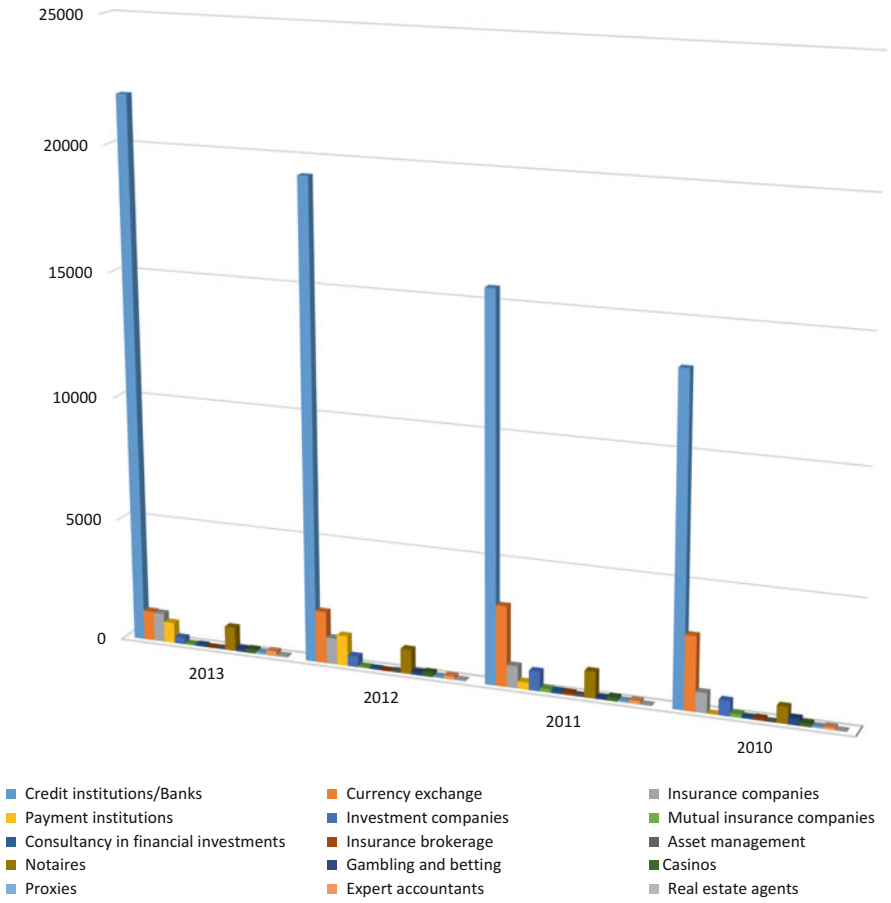

Fig. 3 Suspicious transaction reports in France in the years 2010–2013. Source: TRACFIN (2014)

5 Forgery in France and in Belgium: Statistical Perspective

The crime of forgery constitutes one of the most serious economic threats occurring in Western Europe (Naïm 2007). In order to determine the scale of the indicated crime, the categories of the goods being the most often subject to forgery in France and in Belgium in years 2012–2013 are presented below (Figs. 5, 6, 7, and 8).

On the basis of the chart presented above (Fig. 5) it should be stated that in 2012 the most serious scale of forgery was affecting the textile industry (as many as 1,129,041 pieces of clothing! and almost 800 thousand accessories and about 280 thousand shoes), the next category of forged products were toys and games (over 500 thousand) as well as cosmetics (about 213 thousand), mobile phones and

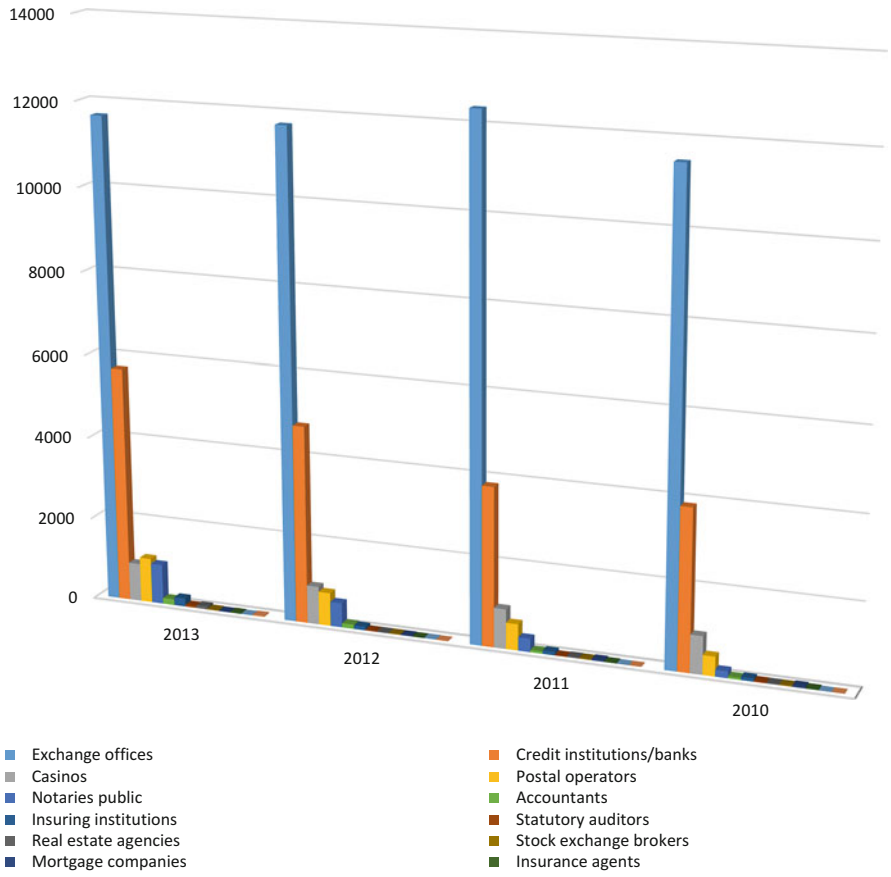

Fig. 4 Suspicious transaction reports in France in the years 2010–2013. Source: GAFI (2015)

electronic equipment and CDs/DVDs (in total 367 thousands) as well as medicine (almost 100,000). It should be emphasized that the scale of the crime of forgery of products in France covered in 2012 more than 3 million 200 thousand products.

On the other hand, as it results from the chart presented below (Fig. 6), the trends relating to forgery of products in France were not constant and in 2013 underwent some noticeable changes. Firstly, the crime of forgery related mainly to the pharmaceutical industry since as many as 1,354,705 medicines were forged. This trend allows for indication of reversal of the trend from 2012, when in France medicines constituted the group of products that were counterfeited the least frequently.

The next category of goods being forged was constituted in 2013 (similarly to the previous year) by textile products as well as shoes and accessories (almost 1 million 900 thousand goods). It is a level that is only slightly lower from the one

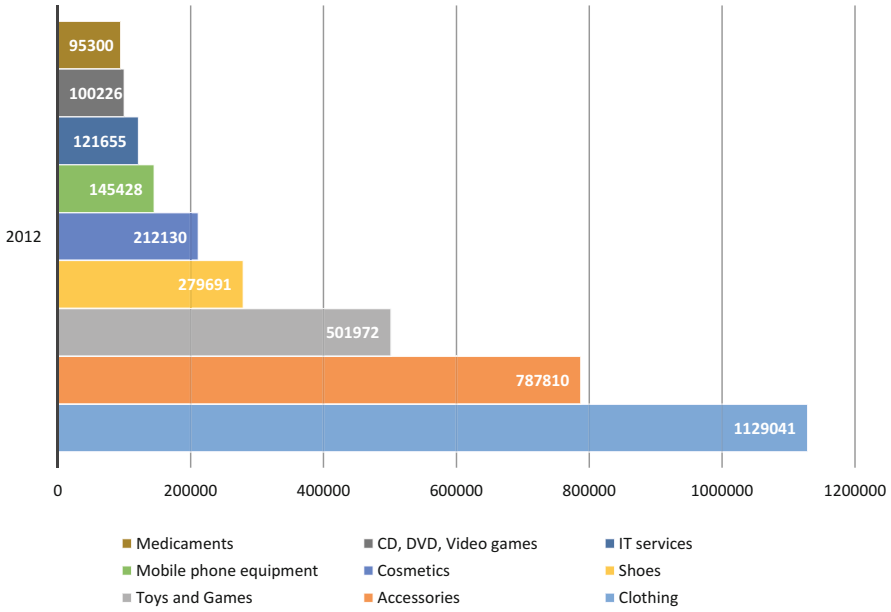

Fig. 5 The number of forgeries broken—down by sectors in France in the year 2012. Source: FIGARO (2013)

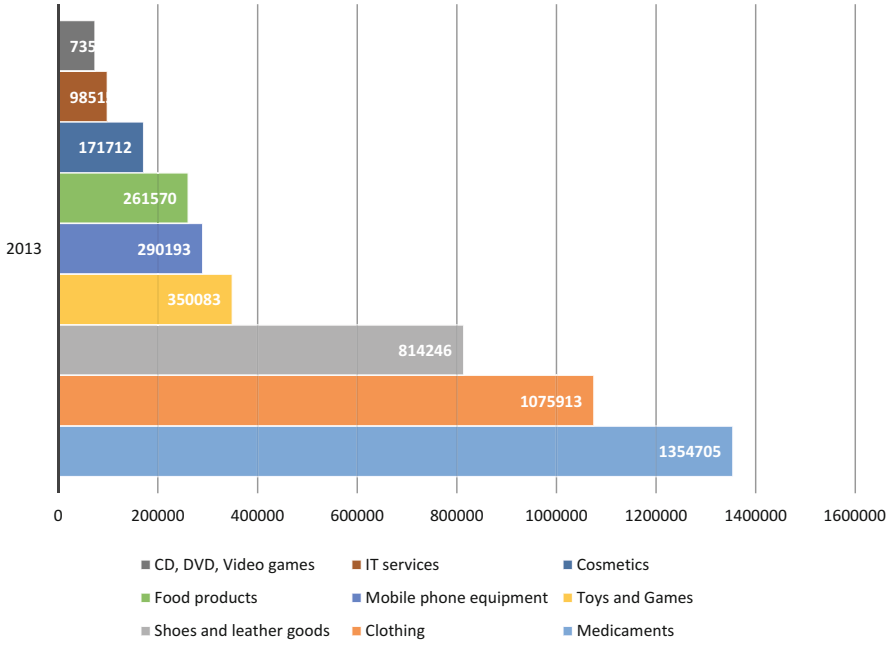

Fig. 6 The number of forgeries broken—down by sectors in France in the year 2013. Source: FIGARO (2013)

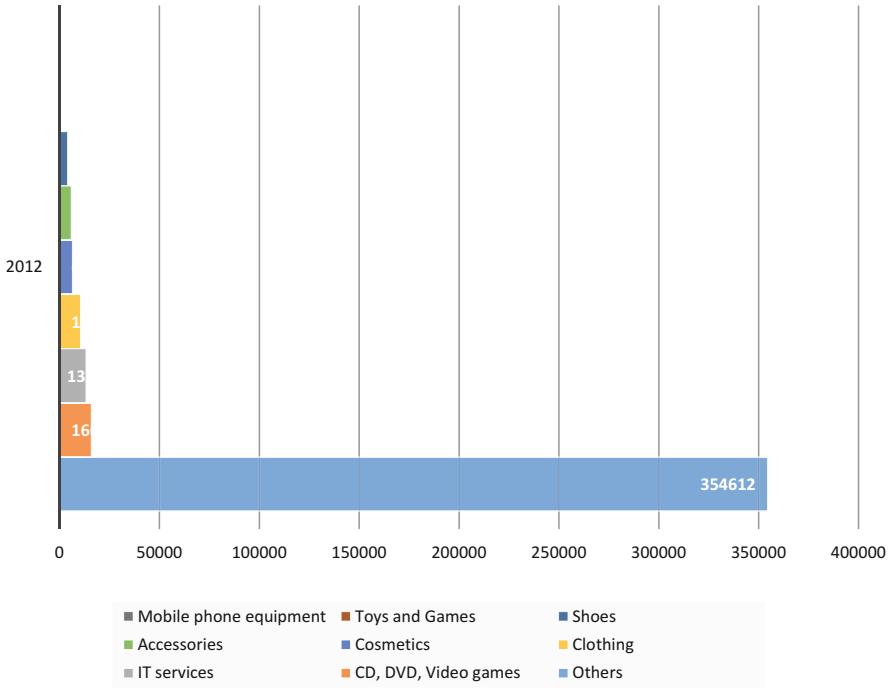

Fig. 7 The number of forgeries broken—down by sectors in Belgium in the year 2012. Source: Service Public Federal Economie (2014)

reported in 2012. Next, the forged goods were toys and games (over 350 thousand products), mobile phones, electronic equipment and CDs and DVDs (in total over 463 thousand products—almost 25% more than in 2012), food (over 260 thousand) and cosmetics (over 170 thousand articles—about 23% fewer than in 2012).

While contrasting the statistical data from years 2012–2013 it may be seen that clothing, shoes and accessories remain the dominant category of goods being the subject of the crime of forgery in France. It clearly dominates in the textile industry. Thus, one of the most developed sections of economy is exposed to the highest losses. What is also interesting is the reversal of the trend relating to counterfeiting of medicines, which in 2013 were opening the list of the goods that were counterfeited the most often, bringing enormous losses to the pharmaceutical industry (over 1 million 350 thousand products). In 2013, in comparison with the previous year, also a clear increase of the frequency of the crime of forgery in the telecommunication and IT industry as well as its minor drop in the cosmetic industry was observed. In total, in 2013 over 4 million 400 thousand goods were forged in France.

On the other hand, while analyzing the statistical data presented below on the next charts (Figs. 7 and 8), it may be stated that the scale of the crime of forgery in

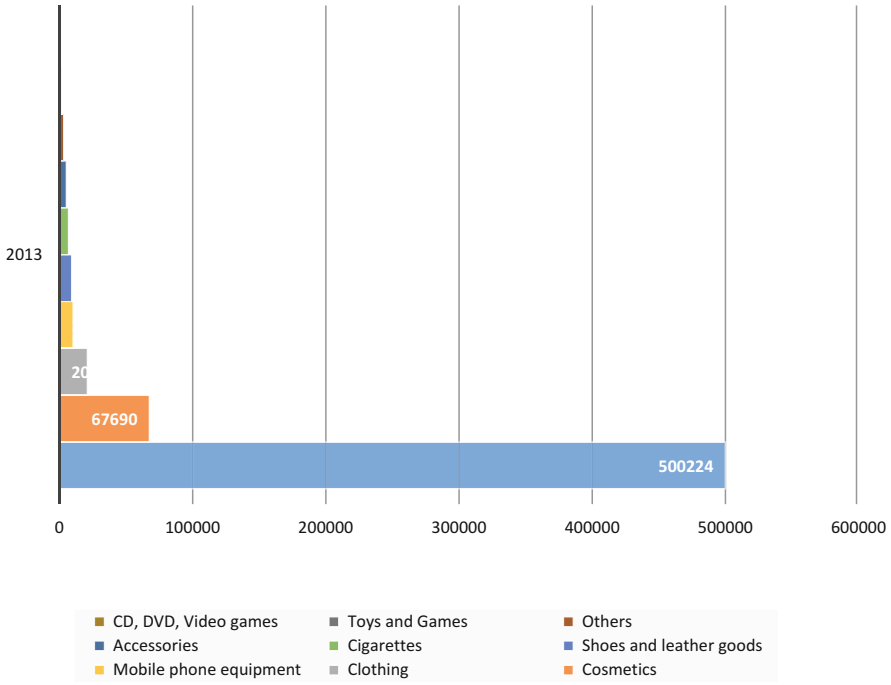

Fig. 8 The number of forgeries broken—down by sectors in Belgium in the year 2013. Source: Service Public Federal Economie (2014)

Belgium is on much lower level than in France. In 2012, it was committed in relation to almost 412 thousand products, while there is a problem with indication of the economic industries, in which it reached the highest level, so on the chart (Fig. 7) it was marked that the largest group of products being subject to forgery had heterogeneous nature. Next, the forged goods was the technical equipment and CDs/DVDs (over 29 thousand products) and then clothing, shoes and accessories (almost 21 thousand goods) and next cosmetics (over 4 thousand articles).

Looking at the statistical compilation relating to the crime of forgery in Belgium in 2013, it should be emphasized that the dominant categories of goods that were subject to it were shoes, clothing and accessories (over 530 thousand products), then cosmetics (over 67 thousand), mobile telephones (over 10 thousand) and cigarettes (almost 7 thousand) as well as toys and games (over 1.4 thousand). Finally, the compilation included over 625 thousand counterfeited goods, which indicates the general increase of the analyzed category of the crime by over 30%. It should be noted that in 2013 the dominant category of the forged goods were textiles, shoes and accessories, which in the previous year constituted only 4% of the number of goods being the subject of the crime of forgery in 2013.

6 Conclusions

The purpose of this article was to indicate two most significant economic pathologies dominating on the economic market of the European French-speaking states—France and Belgium—which are undoubtedly: money laundering and forgery of products (of various etiology), together with determination of their scale and trends that are visible in relation to the frequency of their realization.

As it results from the presented statistical data, in the period from 2003 to 2012 (Fig. 1) money laundering in France was a crime that demonstrated clear increasing trend. Its level increased almost threefold, from about 100 cases of the crime in 2003 to 270 in 2012. Moreover, one of the most significant factors examined in case of the analysis of money laundering, being the Suspicious Transaction Reports, was growing regularly in France. What is especially worrying in this context is the fact that the suspicious transactions were realized on the largest scale by such entities as banks, credit institutions and exchange offices, the basic objective of which should be ensuring of the highest safety of the financial means being at their direct disposal.

On the other hand, in Belgium it is possible to observe a slightly different trend relating to the phenomenon of money laundering. According to the statistics presented above (Fig. 2), despite the generally high level of frequency of its occurrence, a slight drop of the analyzed crime should be noticed, while the illegal operations on income obtained from crimes remain the clearly dominating phase of its realization and its transfer or conversion comes later. Unfortunately, in Belgium, similarly to France, in the examined period from 2010 to 2013 the growth of the Suspicious Transaction Reports performed mainly by banks and credit institutions (Fig. 4) as well as constant great frequency of their realization by exchange offices (from 11,500 to almost 12,500 transactions) should be noted.

Similar negative increasing trends are visible in the analyzed statistics in relation to the crime of the forgery of goods. The scale of growth of this pathology is surprising and at the same time frightening especially in France, where in 2012 over 3 million 200 thousand goods and products were counterfeited or modified in an illegal way (Fig. 6) while in 2013 the scope of this crime included over 4 million 400 thousand articles (Fig. 7). Two manufacturing industries that are the most exposed to its presence and implying the highest losses are: textile industry (2.2 million products in 2012 and 1.9 million in 2013) and pharmaceutical industry (over 1.3 million articles). On the other hand, the scale of the crime of forgery in Belgium is a bit smaller and what is more, in 2012 there were problems in determination of the dominant group of counterfeited products, being homogeneous in terms of qualification (Fig. 7), while in 2013 such group was constituted by products from the textile industry (shoes, clothing, articles of apparel); in total, over 520 thousand counterfeited products of this category were disclosed (Fig. 8).

In conclusion, it should be stated that the presented statistical data allows to observe that the scale of the analyzed pathologies: money laundering and forgery demonstrates increasing trend, while its negative intensity is greater in relation to

the characterized phenomena in France. What is particularly worrying is the fact that the determined pathologies not only cause difficult to estimate economic losses in the indicated states (for example, losses on account of forgery of products in Belgium in 2012 amounted to EUR 12 million but already in 2013 they increased by almost 100% to 23 million 600 thousand) but also contribute to occurrence of next pathological mechanisms, such as at least occurrence of the dangerous phenomenon of the Suspicious Transaction Reports, associated with the crime of money laundering and enhancing the scale of this pathology.

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FDI Determinants, Incentive Policies and FDI Effects in the Western Balkan Countries

Mamucevska Daniela and Nikolovska Natalija

Abstract Foreign direct investment (FDI) is one of the least understood concepts in international economics. Their main proponents argued that FDI is a long-term and stable cross-border flow of capital that enhances productive capacity of domestic economies and helps them to meet their balance-of-payments shortfalls. Moreover, FDI supports transfers technology and management skills and links domestic economies with the wider global markets. But, in reality, the effects from FDI for the host countries are very ambiguous. There are number of debates among scholars and policy makers regarding its nature and impact on capital accumulation, technological progress, industrialization, growth and development in the host countries. However, in the last two decades, FDI has increasingly been viewed by policy makers in the Western Balkan countries (WBCs) as one of the most important external sources to finance development, increase productivity and import new technologies. This has been accompanied by an increase in competition among the WBCs to attract FDI, resulting in higher investment incentives offered by the host governments. So, for policy makers one of the most important issues is being able to determine which factors are crucial in driving FDI inflows and what the real effects of these policies are. Thus, the main focus of this paper is to address these questions.

Keywords FDI inflows • Determinants • Western Balkan countries • Effects • Economic policies

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1 Introduction

UNCTAD (2016) reported a strong recovery of FDI flows in 2015. Global FDI flows increased by 38% and reached to 1.76 trillion US dollars. This is their highest level since the global economic and financial crisis of 2008–2009, but they still remain below the 2007 peak. More than a half of the total inward FDI flows were realized in the developed economies. Strong growth in inflows was recorded in the European countries. In the USA, FDI almost quadrupled. FDI inflows in developing economies reached a new high of 765 billion US dollars and the Asian countries are the biggest recipients.

FDI inflows to transition economies declined further, from 85 billion US dollar in 2013 and 56 billion US dollar in 2014 to 35 billion US dollar in 2015. The low commodity prices, weak domestic markets and the geopolitical tensions were the main driving factors behind the negative trends of FDI. The fragility of the global economy, persistent weakness of aggregate demand, anemic economic growth in some commodity exporting countries, effective policy measures to restrain tax inversion deals and decreasing profits of multinational companies, are expected to result in FDI decline by 10–15% in 2016 (UNCTAD 2016).

However, in the upcoming periods, FDI inflows will be one of the most important external sources to finance development, increase productivity and import new technologies in the Western Balkan countries (WBCs). Scarce potential financial resources, from one side, and the progress of globalization and regionalization, on the other side, will increase a competition among the WBCs to attract FDI, and consequently it will result in higher investment incentives offered by the host governments. The ambiguous effects of FDI and their spillovers in the Western Balkan economies, anemic economic growth and moderate new job creation increasingly provoke debates regarding the concept of FDI incentives policies. So, for policy makers one of the most important issues is being able to determine which factors are crucial in driving FDI inflows and to design adequate investment incentive policies that will generate high net benefits for the domestic economy.

Thus, this paper focuses on the trend and distribution of FDI in the WBCs and makes an attempt to reveal the main determinants that have influenced the FDI inflows to the WBCs. Based on the available data on six WBCs (Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia and Kosovo) over the period 2004–2015 the authors are trying to assess the effects of FDI on economic growth in these countries as well.

The structure of this paper is as follows. The first section deals with the theoretical concepts of FDI and with the determinants which are most commonly recognized as relevant factors for FDI in the existent empirical literature. The second section deals with the trend and distribution of FDI among the WBCs. The third section is dedicated to the econometric analysis of the determinants of FDI in WBCs. The fourth section discusses the effects of FDI in these economies. Finally, the fifth section summarizes the main findings of the research.

2 Theoretical Background

The economic theory remains indecisive regarding whether FDI inflows are beneficial for the host economy. Considering the main properties of the neoclassical growth theory,[1] foreign capital inflows do not affect the long-term growth rate. A high level of FDI only temporary increases the amount of capital per capita due to the declining returns on the capital. But the positive impact on long-term growth rate is likely to prevail if the FDIs stimulate technological development and increase employment in the host economy. The endogenous growth theory[2] gives more room for a potentially positive impact of FDI on the growth rate in the host economy. FDI positively affects the growth rate through research and development activities and by increasing the human capital. Also, FDI may influence growth through externalities which may include improvement of human capital, improvement of fixed assets, implementation of better organization forms, cooperation with local companies, better market access, and improved financing conditions (Sass 2003). These factors increase the productivity of the subsidiary of multinational companies and of the related local companies in the host economy.

However, the presence of FDI does not imply a technology transfer with positive impacts on economic growth by default. Perhaps the transferred technology is not appropriate for the level of human capital in the host economy, or there is no significant transfer of technology due to institutional deficiency or lack of receptiveness by local companies. Thus technology and new knowledge do not broadly disseminate in the economy. Sometimes, the isolation of the subsidiaries of multinational companies into special economic (free) zones precludes local companies from the potential positive effects of technology transfer.

The empirical literature finds mixed evidence on the positive impact on growth in the host country generated by FDI inflows. Alfaro et al. (2006) suggest that developed financial markets may create the preconditions for the links between foreign and local firms to turn into FDI spillovers. So, their research indicates that economies with well-developed financial markets experience growth rates that are twice of those of economies with underdeveloped financial markets. Furthermore, higher level of FDI leads to higher additional growth in economies with developed financial markets compared to those observed in the economies with poor financial markets. Alfaro et al. (2006) also points out that local conditions such as market structure and human capital are important for the effect of FDI on economic growth.

[1]The model was independently developed by Solow (1956) and Swan (1956). The main properties of the model are: constant economies of scale, decreasing marginal products of inputs, positive substitution elasticity of inputs and existence of perfect competition. The steady-state capital—labor ratio is constant and growth equals the sum of exogenously given population growth and technological progress (Heijdra and Van Der Ploeg 2002).

[2]The endogenous growth models omit the assumption of perfect competition. The models are 'endogenous' because the growth rate is not affected only by exogenous parameters, but also by the savings rate. In the case of labor-substituting endogenous growth, labor becomes less important. For more on the endogenous growth models see Heijdra and Van Der Ploeg (2002).

Lee and Chang (2009) are on the same line. They are very conclusive that a highly developed financial sector can represent a source of numerous comparative advantages for the host country, and that these advantages make it easier for the country to absorb the positive impact of FDI, which in turn will encourage overall economic activity. De Mello (1999) does not find a significant and positive correlation between economic growth and FDI. He estimates the impact of FDI on capital accumulation, output and total factor productivity in the host economies and infers that the extent to which FDI is growth-enhancing depends on the degree of complementarities and substitution between FDI and domestic investment. Lipsey (2002) explains that subsidiaries of multinational companies generally have higher productivity than local companies, but the evidence for spillovers to local companies' productivity is mixed. Also he finds the mixture of impacts of FDI to host-country growth. The expected positive effects to economic growth and spillovers generated by the FDI highly depend on the host country policies and environments from one side and from the technological level of the industries and the companies in the host country on the other side.

Generally, FDI is a form of capital flow resulting from the behavior and international activities of multinational companies. Thus, the factors which affect the behavior of multinational companies strongly determine the scope and direction of FDI. Traditional theories in International Business used the OLI-framework as the explanation for FDI inflows. OLI framework was developed by Dunning (1993) and it is a set of factors consisting of ownership advantages (O), location advantages (L) and internalization advantages (I) that affect investors' decision making process. Ownership advantages refer to those assets of the investing companies that enable them to compete successfully in international markets despite the costs of setting up a subsidiary in the host country. These types of advantages typically encompass superior technology and management knowledge in comparison with local companies. Location advantages refer to those benefits that a host country may offer to an investing company, such as, large markets, low-cost labor force, low production costs and a good infrastructure. Internalization advantages cover advantages in terms of lower transaction costs and arise when it is more beneficial to enter the market of the host country with setting up local production rather than exporting products from the source country. While ownership and internalization advantages are investor's specific determinants, the location advantages are more specific to the host country. In this context, OECD (2001) argues that location advantages have gained importance in the multinational companies' decision making process and consequently this increases competition among host countries for attracting FDI.

For more comprehensive interpretation of the findings in the empirical literature on the determinants of FDI inflow it is helpful to note the distinction between two types of FDI identified in the theory i.e. horizontal FDI (HFDI) and vertical FDI

(VDFI).[3] HFDI is more of a market-seeking type of FDI. Tariff-jumping or export-substituting FDI is a variant of the HFDI. Trade restrictions, high tariffs and transport costs, market size and potential growth of the host economy play an important role in the process of encouraging the HFDI. VFDI is a resource-seeking FDI (or cost-minimizing investment), when multinational companies choose the location of each segment of their production chain in order to minimize global costs. Availability of low-cost labor force strongly stimulates VFDI. As a result of these differences in companies' incentives the different characteristics of the host country may provoke different effects on HFDI and VFDI. However, according to Demekas et al. (2007), both types of FDI are subject to 'agglomeration', i.e. clustering in certain locations (where the business infrastructure serves the particular industry or there is presence of positive externalities through network effects) and 'herding' (where investors tend to follow a leader that establishes operations in a particular country). Demekas et al. (2007) emphasize that HFDI is more prevalent type of investment in developed countries, while recent FDI inflows to developing countries were mainly VDFI.

There are many determinants that the empirical studies have used to explain the scope and pattern of the FDI inflows. But, the most frequently used ones are: market size and growth prospects, natural and human resources endowments, physical, financial and technological infrastructure, openness to international trade and access to international markets, regulatory and policy framework and policy coherence, investment promotion and protection policy (OECD 2001).

Market size and growth prospects are important determinants for attracting FDI. Host countries with larger market size and higher degree of economic development provide better opportunities for multinational companies to explore their ownership and internalization advantages. Demirhan and Masca (2008) find out that countries with larger and expanding markets are more attractive for FDI. These markets offer possibility for multinational companies to receive higher return on their capital. On the same line is Charkrabarti (2001) too; he supports the idea that large markets are needed for better exploitation of economies of scale and scope. Furthermore, he argues that fast growing economies provide better opportunities for earning higher returns on investment and consequently making higher profits than ones growing slowly.

[3]Dunning (1993) distinguishes three types of FDI inflow based on the motives behind the investment decision of the multinational companies. The first type is market-seeking FDI whose aim is to serve domestic and/or regional markets in the host country. In this case, local production is seen as a more efficient than exports from the source country and thus this type of investment involve replication of production facilities in the host country. Second type is called resource-seeking FDI, when the prime motive for investment abroad is to obtain resources which are not available in the home country, such as natural resources, raw materials, or low-cost labor. The third type is called efficiency-seeking FDI and it occurs when multinational company may exploit benefits of economies of scale and scope from the common governance of geographically dispersed activities.

Availability of natural and human endowments is a driving factor for FDI attraction, as well. Export-oriented FDIs, in particular, tend to seek low-cost labor force and abundance of natural resources. Demirhan and Masca (2008) note that low labor costs have positive significant effects for FDI in labor-intensive industries and for export-oriented subsidiaries. Bellak et al. (2008) point out that recently attention has shifted from natural resources and labor endowments to 'acquired' endowments of resources, such as availability of intermediate goods, skilled labor, technological and innovative assets. Therefore, when wage rates vary little from country to country, then the skills of the labor force are expected to have an impact on decisions about FDI location.

The term "Infrastructure" covers many aspects—from transportation, telecommunication systems and financial system to institutional development. Differences in infrastructure influence the FDI location decision not only among countries but also among different regions within a country. According to OECD (2001), FDI is more likely to flow to countries or regions with better infrastructure facilities. Good quality and developed infrastructure increases productivity of companies in a country and consequently positively affects FDI inflows toward the country. However, Demirhan and Masca (2008) find out that there is substantial foreign participation in the infrastructure sector in developing countries and argues that from this aspect, poor infrastructure can be seen as an opportunity for foreign investment in these countries.

It is very likely that host country's openness to international trade and access to international markets may stimulate the inflows of FDI. But, according to Demirhan and Masca (2008), the evidence of the empirical literature is not decisive. For instance, market-seeking FDI are more prone to trade restrictions. The intuitive reasoning behind this is that multinational companies prefer to set up subsidiaries in the host country due to difficulties with import of their products to the country. Additionally, high trade restrictions limit domestic market competition. Contrary to market-seeking FDI, export-oriented FDI are more prone to realize in the more open economies. OECD (2001) suggests that the attractive and strategic geographic position of a country could also be a significant determinant in attracting FDI.

A transparent and well-functioning legal framework, accompanied by a good business environment is of prime importance for attraction of FDI. Regulations regarding the entry and operation of foreign companies and treatment of foreign companies are of particular interest to potential foreign investors. Bureaucratic and restrictive administrative procedures accompanied with rent-seeking activities incur additional costs which adversely affects potential FDI decisions and successive reinvestment of earnings. In this context, political risk is also relevant for attracting FDI. In general, as long as foreign investors are confident in being able to work profitably without excessive risk to their capital, they will continue to invest (Kearney 2016).

Investment promotion activities and incentives packages are becoming increasingly important in the process for attracting FDI. Host countries offer different fiscal, financial and other incentives (most of them are in the domain of the state-aid measures) that affect investors' future net profit.

In a nutshell, there are many determinants that have been used in empirical studies to explain the scope and pattern of the FDI inflows. The most relevant determinants vary from country to country, from region to region. One set of determinants are relevant for developed economies, where most of the FDI inflows are from HFDI. For these country 'acquired' endowments of resources, such as availability of intermediate goods, skilled labor, technological and innovative assets are more important determinants in attraction of FDI. Developing countries are target for VFDI and consequently they attract FDI through low labor and production costs and generous investment policy with high fiscal and financial incentives.

3 Trends and Distribution of FDI in the Western Balkan Countries

Throughout the 1990s most of the WBCs suffered from political and economic instability. Transition reforms and slow economic recovery resulted in lower levels of FDI inflows compared to other transition countries from South and Central Eastern Europe. According UNCTAD statistics (WIR database) over the whole 1990–2000 period, the inward FDI stock in the WBCs amounted US$ 8.4 billion or 4.5% of total inward FDI stock in all transition countries.

Since 2001, under the Stabilization and Association Process, lunched by the European Union, WBCs implemented trade liberalization with the EU, gradually improved the business environment and privatized a significant number of their state owned companies. Despite these facts, anemic trends in FDI inflows in WBCs are continuing beyond 2001, when the whole region reached a satisfactory level of political and macroeconomic stability (see Fig. 1). The share of the WBCs in the total FDI inflows in transition economies is low during the whole analyzed period.

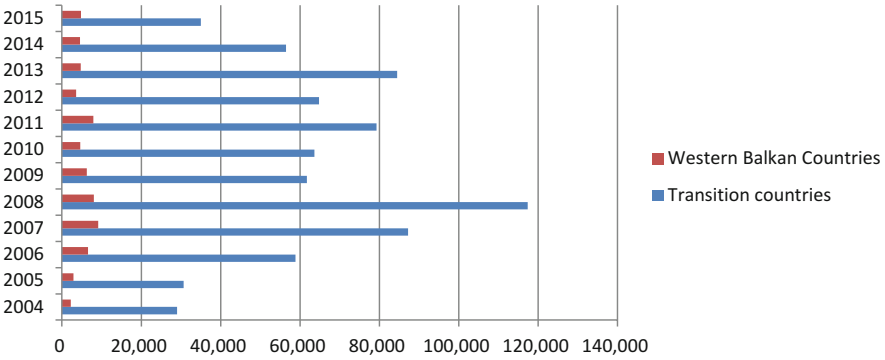

Fig. 1 FDI inflows by region (in 10,000 US dollars) in the period 2004–2015. Source: UNCTAD, WIR database (www.unctad.org). Note: Transition economies: Western Balkan countries and Commonwealth of Independent States (CIS)

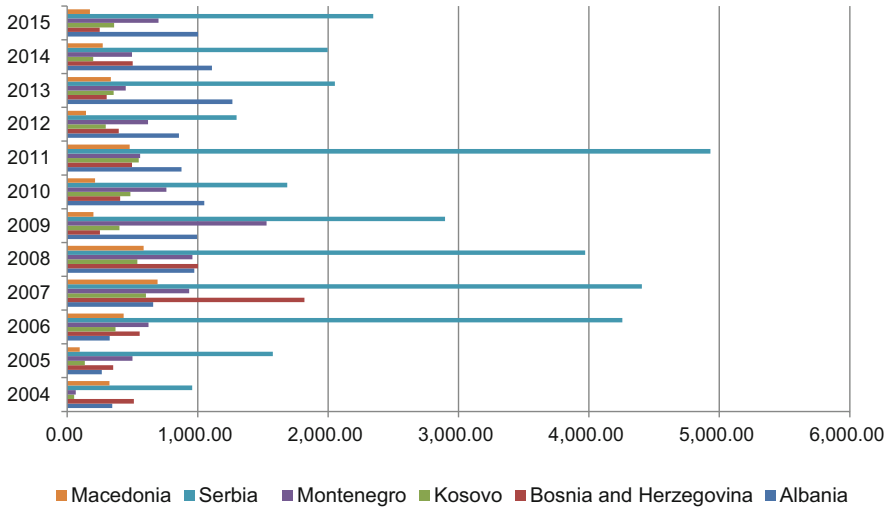

Fig. 2 FDI inflows by country in the period 2004–2015 (in 100,000 US dollars). Source: UNCTAD, WIR database (www.unctad.org)

In 2004 only 9.40% were directed in WBCs, in 2005 it was 9.53%, in 2010 7.23% and in 2015 it was 13.81%. The higher share in 2015 is due to the significant decline in the total FDI inflows in all transition countries.

It is very likely that low FDI inflows are due to the 'Balkan effect' and on the competition from more prosperous transition economies. At first glance, an image of wars and conflicts rather than investment opportunities and economic potential, is characteristic for this region. Considering this, Estrin and Uvalic (2013) found out significant negative regional effect on the FDI inflows to WBCs. Furthermore, the FDI inflows by country were very uneven. During the period 2004–2015 the FDI inflows in Serbia and Montenegro were higher than in the rest of the WBCs. This was a result from the advanced privatization processes in these economies where most of the prosperous state-owned companies were sold out to foreign investors. The economic crisis from 2007 had negative impact on FDI inflow in the region. In all countries FDI inflow has not reached its pre-crisis level (Fig. 2).

The values of the annual averages of FDI inward stock by country are uneven as well. During the three comparable periods, Serbia and Bosnia and Herzegovina have the highest value of the annual average of FDI inward stock (see Fig. 3). Variations in the FDI inward stock among countries are due to the different impact of the economic crisis on the individual countries, to country's privatization process[4] and in some part to the countries' investment incentives policies.

The distribution of FDI by sector of economic activity is very important in terms of assessment of long-term effects of FDI inflows on host economies. Based on the

[4]Due to war and political instability Bosnia and Herzegovina has started privatization process very late, after 2003.

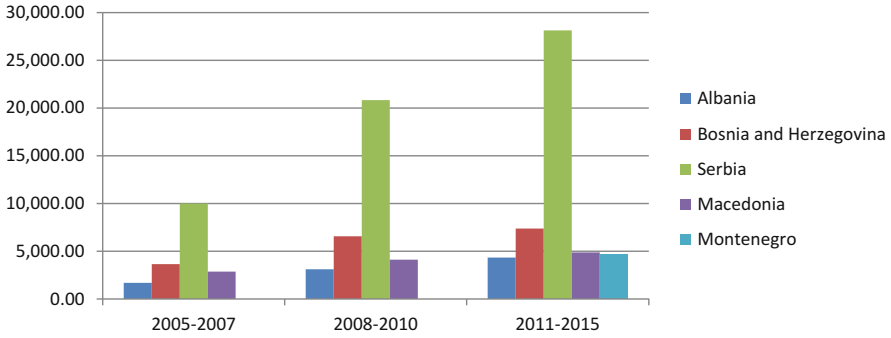

Fig. 3 Annual average FDI inward stock by country for the period 2005–2017, 2008–2010 and 2011–2015, respectively, (in millions US dollars). Source: Authors' calculations based on UNCTAD, WIR database (www.unctad.org). *Note: available data for Montenegro is for the period 2011–2015

Table 1 Inward FDI stock/flow by sector or industry in the WBCs

Country	Latest available year	Inward FDI stock/flow by sector or industry (in percent)				
			Primary	Manufacturing	Services	Unspecified
Albania	2012	Stock	25	12	52	11
BIH	2015	Stock	4	28	63	5
Macedonia	2014	Stock	5	36	59	0
Serbia	Q12016	Flow	9	31	58	2
Kosovo	2015	Flow	1	7	91	1

Source: Authors' calculation based on statistics from the central banks of WBCs
Note: There are no available data for Montenegro

countries' statistical data for their international investment position, the services sector accounted for most inward FDI stock (or flow). For the four WBCs (Albania, Macedonia, BIH and Serbia) FDI in the services sector accounted to 58% of the total, on average. Kosovo is a unique case, where in 2015 91% of the total value of all FDI flows was directed to the services sector (see Table 1). Banking, telecommunications, real estate and retail trade have been among the most preferred sectors of foreign investors in the WBCs. The manufacturing sector has absorbed around 22.8% of total FDI. Serbia (31%) and Macedonia (36%) have attracted a considerable amount of FDI in manufacturing.

According to the UNCTAD (2014) report on FDI distribution by sectors, the situation is similar in developed and other transition countries as well (see Fig. 4). In 2011, 64% of total FDI were directed to the services sector, 25% in manufacturing and 6% in the primary sector. Collapsing commodity prices resulted in a significant decline of FDI flows to the primary sector in developed countries. In the transition countries as a result of structural characteristics of their economies,

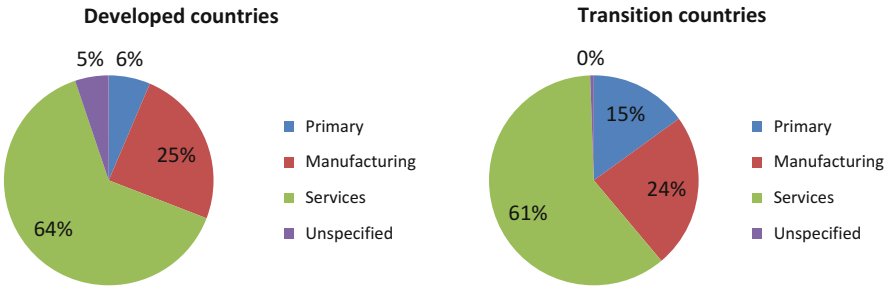

Fig. 4 Estimated Inward FDI stock, by sector or industry, in developed and transition countries for 2011. Source: Authors' calculations based on UNCTAD, WIR database (www.unctad.org)

Table 2 FDI inward stock or flow by source country

Country	Latest available year		Inward FDI stock/flow by source country (top 5 investors -in percent of total)				
Albania	2013	Stock	**Greece**	**Canada**	**Netherlands**	**Austria**	**Turkey**
			37.75	27.96	13.65	13.51	10.0
BIH	2005	Stock	**Austria**	**Serbia**	**Croatia**	**Russia**	**Slovenia**
			20.39	16.91	16.88	8.05	6.99
Macedonia	2013	Stock	**Netherlands**	**Austria**	**Greece**	**Slovenia**	**Hungary**
			20.48	12.17	20.89	9.97	8.15
Montenegro	2011	Stock	**Russia**	**Italy**	**Switzerland**	**Hungary**	**Cyprus**
			15.4	11.8	9.0	8.4	8.2
Serbia	2015	Flow	**Norway**	**Italy**	**Hungary**	**Russia**	**South Africa**
			35.23	12.02	7.45	5.97	4.44
Kosovo	Q1 2016	Flow	**Turkey**	**Germany**	**Switzerland**	**Slovenia**	**Austria**
			11.14	9.3	7.61	6.86	5.59

Source: Authors' calculation based on statistics from the central banks of WBCs

the share of the primary sector in the FDI stock is higher (15%). A share of FDI in services is 61% of total, while in the manufacturing it is 24%.

Additional insight is provided by Table 2, which contains the major source countries of FDI in the WBCs. Almost all FDI source countries are the neighboring countries of the WBCs. Intuitive reasoning suggests that distance between host and source country may have a significant effect on FDI inflows. In regards with this, Demekas et al. (2007) argued that gravity factors explain a large part of FDI inflows in SEE, but also host-country investment policies such as relative unit labor costs, the corporate tax burden, infrastructure and the trade regime are matter.

4 Determinants of FDI in the Western Balkan Countries

In order to study the main determinants of FDI inflows in WBCs, the selection of variables is based on the previous empirical research for the determinants of FDI in Central European and South Eastern European Countries made by Estrin and Uvalic (2013), Brenton et al. (1999), Campos and Kinoshita (2003), Bevan and Estrin (2004), Bucevska (2009) and Trpkova and Tashevska (2009). The paper analyzes the impact of three groups of variables: (1) standard independent variable (market size, labor costs, quality and skills of labor force, quality of infrastructure facilities and transportation cost), (2) policy variables (macroeconomic stability and openness of the economy) and (3) non-economic factors: governance and the effect of EU accession of the country on the FDI).

This econometric analysis is based on the models used by Bucevska (2009), with some modifications, and they are estimated by using the ordinary least square method (OLS). Based on a sample of 60 observations (12 years and 5 countries),[5] the following four models were used:

$$\ln FDI_t = \beta_0 + \beta_1 \ln GDP + \beta_2 LCOST + \beta_3 SECONDARY + \beta_4 \ln MOBILE + \beta_5 \ln DIST + u \quad (1)$$

$$\ln FDI_t = \beta_0 + \beta_1 \ln GDP + \beta_2 LCOST + \beta_3 SECONDARY + \beta_4 \ln MOBILE + \beta_5 \ln DIST + \beta_6 CPI + \beta_7 \ln EXIM + u \quad (2)$$

$$\ln FDI_t = \beta_0 + \beta_1 \ln GDP + \beta_2 LCOST + \beta_3 SECONDARY + \beta_4 \ln MOBILE + \beta_5 \ln DIST + \beta_6 CPI + \beta_7 \ln EXIM + \beta_8 CRISK + u \quad (3)$$

$$\ln FDI_t = \beta_0 + \beta_1 \ln GDP + \beta_2 LCOST + \beta_3 SECONDARY + \beta_4 \ln MOBILE + \beta_5 \ln DIST + \beta_6 CPI + \beta_7 \ln EXIM + \beta_8 CRISK + \beta_9 NEG + u \quad (4)$$

where:

t—is a particular year (t = 1, 2...12) in the period 2004–2015; lnFDI—is the logarithm value of the 28 EU FDI outward stock to the WBCs; (from Eurostat); lnGDP—logarithm value of the gross domestic product per capita of the WBCs measured in million Euros (from Eurostat); LCOST—data on average gross monthly wages in US dollars (from UN Economic Commission for Europe); SECONDARY—total gross secondary school enrolment rate (from UNESCO Institute for statistics); MOBILE—number of active mobile cellular subscriptions per 1000 people in the WBCs (from World Bank WDI database); DIST—airline distance in kilometers between capital cities of 28 EU countries and the capital cities of WBCs (from indo.com/distance); CPI—consumer price index where 2010 is the base year (from Eurostat); lnEXIM—logarithm value of the share of export

[5] Available data for: Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia.

and import in GDP (from UNCTAD database); CRISK—denotes the rank of the country according to the Euromoney country risk ranking (from www.euromaoneycountryrisk.com); NEG—dummy variable for EU formal negotiations. It takes value 1 for the period from formal beginning of the accession negotiations onwards and 0 otherwise. Obtained econometric results are presented in Table 3.

The results suggest that GDP per capita, as a proxy for market size, labor costs, transportation costs and quality of infrastructure have the main roles in attracting FDI form the European Countries. When it comes to the educational level of the labor force, we may conclude that foreign investors are not looking for well-educated and skilled workers, but they prefer a cheap labor force. This confirmed our previous expectations that FDI in the WBCs is an efficiency-seeking type of investment. Distance among source country and host country affects inversely the level of FDI stock in WBCs. Macroeconomic stability (measured by CPI) and the level of openness of the economy (measured by export and import/GDP ratio) do not significantly influence the investors' decisions. Regarding country risk; this variable is statistically significant and shows that a better ranking of a country will stimulate more FDI inflows. The last model (4), shows that the dummy NEG variable is statistically significant, which suggests that EU accession effect has a strong impact on the attracting FDI in the WBCs.

Table 3 Determinants of FDI (Dependent variable is FDI stock in year t)

Variable	M1 (ln FDI)	M2(lnFDI)	M3(lnFDI)	M4(lnFDI)
lnGDP	0.6543 (0.1733)***	0.6448 0.1821***	0.0141 0.3525	0.1729 0.3727
LCOST	0.0009 (0.0002)***	0.0009 (0.0003)***	0.0009 (0.0004)*	0.0004 0.0004
SECONDARY	0.0063 (0.0273)	0.0032 0.0292	0.0214 0.02814	0.0413 0.0281
ln MOBILE	0.5266 (0.0924)***	0.4357 0.1027***	0.5266 0.1132*	0.4058 0.2341
lnDIST	−1.6753 (0.4206)***	−1.2383 0.8415	−0.9921 0.8207	−1.2383 0.9527
CPI		−0.0014 0.0035	0.0025 0.0036	−0.0017 0.0034
lnEXIM		0.7521 0.9072	0.0083 0.0286	1.4897 0.9530
CRISK			0.0522 0.0289*	0.0249 0.0298
NEG				0.4583 0.1898*
Number of Observations	60	60	60	60
Adjusted R^2	0.94	0.94	0.95	0.96

Standard errors are presented in brackets below the coefficients
***, **, *, indicate statistical significance at level of 1%, 5% and 10% respectively

5 FDI Effects and Investment Incentives Policies in the Western Balkan Countries

The main goals of government incentives policies for attraction of FDI is framed in higher rates of economic growth, improvement of export structure and employment generation in the host countries. Thus, using this frame we will analyze the effects of FDI in the WBCs.

FDI has played an important role in the WBCs during their transition period to market economy. As an external capital accumulation, FDI inflows have supplemented the scarce domestic savings and helped to complete privatization processes in these economies. Thus, the ratio of FDI inflows to gross fixed capital formation (GFCF) has higher values than the average of the transition countries during the period 2004–2015. Within the WBCs, the highest values of ratio of FDI to GFCF have Montenegro (76.2%) and Serbia (33.8%) (Table 4).

The inward FDI stock as a percentage of GDP is considered as an indicator of the penetration of foreign capital in an economy. Due to the low level of domestic accumulation, inward FDI stock as a percentage of GDP has higher values in all WBCs (except in Albania), than in the transition countries (see Table 5). The annual

Table 4 FDI inflows as a percentage of GFCF [Annual average for the period 2004–2015 (in percent)]

Transition countries	14.7
WBCs	29.5
Albania	23.3
Bosnia and Herzegovina	17.2
Montenegro	76.2
Serbia	33.8
Macedonia[a]	18.26

Source: Authors' calculations based on UNCTAD, WIR database (www.unctad.org)
[a]Data for the period 2004–2013

Table 5 FDI inward stock as a percentage of GDP [Annual average for the period 2004–2015 (in percent)]

Transition countries	26.3
WBCs	42.9
Albania	26.2
Bosnia and Herzegovina	35.4
Montenegro[a]	106.7
Serbia	48.6
Macedonia	43.9

Source: Authors' calculations based on UNCTAD, WIR database (www.unctad.org)
[a]Data for the period 2010–2015; No available data for Kosovo

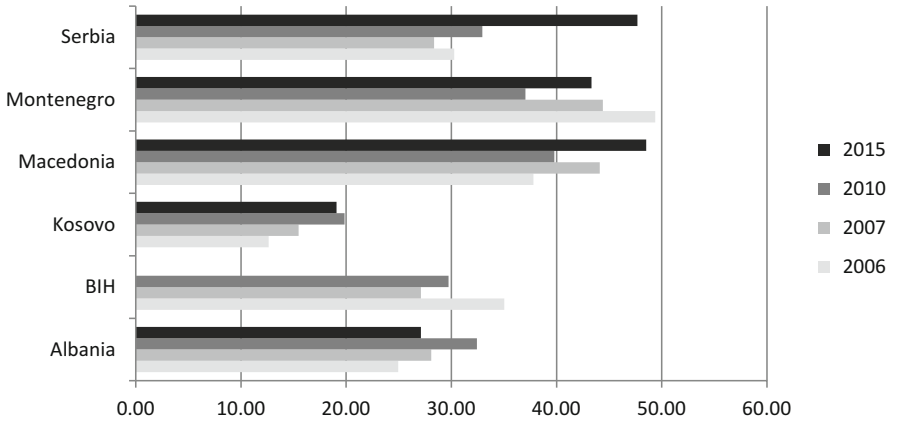

Fig. 5 Exports of goods and services as a percentage of GDP (for selected years) Source: World bank database (world development indicators)

average value of this ratio, for the entire period, for all transition countries was 26.3% and 42.9%for WBCs.

The 'exports of goods and services to GDP' ratio increases during the whole analyzed period, except in 2010, when as consequence of the economic crisis the ratio decreased. But, given that around 60% of all FDI inflows have been attracted in the services sector, FDI inflows have not significantly contributed to improving the export structure in the WBCs. The intermediary goods, food and raw materials still keep their high levels in the structure of exports.[6] This type of export structure makes the Western Balkan economies more vulnerable to volatility of economic activities in the developed countries, since the markets of the latter are their main export destination (Fig. 5).

For more than 20 years, WBCs have struggled with persistent high unemployment rates. Considering the fact, that almost 60% of all FDI inward stock was directed to the services sector, it is not surprising that an increased level of FDI has not generated significant new job positions in these economies. Moreover, the amount of greenfield FDI in the WBCs is low. In 2015, only 24.04% of the total greenfield FDI in the transition countries was in the WBCs. The distribution of greenfield investments is very uneven among the WBCs (see Table 6). Labor tax incentives have not stimulated the process of new job creation in the affiliations of foreign companies.

In view of the changes in values of the Global Competitiveness overall index (GCI) 2015–2016, the competitiveness of the economies from the Western Balkan region has not improved. Serbia, Montenegro and Bosnia and Herzegovina received

[6]A small change is notice in the structure of Macedonian export in 2015, when goods with higher added value increased their participation. This is due to the exports of the foreign companies which operate in the established free economic zones.

Table 6 Distribution of the total value of announced greenfield FDI projects in WBCs (for selected years, in percent)

	2005	2010	2015
Albania	15.04	1.17	1.53
Bosnia and Herzegovina	52.03	6.26	36.71
Montenegro	2.11[a]	7.49	0.50
Serbia	26.87	75.95	56.25
Macedonia	6.06	9.14	5.01

Source: Authors' calculations based on UNCTAD, WIR database (www.unctad.org)
[a]Note: calculation based on the data for 2006

lower values of the index for the analyzed period (2015–2016) and have lower ranks (94, 70 and 111, respectively (Schwab and Sala-i-Martín 2015) compared with their ranks in 2008–2009 (85, 65 and 107, respectively (Schwab and Porter 2008). The lower ranks in the overall GCI ranking mean that competitiveness of these economies has decreased. Only Albania and Macedonia registered better rank position in terms of GCIs and they have moved from 108 and 89 place in 2008–2009 to the 93 and 60 place in 2015–2016, respectively.

To summarize, throughout the whole analyzed period, the FDI inward stock was not sufficient to provide significant impulse for more dynamic economic development in the WBCs. As Christie (2003) stated, the economic costs of instability in the Balkan region in terms of forgone FDI have been very high. As a result of this, the gap between the estimated potential and the real FDI stock is very large. Demekas et al. (2007) showed that for 2003, the gap between potential and real FDI stock in Albania, Bosnia and Herzegovina and Macedonia was very high. They argued that the situation has moderately improved, but the significant gap still exists. Thus, Demekas et al. (2007) suggested that WBCs may increase FDI inflows by designing FDI-friendly investment policies for promotion and attraction of foreign investors.

However, as a result of the increased levels of international and regional trade liberalization, WBCs have little room to apply the standard instruments for attracting FDI. Therefore, the focus of their policy is given to other promotion activities and measures (i.e. government subsidies per job created by foreign investor, real estate provide below market prices, customs free areas, establishing special economic zones, providing direct financial assistance and reducing the total tax burden on foreign investors). But, on the other side, governments attach various conditions and performance requirements to the incentives measures in order to assure the FDI delivers in terms of employment generations, higher growth rate, restructuring of export structure and increasing export of goods and services. Haaland and Wooton (1999) found out that the level of subsidies may be so high that the foreign investors are the net beneficiaries even if considerable positive effects exist in the host economy. In that context, UNCTAD (2016) reported that in 2015, 85% of measures were favorable to foreign investors.

Due to the lack of reliable data, we are very inconclusive regarding the overall effectiveness of the national policies for promotion and attraction of FDI in the WBCs. There is no strong evidence which may confirm that the quantitative effects of the increased levels of FDI inflows are transformed into better qualitative performances of the Western Balkan economies.

6 Conclusion

The analysis in this paper leads to the following conclusions:

- Due to the high political and economic instability of the Western Balkan region, historically WBCs have not been an attractive destination for the inward FDI flows and stock. Their importance as host countries has increased after 2001, when the level of FDI inward flows increased, although it still remains on a lower level when compared to the more prosperous transition countries of South Eastern Europe. Cviic and Sanfey (2010) stressed that the negative image of the Western Balkan region adversely affects FDI inflows in this group of countries.
- Most of the FDI to the WBCs are VFDI type, which means that foreign investors prefer cheap labor force over well-educated and skilled workers. In addition to low labor costs, market size, transportation costs and quality of infrastructure play vital role in attracting FDI in the host countries. Also, the progress in the EU accession process has significant effect in the attracting FDI in the host countries of the Western Balkan region.
- More than half of the total inward FDI stock has been directed into the services sector of the WBCs and consequently FDI has not had significant effect on the process of job creation and restructuring of the countries' export structures. Furthermore, low commodity prices, weak domestic markets and geopolitical tensions are key factors that keep the greenfield FDI on a very low level in these countries.
- Due to the specific economic characteristics of the WBCs, there are low spillover effects of the FDI over the other sectors in economies. Domestic companies are not able to absorb the positive aspects of technology transfers from the FDI. Thus, during the whole analyzed period, economic growth in the regions was anemic and it did not transform into qualitative economic development.
- The progress of globalization and regionalization has yet another important consequence regarding the investment incentive competition. As the integration of markets further intensifies, the competition is likely to occur between more and more countries. This is because all these countries offer similar conditions, and the incentives have a greater weight in the choice between them. Thus policy makers in the WBCs have little room to apply the standard instruments for attracting FDI and they have put the focus on other promotion activities and

measures. But on the other hand, in order to preserve the domestic economies from potential negative behavior of foreign investors, governments should impose precise performance requirements to foreign investors as a precondition for gaining access to the fiscal and other financial benefits.

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Methods of Creating Innovation Indices Versus Determinants of Their Values

Ireneusz Miciuła

Abstract The aim of this paper is to present the methodology of creating innovation indices and to define best practices concerning the effective use of factors determining their values. The analysis of creating innovation indices involved specifying factors which determine the position of a particular country in terms of innovativeness. The analysis of the ranking of EU Member States will enable to study and classify problems and obstacles to innovative activity. Once these factors are identified, general recommendations, whose application will contribute to an increase in the number of innovations implemented and the level of enterprise competitiveness, will be presented.

Keywords Innovation • The European system of metrics • Innovation indices • Determinants ranking of countries

1 Introduction

In the course of economic development of the world, there were changes in the importance of various determinants of development and innovative activity. According to Schumpeter (1960) innovation is the introduction is the introduction of a new product or service which consumers have not yet met or a new variant of a product or service. As well the introduction of a new production method that has not yet been tried in practice in the industry, the opening up of a new market where a particular industry has not yet existed. Also the conquest of a new source of supply or raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created. According to Drucker (1992), innovation is the specific instrument of entrepreneurship and the act that endows resources with a new capacity to create wealth. According to the Oslo methodology, innovation is the implementation of a new or significantly improved product, service or process, including a marketing or organizational method, which redefines the way of working and relations between a company and its surroundings

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(European Commission 2008). In pragmatic terms, innovations are inventions and solutions which are economically viable and can be commercialized. In other words, innovation is new quality on the market which allows for performing particular tasks in a quicker, cheaper and more effective way (Górzycki and Woodward 2004). Currently innovation is treated as a manifestation of knowledge on products and services, which is why its development depends on the existence of a pro-innovative economic, social, cultural, formal and legal environment (Borkowski and Marcinkowski 2004). This is why innovations can be considered in the context of results, i.e. as an effect of technical, social, economic, legal, cultural and organizational processes, or in the context of processes, i.e. as creative thinking processes leading to the application and use of improved solutions in technology, organization and social life.

Innovation is a highly burdened term, both theoretically and empirically. Literature provides many definitions, which are not always precisely worded. The ambiguity of this term stems mainly from the level of considerations, application of various research principles and translations from foreign languages (Miciuła 2015). Definitions of innovation depend on a particular author's cultural context, paradigms, current fashion, customs and linguistic practices. It should be noted, however, that these differences make it possible to extensively explore the complex structure of this concept (Baregheh et al. 2009). On the one hand, the variety of definitions complicates the practical application of the concept of innovation; on the other hand, it provides a more thorough understanding of its complex nature.

2 Methodology of Creating Innovation Indices

Innovativeness of the economy comprises the activity of enterprises, government and self-government authorities, research and development entities and institutions which make up the business environment (Wong et al. 2005). However, innovative economy is not only the sum total of the elements it is composed of, but it is a synergy resulting from broadly understood cooperation based on developed network relations. This is why it is so difficult to create a universal indicator which would concern all factors which show innovativeness in various dimensions (Adams et al. 2006). The level of innovation is therefore measured with the use of various indices which undergo continuous development in parallel to the development of the surrounding innovative reality. The increasing number of indicators and data taken into account is indicative of the need to develop a more accurate (i.e. closer to reality) assessment of the progress in the development of innovativeness in particular economies.

For the purpose of monitoring the level of innovativeness of economies in the European Union under the Lisbon Strategy and the Europe 2020 Strategy, there exists a European system of innovation indicators, whose development is shown in Fig. 1.

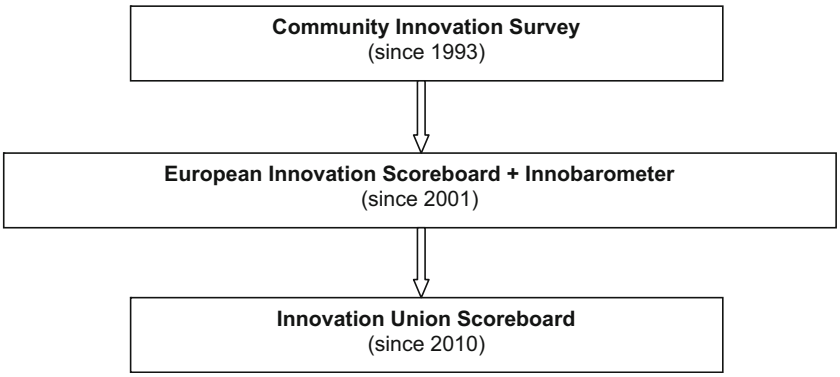

Fig. 1 Development of the European system of innovation indicators. Source: Own work based on Łobejko (2013)

The system of innovation indices in the European Union within the framework of the Innovation Union Scoreboard provides a general overview of 25 indices which can be created on the basis of a higher number of detailed indices (Table 1).

Figure 2 shows the ranking of EU Member States based on the IUS index in 2014.

According to the Innovation Union Scoreboard 2015 ranking, the leaders of innovation in the European Union are the following: Sweden, Denmark, Finland and Germany, whose results rank considerably above the EU average. The following countries are catching up with the leaders: the Netherlands, Luxembourg, Great Britain, Ireland, France and Austria, i.e. countries whose results are above the EU average. Moderate innovators (with results below the EU average) include: Slovenia, Estonia, the Czech Republic, Cyprus, Italy, Portugal, Malta, Spain, Hungary, Greece, Slovakia, Poland and Lithuania. Modest innovators include: Latvia, Bulgaria and Romania.

A very similar methodology is used to determine the Global Innovation Index (GII), which comprises the majority of indicators presented in Table 1, the difference being that it complements certain general categories by assessing e.g. political stability and tax incentives and it is based on a higher number of detailed indices. GII makes a comparison based on a total of 84 criteria and the resulting value ranges between 0 and 100 (Fig. 3).

The Networked Readiness Index (NRI) is an indicator which shows a country's ability to use new information and communications technologies) (Rausas et al. 2011). Every 3 years the World Economic Forum creates rankings of countries from around the world based on NRI. This index makes it easier to understand the impact of ICT on the competitiveness of nations. NRI comprises three elements (World Economic Forum 2015):

1. ICT environment, including elements such as information infrastructure, legal regulations and political situation.
2. Competences and readiness of the community and key stakeholders (individuals, businesses, and governments) to use ICT.

Table 1 Twenty five indices used in the Innovation Union Scoreboard

No.	Index
Research system	
1.	Number of doctorate graduates up to the age of 34 per 1000 population
2.	Share (%) of population aged 30–34 having completed tertiary education
3.	Share (%) of population aged 20–24 having attained at least upper secondary education
4.	International scientific co-publications per million population
5.	Scientific publications among the top-10% most cited publications worldwide as % of total scientific publications of the country (Scopus database)
6.	Non-EU doctorate students as a % of all doctorate students
Finance	
7.	R&D expenditure in the public sector (% of GDP)
8.	Non-R&D innovation expenditures (% of turnover)
9.	R&D expenditure in the business sector (% of GDP)
10.	Venture capital (% of GDP)
Entrepreneurship and relations	
11.	SMEs innovating in-house (% of SMEs)
12.	Innovative SMEs collaborating with others (% of SMEs)
13.	Public-private co-publications per million population (Thomson Reuters database)
14.	SMEs introducing product or process innovations (% of SMEs)
15.	SMEs introducing marketing or organizational innovations (% of SMEs)
16.	Fast-growing enterprises
Economic effects	
17.	Employment in knowledge-intensive activities (% of total employment)
18.	Exports of medium and high technology products as a share of total product exports
19.	Knowledge-intensive services exports as % of total services exports
20.	Sales of new-to-market and new-to-firm innovations as % of turnover
21.	License and patent revenues from abroad as % of GDP
Intellectual property	
22.	International patent applications per billion GDP (in EUR)
23.	International patent applications in societal challenges per billion GDP (in EUR)
24.	Community trademarks per billion GDP (in EUR)
25.	Community designs per billion GDP (in EUR)

Source: Own work based on European Union (2015)

3. Actual usage of ICT among the three basic entities of e-economy (e-commerce, e-government and e-learning).

Table 2 presents the ranking of the top ten countries and selected countries (including Poland) for comparison of NRI index positions in 2015.

When analyzing the ranking of NRI components for Poland in 2015 (1—55th, 2—30th, 3—54th), the focus should be put on the lowest position of the first component. What it indicates is that the greatest room for improvement can be found in the area of legal regulations and political situation and the development of

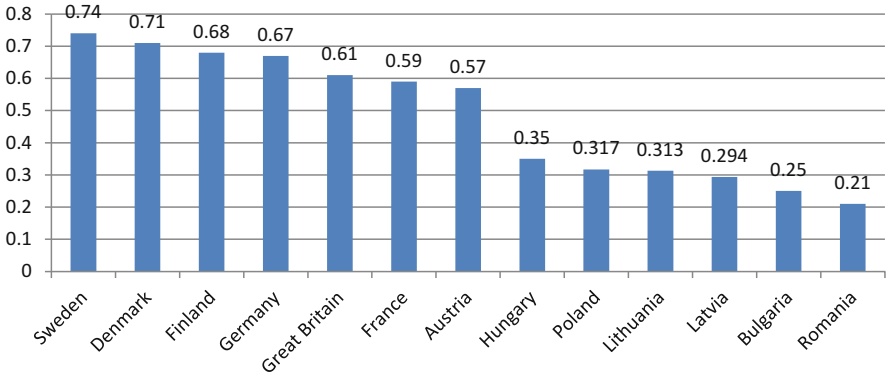

Fig. 2 Innovation Union Scoreboard index in selected EU countries on a scale from 0 to 1 in 2014. Source: Own work based on European Union (2015)

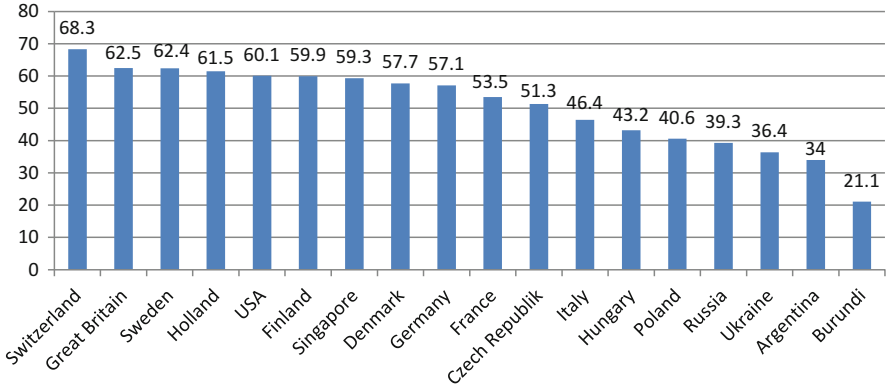

Fig. 3 Ranking of selected countries around the world according to the Global Innovation Index in 2014. Source: Own work based on World Economic Forum (2015)

information infrastructure itself, which is related to the economic aspect of business, especially the costs of purchase and use of the ICT infrastructure. The third component is the application of technology by basic entities of e-economy, including e-government. However, attention should be paid to the positive trend, i.e. the percentage of population using the internet in Poland is constantly increasing. SMG/KRC research indicates that 55.4% of Poles have access to the Internet and use it frequently. This is why Poland ranks 30th in terms of component number 2, i.e. competences and readiness of the community to use ICT.

Literature and international organizations such as NESTA (National Endowment for Science, Technology and The Arts) emphasizes that the methodology of creating innovation indices has a lot of drawbacks and it requires further improvement,

Table 2 Ranking of countries according to NRI in 2015

Position	Country	NRI	Position in 2014
1	Singapore	6.0	2
2	Finland	6.0	1
3	Sweden	5.9	3
4	The Netherlands	5.85	4
5	Norway	5.81	5
6	Switzerland	5.72	6
7	USA	5.64	7
8	Great Britain	5.61	9
9	Luxembourg	5.59	11
10	Japan	5.57	16
13	Germany	5.53	12
26	France	5.2	25
34	Spain	4.7	34
43	The Czech Republic	4.5	42
50	Poland	4.4	54
54	Croatia	4.3	46
55	Italy	4.3	58
62	China	4.2	62
73	Bulgaria	3.97	73
143	Chad	2.30	143

Source: Own work based on World Economic Forum (2015)

also in order to catch up with the changing reality. These indicators include main scientific and technological innovations, which is not sufficient in today's economy. Such a way of measuring innovativeness concerned the period when the linear model of innovation applied. Nowadays, however, the network model of innovation is the prevalent one (Gkypali et al. 2015). It has been pointed out that a significant part of innovations is created outside research and development units and claiming that scientific research and publications directly translate into innovations is a mistake. Moreover, traditional innovation indices prefer innovations in the form of new products and processes resulting from technological progress. Also, there has been a strong criticism of an indicator concerning the number of registered patents and scientific publications available only in a selected database. One of the reasons is that a large number of patents are not commercialized, moreover, patent protection against imitation is ineffective and it is necessary to incur considerable financial outlays. Indicators concerning scientific publications in particular databases are of subjective importance and so is a number of other indicators. Also, the amount of expenditures on innovations should correspond to the level of pay in a particular country because it leads to promoting capital-intensive economies and it is unclear how the amount of expenditures will translate into innovation effectiveness. This is why it has been suggested to put more emphasis on market-related effects of innovation and measurement of activities which contribute to their

achievement. NESTA (2008) distinguishes four types of activities which are included by innovativeness indices, namely:

- innovations which are similar to innovations included by traditional indices, but are still not taken into account in the measurement,
- innovations which are not based on scientific or technical advancement (e.g. such as those related to the organisation of enterprises),
- innovations which are the effect of a combination of already existing technologies and processes,
- local innovations of limited range, which are not included in the measurement of traditional indices.

Quantitative indices show an image of the economy as described by levels of various factors which influence innovativeness, but it is not exactly clear to what extent. This is why this image is a static one and does not include relations among particular factors in the context of cooperation, network relations and increase in social awareness. Current innovativeness in the economy based on knowledge goes beyond enterprises and science as the social sphere becomes a source of innovation, its co-author and its active consumer. Needless to say, the phenomenon of innovativeness is a multi-dimensional one and it is difficult to describe due to a large number of unquantifiable features which cannot be perceived in quantitative categories (Marciniak 1998). However, the existing innovation indices are of qualitative nature. In today's economy innovations permeate all aspects of life, which is why the phenomenon of innovativeness needs qualitative indices to an ever increasing degree. We are now witnessing the development of fourth generation indices which will include qualitative and quantitative indicators.

3 Analysis of Barriers to Implementing Innovations and Determinants of the Growth of Innovation Indices

The need to deal with determinants of the growth of the currently used innovation indices stems from the low level of innovativeness of enterprises in Poland (Mazur 2015). In the years 2011–2013 only 18.4% of industrial enterprises and 12.8% of enterprises from the services sector engaged in innovative activity (GUS 2014). The main determinants of the values of innovation indices established in the analysis of their components include the following areas:

1. Creation and flow of knowledge, i.e. to what extent external and internal sources of knowledge are used.
2. Level of innovativeness defined as the quality of institutions and human resources.
3. Investments in innovations, i.e. availability of finance, including public and private investments, and innovation support programmes.
4. Diversity of innovation at enterprise level.

Table 3 Barriers to innovative activity in surveyed enterprises

Types of barriers	Share in the sample in %
Risk aversion	15.6
Financial barriers	65.6
Internal organizational barriers	26.7
External organizational barriers	30
Barriers in spreading awareness of the need for innovation	13.3
Other mental barriers	12.2

Source: Own work based on Stefański (2008) and Kaczmarek et al. (2009)

5. Openness of the market to innovations, which reflects innovative absorption of stakeholders.
6. Administrative support for innovativeness meaning to what extent the formal and legal system is conducive to implementing innovations.

When defining the main barriers hindering the implementation of innovation in Poland, the results of a survey conducted in Polish enterprises were used. The results are shown in Table 3.

The main barrier to implementing innovations allowing for technological development is the financial barrier, pointed to by over 65% of the surveyed enterprises. The second factor (30%) are external organizational barriers, including formal and legal barriers and tax regulations as well as difficulties in obtaining information about technology and the quality of cooperation with the science sector. External organizational barriers ranked third (26.7%); these include the lack or suitable infrastructure, human resources or not a very innovative nature of a company's activities. The high number of references to mental barriers and the need for innovation should also be taken into consideration. There emerges an image of Polish enterprises which are convinced that it does not pay off to invest in innovations. Undoubtedly many of the barriers described above result from the current state of the Polish economy and its position in relation to West European countries. According to social surveys, Poles stand out with their intelligence and creativity (third place among EU countries), however, in terms of the number of registered patents or implemented technologies, we are among the last countries in the ranking. This is why it is important to remove financial, legal and political barriers and create institutional infrastructure conducive to the development of innovativeness among Polish enterprises. This will be possible once the system in Poland no longer focuses on migration of brains and inventions abroad and starts creating an innovation-friendly legal and financial system.

4 Conclusion

Innovation policy is one of the elements of a country's economic policy (Kanter 2000). The existing innovation policy should support broadly understood innovations, diffusion of technology and active involvement in network cooperation,

including among public institutions to create conditions which are conducive to innovation. The most important recommendations following from the analysis in the article are the following:

- shaping and developing the ability to introduce innovations (in the broad sense, including in the following areas: technology, organisation, education, etc.)
- shaping a formal and legal system which is conducive to innovation,
- shaping a favourable financing system and increasing outlays on R&D while striving to increase the efficiency of application and optimum use of innovation as the main factor determining social and economic growth and development,
- creating an atmosphere in which science, technology and economy become interconnected,
- creating a high absorption capacity of the economy,
- taking advantage of international cooperation and globalisation processes in the economy.

The above measures will affect the stimulation of the creation of innovations and their implementation and popularisation among consumers. Measures leading to an increase in innovativeness in Poland should involve the analysis of factors influencing the growth of currently used innovation indices and dynamic elements which make up what we call innovativeness. This positively impacts competitiveness of the whole economy and the level of social wealth.

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Part III
Growth and Development

Total Factor Productivity Growth and Capacity Utilization in Manufacturing Industries in India

Rajiv Khosla and Rajinder Singh Bawa

Abstract Structural and economic transformation takes place during the course of economic development. Generally, these changes are associated with the shift in economic activities from agricultural sector towards non-agricultural sectors. It is attributed to the fact that there are bleak prospects of employment after a point in the agricultural sector that ultimately shifts the trajectory of development towards industrialization and services sectors. However, in the Indian context, industrial offtake remained slow. Since 1950–1951, the contribution of industrial sector has doubled only to hover around 28% of GDP. Moreover, it has failed to offer large-scale employment to the labor force in the economy. Hence, present study is undertaken to assess the industrial performance and its prospects in future in terms of nature of industries, productivity and capacity utilization since 2000–2001.

Keywords Development • Employment • Service sector • Industries • Productivity • Capacity utilization

1 Introduction

Industrialization is considered to be the key driver of structural change and economic growth in discourse of economic development (Kaldor 1967). Increasing the level of income through increased industrialization is reckoned as a tested tool of development, since ages, and the same is followed by most of the developing economies today. A look at the history of almost all the developed economies of the world today reveal one thing in common, that is, in their initial stages of development they added value to the raw commodities. Once the basic level of industrialization is reached, economic activities diversified over a wide range of

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areas (Kuznets 1959). To the extent industrial sector in India is concerned, it has passed through four stages, each of which has its own features that are discussed in the following paragraphs.

In the first phase i.e. from 1951 to 1965, Indian industry grew at respectable rates (7.7% per annum) attributable particularly to the extension of protectionist policy and substantial public investment (Patnaik 1979). However, in the second phase i.e. from 1965 to 1980 industrial growth receded and witnessed a growth of 4% per annum only. Economists like Ahluwalia (1991), Majumdar (1996), Patnaik (1999), Mitra (1999) etc. explored the reasons for slow growth and found that the reasons constituted primarily the decrease in agricultural incomes due to back to back droughts in the year (leading to lesser demand for industrial goods by the agriculturist class), slowdown in public investment owing to decline in foreign aid, movement of inter-sectoral terms in favor of agriculture against industry and poor management of infrastructural sectors.

The third phase from 1981 to 1991 registered a growth of 7.4% attributed to some degree of liberalization, improvement in public investment and performance of public sector. Overall, the process of liberalization concocted in 1980s started bringing positive results in the industrial growth but not without balance of payments problem. Hence, the fourth phase that started from 1991 completely redesigned the Industrial Policy 1991 in order to suit the liberalization regime i.e. focusing more on dismantling the regulatory system, development of capital markets, investment in research and development, building competitiveness etc. The policy was enacted in a way to free the industry from the shackles of bureaucratic controls. Compulsory licensing was dropped for majority of the industries except eighteen industries that eventually came down to five. Thus, since the year 1991–1992, when industrial growth was low (not even one percent), three planks i.e. liberalization, privatization and globalization propelled fusion into the Indian economy thereby bringing 6% average annual growth rate for the decade ending 2001–2002 (average 7% from 1991–1992 to 2015–2016).

Though the policy-makers in 1991 anticipated better opportunities for employment in all the sectors in the liberalized regime, yet the scholars feel that Indian industrial sector has failed to provide employment to a large labor force in the country (Patnaik 1999). To be precise, only 22.73% of the total workforce is employed in industrial sector in India. (Economic Advisory Council 2015). Besides, between the years 2006 and 2012, employment in private manufacturing and construction sectors increased at a paltry rate of 1.5% per year (Jhunjhunwala 2016). In terms of percentage share in GDP also, industrial sector remained unsuccessful to register any significant increase in the post liberalization period (Table 1). Percentage share of industrial sector in India's GDP that was 14.5% in 1950–51 could barely manage to double even after six decades. On the other hand, share of services sector increased more than double (in terms of share in GDP) from 25.9% in 1950–1951 to 59.9% in 2013–2014. However, the increase in services sector failed to impress in terms of employment as it has been able to provide employment to only 24.41% of the workforce (Economic Advisory Council 2015). It indicates that a large chunk of employment (53%) is still being provided by the

Table 1 Percentage share of different sectors in India's GDP in different years

Year	Share of agriculture and allied activities	Share of industrial sector	Share of services sector
1950–1951	59.6	14.5	25.9
1960–1961	55.1	17.3	27.6
1970–1971	48.5	20.5	30.9
1980–1981	41.5	21.6	36.9
1990–1991	35.1	21.2	43.7
2000–2001	22.4	26.5	51.1
2010–2011	14.6	27.9	57.5
2011–2012	14.4	28.2	57.4
2012–2013	13.9	27.3	58.8
2013–2014	13.9	26.2	59.9

Source: Planning Commission (2014)

agricultural sector. But the plummeting share of agricultural sector in India's GDP along with the limited capability of the services sector to generate employment necessitates the need for the industrial development at a war footing pace in India.

However, haphazard industrialization will not serve the purpose in a country like India wherein capital is already scarce. Thus, it calls for assessing the economic performance of industries in different states in terms of selected economic parameters and to determine the capacity utilization for achieving fuller utilization of existing capacity. Since, three-fourth of the Index of Industrial Production (IIP) constitutes the manufacturing industries, factor productivity and capacity utilization of manufacturing industries are evaluated. Study aims to fulfill the following objectives: to analyze the trends in growth of manufacturing industries across Indian states, to examine the productivity and capital intensity of manufacturing industries in different states of India and to find out the capacity utilization of manufacturing industries in different states of the union.

2 Data and Methodology

Present study is carried out for the years 2000–2001 to 2013–2014. Data for the present study is taken from the supplement to Annual Survey of Industries, issued by Central Statistical Organization, New Delhi for different years. The study is organized into six sections. Section 1 is introductory in nature. Section 2 shows the database and methodology related to the concepts and variables used in the study. Dominance and growth of gross value added and gross fixed capital stock of manufacturing industries in different states of India are discussed in Sect. 3. Labor productivity, capital productivity, capital intensity and Total Factor Productivity Growth for manufacturing industries in different states of India are discussed

in Sect. 4. In Sect. 5, capacity utilization of industries in different states of the union is highlighted. Whole discussion is summed up in Sect. 6.

The study is conducted for the aggregates of all industries for a state and capacity utilization is taken as a benchmark in measuring the performance on the assumption that all the industries in each state behave alike. For analyzing the dominance, growth, productivity, capacity utilization and capital intensity of manufacturing industries of different states, data is collected from secondary sources (stated above). In order to analyze the secondary data, statistical techniques such as coefficient of correlation, regression, growth rate, etc. are estimated for the period of study taken. To offset the effect of inflation, all the value figures are deflated with the help WPI index and expressed at 2004–2005 prices. Compound growth rates of different industries in terms of gross value added and gross fixed capital stock during the time period 2000–2001 to 2013–2014 are studied by computing the compound growth rate through principle of least squares, using following formula:

$$\text{Log Y} = \text{Log a} + (\text{Log b})\text{t} \tag{1}$$

Further, productivity being a matter of concern and curiosity in sound decision making, partial or single factor productivity i.e. the ratio of output to a particular input in terms of labor, capital and capital intensity is studied. Labor productivity is taken as the ratio of output to the corresponding input of labor, labor being measured as number of employees engaged.

$$\textit{Labour Productivity} = \frac{\textit{Output}}{\textit{Labour Inputs}} \tag{2}$$

Capital productivity is taken as the ratio of output per unit of capital. Here, we have taken gross fixed assets at constant price as a measure of capital input.

$$\textit{Capital Productivity} = \frac{\textit{Output}}{\textit{Capital Inputs}} \tag{3}$$

An increase in amount of capital invested per person generally leads to an increase in the productivity of labor. But an excessive capital implies unutilized capacity and wastage of investment which calls for the study of capital intensity in the manufacturing industries. Symbolically, capital intensity is calculated as:

$$\textit{Capital Intensity} = \frac{\textit{Real Gross Fixed Capital}}{\textit{Total Number of Employees}} \tag{4}$$

For estimating the Total Factor Productivity Growth, Translog Index has been used.

$$\begin{aligned} \log V(T) - \log \bar{V}(T-1) = \bar{V}_K \big[\log K(T) - \log K(T-1) \\ + \bar{V}_L [\log L\,(T) - \log L\,(T-1)] \end{aligned} \tag{5}$$

Where

$$\bar{V}_K = \frac{1}{2}[V_K(T) + V_K(T-1)] \tag{6}$$

And

$$\bar{V}_L = \frac{1}{2}[V_L(T) + V_L(T-1)] \tag{7}$$

V_K and V_L are the income shares of capital and labor respectively. Perpetual inventory accumulation method is used to generate the capital series. Capital stock at any year is calculated as:

$$K_t = K_0 + \sum\nolimits_{t=1}^{T} \mathrm{I}_t \tag{8}$$

Where, $\mathrm{I_t}$, is investment in time period t and K_0 is the capital stock for benchmark year, i.e. 2004–2005. Investment figures were obtained using the formula:

$$I_t = \left(B_t - B_{t-1} + D_t\right)/R_t \tag{9}$$

Where, B is book value of fixed capital, D is depreciation and R is the wholesale prices index of industrial machinery (base 2004–2005 = 100).

To measure the capacity utilization, the present study uses minimum capital-output ratio criteria. In this method, the lowest observed capital output ratio is considered as capacity output. As per this method, capacity utilization can be measured as follows:

$$\left\{U = \frac{O}{\hat{C}} \times 100\right\} \tag{10}$$

$$\hat{C} = \frac{C}{C/O\ min} \tag{11}$$

U = Capacity Utilization
O= Gross Value Added
$\hat{C}$ = Estimate of Capacity
C = Gross Fixed Capital
C/O min = Minimum Capital-Output Ratio

The estimate of capacity is obtained by dividing gross fixed capital stock by minimum capital-output ratio. The utilization rate is given by actual output as a proportion of estimated capacity.

3 Dominance and Growth of Manufacturing Industries

Since value addition and invested capital are the important indicators exhibiting the importance of manufacturing industries, dominance, growth and correlation between gross value added and gross fixed capital in different states of India is ascertained in this section. Percentage share of different industries in terms of gross value added and gross fixed capital are highlighted in Table 2. It is evident that Maharashtra, Tamil Nadu and Gujarat remained the top three dominating states in terms of both the gross value added and gross fixed capital in the years taken for this study. To be specific, in terms of gross value added, percentage share of these three states remained more than 45.39% (2000–2001) and 45.54% (2013–2014), indicating the inequalities persisting in terms of gross value added in the manufacturing sector of India. Diagonally opposite remained the case of bottom three states i.e. Jammu and Kashmir, Bihar and Delhi (Uttarakhand in 2000–2001) whose share remained lower than 2% in the total gross value added. Similarly, in case of gross fixed capital, once again Maharashtra, Tamil Nadu and Gujarat remained the

Table 2 Percentage share of different states in terms of gross value added and gross fixed capital

	Gross value added		Gross fixed capital	
State	2000–2001	2013–2014	2000–2001	2013–2014
Andhra Pradesh	6.21	5.75	6.57	8.60
Assam	0.90	0.85	1.35	0.61
Bihar	0.50	0.54	0.39	0.34
Chhattisgarh	1.70	2.26	1.64	2.64
Delhi	1.29	0.78	0.58	0.25
Gujarat	12.89	14.40	18.01	16.12
Haryana	3.98	4.11	3.57	3.07
Himachal Pradesh	0.87	2.50	0.84	2.02
Jammu and Kashmir	0.11	0.43	0.09	0.22
Jharkhand	2.83	2.32	3.90	2.98
Karnataka	5.73	6.27	6.50	7.06
Kerala	2.34	1.41	1.72	0.99
Madhya Pradesh	4.16	2.07	3.52	3.55
Maharashtra	21.13	21.16	17.03	13.93
Orissa	1.73	2.72	2.81	8.60
Punjab	2.95	2.58	2.18	1.70
Rajasthan	3.62	3.29	3.43	3.04
Tamil Nadu	11.37	9.98	9.48	11.45
Uttar Pradesh	6.95	6.00	8.66	4.38
Uttarakhand	0.62	3.93	0.47	2.33
West Bengal	3.99	2.58	4.30	3.39
Others	4.12	7.84	2.98	3.20
All India	100	100	100	100

Source: Central Statistical Organization (2002, 2015)

top three dominating states and their percentage contribution remained more than 40%. A comparison of top three states with the bottom three states exactly sketched the same picture as in gross value added. Further, not more than 1% is contributed by the bottom three states in the gross fixed capital of India. For highest growth rate (Table 3), top states remained Uttarakhand, Orissa, Jammu and Kashmir, Himachal Pradesh and Chhattisgarh both in terms of gross value added and gross fixed capital. However, not only the fastest growing states are common, rather, cohesion is also found in slow growing states (Delhi, Jharkhand and Kerala). On the whole, as many as eleven states have registered a growth rate less than all India growth rate in terms of gross value added. Similarly, for the gross fixed capital, twelve states experienced a growth rate less than the all India growth rate. A comparison of results in Tables 2 and 3 reveal that dominant states in terms of gross value added and gross fixed capital at all India level share little correlation.

An endeavor is made to examine the association between the gross fixed capital stock and gross value added for the manufacturing industries at all India level. For this purpose, we have used simple correlation analysis and the results are given in Table 4.

Table 3 Growth of different manufacturing industries in terms of gross value added and gross fixed capital

States	Gross value added	Gross fixed capital
Andhra Pradesh	15.67	13.10
Assam	7.25	13.30
Bihar	12.39	14.32
Chhattisgarh	17.39	16.10
Delhi	6.79	9.72
Gujarat	12.56	14.63
Haryana	12.24	13.99
Himachal Pradesh	20.79	22.66
Jammu and Kashmir	21.34	25.21
Jharkhand	11.31	12.11
Karnataka	14.13	14.46
Kerala	9.10	9.69
Madhya Pradesh	13.54	8.21
Maharashtra	11.84	13.74
Orissa	22.90	17.47
Punjab	11.46	12.65
Rajasthan	12.50	12.95
Tamil Nadu	15.00	12.68
Uttar Pradesh	8.07	12.53
Uttarakhand	27.26	29.74
West Bengal	11.56	10.23
Others	14.05	19.06
All India	13.46	13.73

Source: Central Statistical Organization (2002, 2015)

Table 4 Correlation between shares of manufacturing industries in gross value added and gross fixed capital

	Gross value added	Gross fixed capital
Gross value added	1.000	0.864**
Gross fixed capital	0.864**	1.000

**Correlation is significant at the 0.01 level (2-tailed)

It is observed from the table that a highly positive (86%) and significant association exists between the two variables. Thus, an increase in capital stock is expected to bring a significant influence in the value added. A key dynamic feature in growth analysis today is productivity. In general, literature on economic growth establishes a direct and positive relationship between productivity change and rate of growth of output. In the next section, partial productivity ratios and total factor productivity growth in the manufacturing industries are discussed.

4 Labor Productivity, Capital Productivity, and Capital Intensity in Manufacturing Industries

Productivity is considered to be a good proxy of efficiency. In this section, we endeavored to find out the estimates of labor productivity, capital productivity and capital intensity among different Indian states for the years 2000–2001 and 2013–2014. It is evident from Table 5 that fair degree of variation is experienced among Indian states in terms of consistency in performance for the three parameters taken. While some states have exhibited rapid and phenomenal performance, rest lagged behind the all-India productivity. It may be seen that in case of labor productivity Gujarat, Himachal Pradesh and Maharashtra.

In case of capital productivity, five states i.e. Delhi, Bihar, Punjab, Kerala and Jammu and Kashmir that topped in capital productivity in the year 2000–2001 topped in the year 2013–2014 also. Further, Orissa, Jharkhand and Chhattisgarh continued to figure amongst low performing states in the year 2000–2001 as well as in 2013–2014. Similarly, for capital intensity, Gujarat, Orissa, Jharkhand and Chhattisgarh dominated other states, while Delhi, Kerala, Punjab and Bihar continued to perform dismally in both time periods.

An attempt is made to figure out the association among capital intensity, labor productivity, capital productivity and gross value added of the manufacturing industries indifferent state. For this purpose, multiple correlation among these variables is estimated for manufacturing sector as a whole and results are presented in Table 6. It is observed that capital intensity has a positive correlation (0.37) with labor productivity implying that growth in capital intensity has a capacity to influence the growth in labor productivity. It is also found that capital intensity has a negative correlation with capital productivity. It is worked out to be −0.64 implying that an increase in capital intensity in the manufacturing sector is virtually leading

Table 5 Labor productivity, capital productivity and capital intensity in different Indian states

	Labor productivity		Capital productivity		Capital intensity	
	2000–2001	2013–2014	2000–2001	2013–2014	2000–2001	2013–2014
Andhra Pradesh	4.34	21.96	2.15	1.98	2.02	11.08
Assam	4.99	19.84	1.49	3.68	3.35	5.39
Bihar	7.41	31.26	4.27	6.34	1.74	4.93
Chhattisgarh	8.49	40.95	1.79	1.58	4.75	26.00
Delhi	7.62	33.79	5.70	9.38	1.34	3.60
Gujarat	10.93	57.58	1.64	3.00	6.68	19.19
Haryana	9.54	31.06	2.88	3.79	3.31	8.20
Himachal Pradesh	10.57	33.06	1.78	1.95	5.95	16.93
Jammu and Kashmir	3.71	22.46	3.54	4.11	1.05	5.46
Jharkhand	7.14	37.04	1.14	1.43	6.27	25.95
Karnataka	6.27	30.80	1.64	2.48	3.83	12.44
Kerala	5.47	23.94	3.58	5.19	1.53	4.61
Madhya Pradesh	9.30	33.58	2.40	1.87	3.88	17.99
Maharashtra	10.13	36.66	2.50	3.01	4.05	12.19
Orissa	6.61	30.14	1.09	0.56	6.09	53.91
Punjab	6.27	19.86	3.71	4.32	1.69	4.60
Rajasthan	8.52	29.72	2.07	2.81	4.12	10.58
Tamil Nadu	5.85	21.30	2.52	2.33	2.33	9.14
Uttar Pradesh	7.72	29.23	1.72	3.73	4.47	7.84
Uttarakhand	7.27	29.44	2.41	2.99	3.02	9.85
West Bengal	4.42	27.49	2.10	3.20	2.10	8.59
Others	13.26	27.61	2.83	2.94	4.69	9.40
All India	7.45	31.22	2.13	2.58	3.49	12.09

Source: Central Statistical Organization (2002, 2015)

Table 6 Correlation matrix—total manufacturing sector of India

	Capital intensity	Labor productivity	Capital productivity	Gross value added
Capital intensity	1.000			
Labor productivity	0.37	1.000		
Capital productivity	−0.64	−0.11	1.000	
Gross value added	0.03	0.40	−0.22	1.000

Table 7 Summary of regression between capital intensity and labor productivity

	Coefficients				
	Unstandardized coefficients		Standardized coefficients		
	B	Std. error	Beta	t	Sig
Constant	26.75	2.55		10.50	0.001
Capital intensity	0.28	0.15	0.37	1.83	0.04

Dependent variable: Labour productivity

to a decrease in capital productivity. Further, capital intensity and gross value added are found to be positively correlated. The correlation coefficient between the two is 0.03. This implies that growth in capital intensity in manufacturing industries can contribute to the growth in gross value added of manufacturing sector.

The correlation coefficient between labor productivity and gross value added of manufacturing industries is also found to be positive and it is worked out to be 0.40 implying that growth of labor productivity directly influences the gross value added. It will not be wrong if construed that investment in small sized plants can be more functional as they generally employ labor oriented techniques. Further, labor productivity and capital productivity are negatively correlated to each other and the correlation is worked out to be −0.11. It is also observed from the table that capital productivity and gross value added in manufacturing industries are negatively correlated. Further, we have regressed labor productivity index on capital intensity index for total manufacturing sector to ascertain whether the former is explained by the latter (Table 7). The results show that capital intensity explains labor productivity. In brief, it can be said that capital intensity facilitates increase in labor productivity in manufacturing industries.

Since, partial productivity alone does not give a complete of Indian manufacturing, it is necessary to have a true picture of Indian manufacturing by way of total factor productivity.

In general, total factor productivity growth is referred to as the difference between growth of output and the growth of a combination of all factor inputs (usually, labor and capital). Estimates of total factor productivity growth for different states are shown in Table 8. These estimates are based on the Translog index. Total factor productivity growth rates are shown figured at the top whereas the hill

Table 8 Total factor productivity growth in manufacturing industries in different states of India

States	TFP
Andhra Pradesh	0.154
Assam	0.151
Bihar	0.138
Chhattisgarh	0.122
Delhi	0.251
Gujarat	0.126
Haryana	0.177
Himachal Pradesh	0.087
Jammu and Kashmir	0.095
Jharkhand	0.173
Karnataka	0.134
Kerala	0.186
Madhya Pradesh	0.227
Maharashtra	0.179
Odisha	0.116
Punjab	0.237
Rajasthan	0.163
Tamil Nadu	0.159
Uttar Pradesh	0.177
Uttarakhand	0.073
West Bengal	0.158
Others	0.261
All India	0.157

Source: Central Statistical Organization (2002, 2015)

states i.e. Uttarakhand, Himachal Pradesh, Jammu and Kashmir along with Orissa and Chhattisgarh performed below par.

Relative contributions of productivity growth and factor input growth in the growth of gross value added of manufacturing sector in different states of the economy are presented in Table 9. It is evident from the table that growth in real value added in manufacturing sector is largely accounted by the growth of factor inputs such as labor and capital and mainly labor input. The impact of total factor productivity growth on the growth of real gross value added is found to be low. From this analysis, it can be argued that growth in value added in manufacturing industries in India is driven by the growth in the accumulation of factor inputs-labor and capital in the production process rather than by increase in overall efficiency in factor use/productivity. In other words, growth in value added is attributable to an increase in the quantity of factor inputs (labor) and not by the quality or efficiency with which these factor inputs are used. The above findings imply that contribution of technological process/efficiency in factor use to growth performance of manufacturing industries in India remained low.

This discussion takes us to the conclusion that there is a wide spread variation among Indian states in terms of consistency in performance for the selected

Table 9 Growth rates of real gross value added, labor, capital and total factor productivity

State	Gross value added	Labor productivity	Capital productivity	Total factor productivity growth
Andhra Pradesh	13.10	12.28	−0.59	0.154
Assam	13.30	10.36	6.67	0.151
Bihar	14.32	10.83	2.86	0.138
Chhattisgarh	16.10	11.89	−0.89	0.122
Delhi	9.72	11.22	3.62	0.251
Gujarat	14.63	12.60	4.41	0.126
Haryana	13.99	8.80	1.98	0.177
Himachal Pradesh	22.66	8.49	0.65	0.087
Jammu and Kashmir	25.21	13.73	1.07	0.095
Jharkhand	12.11	12.48	1.63	0.173
Karnataka	14.46	12.04	3.00	0.134
Kerala	9.69	11.12	2.69	0.186
Madhya Pradesh	8.21	9.60	−1.77	0.227
Maharashtra	13.74	9.62	1.33	0.179
Orissa	17.47	11.45	−4.65	0.116
Punjab	12.65	8.58	1.09	0.237
Rajasthan	12.95	9.33	2.21	0.163
Tamil Nadu	12.68	9.67	−0.56	0.159
Uttar Pradesh	12.53	9.98	5.68	0.177
Uttarakhand	29.74	10.51	1.55	0.073
West Bengal	10.23	13.95	3.05	0.158
Others	19.06	5.38	0.27	0.261
All India	13.73	10.78	1.38	0.157

Source: Central Statistical Organization (2002, 2015)

parameters. Further, there is a positive relationship between value addition, labor productivity and capital intensity. It clearly signifies that capital deepening in India can kill two birds in one shot i.e. enhance labor productivity as well as generate additional employment opportunities in the state. In the next section, we have tried to find out if there is any production capacity that can be gainfully utilized to generate employment.

5 Capacity Utilization in Manufacturing Industries in India

Table 10 shows the extent of capacity utilization in the manufacturing sector across Indian states. It is observed from the table that the rate of capacity utilization varied between 47% (Bihar) and 89% (Tamil Nadu) in the given time period. Capacity utilization remained high in Tamil Nadu followed by Kerala (88.45%), Gujarat

Table 10 Capacity utilization in manufacturing industries in different states of India (in percent)

State	Capacity utilization
Andhra Pradesh	74.46
Assam	75.01
Bihar	47.23
Chhattisgarh	66.07
Delhi	76.46
Gujarat	81.50
Haryana	81.08
Himachal Pradesh	61.97
Jammu and Kashmir	63.49
Jharkhand	48.84
Karnataka	70.05
Kerala	88.46
Madhya Pradesh	72.34
Maharashtra	76.28
Odisha	59.89
Punjab	57.75
Rajasthan	67.39
Tamil Nadu	88.67
Uttar Pradesh	76.31
Uttarakhand	54.91
West Bengal	80.24
Others	72.61
Average	70.50

Source: Central Statistical Organization (2015)

(81.49%) and Haryana (81.08%). Rate of capacity utilization on the whole remained 71% for the time period 2000–2001 to 2013–2014.The states where capacity utilization remained low constituted Jharkhand (48.84%), Uttarakhand (54.91%), Punjab (57.75%) and Odisha (59.89%). As many as 11 states witnessed the capacity utilization rate above the average rate. It point towards the scope for increasing the value added by utilizing the entire capacity. Low capacity utilization is not only adversely affecting the industrial scenario in particular state, rather, throughout the economy as well. It calls for taking emergent steps to utilize the entire capacity thereby increasing production in the manufacturing sector of India.

6 Conclusions and Recommendations

History of advanced economies reveal one thing in common, that is, they have reached the existing levels through value addition in raw commodities in the initial stages of their development, diversifying the industrial activities later. To the extent, industrialization in Indian economy is concerned, it has remained slow

and its contribution to the GDP remained 26–28% in recent years. Also, it has failed to offer any solution to the large unemployed large labor force in the country. Despite that, balanced development of industrial sector is seen as a catalyst to provide solution to the problems of Indian economy. The study assessed India's industrial performance and its potential with respect to major economic indicators like dominance, growth, productivity, capital intensity, capacity utilization etc.

Overall, the results pointed out that an increase in capital stock can bring a corresponding increase in the value added in manufacturing sector in India. Further, direct relationship is found between the labor productivity and gross value added implying that an increase in labor productivity can increase the gross value added thereby necessitating the investment in small sized plants which can be more instrumental in employing labor. Not only this, capital intensity (amount of capital invested per person) is found to be facilitating increase in labor productivity. Largely, the capacity utilization in manufacturing industries in India remained 71% that point towards the prospects of an increase in value added by utilizing the entire capacity. Although no straight forward results about the performance of manufacturing industries in different states of the union could be deduced (as there are no set of states that are common in all the indicators studied), yet, on the basis of empirical results we can assert with reasonable level of confidence that states like Gujarat, Maharashtra, Tamil Nadu and Kerala (all legendary port states) continue to lead the overall scenario in the economy. States like Jharkhand, Chhattisgarh, Himachal Pradesh and Uttarakhand (all have extended fiscal incentives) have improved their position in few indicators vis-à-vis previous years but need to improvise considerably in terms of others. Punjab, Delhi, West Bengal and Karnataka seems to have lost the momentum and are pushed backward now to figure amongst the laggard states along with customary Bihar and Jammu and Kashmir states. A series of recommendations on the basis of analysis are being given for the robust development of the manufacturing industries in the economy as a whole.

Prima facie, we must admit that liberalization policy in the Indian economy that was initiated to increase the share of capital goods in the industrial sector by the private and foreign entrepreneurs has not yielded the desired results (Patnaik 2016). Moreover, the relative share of capital goods industries has also not picked up vis-à-vis consumer goods industries. Even in terms of exports, Indian economy is dealing with the "low-tech products" or "resource-based exports" vis-à-vis other Asian economies that with the passage of time have transformed themselves into the exporters of light and heavy manufactured goods with the help of domestic industries. It is recommended that a structural transformation alongwith technological competence should take place towards capital goods in the Indian manufacturing. Keeping in mind, the vacuum created by the withdrawal of public sector as well as the inefficiency of private and foreign players to fill the void, it becomes imperative to foster the transformation through public sector (Subrahmanya 2014).

Apprehension may rise that creation of capital goods may lead to the use of labor saving technology which is not suitable for an economy like India. But, exposition of private or foreign players also cannot offer any solution to this problem rather than aggravating the problem. Hence, it is further recommended to divide the

industries into three categories on the basis of number of jobs created i.e. highly capital intensive, medium capital intensive and labor intensive. High rate of taxes should be charged from the industrial units that are highly capital intensive whereas low rates from medium capital intensive and finally rebates and concessions should be extended to the labor intensive units. Now if a private or foreign unit want to figure in the highly capital intensive category, it should be welcomed.

Yueh (2015) pointed out that sustainable economic growth takes place through an improvement in the level of education and skills of the workforce. China was successful in building a strong manufacturing economy because the human capital contributed to 11–15% in its growth. Taking cue from China, Indian manufacturing needs to be strengthened on two points i.e. through skill development of existing workers and innovations. It is because the projections are that in the days to come we shall have to compete not only with the highly innovative advanced economies rather low-cost poorer countries like Bangladesh, Vietnam and Indonesia as well. Hence, it becomes imperative that mandatory provisions are made for imparting skills to the employees in manufacturing units in annual in-house training through collaboration with the premier institutes like National Skill Development Council. Building up of strong intellectual property framework will also facilitate the culture of innovations that will help us to move up in growth. Pertinently, in 2013–2014, India filed only 1394 patents while its counterpart China 25,539.

Lastly, India should move ahead from 'Make in India' to 'Design and Develop in India'. Efforts should be on to minimize bureaucratic complications to provide speedy clearances and compliance formalities. A manufacturing unit in India, on an average has to comply with nearly 70 regulatory laws along with multiple inspections besides filing more than 100 returns annually. This multitier regulatory framework needs to be replaced with simplified submission of one annual comprehensive return. Such efforts would actually lead to sustainable industrial development that will offer a solution to the persisting problems.

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Relations Among Social and Economic Order in European Union Countries

Adam P. Balcerzak and Michał Bernard Pietrzak

Abstract The article concentrates on the problem of sustainability at country level in European Union. Special attention is given here to the relations between two pillars of sustainable development concept: social order and economic order. Thus, the aim of the article is to analyze relationship between the social and economic spheres for European Union members states. The concept of sustainability and its pillars are considered as a multiple-criteria and latent phenomenon. As a result they are analyzed with application of structural equation modeling (SEM). The applied methodology includes confirmatory factor analysis and path analysis. SEM model was used here as it enables to analyse the interrelations between latent variables, which are the result of influence of many factors. The research is conducted with application of data provided by Central Statistical Office of Poland for the years 2004–2013. The applied model enabled to confirm significant influence of the social order on the economic order.

Keywords Social order • Economic order • Structural equation model (SEM) • Sustainable development • European Union countries

1 Introduction

The article relates to the concept of sustainability, which is currently considered as the main policy objective in the European Union countries both at macroeconomic and regional level (see European Commission 2010; Balcerzak 2015). The research is based on three main assumptions. First, it is assumed that the phenomenon of sustainable development should be analyzed form the institutional perspective (see Usubiaga et al. 2012). Then, it is taken that it is a multidimensional concept, which

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in spite of qualitative character, can, and should be quantified with application of multiple criteria decision analysis or multiple-criteria analysis tools (Diaz-Chavez 2014; Pietrzak 2016; Balcerzak 2016a, b; Balcerzak and Pietrzak 2016a, 2017a). In the end, it is assumed that pillars of sustainable development should be described and quantified as latent variables.

The research concentrates on two spheres of sustainability concept: (a) a social sphere or social order; (b) an economic order. The analysis is conducted for the European Union countries at macroeconomic level. In the research the environmental issues are not taken into consideration, as they are the most common subject of analysis in the case of sustainable development factors measurement (see Diaz-Chavez 2014). The analysis can be considered as a proposal of quantitative research within new institutional economics framework (see: Davis and North 1971; North 1990; Anderson and Francois 2008; Balcerzak 2009; Balcerzak and Pietrzak 2016b).

The aim of the paper is to propose an approach for quantification of the social and the economic order and to assess directions and strengths of relations between them for 24 European Union member states in the years 2004–2013. The research hypothesis is the following: Within the European Union institutional framework, the positive change in the social order significantly influences the economic order.

The article is a continuation of previous research of the authors devoted to the problem of sustainability determinants in the European Union countries at national and regional level, where the authors treat the concept of sustainable development as a multiple criteria decision analysis (MCDA) problem. Balcerzak and Pietrzak (2016c) used TOPSIS method for comparative research of the level of sustainable development in the EU member states. Pietrzak and Balcerzak (2016a) concentrated on the Central European countries and they applied Hellwig (1972) method of development pattern to assess the progress achieved by the new member states in the field of implementing the concept of sustainability after joining the European Union. The macroeconomic perspective was also taken by Balcerzak and Pietrzak (2017b), where SEM methodology was used for measurement of the level of sustainable development in the EU countries. In this paper, an external model was applied for proposing the ratings of the EU member states in the years 2004–2013. On the other hand, the regional perspective for Poland was taken in Pietrzak and Balcerzak (2016b), where the research confirmed still present noticeable disparities between western and eastern part of the country. This result was consistent with the analysis of conditional β-convergence in Poland for two spatial regimes and application of a spatial switching regression model (Pietrzak and Balcerzak 2017).

2 Structural Equation Modeling Methodology

In the article two pillars of the sustainability concept and potential relations between them are analyzed. As it has been already pointed the idea of sustainable development and its pillars should be treated as a multiple-criteria phenomenon

(Pietrzak et al. 2013, 2014, pp. 135–144; Sekuła and Śmiechowicz 2016; Łyszczarz 2016; Balcerzak and Pietrzak 2016d; Małkowska and Głuszak 2016; Jantoń-Drozdowska and Majewska 2016), which can be additionally treated as a latent variable. Such economic phenomena can be analyzed with application of structural equation modeling (SEM), as it enables to quantify latent variables, and additionally it allows to verify potential relations between them. These factors are usually considered as the main advantages of SEM methodology.

The main idea of SEM is based on the combination of a confirmatory factor analysis and casual-effect models. The confirmatory factor analysis enables to identify and measure the latent variables, whereas the causal-effects analysis allows to measure the relations between the variables (see Loehlin 1987; Bollen 1989; Kaplan 2000; Pearl 2000; Brown 2006; Byrne 2010; Pietrzak et al. 2012; Balcerzak and Pietrzak 2016e).

The SEM model consist of two components: (a) an external model; (b) an internal model. In the case of the first one the confirmatory factor analysis for the latent variables is conducted. The former one is the causal-effect econometric model, which is used for analogizing the relations between the latent variables.

The external model can be described with Eqs. (1) and (2):

$$\mathbf{y} = \mathbf{C_y}\boldsymbol{\eta} + \boldsymbol{\varepsilon}, \tag{1}$$

$$\mathbf{x} = \mathbf{C_x}\boldsymbol{\xi} + \boldsymbol{\delta}, \tag{2}$$

where:

$\boldsymbol{\eta}$	the vector of endogenous latent variables,
$\boldsymbol{\xi}$	the vector of exogenous latent variables,
$\mathbf{y}$, $\mathbf{x}$	the vector of observable variables,
$\mathbf{C_y}, \mathbf{C_x}$	matrices of factor loadings,
$\boldsymbol{\varepsilon}, \boldsymbol{\delta}$	measurement error vectors.

The internal model in the case of one dependent variable can be described with Eq. (3).

$$\boldsymbol{\eta} = \beta\ \boldsymbol{\xi} + \psi, \tag{3}$$

where:

$\boldsymbol{\eta}_{m \times 1}$	the vector of latent endogenous variables,
$\boldsymbol{\xi}_{k \times 1}$	the vector of latent exogenous variables,
β	the regression parameter,
$\boldsymbol{\psi}$	the vector of random components.

The estimation of parameters of structural equation models is conducted with application of the maximum likelihood method (MLM), generalized least squares method (GLSM) and asymptotically distribution-free (ADF). The choice of the proper method depends on the type of dataset, sample size and variables distribution. The normal distribution for the observable variables is a condition for applying the maximum likelihood method. In other cases the two remaining methods can be used (see Pietrzak et al. 2012).

The obtained model should be verified in regard to the significance of parameters and a degree of fit of the model to empirical data. The formal criteria for assessing the quality of the models have been not unified yet, but the literature in the field provides a set of indicators in this area (Loehlin 1987; Bollen 1989; Kaplan 2000; Balcerzak and Pietrzak 2017b).

The statistical verification of structural equation model is conducted by comparing the obtained model with the saturated and independent model. Among the measures of the degree of a SEM model fit to empirical data two measures are usually treated as the most important once: *IFI* (*Incremental Fit Index*) and *RMSEA* (*Root Mean Square Error of Approximation*). *IFI* values should be contained between zero and one. The model is characterized with a sufficient fit to empirical data, when *IFI* value is greater than 0.9. In the case of *RMSEA* indicator, the lover the value of the indicator for a given model, the better the degree of the fit of the model. It is usually assumed that a value below 0.1 indicates that the model is well-fitted to empirical data. However, it should be remembered that the pointed limits for both indicators have been proposed for the models estimated based on data derived from surveys. In the case of macroeconomic aggregate data, which is derived from sources of official statistics, the limits can be less restrictive (Pietrzak et al. 2012; Balcerzak and Pietrzak 2017b).

3 Measurement of Relations Between the Social and Economic Orders in the EU Countries

In the literature concerning the sustainability concept it is commonly assumed that the sustainable development is based on three pillars, which influences each other (see Fig. 1).

In this context the aim of the article was to analyze the relations between the two mentioned pillars of sustainability concept the social order and the economic order. In the research a hypothesis pointing to a significant statistical influence of the social order on the economic order was tested. As a result the parameters of

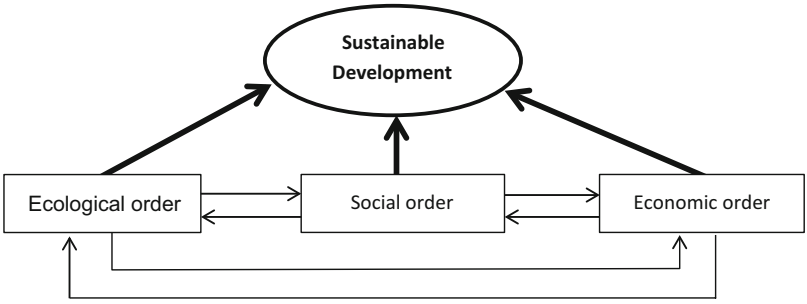

Fig. 1 Pillars of sustainable development. Source: Own work

SEM model for 24 UE member states for the years 2004–2013 were estimated. Luxemburg, Malta and Cyprus were excluded from the research due to the sizes of the economies and lacks of some data in the database. Croatia was not included in the analysis as it joined the EU only in 2013.

In the first step a confirmatory factor analysis was conducted, which have enabled to quantify the levels in the case of both orders for the European economies. In the second step the parameters of the internal model were estimated, which enabled to verify the model hypothesis pointing to the influence of the social order on the economic order.

The latent variables in the form of the social and economic orders were assessed based on 12 observable variables, which were suggested by Central Statistical Office of Poland. The variables with their classification as stimulants or dis-stimulants are given in Table 1. In the case of social order the six observable variables belong to three aspects: A1(SO)—demographic changes, A2(SO)—public health and A3(SO)—poverty and living conditions. In the case of economic order there were also three aspects were proposed based on sixed observable variables: A1(EO)—economic development, A2(EO)—employment, and A3(EO)—innovativeness.

For all the variables Cronbach's alpha was estimated (see Cronbach 1951). The assessment of Cronbach's alpha equal to 0.74 for six variables used for specification of the social order and equal to 0.78 for six variables in the case of the economic order indicate that application of given observable variables should enable to describe properly the dependent latent variables.

The next step of the analysis was estimating SEM model parameters on the basis of the adopted variables.[1] The proposed model specification is presented in Fig. 2. As it has been already stated, in the adopted model specification the relations between the social and economic order were analyzed, with the assumption that the social order impacts the economic order. Assessment of the strength and direction of the relationship between the two orders will be an argument for verification of the adopted research hypothesis. The estimation of the model parameters was carried out with application of asymptotically distribution-free (ADF) method, as there was a risk that some variables do not fulfill the condition of normal distribution. The estimation results are presented in Table 2.

All the parameters of the external model are statistically significant, which means a correct selection of variables for both the social and economic orders. The parameter $\beta 1$ is also statistically significant that describes the impact of the social order on the economic order. A positive value of the parameter indicates that there is a positive impact of the social order on the economic order. Additionally, the value of the estimated parameter at the level of 0.982 indicates that the change in the social order almost proportionally influences changes in the economic order.

[1]The estimation was made in the AMOS package.

Table 1 A set of factors affecting social and economic order

Social order	
Area 1 (SO_1)—Demographic changes	
X_1—Total fertility rate (the sum of separate fertility coefficients in particular reproductive periods 15–49 years)	Stimulant
X_2—Indicator of international migrations (the ratio of the number of net international migrations for permanent residence to the number of population in a given year per 1000 population)	Stimulant
Area 2 (SO_2)—Public health	
X_3—Disability-free life expectancy at the age of 65 (the number of years that a person aged 65 is still expected to live in a healthy condition defined as lack of limitations in functioning or no disability)	Stimulant
X_4—Euro Health Consumer Index *(EHCI)* (a summary evaluation of indicators identified in the following areas, subcategories related to the health care system: patients' rights and information, accessibility—waiting times for treatment, results of treatment, outcomes, range and reach of services provided, pharmaceuticals, additionally, the area of e-Health was identified in 2008 and 2009)	Stimulant
Area 3 (SO_3)—Poverty and living conditions	
X_5—At risk of poverty or social exclusion indicator (a synthetic indicator and it is expressed as the share of persons at risk of poverty and/or experiencing serious material deprivation and/or living in households with low work intensity in total population)	Dis-stimulant
X_6—Inequality of income distribution (the ratio of total income received by the 20% of the population with the highest income (top quintile) to that received by the 20% of the population with the lowest income)	Dis-stimulant
Economic order	
Area 1 (EO_1)—Economic development	
X_7—Gross domestic product per capita in purchasing power parities	Stimulant
X_8—General government sector debt in relation to GDP	Dis-stimulant
Area 2 (EO_2)—Employment	
X_9—Employment rate of persons aged 20–64 (the percentage share of the employed persons aged 20–64 in total population in the same age group)	Stimulant
X_{10}—Duration of working life (the indicator is calculated using a probability model combining demographic data about life expectancy tables available from the Eurostat to calculate the survival function and labour market data based on activity rates for individual age groups based on LFS)	Stimulant
Area 3 (EO_3)—Innovativeness	
X_{11}—Expenditure on R&D activity in relation to GDP	Stimulant
X_{12}—Human resources in science and technology (HRST) (composed of persons who currently or potentially could engage in creating, developing, disseminating and applying scientific and technical knowledge. The indicator is calculated as the percentage of human resources in science and technology in the economically active population in the age group 25–64 years)	Stimulant

Note: A precise description of the variables and the methodology for data collection is available at http://wskaznikizrp.stat.gov.pl/
Source: Own work
The stimulants are defined as variables that affect positively the level of a given factor, whereas the dis-stimulants hamper it (see Hellwig 1972, p. 131)

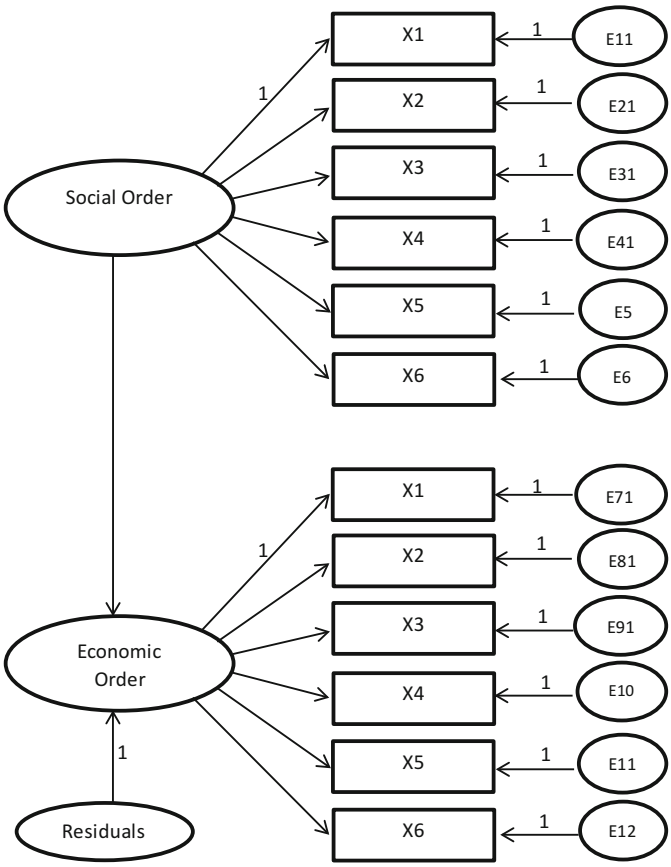

Fig. 2 A hypothetical SEM model for measuring the relations between the social and economic order in the European Union countries. Source: Own work

First of all, it should be stressed that the obtained results cannot be interpreted as a cause and effect relationship (see Kordalska and Olczyk 2016). It should be also emphasized that the result is obtained for relatively developed countries of the European Union, which are characterizes with a specific institutional system in the sense of new institutional economics. As a result, it should be remembered that in other countries with different institutional conditions and level of development the changes in the social order do not need to affect the economic order in such a strong extent, or even there can be no influence of that kind at all. However, in the case of the European Union countries the obtained result indicates that both material and organizational government investment in the social order can have positive influence on the economic sphere. This result can be interpreted as an argument in the post-crisis debate on the government role in the economy, the financial costs of government actions, and the eventual directions of reforms in the European Union

Table 2 Estimated parameters of the SEM model based on confirmatory factor analysis

Variable	Parameter	Estimate	Standardized estimate	p-value
Social order	β_1	0.007	0.982	~0.00
X_1	α_1	1	0.859	–
X_2	α_2	6.15	0.481	~0.00
X_3	α_3	12.893	0.93	~0.00
X_4	α_4	626.628	0.867	~0.00
X_5	α_5	−29.473	−0.971	~0.00
X_6	α_6	−1.525	−0.452	~0.00
X_7	α_7	1	0.93	–
X_8	α_8	−0.065	−0.723	~0.00
X_9	α_9	0.195	0.989	~0.00
X_{10}	α_{10}	0.127	0.966	~0.00
X_{11}		0.025	0.836	~0.00
X_{12}		0.271	0.942	~0.00

Source: Own estimation based on Central Statistical Office of Poland data: http://wskaznikizrp.stat.gov.pl/

Table 3 Model fit measures

Model	IFI	RMSEA
Estimated	0.813	0.268
Independent	0.000	0.554

Source: Own estimation

countries (see for example Kawiorska 2016; Czaplak 2016; Balcerzak and Rogalska 2016; Balcerzak et al. 2016; Balcerzak 2016c; Lajtkepová 2016).

The verification of the model in regard to its degree of fit to empirical data was conducted with application of *IFI* and *RMSA*. The results for both measures are given in Table 3. The value of *IFI* for the estimated SEM model is equal to 0.813 and the value of *RMSA* is equal to 0.268. Thus, the values of the measures are not up to the proposed requirements for models based on the survey data. However, in the case of models based on the macroeconomic data form official national statistics, the obtained measures indicate sufficient fit of the model to empirical data.

As it was mentioned, the estimation of parameters of the SEM model enabled to confirm significant influence of chosen factors on the social and economic orders (Table 2). Additionally, the obtained standardized valuations allow to assess the importance of given variables in forming the latent variables. Based on the assessment of their importance a ranking of factors influencing the latent variables is given in Table 4. This information can be important form the perspective of policy making and in the context of allocation of limited national resources.

In the case of the social order the value of importance above 0.9 was obtained in the case of two variables: X_5—at risk of poverty or social exclusion indicator and X_3—disability-free life expectancy. The value of importance above 0.8 can be found in the case of X_4—Euro Health Consumer Index *(EHCI)* and X_1—total

Table 4 The ranking of factors in regard to their importance in forming the latent variables

Description of variable	Importance of variable[a]	Rank
Social order		
X_5—At risk of poverty or social exclusion indicator	0.971	1
X_3—Disability-free life expectancy at the age of 65	0.93	2
X_4—Euro Health Consumer Index *(EHCI)*	0.867	3
X_1—Total fertility rate	0.859	4
X_2—Indicator of international migrations	0.481	5
X_6—Inequality of income distribution	0.452	6
Economic order		
X_9—Employment rate of persons aged 20–64	0.989	1
X_{10}—Duration of working life	0.966	2
X_{12}—Human resources in science and technology (HRST)	0.942	3
X_7—GDP per capita	0.93	4
X_{11}—Expenditure on R&D activity in relation to GDP	0.836	5
X_8—General government sector debt in relation to GDP	0.723	6

Source: Own estimation

[a]The importance of a given variable was assessed as an absolute value standardized assessment of a parameter value (see Table 2)

fertility rate. Much lover values of importance—lover than 0.5—were reached in the case of X_2—indicator of international migrations and X_6—inequality of income distribution.

In regard to economic order the value of importance above 0.9 were reached by X_9—employment rate of persons aged 20–64 and X_{10}—duration of working life, X_{12}–human resources in science and technology, and X_7—GDP per capita. In the case of X_{11}—expenditure on R&D activity in relation to GDP the value of importance was higher than 0.8 and in the case of last variable X_8—general government sector debt in relation to GDP it was higher than 0.7.

4 Conclusions

The conducted research can be considered as a proposal of application of structural equation modeling methodology in institutional research at a macroeconomic level. The main objective of the article was to propose an approach for quantifying of the social and economic orders as the two pillars of sustainability concept. As a result, the influence of the social order on the economic order and its strength were verified with application of SEM model for the European Union countries in the years 2004–2013.

The obtained results are consistent with the research hypothesis concerning the significant influence of changes in the social order on the economic order. What is more the quantitative research confirms strong relations between the two mentioned intuitional spheres. It can be said that the changes in the social order proportionally

influence the economic order. This result cannot be considered as a universal cause and effect relationship. However, it can be still considered as an important argument in the discussion concerning the role of government and eventual debate on the costs and benefits of government expenditures in the social sphere, which after last financial crisis is still under way in the European countries and the European Union as a whole.

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The Mega Capitalism and the Contradictory Perspectives of the European Union

Nikolovska Natalija and Mamucevska Daniela

Abstract The key issue of this paper is the analysis of the perspectives of the European Union under the framework of the tendencies of mainstream economics, which leads us towards the creation of mega-capitalism (i.e. the last phase of capitalism where the business of mega corporations is the key driver). In fact, the EU has fallen into the trap of the economic reality of globalization and the application of virtual neoclassical ideology. The process of structural adjustment of the European Union into the global economy has brought to the surface two contradictions which became *differentia specifica* of a protracted systemic crisis. The first contradiction will be presented from the aspect of the core-periphery model by describing the development strategies and structural differentiations in the European economic area. The second contradiction of the systemic crisis refers to the erosion of 'the social state and national state'. Discrepancies between the promoted values for economic and social equality and the widening economic gap among the states make this process of erosion very obvious. This creates a dangerous potential for opening a new chapter in European history which will be characterized by intense processes of disintegration and fragmentation, deepening of the connection with the elite agglomerate enclaves of mega-capitalism and reducing the power of the national (social) state. Both processes have a common denominator and are products of the global market capitalism and the functional integration of mega capital. They confront the EU with the challenge to improve the competitiveness of its economy. Thus, the perspectives of the EU regarding its catching up with the global competitiveness will be analyzed from the point of view of this position, and the prospects of the Euro on the global market.

Keywords European Union • Globalization • Economic growth • Core-periphery model • Mega-corporations • Capitalism

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1 The (In)sustainability of the Mega-Capitalism

Corporate forces, which influence the fundamentals of modern mainstream economics, lead the world towards mega-capitalism, as a logical next step in the development of the capitalist society. The process is staged in an imperfect-competition surrounding (monopolies or oligopolistic markets), led by mega-corporations and alliances grouped geographically into agglomerate enclaves and is further assisted by the parallel process of gradual diminishing of the importance of the territorial sovereign states.

Heading towards its objective—concentration and centralization of capital, mega-capital will have to overcome a series of potential barriers. Perhaps most importantly, it will tend to eliminate, or at least minimize, the burden of the non-economic distortions imposed by the state. The European Union may find itself being targeted by these efforts. The EU will be challenged to test its ability to participate competitively in the globally interconnected network economy under its own conditions which enable its social and economic model of a capitalist society. Furthermore, the creation of the EURO is a process complementary with the mega-capitalistic process. One of the strategic objectives of the creation of the EU was the creation of the common currency area (EMU), thus the operation strategy aimed at the creation of a larger integrated market area which would then provide the economy of scale benefits to give the EU a better competitive position when compared to the global rivals like the USA and Japan.

The sustainability of the info-growth (i.e. growth based on the growth of the information and communication technologies) depends on the development of the sources of productivity growth in the USA, and whether this economic development can be adopted and matched by the EU and Japan as second and third pillars of the globally interconnected economy. Such dispersion of growth would balance the mono-centric model, characterized by the USA dominance, and would provide a more harmonized, poly-centric layout of the geo-economic map, which would initiate a process of gradual adjustment and integration of the peripheral regions and territories and would give a viable alternative to all developing and transitional countries.

But, the problem arises from the following: In the EU and Japan, global interconnection and technological innovation are perceived as attempts for diminishing the social state, with effects as reduction of employee rights that might cause social unrest and political reaction which would halt the innovation reforms. If this position prevails for a prolonged period of time, the growth capacity of the USA economy, which relies on the global economic performance, will be exhausted. The USA cannot limitlessly produce and consume an ever-growing portion of the global output. Domestic consumption in the US is becoming a key factor of world economic growth and US household savings are getting dangerously low. But the US economy cannot develop and grow independently from the rest of the global inter-dependent economy. That is why the US administration and the international financial institutions call for structural reforms in the EU and simultaneously try to

stabilize the emerging markets to avoid the possible disruption of the global economic balance. The EU will either join the expansion, or the US machine will also stop the growth and start spiraling down. This would cause a drop in the value of the stock markets, thus eroding the market value and on-paper wealth of the companies and the households and finally the productive potentials of the new technologies will mutate into excess unutilized capacity and will diminish in the deflation caused by the lack of consumption on global level.

All put together, the sources of unsustainability of the info-growth of mega-capitalism could be grouped as: (1) danger of implosion of the global financial market; (2) stagnation caused by the inability of the global effective consumption growth to match the technology driven productivity growth; (3) social and political revolt of an increasing part of the disconnected population on the periphery of the global economy (Giddens and Hutton 2000).

Cristopher (2012) points out that, all these contradictions are a result of the pick of the cyclical and structural crisis of the Kondratieff "long term cycles" and carry the crucial aspects of the technological stagnation in the EU and the consequences—adjustment of the economic and political system in line with the strict market imperatives. Following results of the analysis of Thompson (2016), we are currently in the second half of the winter phase which had started at the beginning of year 2000 and we are moving from the recession to the depression phase, which is predicted to last until 2017–2020.

2 Structural Adjustment of the EU Framework from the Core-Periphery Theory Perspective

The crucial characteristics of the core-periphery theory[1] are in contradiction with the basic political and economic tendencies for convergence of the levels of economic development of the EU member countries. Observed in the context of the development processes in the EU, this means that the monetary strategy and the liberalized markets act together to create differences in the development perspectives of the countries with different economic and technological levels of advancement. The growth of the output in the core countries corresponds to the growth in consumption in the periphery, the trade surplus of the core results from the trade deficit of the periphery and through financial channels it is used for leveling the balance of payments on both sides (Uho et al. 2011).

[1]The Marxist economic theory gives the basis for core-periphery theory analyses. More recently the idea has been resurrected by Krugman (1991) and his concept about "New" economic geography" which unambiguously suggests formation of core-periphery development model based on the principle of increasing returns and decereasing costs. Also, Nikolovska (2000), Panic (2003), Stockhammer (2010, 2011) analyzed different models of development in the European economy from the perspective of the current crisis, and they pointed out on the relevance of the core-periphery development model.

The heterogeneity of the EU member countries is an undeniable fact, especially after the last round of enlargement of the EU which included countries from Central and Easter Europe as members. As a whole, in line with the Maastricht criteria, the European Union is export oriented, but the individual member states have different levels of previously accomplished comparative and competitive advantages, different educational structures of the labor force and thus the logical division into core countries (Germany, as a leading drive-train, France, Belgium, Holland) and periphery countries (Spain, Italy and the countries of Central and Easter Europe). This is how the capitalist development model demonstrates its contradictory structure—the core accumulates capital (surplus) while the periphery accumulates debt (the indebtedness of Spain, Greece and Portugal are just some of the examples). This trend creates real divergence within the entity which aspires to converge.

Starting with the analysis of the core economy in the EU—Germany, an export oriented country, which adopted restrictive policies aimed at controlling inflation and experienced growth of the productivity resulting with negligible increase of the per-unit labor costs of production. The austerity measures reduced private spending in Germany, and the increased profitability did not increase the investment in the physical capital in the domestic economy. On the contrary, the extra liquidity was placed in the periphery through the financial market channels, thus increasing the demand for competitive products produced in the core. German exports increased by 80% between 2007 and 1999. This is a proof of the high competitiveness of German goods and services. In the same period, the trade surplus with the other members countries of the European Monetary Union (EMU) increased by 3.3%. What is particularly distinctive of the German economy, when compared with the economies of the countries in the periphery of the EMU, is the fact that the German economy had a relatively smaller growth rate than the average growth in the Eurozone and the growth in the periphery countries (Nikolovska and Mamucevska 2015). According to Stockhammer (2011), the reason for this is the following—the growth in the countries from the periphery is based on a consumption financed by debt, unlike the German economy which financed its growth form its own accumulated wealth. The criteria dictated by the Maastricht agreement (reduction of the interest rates and stable prices) created a favorable environment for credit expansion, which stimulated economic growth through construction, creating a speculative bubble in the real-estate markets and debt-financed private consumption. The divergence trend is obvious—the common monetary policy resulted in export oriented growth for the core and consumption oriented growth for the periphery, followed by initially unbalanced current accounts on both sides.

The expansion of the trade deficits of the periphery is further assisted by the creation of the EMU and the process of financial integration. The liberalization and deregulation enabled for the accumulated finances in the core to be placed in the periphery under very favorable conditions, as loans for the private households and the public sector. The periphery became a market for goods and services as well as a market for credit portfolios and this resulted in further accumulation of finances in the core vis-à-vis the accumulation of debt in the periphery. This process became so potent that it overwhelmed the productive economic entrepreneurship. The

speculative growth of the consumption fueled economy crushed during the financial crisis in the USA in 2008 and during the last pick of oil prices, which came as a shock for the production sector. The core-periphery conflict in the EU is manifested in a form of a fiscal and debt crisis. One of the more obvious examples is the case of the Greek economy. The Maastricht criteria created a favorable surrounding for the growth of a speculative economy in Greece. The bursting of the bubble manifested as a crisis of corporate and public debt in the Greek economy and opened the era of confrontation in the triangle social masses—sovereign state—international capital. The ECB and the IMF imposed a restrictive monetary and fiscal policy which resulted in a 25% reduction of GDP and a rate of youth unemployment of 60%. The state budget is now programmed to run a surplus of 3–5% of GDP by 2018. Greece is the first member of the EU to enter into an arrangement with the IMF. This scenario gives a good hint of the future: prolonged economic depression, diminishing presence of the Greek economy in the EU marketplace and social unrest. The accumulated debt and its management placed the Greek state in conflict with the interests of the core of the EU. This conflict is one of the shaky pillars of the European economy and has systematic character in its initiation. In other words, it is a result of the strategies and policies that lay down the foundation of the EU. This fact leads to the conclusion that other countries in the EU periphery may face the "Greek syndrome" as well.

3 Regional Contradictions of the European Social-Market Capitalism

European social—market capitalism favors the labor-rights and is based on the political ideology of social equality as a long-term option for regional cohesion of the EU. Due to the inherited failure of the markets to act as a mechanism for efficient allocation of resources, this role is given to the cohesion policy of the leading structures of the EU. Begg and Bergman (2002) suggest that this concept is based on the solidary willingness of the developed regions to dedicate part of their revenue for overcoming the feeling of injustice by the people of the less developed regions. The purpose is to compensate the costs associated with market and structural adjustment of the less developed member countries to the external shocks created by the adoption of the common market, and the common monetary union at the later stages. The European budget is the main instrument of this cohesion policy. It has the allocation and re-distributive function through channeling three quarters of its resources towards development, employment and sustainable growth in line with the Europe 2020 Strategy, which stipulates that all member countries should contribute for the accomplishment of the main goal—creation of jobs along with their economic development (De Grauwe 2011).

The purpose of the cohesion policy would be accomplished through investments in research and development, ICT and improvement of the competitiveness of the

small and medium enterprises. This way, the regional policies are planned to adapt to the requirements of mega-capitalism without losing its main specific characteristic—the social component and reduction of the development disparity. But, the divergence trends fueled by speculative capital and creation of indebted economies in the heart of the EU do not support the scientific and technological development of the region. Instead of moving towards technological development, the financial surplus currents move towards maintenance of the territorial cohesion, which is a basic building-block of the EU structure. From this aspect, the costs of the cohesion policy manifest through the cost which has to be paid for maintaining the concept of social over-all integration at the cost of productivity in the era of mega-capitalism which ruthlessly attacks from across the Atlantic. The problem is furthermore emphasized by the fact that most European theoreticians and practitioners deny the accomplishments of the cohesion policy pointing out the opposite tendency—increasing regional disparities within the EU. According to EC (2010), the last enlargement of the EU increased its population by 20% and its GDP by only 5%, a fact which supports the core-periphery theory. However, they all agree that the implications of the cohesion policy somewhat reduce the effects of the spontaneous agglomeration tendencies, which are among the key initiators of polarized development.

Finally, the amount of the funds channeled through the cohesion policies of the EU is small when compared to the market redistribution of financial funds which follow the profit motive. Additionally, the disparities between the core and the periphery grow faster than the amount of funds dedicated to the cohesion policies.[2]

The solution of the European crisis can be found in giving a priority to the financial stabilization policy. The stabilization is the first and basic precondition for maintaining the favorable globally competitive position of the EU.[3] A crucial characteristic of the newly created stabilization instruments is that they are available only to member countries of the Euro zone and carry conditional rigid programs for economic and financial adjustments determined by the Troika (European Commission, IMF and ECB). This configuration of the financial flows from the core towards the periphery highlighted the following problematic aspects: (1) Monetary growth will be at the expense of a falling real sector; (2) Cost inflation will be replaced by unproductive deflation; (3) It will generate unemployment at the periphery; (4) the financial packages will redistribute the surplus capital from the center to the periphery, thus further revitalizing the market for speculative capital which can only reduce the effects of the cohesion policies.

The core, which was previously an exporter of capital for financing the consumption of the periphery, now becomes an exporter of capital for bailing out the

[2]At the moment of accession into the EU the Mediterranean countries had a disparity of 30% with the northern countries, and today the disparity of the new member states compared to EU-12 is 60%.

[3]This was the purpose for the foundation of the European financial stabilization mechanism in 2010, which was replaced by a permanent instrument for crisis management, the European stabilization mechanism (ESM) with capital funding of 700 billion EUR.

periphery. The divergence trend is very obvious. The strategies contradict the goals for "polycentric and balanced growth" of Europe 2020 and the need for "global competitiveness" of the regions. The goals are actually *contradiction in adjecto* and as a result they are not carried out in practice, thus increasing the feeling of discontent and conflict within the EU. These contradictions became obvious in the case of the United Kingdom. On the 23th of June 2016, on the basis of the European Referendum Act 2015, the United Kingdom held a referendum for reaffirming its position as member country of the Union. According to the results of the referendum 51.9% of the citizens who cast their vote, preferred the "Leave the European Union" option (Bishor and Jamison 2016). The decision is a result of the choice of the people which felt marginalized in context of the large-scale happenings in the EU (migration, subsidies for the EU periphery and erosion of sovereignty). The "winner" in the UK was the territorial, sovereign state which confronted its further integration based on the policies and strategies dictated by large-scale capital. This process is a historical tendency which will shape the future of both unions—the United Kingdom and the European Union. The contradictory processes on the British island manifested through the configuration of its internal relations, where London as a globalized metropolis preferred to act as an independent state and to stay in the EU. This position is motivated by the realistic danger of losing the comparative advantage and the current strong position on the global financial market.[4] The new initiatives in Scotland and Northern Ireland for referendums for independence and subsequent joining the EU were mainly result of their fears that they would stay the "undeveloped" parts of the United Kingdom.

The economy of scale which was foundation for the competitive advantage of the region took a serious blow by the UK exit. At the same time, the integration processes are under threat from disintegrative tendencies which might have uncalculated and unanticipated consequences on the future of the EU.[5]

4 Structural Adjustment of the EU from the Global Competitiveness Aspect

The two-decade-long functioning of the Euro, and it importance as a leading global currency, showed that the monetary interventions of the ECB are not sufficient for the Eurozone to resist the pressures from mega-capitalism and to serve the needs of info-growth. Such ambitions require structural reforms which would result in

[4]According to Taylor (2001), who analyzed the comparative business advantages of the world metropolises, London has the highest index of interconnectedness in the global economy (1,00), (cited by Dicken 2011, pp. 64).

[5]The countless waves of settlement of different nations from their original Asian lands, which have blended together over the centuries, and the modern history of expansionary migrations in the European continent thorough the open process, which we might refer to as "clash of cultures", could turn the heterogeneous Europe into a leopard skin patterned map.

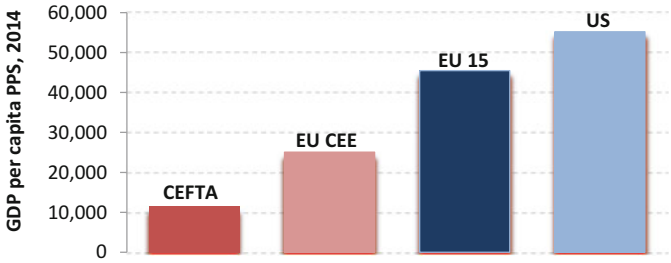

Fig. 1 GDP per capita of EU15 compared to the USA (trend of stagnation). Source: Based on EUROSTAT and Vujcic (2016)

improved productivity in the EU. The EURO must fulfill three criteria (in order to become a viable competitor of the US Dollar in a way which will represent a fundamentally more competitive economy): (1) to be a representative of a strong economy with a sustainable high level of GDP and external trade, (2) to create a developed foreign exchange and financial market with full convertibility of both current and capital transactions, and (3) to maintain long-term stability of purchasing power reflected through an economy with low inflation. The EU lacks behind the US when it comes to the first condition (see Fig. 1).

When compared for the second condition, the US is ahead of the EU, particularly because the UK, which is an important part of EU core, is not a member of the monetary union. In order to accomplish the desired global positioning of the EURO as a currency the EU must implement structural reforms. At the moment the EU lacks behind the USA in several fields: (1) business dynamics, (2) share of ICT investment in the total investments, and (3) specialization in technologically-intensive products. According to Vujcic (2016), European industry structure is dominated by the old and static firms, while industry in the USA is dominated by the new and fast growing firms. Furthermore, participation of investment in information and communication technology in the total investment is 29%, on average, in the USA and it is significantly higher than the one in the EU (see Fig. 2). Additional, the USA industry is more focused on specialization in technologically advanced and R&D incentive products in comparison with the industry of the EU The indicator for the technology specialization in innovation-based growth sectors is 1.4 for the USA and 0.9 for the EU (Vujcic 2016).

The companies which are abundant with high technological intensity prefer the USA. They follow the US business dynamics, which goes in line with technological development, which is in turn supported by the continuous investment in ICT and research and development, which finally result in high-tech specialization of products. Therefore, they prefer the Silicon Valley and not the EU which is dominated by static and inert companies. The structural differences between the economies of the USA and the EU actually demonstrate the contradictions in the relations between the core and the periphery in the global economic framework. The slow sliding towards the global periphery of the European economy is an

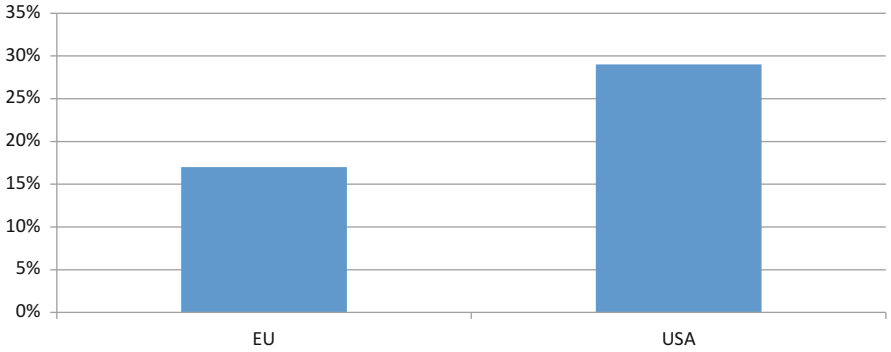

Fig. 2 Investments in ICT as percentage of total investment, average 2000–2010. Note: The Aggregate for EU investments in ICT is an average of the values for Austria, Denmark, Finland, France, Germany, Ireland, Italy, Holland, Spain, Sweden and the United Kingdom. Source: Based on EUROSTAT and OECD data

ongoing process and its reversal requires appropriate structural reforms and investment in the high-tech sectors. The productivity of the European economy would rise to the extent where the leading price in the economy (i.e. the exchange rate of the euro to the dollar) would create favorable environment for better capital effectives due to the technological advantage over the USA. Consequently, the Euro would revitalize the financial sector (money and liquidity market) within the EMU and with the stable rate of inflation and stable exchange rate it would be able to compete with the dollar as a transaction, investment and reserve currency. The stability of the financial sector is crucial from the aspect of the future role of the Euro as a reserve currency because central banks keep large portions of their portfolios in commercial papers issued in the financial markets of countries with stable currencies and developed capital market. The affirmation of the Euro as a global currency would result in quick restructuring of the banks and the financial institutions and development of the financial markets through mergers, acquisitions and joint ventures of capital and strengthening of the profitability of the banking sector. This process would create mega banking institutions which would be able to compete with the other global mega banks and would be able to respond to the needs of the international companies. This would create the pre-conditions for lower real interest rates in the Eurozone, which would further stimulate high-tech investment projects. Small and medium size companies from the Eurozone would have better real opportunities for interconnecting in the unified common financial market. The increased systematic and structural competitiveness of the economy would act in favor of the affirmation of the EURO as a global currency. This requires a large market with significant homogeneity of development of the countries. However, the EU market is heterogeneous, diverging and does not fulfill the criteria for an optimal currency area.

5 Neoliberalism as a Pillar of the Peripherisation Process Within the EU Model

The key question for the future of the EU is: Is the neoliberal model of mega-capitalism compatible or in conflict with the social—market model? The answer to this question is crucially linked to the willingness of the international financial institutions to implement radical reform of their monetary and credit policy to stimulate development instead of the imposing rigid contraction policies resulting in impotent economies. In the case of the EU, a small increase of the inflation rate, high-tech investment projects motivated by structural reforms and development based on socio-institutional engineering would increase the productivity of the economy and would create the basis for a dynamic integration of the European economy into the core of mega-capitalism.

This process would create a serious potential for selective integration of the emerging and developing markets as well. But, the complete inclusion of the entire periphery of the global economy is both theoretically and practically impossible. This process requires creation of more than two or three core centers which would create growth and development. That is a situation which is very unlikely to be achieved with the forces of the globally interconnected net economy which sources its productivity from the technological development emitted by the core of the USA and from the unconditional political support which financial capital gets from the most powerful country in the world. Even if optimistically we assume that 20% of developing economies have direct benefit from the growth of the global interconnected economy, still a large majority of humanity remains to be a victim of the ruthless mega-capitalism without being given any of its benefits. If we add to these people the large number of disconnected social groups from within the developed countries, the situation becomes ever more complicated. It is a fact that, besides the incredible economic growth of the USA as a core of mega-capitalism and as a core which emits incredible technological development, around 15% of the population of the USA lives in poverty, and a quarter of the total number of imprisoned people in the world are located in the jails in the USA. This is a criminalized structure which is by default socially disconnected (Travis et al. 2014).

The effects that information technology has on the widening of the phenomenon of polarization, inequality and exclusion though the disparities in the quality of education and the opportunities for interconnection is constantly growing. The purpose of the presented theories in not to deductively suggest that this type of capitalist structure, which sources it strongest moving force from the technological geniusness of one global center (Silicon Valley) and is assisted by the voluntarism of speculative capital and cultural individualism, is politically, socially and above all economically unsustainable. This core creates a high-tech archipelago in a sea of an impoverished periphery (in the USA, EU or anywhere) which is incapable to match the productivity needs of the archipelago on the long run and will eventually suffocate the competitiveness and the entrepreneurship which are the moving forces of economic development. The level of effective consumption of the core and

periphery together cannot pair the productivity and production potential of the core. As Stiglitz (2008) notes, once the market is saturated by exhausting the consumption potential, the speculative capital, through its credit instruments, becomes the only connection between the core and the periphery. At this point, we already have favorable conditions for a speculative, criminal and militaristic economy with its eroding effects on all political and social structures worldwide, distorting the system of universal human rights. So, this approach is a main driver in the process of collapsing financial structure by exploitation and control. Population growth is identified as a threat of ability for ultimately usage of resources, and in history always such oligarchic model resulted in wars and collapse of an empire.

6 Final Conclusions: Quo Vadis EU in the Twenty-First Century?

The contradictory perspectives of the EU are part of the fundamental trend and the threats arising from it. The economic policies of the EU actually reflect the process of concentration and centralization of capital on global level. This process will lead towards more fierce competition between the USA and the EU in the future and will involve new forms of open and hidden economic and political pressures which will partially be transmitted through third-party countries which are not part of these two dominant entities of global capitalism. In such case, we can expect the strengthening of the supra-national structures of the EU along with erosion of the sovereign (territorial) state and a shift of the priority to global interconnectedness at the cost of the maintenance of the local governance. Economically, the consolidation of the EU will continue through further enlargement of the European monetary union, which would provide the benefits of the economy of scale (reduction of transaction costs, more stable aggregate demand of money, reduction of foreign exchange rate risk etc.). Schmidt (2002) pointed out that the increasing profitability of the companies will lead to a more rigorous monitoring of the neoliberal market motives and indirectly towards an increased pressure for enlargement of the corporations and of financial capital through all forms of friendly or hostile take-overs, but also through a higher level of price and cost flexibility. These processes will lead towards reduction of wages and employment and will increase the danger of social, ethnic, racial or religious conflict and destruction.

On the other hand, the reaction to this process could take another form in the retroactive preference of the territorial (sovereign) state. If this prevails over the market-oriented state it will lead to the return of various forms of “protectionism”. In today world, with the current level of technological and informational development, both the economy and the entire civilization could not pass through such a retrospective process without initiating an economic, social and political earthquake with a perhaps larger magnitude than the one in 1929. This is why the answer to the “Quo Vadis EU in the XXI century?” question is becoming urgent

(Stojanov 2012). It requires urgent reforms which will protect the values of the social—market model of capitalism, as a civilization's achievement of capitalism, which respects the foundational principles of productive entrepreneurship in favor of the wellbeing of all European citizens. Therefore it is necessary to acknowledge systemic defects and act timely to correct them. This depends of the social responsibility of the European community and its ability to focus on the real issues like:

- To globalize the European efforts for reformation of the ideological pillars of trade and financial system in order to create a favorable environment for effective long-term capital investment in each nation. This approach raises the fundamental concept of 'real sector economy' as opposed to monetary concept of 'feudal ground of rent system'. Economic science can help in this process by reintroducing these topics into academic and public debates.
- To reconstruction of European architecture by establishing institutions of European society. These institutions are supposed to enhance cooperation into the EU. Involvement of European institutions in the process of resolution of transnational problems and emigration—terrorism, environmental protection, supply of public goods (health care, education, poverty, social protection, etc.), which nowadays are apparently jeopardized by market fundamentalism.
- To establish an extensive agenda for European development on the basis of active participation of all European countries in production oriented scenario. Cooperation should realize through establishing of new development arteries under which will develop Eurasian land-bridge which includes countries from EU and Balkan, and also countries from Middle East, Far East and North Africa.

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Innovation Catching Up for Developing Countries

Pawel Dobrzanski

Abstract The main goal of the article is to present the contemporary role of innovation in economic growth. The increasing globalization, information revolution and rapid technological progress are considered to be the most important cause of creating a new competitive landscape. According to the newest growth theories improvement of innovation and human capital have a major impact on the development of the country. Main research problem in the paper was innovation catching up. Author presented the level of innovation for group of countries divided in terms of income. Moreover, article highlighted the strongest and weakest factors of innovation for the poorest countries and areas that should be improved in order to increase their competitiveness. Through innovations developing countries are able to make up for the delay to the developed countries. However, developed countries have a significant advantage. This study did not confirm decrease in the innovation gap between developed and developing countries. Positive is the fact, that poorer countries are becoming more efficient in the innovation process. Although, countries with lower income do not have adequate infrastructure and human capital, and thus do not achieve the significant innovative results. Investments in the innovation-friendly environment should be key area for the state activity. Also important are innovation programs supported by government, like improvement in the framework conditions for innovation and implementation of innovation policies targeting innovation players and relationships between them.

Keywords Economic growth • Globalization • Technological advantage • Convergence hypothesis

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1 Introduction

Since 1900, GDP of the world economy has grown more than 18 times. Countries are able to supply its citizens with all kinds of goods, and thus increase their well-being, which is one of the overriding objectives of state activity. Therefore, currently the economic growth is seen as the most important factor in the economic success of individual countries in the long term period (Samuelson and Nordhaus 1999).

The reasons for growth are one of the most important subjects of inquiry in economics since its inception. Growth, like many other manifestations of economic processes, is the result of various causes. During years the role of the individual factors of the economic growth has changed. Therefore, classical economics have stressed the importance of other factors to multiply the wealth of nations, than it is done in the modern economy, especially the most recent one (Wozniak 2004). Some theories also take into account social factors determining relationship between economic growth and social welfare. These theories reject the assumption of economic growth as goal itself, emphasizing importance of the sustained and balanced growth.

New competitive landscape is result of increasing globalization, information revolution and rapid technological progress. As a consequence of increasing importance of the innovation, state began to conduct an intensive innovation policy. The innovation policy can be considered as specific institutional, economic and legal influence of the state to achieve the objectives, in line with the socio-economic policies.

According to the national innovation system theory, a key to improve an innovative process is flow of technology and information among people, enterprises and institutions. Innovation and technology development are the outcome of complex set of interactions among enterprises, universities and government research institutes. Correct understanding of the national innovation system can help identify the leverage point for improving innovative performance and overall competitiveness (Freeman 1995).

Technological progress is a common theme in the literature of economic growth. In the article Solow's (1957) and Romer's growth theories (Romer 1986) will be discussed. In further part of the article convergence hypothesis will be presented. Finally, innovation level in developed and developing countries will be analyzed.

2 Technological Progress in Economic Growth Models

Economic theory can distinguish many models depicting economic growth. The paper presents two models relevant to the convergence hypothesis introduced by Solow (1957) and Romer (1986).

Solow presented a unique model of economic growth, which ushered in the era of neoclassical growth models. Solow (1957) and Swan (1956) quantified the sources of growth. For this purpose, the function of Cobb-Douglas production was used:

$$Y = AN^{\beta}K^{\alpha}, \text{where } \alpha + \beta = 1, \textit{for } 0 < \alpha < 1, \text{so } \beta = 1 - \alpha. \quad (1)$$

Domestic product Y is determined by the resources of capital K and labor N. Solow introduced A variable, which is a measure of the contribution of technological progress to the economic growth (Wozniak 2004). Solow made the assumption of closed economy, in which there are no technical changes and there is constant increase in the labor force of 1% per annum. Apart from this, Solow in his deliberations on sustainable growth drew the attention to the relationship between net investments = nK and net savings = sY, where s is the savings rate. By making a combination of both of these equations, Solow adopted for sustainable growth following condition:

$$nK = sY, \quad (2)$$

$$\frac{s}{n} = \frac{K}{Y}, \quad (3)$$

where K/Y is called the capital-output ratio. Solow pointed out natural forces, which automatically adjust the value of the capital to the value s/n, so that the steady state model is stable. This means that regardless of the initial level of capital, the economy will always reach the steady state. If in fact $k(0) < k^*$, than $SF(k) > (n + a + \delta)\, k$, k will grow over time and eventually reach the level of k^* (Solow 1956).

The long-term balance (steady state) occurs at the point of intersection of the curves of actual investment [sf (k)] and replacement investments [$(n + a + \delta)$ k]. At this point the capital and production per unit of effective work does not change over time. At equilibrium, the long-term growth rate of GDP is equal to the sum of technical progress and the rate of population growth, while the growth rate of GDP per capita is equal to technical progress. These conclusions emphasize the greatest weakness of the neoclassical models, defining the relationship between economic growth and exogenous variables, emerging outside the model (Barro and Sala-i-Martin 2003).

Solow model confirms the phenomenon of conditional convergence (β type). Convergence (type β) means that less developed countries (with a lower level of GDP per capita) show the faster rate of growth than the more developed countries (Barro and Sala-i-Martin 2003).

Romer (1986) initiated era of endogenous growth models. The fundamental change that distinguish this approach from the neoclassical models, is moving away from neoclassical production function. According to Romer (1990) the improvement of the technology can be achieved by increasing the qualification of human capital and innovation. Therefore, the main driving force in this model is improvement in processing inputs into products, so technological progress. Romer

paid special attention to labor and capital, which contribute to the growth of technology and inventions. He created the following production function for the technology:

$$\Delta A = T(N_A K_A A), \tag{4}$$

where:

- ΔA is growth of technology,
- T is function of technology production,
- N_A is labor output used to produce technology,
- K_A is capital output used to produce technology,
- A is technology.

The model shows the relationship between growth of technology ΔA, and amount of work that has been used in the production of technology N_A, capital output K_A and technology A. The relationship $N_A < \mathrm{N}$ and $K_A < \mathrm{K}$ occurs, because only part of the supply of labor and capital is involved in the process of research and science (Wozniak 2004).

According to Romer, knowledge is the only reproducible production factor, which shows growing revenues at the level of the whole economy—can spread indefinitely in the whole economy and thus can be used by all companies without having to incur additional costs. This mechanism of spreading knowledge is stated in term *learning-by-doing*. The characteristic feature of the knowledge is its inclusiveness. It is impossible to turn off another company from the use of any technology in a given period of time. Therefore, the use of technology can be universal and continuous. It is possible to increase the production of the new technology by investing capital and labor in the research and development activities. In neoclassical models technological growth was temporary. In the exceptional case in function of the production growth rate of technology can increase permanently (Wozniak 2004):

$$\frac{dA}{dt} = cN_A A \rightarrow \hat{A} = cN_A \tag{5}$$

According to the given formula, the growth rate of technology depends on the number of employees in the research centers. By increasing the number of workers, it is possible to increase the growth rate of technology $\Delta A/A$, and thus also increase the rate of production growth.

Romer's model assumes that the total volume of human capital and the share of capital accumulated in the area of scientific and technical knowledge affect the rate of economic growth. As the knowledge is increasing over time, and thus increases the overall skill level, the GDP per capita growth rate in the economy is uniformly accelerated (Romer 1986). This model does not confirm the phenomenon of convergence between countries. Moreover, this model indicates the existence of the divergence trend. In Romer's concept the economic growth rate increases in parallel to the income level, which means that the developed countries grow faster

than the underdeveloped countries. The economic growth rate tends asymptotically to the same upper limit, however, poor countries will grow more slowly, because in the starting moment have a smaller outputs of knowledge. As a result, differences in income levels between countries will permanently increase (Romer 1986).

3 Convergence Hypothesis

Gerschenkron (1962) is a precursor of the convergence hypothesis. He stated that the developing country can make the "jump", through which can significantly accelerate its economic development. The concept of convergence was introduced to economic sciences in the 60s of twentieth century by Tinbergen (1961). The first convergence analyses were related to the economic systems. At the same time research question concerning the assimilation of the capitalist and socialist systems was verified (Kowalik 2000). Then research focused on the catching up effect in the context of countries or regions. Very extensive studies were conducted by Barro (1991).

It should be emphasized that the country's economic backwardness does not guarantee that economy will catch up with developed countries. In the underdevelopment context, it is important to consider the factors that may affect the development of the country. In the literature often mentioned are the following factors: large investments, educated workforce, high activity related to research and development, development of information technology sector, trade relations with developed countries and foreign investments.

All these factors are very important. However, the authors analyzing the convergence hypothesis focused on the two main factors: capital accumulation and/or technology. If the capital has had a decisive influence, then we can conclude that the differences in the level of GDP per capita should disappear (existence of convergence) (Nowak 2006). If, however, the dominant factor is technology, the convergence effect is not so obvious. In such case equalization of the level of GDP per capita occurs only among countries (regions) with a similar level of development. Nowadays such statement can be very doubtful, because technology affects the development of the region (the country) much greater than twenty years ago. Currently, the smallest technological advantages can significantly affect the development of the company, and as further consequence development of the region and country.

Solow's growth model suggests that economies with similar rates of population growth and technological progress should exhibit the similar level of per-capita income in the long run, regardless of their initial capital stock. During the adjustment to steady state, countries with lower capital stock will grow faster than those with higher capital stocks. According to Solow's model, countries are predicted to converge to their respective steady states (conditional convergence). The rate of return is lower in countries with higher capital per worker, therefore capital should flow to poorer countries, thus driving convergence. Moreover, diffusion of

knowledge is possible: the poorest countries can adopt modern technologies and thus benefit from technological progress in more advanced countries (Barro and Sala-i-Martin 2003). Convergence hypothesis was denied by Romer (1986). He introduced the theoretical growth model with increasing-returns-to-scale production. This results in strong tendency for rich countries to maintain or even increase their lead over poorer countries. Moreover, this model indicates the existence of divergence phenomena. In Romer's concept, economic growth rate increases with increasing income, which means that the developed countries grow faster than underdeveloped countries (Romer 1986).

Research of Barro (1991), Summers and Heston (1991) from the beginning of the 90s, have shown that the effect of convergence could be observed only for developed countries (OECD), while in countries less wealthy, this effect has not been confirmed. These studies are based on data from 25 years ago. Therefore, it would be worthwhile to return to the test to verify the phenomenon of convergence in today's economy.

4 Innovation in Developed and Developing Countries

Global Innovation Index in 2015 rated 141 economies worldwide (Dutta et al. 2015). This report examined innovation with 79 indicators, both factors that contribute to increasing innovation, as well as innovative results of the country. In addition, the report divides countries into four groups in terms of income inhabitants: countries with high income, medium-high income, lower-middle income and low income. Global Innovation Index confirms the continued existence of significant differences between countries. The relationship between the level of income and innovation is positive. The higher the income level, the greater the innovation level. The highest rates of innovation have countries with high income—the average for this group is 49.63, the lowest average innovation level is for low-income countries—25.35 out of 100 possible points (Table 1). However, in practice it's hard to achieve the maximum rating of 100 points in the rankings. Switzerland ranked on first place achieved only 68.30. Also, the effectiveness of the richest countries is the highest, while the low income countries the poorest. However, the effectiveness of the countries with medium-low income is slightly better than countries with a medium-high income. This means that they use more efficiently available inputs, and thus are able to obtain better results.

The highest rated indicators for countries with high income, middle-high income and lower-middle income are institutions, market sophistication and infrastructure. Low-income countries have received the highest evaluation in such indicators as: institutions, market sophistication and business sophistication (higher than in countries with medium-low income). Low-income countries obtained the lowest score for inputs indicators: human capital and research as well as infrastructure, and also both outputs indicators: knowledge and technology and creative outputs. Countries with low incomes should focus on improving the assessment of these indicators.

Table 1 The global innovation index 2015

	High income	Upper-middle income	Lower-middle income	Low income
Global innovation index	49.63	34.58	29.1	25.35
1. Institutions	79.98	58.9	49.9	46.76
2. Human capital and research	46.35	29.85	20.6	15.88
3. Infrastructure	53.51	38.75	30.04	22.49
4. Market sophistication	56.81	46.17	43.53	42.14
5. Business sophistication	44.27	33.31	29.34	30.48
6. Knowledge and technology output	39.64	25.1	21.41	18.86
7. Creative outputs	46.5	30.44	25.61	19.43
Inputs (1,2,3,4,5)	56.18	41.4	34.68	31.55
Outputs (6,7)	43.07	27.77	23.51	19.14
Efficiency	0.76	0.67	0.68	0.61

Source: Dutta et al. (2015, p. 30)

In order to increase innovation and reduce the gap to the more developed countries, it is necessary for low-income countries to increase spending on education, extend the years of study, reduce of the number of pupils per teacher ratio, increase the share of people with higher education and invest more in R&D. The infrastructure improvements can occur by increasing access and use of information and communication technologies (ICT). In addition, developing countries should focus on increasing the number of patents and high- and medium tech production and trademark applications (Table 2).

Dutta et al. (2015) draw attention to the fact that the gap between developed and developing countries is declining from year to year. However this relationship is not so obvious, when analyzing the gap between innovation indicators. Table 3 shows the average effectiveness rate for the countries divided into groups in terms of earned income. There cannot be observed continuously decreasing gap between countries with low-income and high income, as well as low-income with medium-low incomes countries.

Positive is fact, that among developing countries are those, which achieve very good, similar to developed countries, results both in terms of inputs and outputs. In 2015, these countries were: Armenia, China, Georgia, India, Jordan, Kenya, Malaysia, Moldova, Mongolia, Uganda and Vietnam. In addition, the report authors noted, that in order to maintain economic growth, adaptation of technology is not enough. In order to maintain the so-called "catch-up", it is necessary to invest in innovation. Currently, priorities for countries with low and middle incomes are the national innovation programs and the introduction of appropriate institutional arrangements (Dutta et al. 2015).

Research carried out by Growth Research Program emphasized that technological innovation has been traditionally concentrated in few developed countries, due to costs and risks involved in increasing technological innovation. Therefore, the

Table 2 Key areas for improvement in innovation

	High income	Upper-middle income	Lower-middle income	Low income
Human capital and research				
Spending on education, % GDP	5.25	4.66	4.79	4.02
School life expectancy, year	16.1	13.85	11.49	9.65
Pupil-teacher ratio, secondary	10.89	15.46	19.75	29.25
Tertiary enrolment, % gross	65.03	42.16	21.31	7.73
Researchers, FTE/million citizens	3683	733.34	266.97	53.44
Gross expenditure on R&D, % GDP	1.64	0.55	0.28	0.38
Infrastructure				
ICT access (index)	7.99	5.58	4.07	2.53
ICT use (index)	6.24	3.13	1.59	0.49
Knowledge and technology outputs				
Patents by origin (index)	6.87	2.89	1.73	0.48
PCT patent applications (index)	3.54	0.27	0.08	0.07
High- and medium-high-tech manufactures (%)	31.81	24.43	15.82	6.3
Creative outputs				
Trademarks (index)	61.69	51.77	57.27	21.96

Source: Author's own study based on Dutta et al. (2015, pp. 44–48)

Table 3 The innovation gap between the countries by income level

	2015	2014	2013	2012	2011
1. High income	49.63	48.83	50.11	51.02	48.08
2. Upper-middle income	34.58	34.76	35.71	35.24	33.36
3. Lower-middle income	29.1	29.53	29.83	28.31	30.42
4. Low income	25.35	25.62	26.43	24.61	25.91
Gap between group 4 and 1	−24.28	−23.21	−23.68	−26.41	−22.17
Gap between group 4 and 3	−3.75	−3.91	−3.4	−3.7	−4.51

Source: Author's own study based on Dutta et al. (2011, 2012, 2014, 2015), Dutta and Lanvin (2013)

development process in low income countries can be supported by tapping existing knowledge and know-how. According to the Growth Research Program report, in low income countries innovation activities are taking place in both formal and informal sectors. Most of these innovations are not lab-based R&D. They are based on learning and incremental in nature. Most of them are diffusion based innovations. In low income countries there are not only technological innovations, but also related to new management, marketing models and practices. Finally, report showed that companies in low income countries are innovative, but they are unsupported. Innovations are not recognized and properly supported (Fu et al. 2014).

5 Conclusion

According to the newest growth theories development of the country is mainly depended on innovation and human capital. Through innovations, developing countries are able to catch up with developed countries. However, the developed countries have a significant advantage. This study did not confirm decrease in the innovation gap between developed and developing countries. Low income countries are becoming more efficient in the innovation process. But still, countries with lower income do not have the infrastructure and human capital, and thus do not achieve significant results in terms of innovation.

The absence of the strong evidence across countries of unconditional economic catch-up effect has led to many disparate views in the economics profession in recent years. Some have argued that non-convergence is a technological fact of life. Others suggested, that developing countries require special remedial policies to provoke high-speed growth, lest they get trapped in the low-growth economy.

Therefore, important are innovation programs supported by government. There are two main pillars of the innovative policies. The first one is improvement in the framework conditions for innovation. Such programs concern business environment, trade openness, competition and access to finance. Investments in the innovation-friendly environment should be key area of the state. On the other hand, the countries should implement innovation policies targeting innovation players and relationships between them. These activities include collaborative research projects, public-private partnerships, and clusters. Developing countries should follow set of dedicated supply- and demand-side innovation policies.

It should be also noted, that Barro's studies, which took place in the twentieth century are still valid, but we cannot overlook the fact, that the technology nowadays develops in a geometric sequence. The technological advantage will increase due to the continuity and universality of new technological solutions. This would prove the validity of Romer's model, which does not confirm the phenomenon of convergence between countries. In addition, it would confirm also the divergence phenomenon.

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Assessment of the Sustainable Development by Means of the Human Development Concept and the Footprint Indicators

Magdaléna Drastichová

Abstract One of the possible approaches to assess the level of the sustainable development is to combine the Footprint Indicators, allowing also for the available biocapacity, with the Human Development Indicators. This approach was used to assess the sustainable development path of the European Union (EU) and its countries. The EU countries achieving the higher levels of the human development also show the higher levels of the Ecological Footprint. However, the characteristics of the economies are different, especially those determining the Ecological Footprint and some outliers in the group can be found. The relations between the human development and the available biocapacity are not so straightforward. Allowing for inequality as regards the level of human development, the social dimension of the sustainable development shows significant losses in several developed countries.

Keywords Sustainable development • Human development • Ecological footprint • European Union • Biocapacity

1 Introduction

According to the most quoted definition of the World Commission on Environment and Development (WCED) (WCED 1987) the sustainable development (SD) is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. SD is a global challenge that requires substantial changes in production processes and life-style in compliance with the idea that the global development cannot only be understood from the economic point of view (FEEM 2011), or in other words, a progressive transformation of economies (Hediger 2006). SD represents a vision of progress, which integrates short-term and longer-term objectives, local and global action, and regards social, economic and environmental issues as inseparable and interdependent components

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of human progress (European Commission 2015). Thus, the SD is a paradigm that considers several aspects of growth in a comprehensive framework (Carraro et al. 2013). Recently, the SD belongs to the main policy priorities worldwide.

At the EU level, already in 1997 SD became a fundamental objective of the EU when it was included in the Treaty of Amsterdam—Consolidated Version of the Treaty Establishing the European Community—in *Article 2* as an overarching objective of the EU policies (European Union 1997). The EU Sustainable Development Strategy (EU SDS) was launched in 2001 and renewed in 2006. The Sustainable Development Indicators (SDIs), reflecting the key challenges of the EU SDS, which are used to monitor the EU SDS, are presented in ten themes. The themes cover the economic, social, environmental, global and institutional dimension of SD, but these dimensions also overlap in particular themes. In this paper, the more fundamental approach to reflect sustainability or SD path is used. Particularly, it is based on the combination of the level of human development achieved by countries together with their use of natural resources to meet the needs of people. In summary, the latter is measured by the Ecological Footprint (EF) Indicator.

The aim of the paper is to detect if the EU countries meet the sustainability criteria or draw closer to the SD path according to the level of their human development together with their impact on resources as measured by the EF Indicator, also allowing for the available biocapacity. The countries included in the sample are the EU-28 countries together with Norway and Switzerland, which are the countries of the European Economic Area, and two countries of the North America, i.e. the United States and Canada. The additional four developed countries were included to compare the levels of sustainability. Thus, the sample of 32 countries was used in the analysis.

2 Materials and Methods

In this section, the used data and the applied methodology are presented.

2.1 Data

To obtain data on the EF per capita in 2012 (global hectares (gha) per person) and Biocapacity per capita in 2012 (gha per person) the results from the National Footprint Accounts (NFA), 2016 Edition, i.e. 2016 Public Data Package provided by Global Footprint Network (2016) were used. To obtain data on EF per capita in 2011 (gha per person) and Biocapacity per capita in 2011 (gha per person) the corresponding results from the NFA 2015 Edition (Global Footprint Network 2015) were also used. The NFAs measure the ecological resource use and resource capacity of nations. This Data Packages contain the EF and Biocapacity Indicators as well as GDP, Human Development Index (HDI) and population data (Global

Footprint Network 2016). It means, the majority of the additional data used in this paper are also included in these Packages. Data on HDI and Inequality-adjusted Human Development Index (IHDI) are extracted from United Nations Development Programme's Human Development Reports (UNDP HDR), 2013 and 2015. According to data availability, the data on HDI in 2011, 2012 and 2014 and IHDI in 2014 are used in the analysis (UNDP 2013, 2015). Population data are from the Food and Agriculture Organization of the United Nations (Global Footprint Network 2016). The 2016 Data Package does not include data of Malta and the 2015 version for both Malta and Luxembourg. Thus, the missing EF data are extracted from Abdallah et al. (2012) where the last available data are in 2008.

2.2 Methods

For the analysis in this paper, the EF and biocapacity indicators and the human development approach, reflected by the HDI and IHDI, are applied to measure the sustainability in the EU and its countries together with the formulas derived from these indicators.

The EF and biocapacity analysis is based on two basic indicators. The EF concept was introduced by Rees and Wackernagel (1994). The EF indicator can be used as one of the primary guides for the evaluation if the examined agents operate at a sustainable level. The EF is a method for estimating the biologically productive area that is necessary to support current consumption patterns, given prevailing technical and economic processes (Holmberg et al. 1999). Thus, the EF is a measure of the demand, which human activities put on the biosphere. Concretely, it measures the extent of biologically productive land and water area required to produce all the resources an individual, a population, an activity, a region, or all of humanity consume, and to absorb the waste they generate, given prevailing technology and resource management practices (Global Footprint Network 2015). Subsequently, this area can be compared with biocapacity, which is the amount of productive area that is available to generate these resources and to absorb the waste. Both are measured in global hectares (gha) whereas a gha represents a hectare with world average productivity. By comparing human impact with the planet's limited bioproductive area, this method tests a basic ecological condition for sustainability (Holmberg et al. 1999). The EF calculations have so far included land for energy supply, food, forest products, and the built environment, degraded areas, and sea space for fishing. For the waste side the land needed for sequestering CO_2 is included in the EF. The EF generally refers to the EF of consumption.

The particular components of the EF are the following ones. Cropland is the most bioproductive of all the land-use types and consists of areas used to produce food and fiber for human consumption, feed for livestock, oil crops, and rubber. The Cropland Footprint includes crop products allocated to livestock and aquaculture feed mixes, and those used for fibers and materials. Recent Cropland Footprint calculations have not yet considered the extent to which farming techniques or

unsustainable agricultural practices may cause long-term degradation of soil. That is due to lack of globally consistent data sets. Forestland provides for two competing services. Firstly, it is the Forest Product Footprint, which is calculated based on the amount of lumber, pulp, timber products, and fuel wood consumed by a population on a yearly basis. Secondly, it is the Carbon Footprint, which represents the carbon dioxide emissions from burning fossil fuels in addition to the embodied carbon in imported goods. The Carbon Footprint component is represented by the area of forestland required to sequester these carbon emissions. Recently it is the largest portion of humanity's Footprint. The Fishing Grounds Footprint is calculated according to estimates of the maximum sustainable catch for a variety of fish species. The Grazing Land Footprint is determined by grazing land that is used to raise livestock for meat, dairy, hide, and wool products. The Built-Up Land Footprint is calculated based on the area of land covered by human infrastructure: transportation, housing, industrial structures, and reservoirs for hydro-power. Moreover, built-up land may occupy what would previously have been cropland. It is calculated based on the area of land covered by human infrastructure, such as transportation, housing, or industrial structures (Global Footprint Network 2016). The assessment of the EU according to the component indicators and comparison with the other regions was carried out in Drastichová (2015).

As regards the determining factors, the EF is driven by consumer habits and the efficiency of providing goods and services. The growing biocapacity deficit is defined as the situation when a population uses more biocapacity than can be supplied and regenerated in a year. It is driven by the combination of high consumption rates, i.e. consumption is growing more rapidly than improvements in efficiency, which leads to increase in people's footprint; and populations growing faster than the biosphere's capacity resulting in drop of biocapacity per person. Biocapacity as a supply side is the bioproductive area multiplied by its bioproductivy (per hectare) whereas these two are referred to as the biocapacity factors. Bioproductive area is the available area of cropland, grazing land, fishing grounds and forests. Bioproductivity per hectare is the area's productivity. It depends on factors, such as ecosystem's type, management and health, agricultural practices or weather and therefore it can vary between years. Productivity can be advanced to achieve more biocapacity. However, this is often at the expense of a larger EF. It means, energy-intensive agriculture and heavy reliance on fertilizer can increase yields, but it requires increased inputs and can generate more CO_2 emissions. The EF can be expressed as *population* $\times$ *consumption per person* $\times$ *footprint intensity*, whereas these factors represent the so-called EF drivers. As regards population growth, it is obvious that the growing number of consumers is a strong driver behind the growing EF. Moreover, population size also affects the biocapacity available to each person. Concerning consumption of goods per person, it is evident that different populations consume different quantities of them, which is primarily based on their income levels. Footprint intensity is the efficiency with which natural resources are turned into goods and services while the differences between products and between countries exist (WWF 2012).

Moreover, three complementary indicators are created by means of the EF per capita and the available biocapacity per capita that serve for sustainability assessment of the countries:

$$Biocapacity\ Deficit/Reserve = Biocapacity - EF \tag{1}$$

$$Number\ of\ Countries\ required = \frac{EF}{Biocapacity} \tag{2}$$

$$Number\ of\ Earths\ required = \frac{EF}{Earth - Biocapacity} \tag{3}$$

The EF in Eqs. (1)–(3) means the Ecological Footprint. In 1990, the first HDR was issued. It introduced a new approach for advancing human wellbeing. The human development approach is about expanding the richness of human life, rather than simply the richness of the economy in which human beings live. This approach is focused on people and their opportunities and choices. As regards people, human development is focused on improving the people's lives rather than assuming that economic growth as such will lead to greater wellbeing for all. Income growth is regarded as a means to development, rather than an end in itself. Regarding the third aspect, which are opportunities, it can be claimed that human development is about giving people more freedom to live lives they value (UNDP 2016). Economic and social development, or human well-being, can be approximated with UNDP's widely recognized HDI and its adjusted alternative IHDI. The IHDI can be interpreted as the level of human development when inequality is considered. The relative difference between the IHDI and HDI is the loss due to inequality in distribution of the HDI within the country. The IHDI goes beyond the average achievements of a country in health, education and income to show how these achievements are distributed among its residents (UNDP 2015). The calculation of both Indices is indicated in Table 1.

To complete the analysis, the additional indicator was calculated to detect the sustainability of the monitored countries from the point of view, which was applied in this analysis. According to Eq. (4) the following indicator was constructed.

$$HDPEF = \frac{IHDI}{EF} \tag{4}$$

The *HDPEF* in Eq. (4) represents the human development productivity of the EF, i.e. the ratio of the *IHDI* to the *EF*. It indicates the level of human development including the adjustment for inequality, as measured by *IHDI*, related to the unit resource use in gha, which are included in the *EF*. The higher level of sustainability is achieved when the state of human development in relation to the resource use to meet the people's needs in the country is higher. However, countries dispose of different resource stocks. Allowing for the available biocapacity, the following formula (5) is also applied to detect the human development productivity of the resource use in relation to their stocks (*HDPNC*). The higher the indicator is, the

Table 1 Calculating the Human Development Indices HDI/IHDI

	Dimensions	Long and healthy life	Knowledge	A decent standard of living
HDI	Indicators	Life expectancy at birth	Mean years of schooling Expected years of schooling	GNI per capita (PPP, USD)
	Dimension index	Life expectancy index	Education index	GNI index
	Human Development Index (HDI)			
IHDI	Dimensions	Long and healthy life	Knowledge	A decent standard of living
	Indicators	Life expectancy at birth	Mean years of schooling Expected years of schooling	GNI per capita (PPP, USD)
	Dimension index	Life expectancy	Years of schooling	Income/ consumption
	Inequality-adjusted index	Inequality-adjusted life expectancy index	Inequality-adjusted education index	Inequality-adjusted income index
	Inequality-adjusted Human Development Index (IHDI)			

Source: UNDP (2015)

higher level of sustainability is achieved taking into account the natural endowment of countries.

$$HDPNC = \frac{HDI/IHDI}{Number\ of\ Countries\ required} \tag{5}$$

The indicator in denominator of Eq. (5) is calculated according to Eq. (2). Moreover, the cross-section analysis is used to detect relations between the human development level of the countries measured by HDI (reflecting also the standard of living) as the explanatory variable and their impact on resources measured by the EF as the explained variable. The IHDI was not included in the model as the available data used are those of 2014 and in the models, it was more appropriate to use the data from the same years, i.e. 2011 and 2012. The cross-section model was created and the linear least-squares regression was applied to detect the relations between the EF and the HDI in the monitored sample of the countries. The applied formula to detect the relationship is as follows.

$$\ln EF = a + b \times \ln HDI + \mu_i, \tag{6}$$

In Eq. (6) the *EF* means Ecological Footprint in 2011/2012 (gha per person) and *HDI* is Human Development Index. Symbols *a* and *b* represent coefficients and *ln* represents the natural logarithm which is used to eliminate the effect of the different units of the variables. The assumptions of linear regression, particularly

(1) statistical independence of the errors, (2) homoscedasticity (constant variance) of the errors, and (3) normality of the error distribution, are verified by the suitable tests, i.e. by Breusch-Godfrey Serial Correlation LM Test for the first assumption, Breusch-Pagan-Godfrey, Harvey, Glejser and White test for the second one, and the Jarque-Bera test for the third one.

3 Results

The relations between the Human Development Indices, i.e. HDI and IHDI, on the one hand, and the EF, also considering the available biocapacity, on the other hand, were analyzed. The results of graphical as well as cross-section section analysis, together with the additional indicators composed according to Eqs. (4) and (5), are presented in this section.

3.1 Relations Between Human Development Indices and the Ecological Footprint

To assess the level of sustainability the criterion used by the Global Footprint Network (Global Footprint Network 2015, 2016) and also in the Living Planet Report 2014 (WWF 2014) is applied in this paper. For a country to achieve SD globally, it needs to have a per capita EF lower/not larger than the per capita biocapacity available on the planet, while maintaining a decent standard of living. The former means a per capita EF lower (or no larger) than 1.7 gha which is the maximum that could be replicated worldwide without resulting in global overshooting. Concretely, Global Footprint Network indicates in its Public Data Package, 2016 Edition (Global Footprint Network 2016) the average global biocapacity at the level of 1.73 gha per person in 2012 and that most recent number is used in this analysis. The latter is defined as the UNDP's IHDI equal to or higher than 0.71 (UNDP 2013). It means, not the GDP, but the IHDI indicator reflecting broader aspects of the human development is used to assess sustainability.

The relations between the IHDI on the one hand and the EF as well as the indicators based on the EF according to Eqs. (2) and (3) on the other hand, are displayed in the following Figs. 1, 2, 3, and 4 to indicate the level of sustainability and to reflect the SD path. To indicate the human development level, the IHDI is used in Figs. 1, 2, 3, and 4 because it adjusts the HDI for inequalities. Thus, the IHDI better reflects the social aspects of sustainability. The both indicators are also highly correlated. The correlation coefficient of their 2014 levels in the overall sample reached 0.902. For all examined countries, the IHDI is lower than HDI. The differences are indicated in Table 2 whereas the countries are ordered according to the IHDI level. The IHDI is lower for all the countries, whereas the loss due to

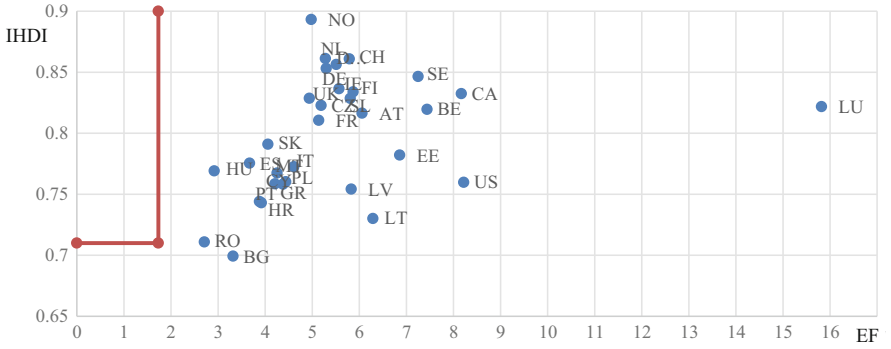

Fig. 1 The EF (2012) and IHDI (2014) of the EU and four developed countries. Source: Global Footprint Network (2016). Note: *AT* Austria; *BE* Belgium; *BG* Bulgaria; *CA* Canada; *CH* Switzerland; *CY* Cyprus; *CZ* Czech Republic; *DE* Germany; *DK* Denmark; *EE* Estonia; *ES* Spain; *FI* Finland; *FR* France; *GR* Greece; *HR* Croatia; *HU* Hungary; *IE* Ireland; *IT* Italy; *LT* Latvia; *LV* Lithuania; *NL* Netherlands; *NO* Norway; *PL* Poland; *PT* Portugal; *RO* Romania; *SE* Sweden; *SK* Slovakia; *SL* Slovenia; *UK* United Kingdom; *US* United States of America

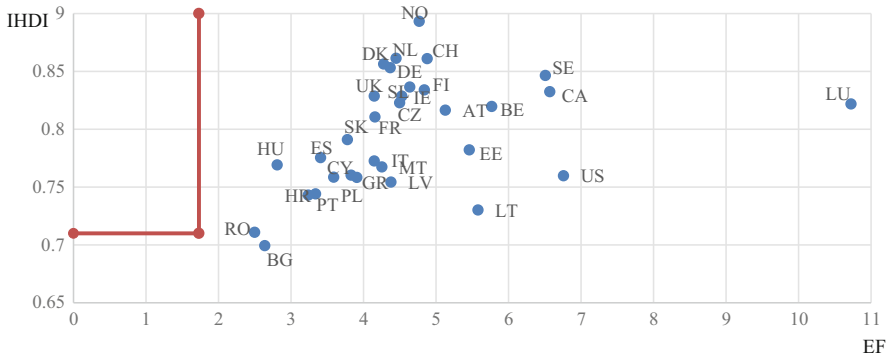

Fig. 2 The EF (2011) and IHDI (2014) of the EU and four developed countries. Source: Global Footprint Network (2015), UNDP (2015)

inequalities showed the highest extent for the United States, followed by Greece, Spain, Italy and Cyprus. On the other hand, the losses are the lowest for the Czech Republic, followed by Finland, Norway, Slovenia and Slovakia. The most recent data on IHDI were used, i.e. those of 2014 to reflect the most recent state of development. Although the most recent data on the EF are those of 2012, they can be displayed together with the most recent data on human development in one Figure because in 2 years no significant changes occurred. As regards the changes of the HDI, for which the longer time series are available, in period 2010–2014 the HDI declined only in Greece and the smallest increase occurred in the United Kingdom (UK) and Cyprus. The highest increases were typical of Estonia followed by Slovakia, Denmark, Malta and Poland. In 2012, the HDI dropped annually in

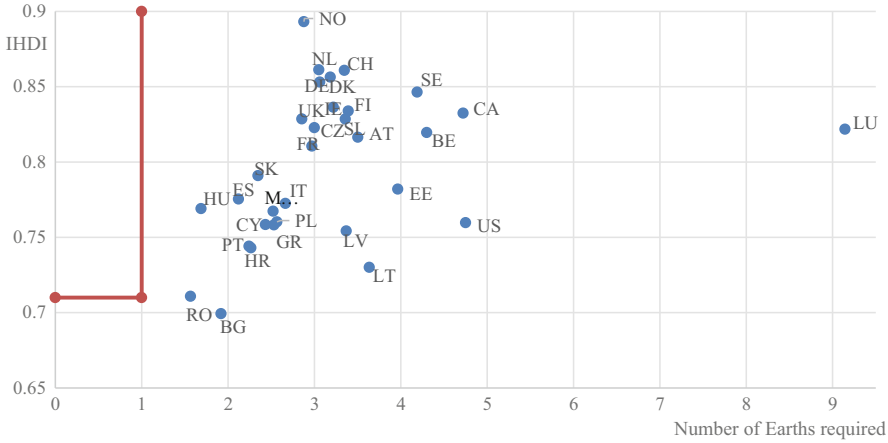

Fig. 3 The Number of Earths required (2012) and IHDI (2014) of the EU and four developed countries. Source: Global Footprint Network (2016), UNDP (2015)

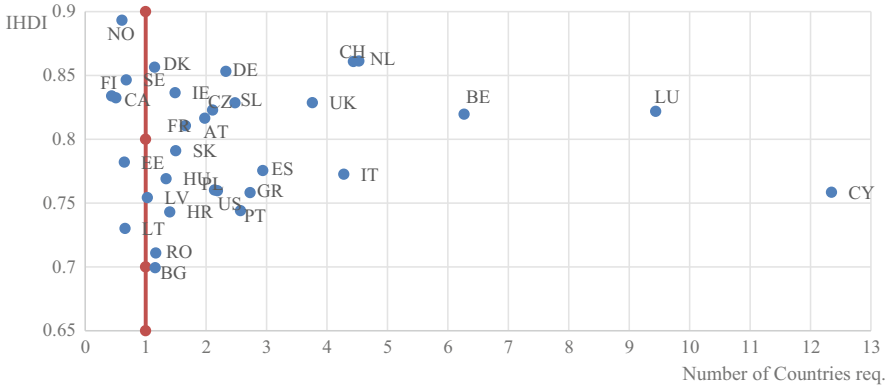

Fig. 4 The Number of Countries required (2012) and IHDI (2014) of the EU and four developed countries. Source: Global Footprint Network (2016), UNDP (2015)

Italy, Cyprus and the UK. The most significant increase occurred in Malta, followed by Estonia and Slovakia. In 2013, the HDI decreased annually in Cyprus, Greece, Belgium and Netherlands and in 2014 in Italy. The highest annual growth took place in Malta, Lithuania and Estonia in 2013 and in the UK and Slovakia in 2014. To sum up, the Southern economies were significantly affected by the last economic crisis that also led to relatively higher decreases of the HDI. On the other hand, in many transition economies the HDI has shown relatively higher increases.

In Fig. 1, the red rectangle in the upper left part determines the area of sustainability and indicates which countries are close to achieve sustainability

Table 2 Two additional indicators: HDPEF and HDPNC, 32 countries

Country	HDI	IHDI	HDI-IHDI	Country	HDI	IHDI	HDI-IHDI
NO	0.944	0.893	0.051	SK	0.844	0.791	0.053
NL	0.922	0.861	0.061	EE	0.861	0.782	0.079
CH	0.930	0.861	0.069	ES	0.876	0.775	0.101
DK	0.923	0.856	0.067	IT	0.873	0.773	0.101
DE	0.916	0.853	0.063	HU	0.828	0.769	0.059
SE	0.907	0.846	0.060	MT	0.839	0.767	0.072
IE	0.916	0.836	0.079	PL	0.843	0.760	0.082
FI	0.883	0.834	0.049	US	0.915	0.760	0.155
CA	0.913	0.832	0.081	CY	0.850	0.758	0.091
UK	0.907	0.829	0.078	GR	0.865	0.758	0.107
SL	0.880	0.829	0.052	LV	0.839	0.754	0.085
CZ	0.870	0.823	0.047	PT	0.830	0.744	0.086
LU	0.892	0.822	0.070	HR	0.818	0.743	0.075
BE	0.890	0.820	0.071	LT	0.819	0.730	0.089
AT	0.885	0.816	0.069	RO	0.793	0.711	0.082
FR	0.888	0.811	0.078	BG	0.782	0.699	0.082

Source: UNDP (2015)

path. It can be seen that 31 analyzed countries showed the higher IHDI than 0.71, whereas only Bulgaria showed the lower level, i.e. 0.699. Bulgaria and Romania are the EU countries with the lowest level of human development and standard of living, both showing lower HDI than 0.8 which is in compliance with "high human development" compared to the others achieving "very high human development". As regards the IHDI, Romania reached the score of 0.711, which is sufficient according to the applied sustainability criterion. On the other hand, Norway is the country with the highest score of HDI and IHDI in the world and as regards HDI it is followed by Switzerland, Denmark and Netherlands in the sample whereas Netherlands overcame the two others as regards IHDI (see also Table 2). However, no country complies with the EF criterion. The EF levels in 2011 are shown in Fig. 2 to compare the changes and the red rectangle in the upper left part defines the area of sustainability. In both Figs. 1 and 2, no country can be found in the area of sustainability.

As compared Figs. 1 and 2, the EF increased in all the monitored countries.[1] The lowest increase occurred in Hungary (0.11 gha). This was followed by Norway (0.21 gha), Romania (0.21 gha), Spain (0.26 gha), and Slovakia (0.28 gha). The highest EF increase occurred in Belgium, Canada, the United States, followed by two Baltic economies, i.e. Lithuania and Estonia, Slovenia, and two Northern economies, i.e. Denmark and Finland, all with the higher increase than 1 gha. The highest level of the EF is typical of Luxembourg, which is the country with the

[1]The changes can be partly attributed to the changes in methodology.

extraordinary conditions and thus it is an outlier. It is a small country with the low population where the product is predominantly created by foreign workers and thus the comparison with the other countries is not reliable. Although the EF level in Fig. 2 is that of 2008 (10.724 gha), the 2012 level is even significantly higher (15.82 gha). Except for Luxembourg, in both years 2011 and 2012 the U.S. showed the highest EF and it is followed by Canada (both higher than 8 gha in 2012), Belgium and Sweden (both higher than 7 gha in 2012) and Estonia, Latvia and Austria (all three higher than 6 gha in 2012).[2] The lowest levels were shown by Romania, Hungary, Bulgaria, Spain, Portugal and Croatia in both years. As it was mentioned above, the increase of the EF in Hungary and Romania was only marginal, it was also low in Spain, but higher in Croatia and Bulgaria (for the two latter: 0.68 gha). Thus, Bulgaria's EF exceeded that of Hungary in 2012 and Croatia's EF exceeded those of Portugal and Spain although they showed the lower human development.

In Figs. 3 and 4 the particular indicators based on the EF are used to show the impact on resources, also allowing for the available biocapacity, together with the human development scores. Firstly, the average biocapacity of Earth reflected by Number of Earths required Indicator according to Eq. (3) is shown in Fig. 3. Secondly, Number of Countries required reflecting biocapacity stock of each country according to Eq. (2) is depicted in Fig. 4.

In Fig. 3 the criterion of sustainability according to the Global Footprint Network (Global Footprint Network 2015, 2016) is indicated by the area bounded by red lines creating the rectangle in the left part. When the Number of Earths required Indicator is used, the country should use the area of less or equal to one Earth to meet the sustainability criterion. This is consistent with the criterion of the EF lower or equal to 1.73 gha, which is the average global biocapacity. It is obvious that even the majority of the less developed countries in the sample are far from meeting this criterion. Romania and Hungary are placed closest to this area. In Fig. 4, the red line only indicates the boundaries between the "Creditor" and "Debtor" position regarding the use of resource stock available in each country whereas those countries, which are placed in the left part, are resource "Creditors" using less than available stock in the area of the country. On the other hand, those in the right part overshoot the resource capacity available in the area and are resource "Debtors". It can be seen in Fig. 4 that four of these countries, i.e. Norway, Sweden, Finland and Canada also show relatively high human development. On the other hand, Estonia and especially Latvia showed lower human development. Moreover, except for Norway and (to lesser extent) Finland, these countries are placed far from the sustainability area in Fig. 3. Moreover, these countries can be regarded as outliers because they are separated in the right part of Figs. 1, 2, and 3 together with the Luxembourg, the United States, Belgium and Lithuania. These countries seem to have relatively high EF in relation to their stage of human development as measured by IHDI.

[2]For the five latter countries, the order slightly differs between 2011 and 2012.

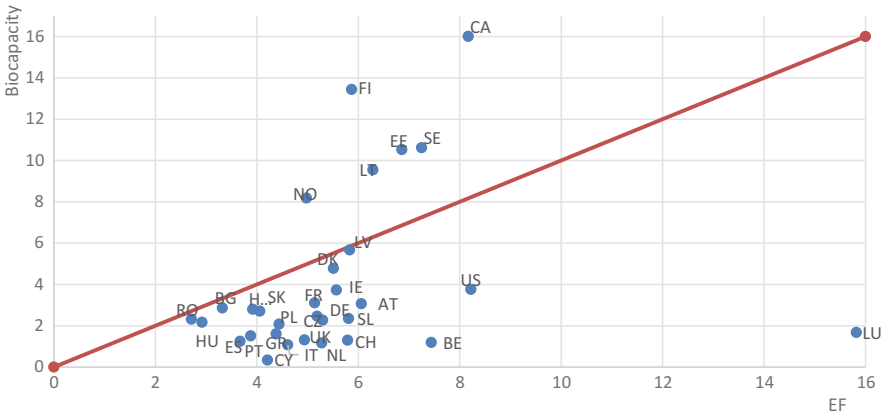

Fig. 5 The EF and biocapacity of the EU and four developed countries. Source: Global Footprint Network (2016), UNDP (2015)

To sum up, Figs. 1, 2, and 3 indicate positive relationship between the HDI on the one hand and the EF on the other hand while some outliers can be found. In Fig. 4, the indicated relations are not as straightforward as countries have different biocapacity available. If the sustainability criterion was determined by the high level of the human development and resource use activities operating in the limits of the own area's biocapacity, the six countries which are "Creditors" (see Figs. 4 and 5) would achieve relatively good results in comparison to the others. Norway showed the best results, because its EF is relatively lower than that of other five "Creditors", i.e. in 2012 it is lower than 5 gha as in the only country in this group. Norway also showed the second lowest EF increase between 2011 and 2012 in the overall sample. It also shows the highest human development in the world, expressed by both HDI and IHDI. In this group of "Creditors" Norway also showed the lowest Number of Earths required, i.e. 2.88 Earths, which was the only Number lower than 3 Earths in this group. Finland showed the second lowest Number of 3.39 Earths required. The lower Number of Countries required than Norway showed only Finland and Canada. Although, its biocapacity reserve according to the Eq. (1) is the lowest in this group because its biocapacity per capita showed the lowest level, Norway can be assessed as the country achieving the overall best results. The stock biocapacity is predominantly affected by the factors that are difficult to control. On the other hand, the indicators and factors which can be affected show positive results. Canada followed by Finland dispose of the highest biocapacity stock per capita and thus these countries showed the highest biocapacity reserve. However, the economy of Canada is highly resource intensive and the EF is the third highest in the overall sample of 32 countries. On the other hand, Finland's EF is the second lowest in the group of the "Creditors" and the human development is the third highest according to IHDI and the fourth highest according to HDI. Thus, Finland can be evaluated as the second best as regards the investigated indicators. Moreover, Finland showed the second lowest and Norway the third lowest losses due to the adjustment of the HDI by inequalities in the

overall sample (see Tables 1 and 2). These little differences between HDI and IHDI indicate very positive results in the social dimension of the SD. On the other hand, Latvia showed the lowest level of human development as measured by both HDI and IHDI while the IHDI is also the third lowest in the overall sample; the lower level was only shown by Bulgaria and Romania.

However, the EF of the developed countries is generally high and these countries are overshooting the Earth's average biocapacity. As it can be seen in Figs. 1, 2, and 3 no country in the sample met the sustainability criterion if the EF should be lower or equal to 1.73 gha. Even the countries in the sample, which are at the lowest stage of development, showed the higher EF levels. However, Romania reaching the lowest EF in both years could show the features of the development which does not lead to significant increases of the EF. This could also be the case of Hungary. On the other hand, Bulgaria, which is the country at the lowest lower of human development level, showed the higher EF in 2012 than both above mentioned countries as well as higher increase between 2011 and 2012.

There is only one country with the lower total biocapacity of the area than 1 gha, i.e. Cyprus. However, a larger group of countries disposes of the stock, which is lower than 2 gha per capita, i.e. countries of BENELUX, all four Southern economies, such as Italy, Spain, Portugal and Greece, and also Switzerland and the UK (see Fig. 5 in Sect. 3.2). These countries show the highest Numbers of Countries required (see Fig. 4). This also leads to the significant biocapacity deficits as measured by Eq. (1) whereas the highest deficit showed the economy of Luxembourg. It is followed by Belgium, Switzerland, the United States, Netherlands and Cyprus. It is obvious that for BENELUX countries and Switzerland the combination of the high EF together with low biocapacity leads to serious "Debtor" situation while in the United States the very high EF level is mostly responsible for that. On the other hand, in Cyprus, Italy and the UK the low biocapacity stock is mainly responsible for the high resource deficits.

On the other hand, the Number of Earths required depends entirely on the EF, as the denominator of the Eq. (3) is the same for all the countries. The lowest levels are achieved by the countries at the low human development level together with others showing low level of the EF, i.e. Romania, followed by Hungary, Bulgaria, Spain, Portugal, Croatia and Slovakia requiring 2.35 Earths. On the other hand, the U.S., Canada, Belgium and Sweden require more than four gha and Luxembourg, which is country with extraordinary conditions, requires even 9.14 Earths. As it was already indicated, the majority of the countries referred to as "Creditors" also show high EF levels, i.e. Estonia and Latvia directly follow Sweden in Number of Earths required Indicator. The Number required by Finland is slightly lower, i.e. 3.39, and only Norway required less than three Earths.

3.2 *Deeper Assessment of the Relations Between the Human Development and the Resource Use*

It is obvious that in general, the positive relationship between the EF and the HDI/IHDI exists in the sample which includes the EU and four other developed countries whereas some outliers are present. It is more difficult to detect causality. The positive relationship would also be visible in the larger group including countries at different stages of the development [see more in Drastichová (2015)]. However, there are also many outliers, i.e. the EF is determined by many factors also including the abundance and character of biocapacity. Although the amount and types of available resources can partly determine the level of the EF, the cross-section analysis in the sample of the 32 developed countries does not indicate the statistically significant relationship, because many factors can affect the results. The slope (*b* coefficient) of the regression function is positive, but the model as well as this coefficient is insignificant. The correlation coefficient in the sample of 31 countries in 2012 (excluding Malta) is positive, but low, it is equal to 0.238. The relations between the total EF and biocapacity, both per capita, are indicated in Fig. 5. The countries, which are "Creditors", are placed above the red line (with the angle of 45° to the horizontal axis) and "Debtors" are the countries below it. It can be seen in Fig. 5 that the majority of countries are debtors, which means that they are overshooting their biocapacity. These results are in compliance with those indicated in Fig. 4 whereas the six countries placed above the red line in Fig. 5 are those requiring less than is the biocapacity of its own area and thus they are placed in the left part bounded by the red line in Fig. 4. The results also comply with those of the Biocapacity Deficit/Reserve Indicator expressed by the Eq. (1). The relationship between the EF and biocapacity is not straightforward in Fig. 5. There are many outliers in even this small sample of the developed countries. Although there are only six "Creditors", more countries are close to the borderline between two positions. The remaining Northern economy, i.e. Denmark, and the remaining Baltic economy, i.e. Lithuania, together with other less developed or transitive EU economies, such as Romania, Hungary, Bulgaria, Croatia and Slovakia are close to the "Creditor" position.

As the time series for the EF indicator are not available, the cross-section data on the EF and HDI are further investigated and the regression model is created. The relations between the EF as the explained and HDI/GDP per capita as the explanatory variables were also investigated in Drastichova (2015), using the cross-section data on these variables in 2011 from the Global Footprint Network (2015). Only the HDI is used as the explanatory variable in this paper and the EF as the explained one due to the fact that standard of living measured by GDP per capita significantly determines the human development and therefore they are positively correlated (see Table 1). The results in 2012 are compared with those in 2011. As the relations of the indicators from the same year are investigated, Malta had to be excluded from the analysis due to the lack of data on the EF in 2011 and 2012 and Luxembourg due to the lack of data in 2011. However, Luxembourg was also

excluded from the model of 2012 relations because the assumptions of the model were violated. For 2012, the relations are as follows:

$$\begin{gathered}\ln EF_{2012} = 2.114 + 3.51 \times \ln HDI_{2012} + \mu_i, \\ Obs.: 30; R^2 = 0.393; adjR^2 = 0.372; Prob. = 0; 0; Prob(F - stat.) = 0\end{gathered} \tag{7}$$

In 2011 the models are as follows:

$$\begin{gathered}\ln EF_{2011} = 1.946 + 3.292 \times \ln HDI_{2011} + \mu_i, \\ Obs.: 30; R^2 = 0.421; adjR^2 = 0.4; Prob. = 0; 0; Prob(F - stat.) = 0\end{gathered} \tag{8}$$

All the assumptions of the linear regression are met in the models expressed by the Eqs. (7) and (8). It can be concluded that in the sample of the examined developed countries the positive relationship between the level of human development and standard of living, reflected by HDI, on the one hand and the resource use, expressed by the EF, on the other hand exists. Because the time series are not available, the only visible result is the slight increase of the *b* coefficient indicating the slope of function in the model of 2012 relations as compared to that of 2011 relations. On the other hand, the Coefficient of Determination (R^2) slightly decreased. To assess the development of the relations between the human development and resource use, the longer time series would be required. It can only be concluded that no significant changes in the relations occurred between 2011 and 2012.

To complete the assessment, the additional indicators calculated by means of the EF, biocapacity and IHDI should help determine the level of sustainability and possibilities of the SD path of the individual EU countries. These Indicators calculated according to the Eqs. (4) and (5) are included in Table 3. The results are ordered according to those resulting from Eq. (4) from the lowest to the highest one. According to the results included in Table 3, the previous findings can be summarized. The results of the *HDPEF* Indicator according to Eq. (4) show that the lower the EF and the higher the IHDI the closer to SD path country is and the higher level of sustainability is achieved. The countries with the high EF levels, such as Luxembourg, the United States, Canada, and Belgium are worse off; the countries at the lower stage of the human development, such as Romania, Bulgaria, Hungary, together with other countries showing low EF levels achieved the best results. However, the *HDPEF* Indicator was calculated to compare the ratios between the human development and resource use in particular countries and therefore the results depend on this ratio. It can be seen that Hungary and Romania showed the best results. The country, which should also be emphasized, is Slovakia, because it showed significant increases in human development, its EF is relatively low and it showed relatively low increase between 2011 and 2012. The *HDPEF* Indicator in Slovakia also shows one of the highest score. Moreover, the losses due to the inequalities, i.e. between HDI and IHDI, are one of the lowest in the overall sample. As regards the *HDPNC* Indicator according to Eq. (5) the biocapacity stock of the country is taken into account and this also affects the

Table 3 Differences between the Human Development Indices HDI/IHDI

Country	IHDI/EF	IHDI/NCr	Country	IHDI/EF	IHDI/NCr
LU	0.052	0.087	DE	0.161	0.366
US	0.092	0.347	NL	0.163	0.190
CA	0.102	1.632	IT	0.168	0.180
BE	0.110	0.131	UK	0.168	0.220
EE	0.114	1.203	PL	0.171	0.355
LT	0.116	1.106	GR	0.173	0.278
SE	0.117	1.245	NO	0.179	1.464
LV	0.129	0.732	CY	0.180	0.061
AT	0.135	0.412	MT	0.180	–
FI	0.142	1.895	HR	0.190	0.531
SL	0.143	0.334	PT	0.192	0.290
CH	0.149	0.194	SK	0.195	0.527
IE	0.150	0.561	BG	0.211	0.603
DK	0.155	0.745	ES	0.211	0.264
FR	0.158	0.488	RO	0.262	0.608
CZ	0.159	0.390	HU	0.263	0.574

Source: Global Footprint Network (2016), UNDP (2015), author's calculations
NCr Number of Countries required

results. Accordingly, the best results are achieved by "Creditors", i.e. Finland, Canada, Norway, Sweden, Estonia and Latvia. As it was already indicated, although Canada showed the higher *HDPNC* ratio than Norway, its economy is highly resource intensive which is reflected in the high level of the EF and therefore, Norway and Finland can be assessed as the economies showing the best results. Moreover, Norway also shows relatively high score of *HDPEF* Indicator in comparison to the other "Creditors". The countries with lowest levels of biocapacity and/or having relatively high level of the EF show the lowest levels of *HDPNC*. These countries especially include Cyprus, followed by Luxembourg, Belgium, Italy, Netherlands and Switzerland.

4 Discussion

As regards the applied sustainability criterion determined by the EF and IHDI, no country has achieved a high level of human development with a globally sustainable EF yet but some have moved in the right direction. The path of progress to achieve SD varies among countries. Some countries have significantly advanced their human development with a relatively low increase in EF. Others have reduced their EF while maintaining high levels of development. However, development and improvement of living standards are predominantly linked to growing consumption of ecological services. It means that the high human development in developed

countries has predominantly been achieved at the expense of a high EF. Decoupling and reversing this relationship is a key global challenge. For developing countries, which would be placed in the bottom-left sector of Figs. 1, 2, and 3 and generally in the bottom part of Fig. 4 and in the left part of Fig. 5 (the biocapacity stock will vary), the challenge is to significantly increase their IHDI without significantly increasing their EF. This is still a challenge for countries at the lowest level of human development and standard of living in the EU, such as Romania, Bulgaria, Hungary, Croatia and Latvia. Romania followed by Hungary show the lowest levels of the EF, but they also dispose of the relatively lower biocapacity stocks. Latvia as one of the "Creditors" also showed one of the highest EFs in the overall sample. It is difficult to predict the development of the less developed countries, because it also depends on the kind of the biocapacity stocks. The international flows also significantly determine the kind of their development. For the developed countries, which are investigated in this paper and which are predominantly placed in the upper-right sector of Figs. 1, 2, and 3 and generally in the upper part of Fig. 4 and in the right part of Fig. 5, i.e. achieving high IHDI levels, the challenge is to reduce their EFs or, more generally, to reduce the Footprint Indicators reflecting consumption of particular resources.

As it was indicated in Sect. 3, the relations between the EF and available biocapacity are not so straightforward. The abundance of the natural resources can help to increase the countries' welfare, often at the expense of the higher EF, but this also depends on the EF drivers (see Sect. 2.2). On the other hand, the country with the great stock of natural resources can remain developing country if the resources are overexploited by other, usually developed countries, or other conditions of development are missing. The extent and character of the country's biocapacity is predominantly affected by natural conditions and subsequently, this determines the kind of development of the country. On the other hand, the kind of the development also depends on the economic and other characteristics, international flows and many others, including non-economic, factors. Thus, the relations between the EF and biocapacity levels vary among countries depending on a huge number of factors. Then, the resulting standard of living and human development levels are different as well. Nevertheless, the positive relationship between the EF on the one hand and the standard of living together with the human development on the other hand can be confirmed in general. The challenge in every country is to maintain its biocapacity, or even increase its quality or quantity (to a limited extent). At least, countries should, according to their opportunities, focus on not increasing the EF or maintaining such EF composition, which does not degrade the resource stock significantly. Even though it is more difficult task the average global biocapacity extent should be taken into account to also maintain the resources for the future generations, which is the main idea of the SD.

Finally, it must be emphasized that the aim of the regression model was to prove the significant relations between the standard of living and human development on the one hand and the impact or resources measured by the EF on the other hand. It is obvious that the causality is not straightforward because during the development of the developed countries as the human development and

standard of living indicators as the EF, or generally the Footprint Indicators, have been growing. Generally, it is likely that the higher standard of living and the level of the human development gradually stimulated even higher consumption of resources during the development driven by the increase of resource consumption. This is the trend, which should be reversed by the developed or avoided by the developing countries. However, particular countries have different possibilities of development and the appropriate structural reforms are inevitable. In the EU, these changes towards the SD path have also significantly been encouraged by the EU law and strategies.

5 Conclusion

The aim of the paper was to detect if the EU countries meet the sustainability criteria or draw closer to the SD path according to the level of their human development together with their impact on resources as measured by the EF Indicator, also allowing for the available biocapacity. For the purpose of comparison, the other four developed countries were analysed together with the EU countries. These countries are Norway, Switzerland, Canada and the United States. The fundamental analysis based on the human development approach and the EF together with Biocapacity Indicators and their combination detected the level of sustainability and possible path towards the SD. It can be concluded that generally, the countries at the higher stage of human development having higher standard of living also show the higher EF levels. To assess the development of the relations between the human development and resource use the longer time series would be required. It can only be concluded that no significant changes in the positive relations occurred between 2011 and 2012. The relations of the human development and available biocapacity are not so straightforward and relations between biocapacity, footprints, standard of living and human development can vary in particular countries because they are dependent on many factors.

Regarding the investigated indicators and the applied sustainability criteria of the IHDI equal to, or higher than 0.71 and the EF equal to, or lower than 1.73 gha, the monitored countries showed the different results. Except for Bulgaria and Romania, all countries have already achieved the stage of "very high human" development" as measured by HDI. The losses from adjustments of HDI for inequalities to create IHDI vary among countries, but only Bulgaria does not meet the criterion to achieve IHDI equal to or higher than 0.71. No country meets the criterion of the per capita EF lower or no larger than 1.73 gha which is the maximum that could be replicated worldwide. Except for Luxembourg, which is the country with extraordinary conditions, the two Northern American countries showed higher EF levels than the European countries. The other non-EU country, i.e. Switzerland, also cannot be highlighted in a positive way in comparison to the EU countries. It showed relatively high EF together with relatively low biocapacity stock. On the other hand, resulting from the analysis of the applied indicators it can

be concluded that the remaining non-EU country, i.e. Norway, is the most sustainable economy. In the group of the EU countries, Finland can be regarded as the most sustainable one. Norway and Finland, together with Sweden, Canada, Estonia and Latvia represent the group of resource "Creditors" having the lower EF level than the biocapacity of their area. However, except for Norway and Finland, all these countries show high EF levels and thus they cannot meet the sustainability criterion of the per capita EF lower (or no larger) than 1.7 gha. Moreover, Latvia also showed relatively low level of the IHDI. There is the group of countries that are close to the borderline between the "Creditor" and "Debtor" positions. Particularly, Denmark, Lithuania, Romania, Hungary, Bulgaria, Croatia and Slovakia can be included in this group. Slovakia must also be highlighted due to its positive results because it showed significant increases in human development, its EF is relatively low and it showed relatively low increase in 2012 as compared to 2011.

The highest ratios between the achieved human development and the resource use (IHDI/EF) were shown by Hungary, Romania and Spain. Romania and Hungary are still the countries at the relatively lower level of human development, and still showing the lowest EF levels in the sample, thus, they should particularly focus on that kind of development that would not lead to significant increases of the EF. However, both countries dispose of the relatively low biocapacity area per person that can also determine the overall development. The countries with the highest EF levels, such as Luxembourg, the United States and Canada showed the lowest ratios. The ratio of the achieved human development to the resource use related to the biocapacity area of the country (IHDI/the Number of Countries required) shows the highest scores in the countries, which are resource "Creditors". Finland followed by Canada and Norway achieved the highest ratios although Canada shows very high EF level. The lowest level in the sample was reached by Cyprus, which is the country disposing of the smallest area of biocapacity per person and it was followed by Luxembourg, Belgium, Italy and Netherlands, all having low biocapacity stock available. Moreover, the three BENELUX countries also show the relatively high EF levels which is not the appropriate combination to achieve the SD path.

Each country may follow a different path towards sustainability. The challenge is to determine how to reduce resource consumption or maintain this consumption at the appropriate, sustainable level while improving human development and well-being whatever a country's resource stock and economic and social wealth. Each country needs to prepare a national development strategy addressing the reality of global biocapacity limits and the role biodiversity and ecosystems to sustain human existence. By recognizing countries' specific challenges and opportunities in recent times, it is possible to move towards secure natural resources use in future that would enable economic and social prosperity globally. This would be consistent with the SD path.

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Conditions for Development of Japanese Economy

Pawel Dobrzanski

Abstract One of the main economic problems is to explain what factors make some economies grow faster than others. In the literature there are many theories explaining the economic growth. In practice identification of factors affecting economic growth helps in understanding the determinants of socio-economic development of world leaders and in clarifying developmental delays of other countries. The main goal of the article is to identify main competitive advantages for modern economies. The Japanese economy from many years is the world leader, that's why this country has been chosen by author for analysis. To achieve research goal main macroeconomic indicators for Japanese economy have been presented, inter alia: GDP, GDP per capita, import and export goods and services also import and export ICT and high-tech goods. In addition the article discusses innovation and human capital indicators as a key factor of economic growth, inter alia: spending on R&D, level of education, demographic aspects and its forecast, labour productivity, unemployment rate, patents. Finally article presents short overview and assessment of government activity.

Keywords Competitiveness • Innovation • Human capital • Government • Japanese economy

1 Introduction

In the global economy, countries compete with each other in different areas. Determinants of economic development, competitiveness and effectiveness of economy have changed in time. Reasons for growth are one of the most important subjects of inquiry in economics. Traditional factors of growth are natural resources, land, labor and capital resources. Modern economics underline such factors as development of technology and human capital (Romer 1986, 1990; Lucas 1988; Uzawa 1965; Shell 1966; Solow 1957).

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Countries on the leading positions of competitiveness rankings are significantly different from each other. The competitive advantage of the country is due to its specificity. Macroeconomic indicators are reflecting country's competitiveness. Modern growth theories suggest the importance of human capital and innovation, as factors of economic growth. Institutions of the state and government policy have significant impact on efficiency of the economy.

Despite Japanese economy has market character it is significantly different from other Western economies, especially from the US model. Post-war democratic constitution, demilitarization, de-monopolization and privatization of the economy have transformed from totalitarian economy to market economy. Holistic analysis of aspects that shape the modern market economies can help identify main factors of competitiveness. In further part of this article the conditions for development of the Japanese economy in the years 1990–2012 will be analyzed.

2 The Role of the State in Japan

Every economy has specific economic system. It is set of institutions and mechanisms for coordinating and controlling the implementation of the decisions taken in the country (Conklin 1991). Nowadays the most popular is a mixed model. It combines market economy system with state intervention. Japanese economy is also approaching the controlled market economy model (Gregory and Stuart 2004). Although the role of government is similar in all economies, government's size and methods of its impact are different (North 2007).

Japanese economy is unique market model. It is significantly different from other Western economies. Modern history of Japan shows that state took active part in the economic development by using state investments and various types of support for establishment and development of leading industrial sectors. This active state intervention caused huge economic development, so Japanese economy has become one of the most competitive in the global economy. In nineteenth century Japan was feudal system similar to medieval Europe. Japan was behind other countries hundreds of years ago. Takeover of power by Emperor Meiji contributed to dynamic modernization of the country (Dolan and Worden 1992).

After Second World War Japan was economically backward country. Hence government set three basic goals of economic policy: modernization of technology, improvement of means of production and the setting up conditions for competition. The main task of the Japanese government was promotion of export-oriented industries. Effectiveness of Japanese industrial policy was achieved by preferential tax system, credits and insurance for companies (Klamut 2007).

Today so extended state influence in economic activities is limited, but still government's control and impact on business sector is more powerful than in other market economies. Government is in constant consultation with business and has indirect involvement in banking system. State ownership of industry is small, but the business sector is strictly guided by bureaucratic government elites (Leftwich 2000).

One of the most important elements of the state activity is support for economic development. Japan is poor in natural resources, and thus must lead an active import policy. Japan is cooperating with South-East Asia, where Japanese economy buy materials, sells goods and invests. Japan strengthens its economic and political position in Asia region through concluding bilateral free trade agreements (Drelich-Skulska 2012).

Nowadays, the Japanese economy is a mixture of independent private companies with a significant role of the state control executed by few main state agencies. Government agencies are involved in such areas as export, import, investment, and prices, as well as overall economic performance. The most powerful is Economic Planning Agency which is under the supervision of the Ministry of Economy, Trade and Industry. Economic Planning Agency is responsible for monitoring the daily running of the economy and for long-term planning. The practice of long-term planning has been a major force in the functioning of the Japanese economy (Skulski 2011). Other agency, called Agency of Industrial Science and Technology, is in charge of the technology development and data collection, what is the most important for Japan's scientific and technological development. The third agency is the Ministry of Economy, Trade and Industry, which played a major role in the post-war modernization of Japan, using tax incentives, low-interest loans and other financial incentives. Its main goal is to specify development paths for Japanese industry. Moreover, it is the consultant for other government agencies and is responsible for providing funding for preferred industries and is mandated to provide licenses and patents (Mitsubishi Research Institute 2007).

3 The Economic Situation in Japan

Japan is a country in the Far East and its socio-economic model in many ways different from the European model and the US. Japan belongs to international organizations such as; APEC, ASEAN, OECD, IMF, UN, WTO, G8, G20. The country no doubt can include to the group of world superpowers. Japan's economic position after a period of dynamic and sustainable growth in the years 1950–1992 clearly weakened. GDP growth in Japan, which belonged to the highest in the world, has fallen far below average for the OECD countries. Moreover, the share of Japan of the world gross product decreased. In 2012, Japan noted GDP growth of less than 2%, while in the eighties, this growth reached value up to 7% per annum (see Fig. 1). Currently, the Japanese government conducts an aggressive stimulus policy, which aims to increase economic growth. This policy is strongly supported by the Bank of Japan.

Japan with over 4.5 trillion USD of GDP is the second after US economy among the OECD countries. The Japanese economy is in the process of transformation from industrial to post-industrial, as evidenced by the structure of GDP. Currently, more than 70% of Japan's GDP comes from services sector, 28% from industry and only 1% from agriculture. Japanese national income per capita, which in 2012 was

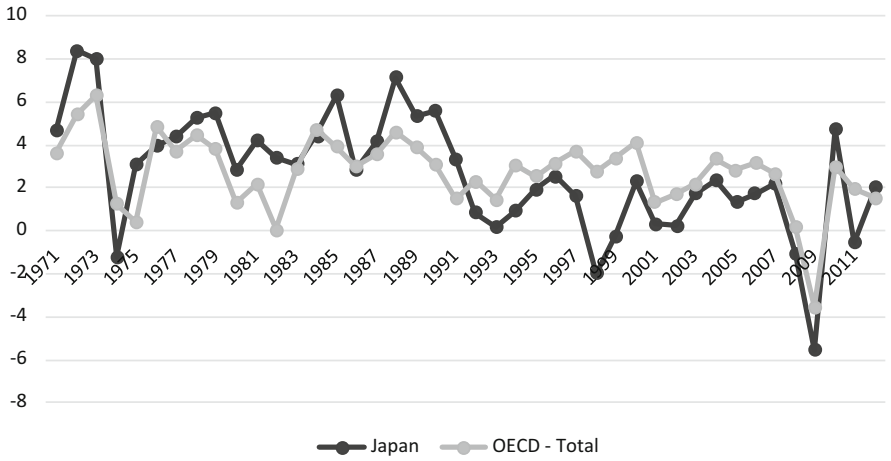

Fig. 1 GDP growth rate in Japan in years 1971–2012. Source: Author's own study based on OECD Database (http://stats.oecd.org)

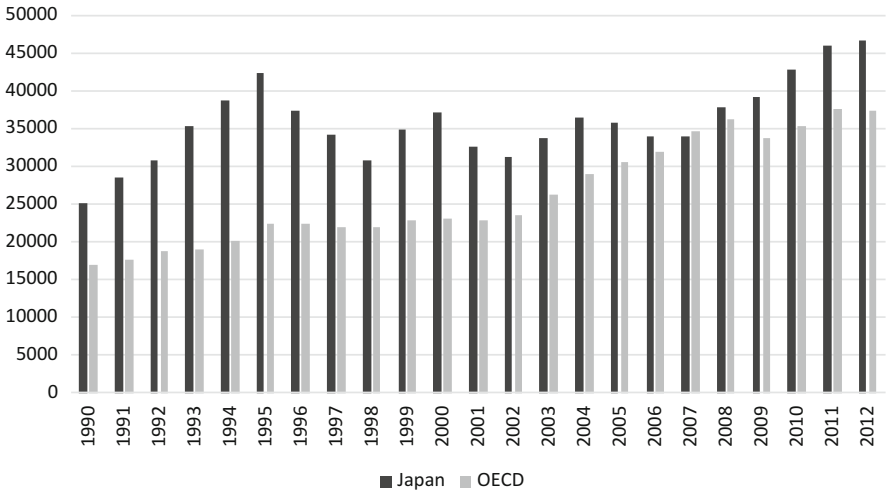

Fig. 2 GDP *per capita* in Japan and OECD countries in years 1990–2012. Source: Author's own study based on OECD Database (http://stats.oecd.org)

47 thousand USD, is almost 10 thousand higher than the average for OECD countries (Fig. 2). However, the difference was much greater in 90s, when Japan reached almost twice as high as GDP per capita than the OECD countries.

In years 1995–2009 consumption growth was much higher in OECD than in Japan. In years 1995–2009 consumption growth was much higher than in OECD countries in Japan. Inverse results were noted in 2010 and 2012. In 2012 the largest contribution to GDP growth in Japan had a dynamic growth of private consumption

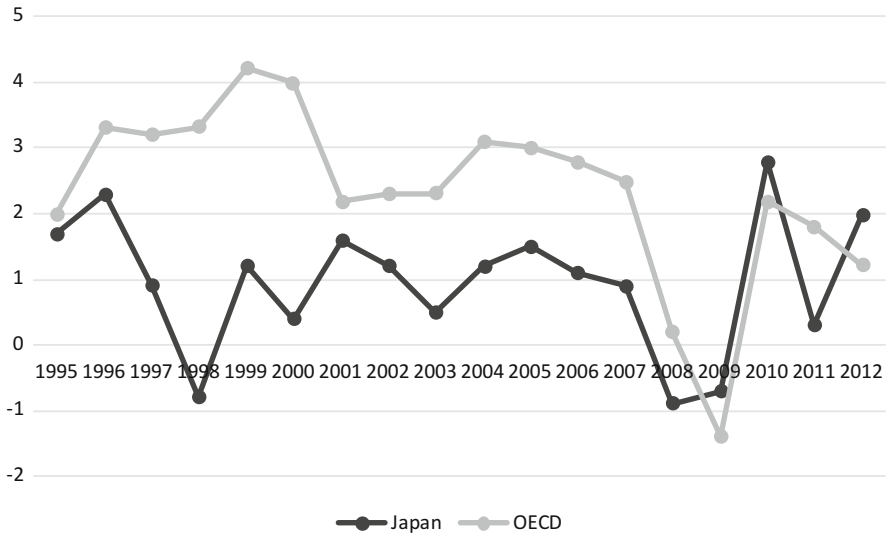

Fig. 3 Private consumption growth in Japan in years 1995–2012. Source: Author's own study based on OECD Database (http://stats.oecd.org)

which was responsible for GDP growth of 2.3% (Fig. 3). Data on GDP, the level of private consumption and volume of Industrial production suggest that Japan emerges from ongoing about a decade of stagnation. The decisive role in this growth was played stimulus efforts carried out by the Japanese government and its central bank.

Due to the lack of natural resources, Japan is a country forced to import most of industry raw materials. After World War II the objective of trade policy was export of goods manufactured on the basis of import, leading to economic growth. Japan's export-oriented development also has contributed to the dynamic growth of the country. Maintaining a constant since the 70s yen exchange rate contributed to the expansion of exports and reducing imports.

Currently, Japan is the third largest exporter among OECD countries, only Germany and the United States are ahead. In the 1980s exports increased from 130 billion to 286 billion USD, and in 1990s increased up to 480 billion USD. Finally export in 2012 reached the level of 770 billion USD. Most often exported products are machinery and transport equipment, industrial products, and chemical products. Positive trend is characterized by the import of goods whose value in 2012 reached 842 billion USD. This can be observed on Fig. 4. Japan imports mainly fossil fuels, lubricants, machines and means of transport. Since 2011, Japan recorded higher level of imports than exports of goods.

Japan recorded a high deficit on services. Since 2000, the deficit decreased from 45 to 31 billion USD (Fig. 5). This is due to increasing of business income. Import and export of services is growing at a similar pace.

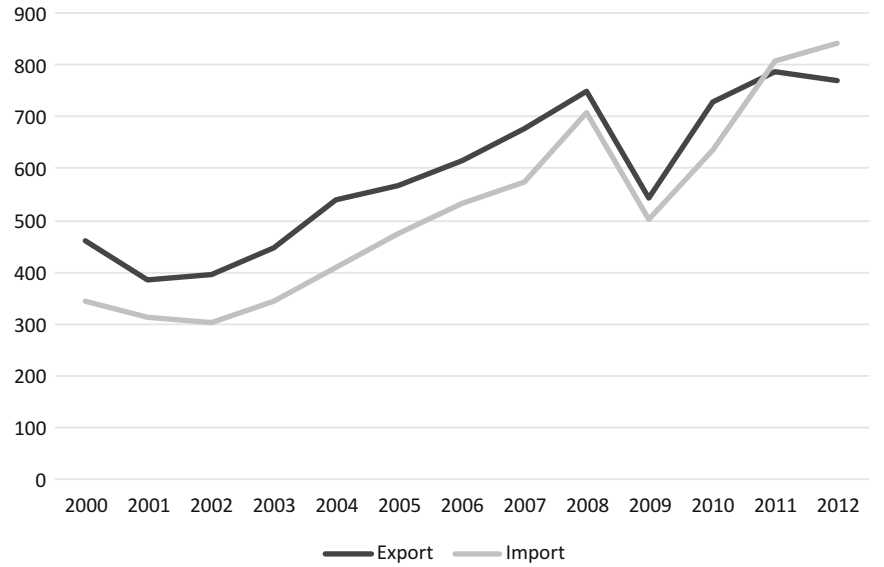

Fig. 4 Import and Export of goods in Japan in years 2000–2009 (in billion USD). Source: Author's own study based on OECD Database (http://stats.oecd.org)

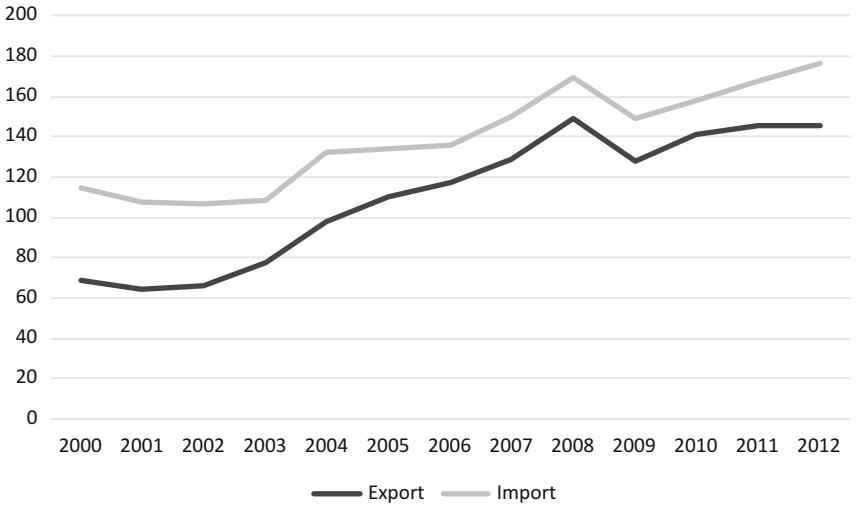

Fig. 5 Import and Export of services in Japan in years 2000–2012 (in billon USD). Source: Author's own study based on OECD Database (http://stats.oecd.org)

The current account balance in Japan in the analyzed period was positive, it means that Japan exports more than it imports. Since 2010 current account balance recorded a decline, and in 2012 this balance reached 1.1% of GDP (Fig. 6).

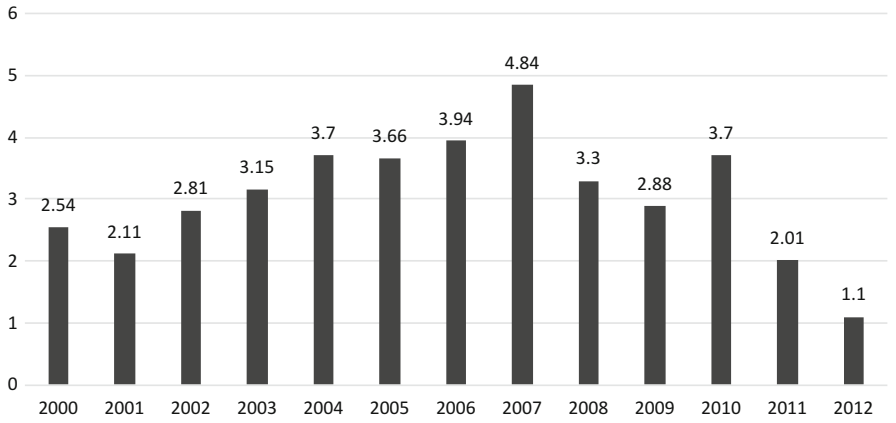

Fig. 6 Current account balance in Japan (%GDP). Source: Author's own study based on OECD Database (http://stats.oecd.org)

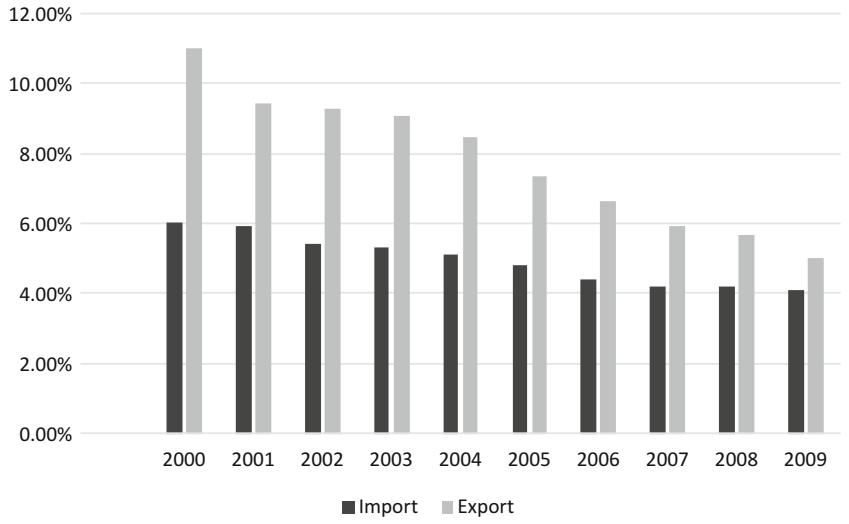

Fig. 7 Import and Export of ICT goods (% of world import/export). Source: Author's own study based on OECD Database (http://stats.oecd.org)

Japan is a leader in export ICT products. However, its share in the world market decreases from year to year. In 2000, Japan had 11% of world exports of ICT products, and in 2009 this share was already two times smaller (Fig. 7).

In recent years it can be observed a negative trend in the export of high-tech goods. In 2000 they represented almost 29% of Japan's exports, this number decreased from year to year and in 2011 reached 17.5% as can be observed on Fig. 8.

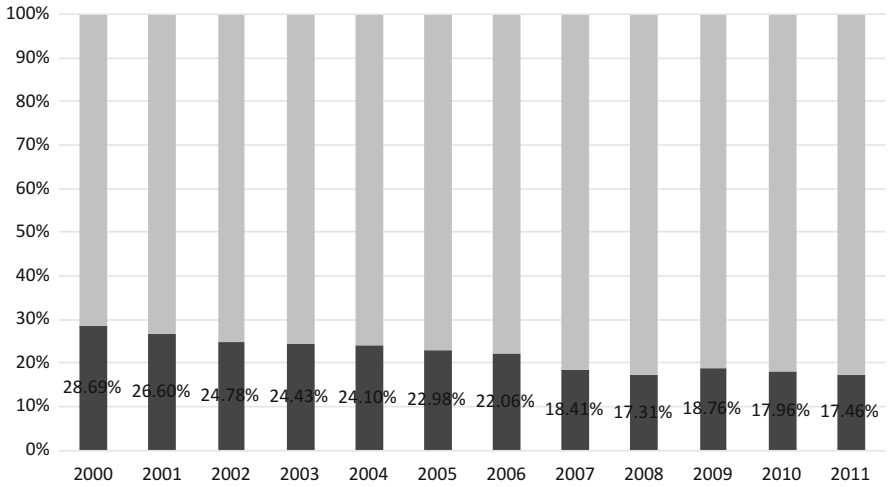

Fig. 8 Share of high-tech goods in Japanese export. Source: Author's own study based on World Bank Database (http://databank.worldbank.org/data/home.aspx)

4 Innovation Level of Japanese Economy

Japan is one of the most innovative countries in the world. In 2007 this country was rated as a second most innovative economy in the world according to the Global Innovation Index. In subsequent years, Japan has fallen in ranking to 9th place in 2008 and 13th in 2009 (Table 1) It is worth noting that the rate of innovation performance is much better assessed than the rate of innovation expenditures (in 2009 respectively 9th and 17th place)—it means a very efficient use of funds spent on innovation by Japan (Dutta 2010).

Modernity of the Japanese economy and its competitiveness involve significant expenditures on R&D by both the private and public sector (ranked 2nd place) also Japan has the world's largest number of patents per number of inhabitants. Japan is also characterized by the world's best ability to innovate and advancement of the manufacturing process. In addition, Japan has a large number of researchers per million inhabitants (Table 2).

Expenditure on R&D in Japan are significant and amounted in 2009, 3.38% of GDP. Since 2000 they are characterized by an upward trend (Fig. 9). Important is the fact that they come mostly from the private sector.

Apart from expenditures on R&D technological position of the economy determines the ability to create new technological solutions, reflected in the number of patents granted. The dynamics of the development of this factor in Japan is very high. In the period 2000–2010 there has been a threefold increase in the number of patent applications from 10 to 30 thousand. Therefore, Japan also improved the ratio of patent applications per million inhabitants and in 2010 amounted 226 (Fig. 10).

Table 1 Japan score in Global Innovation Index in years 2007–2009

	2007	2008	2009
Place in ranking	2	9	13
Score	4.89	4.65	4.50

Source: Author's own study based on Dutta (2010)

Table 2 Top rated innovation indicators in 2009—Japan

	Place in ranking
Researchers per million inhabitants	4
Private spending on R&D	2
Public spending on R&D	4
The stage of development of clusters	1
The number of patents	1
The ability to innovate	1
The advancement of the production process	1

Source: Author's own study based on Dutta (2010)

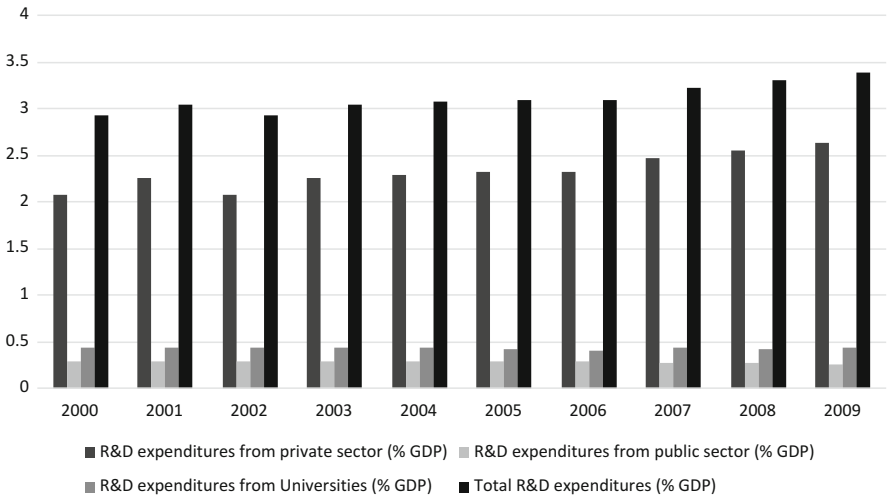

Fig. 9 Expenditures on R&D in Japan 2000–2009. Source: Author's own study based on OECD Database (http://stats.oecd.org)

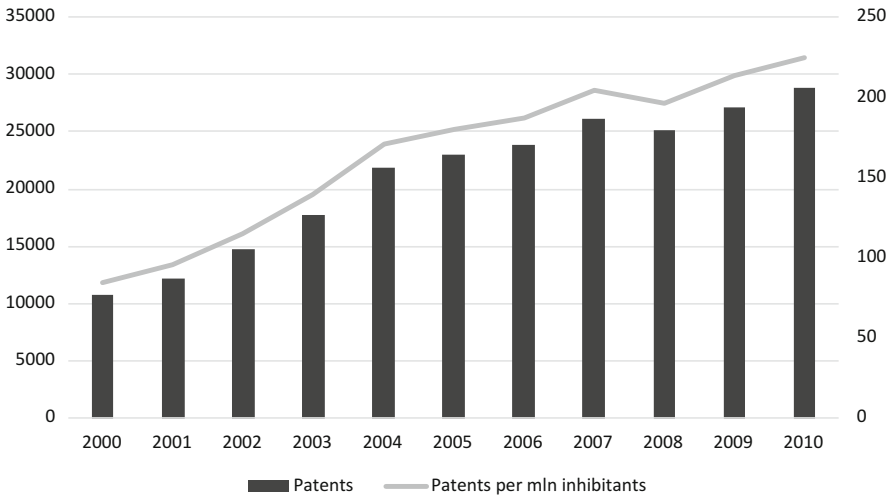

Fig. 10 The number of Japanese patent in The International Patent System in 2000–2010. Source: Author's own study based on OECD Database (http://stats.oecd.org)

5 Human Resources and Human Capital

The population of Japan in 2000–2010 oscillated around 127 million people. Japanese society is quite hermetically, as evidenced by the fact that only about 1.5% of the population are foreigners. According to demographic forecasts the population of Japan as a result of the negative natural growth will steadily decline. Japanese society is aging demographically—evidenced not only by the negative natural growth, but the increasing the average life expectancy. The number of people at the age over 65 years is constantly increasing—according to OECD forecasts in 2050 it will be up to 38% of the Japanese population, and thus 48% of the population will be economically inactive group (Table 3).

Japan is characterized by a high rate of social activity, as evidenced by the relatively low unemployment rate, which in 2010 was 5.04% and was more than 3 percentage points lower than the average for OECD countries (Fig. 11). However, unemployment in Japan has increased significantly over the past 20 years.

Until the mid-eighties, the annual working hours in Japan was the longest among OECD countries and exceeded 2100 hours. In recent years significantly decreased, and in 2012 amounted to 1745 hours, and was lower than the average for OECD countries (Fig. 12).

Apart from hours worked Also important is productivity measured by the value of GDP at constant prices. GDP per hour worked in Japan in 2000–2010 has increased steadily and in 2010 reached a value of 35.40 USD. The annual growth in GDP per worker is also characterized by a positive trend until 2008–2009, when it reached a negative value, but in 2010 rose by 5.1% and reached a value of over 61 thousand USD (Table 4).

Table 3 Basic demographic data—Japan

	Population in mln	Population growth rate	The working age population (%)	Fertility rate	Population below 15 years old (%)	Population above 65 years old (%)
2000	126.93	0.19	68.06	1.36	14.58	17.37
2001	127.29	0.29	67.67	1.33	14.36	17.97
2002	127.44	0.11	67.25	1.32	14.2	18.54
2003	127.62	0.14	66.92	1.29	14.03	19.05
2004	127.69	0.05	66.63	1.29	13.89	19.48
2005	127.77	0.06	66.07	1.26	13.76	20.16
2006	127.77	0	65.53	1.32	13.65	20.82
2007	127.77	0	64.97	1.34	13.53	21.49
2008	127.69	−0.06	64.45	1.37	13.45	22.1
2009	127.51	−0.14	63.91	1.37	13.34	22.75
2010	128.06	0.43	63.76	1.39	13.22	23.01
2020	124.1	−0.47	59.15	–	11.74	29.11
2050	97.08	−1.05	51.52	–	9.67	38.81

Source: Author's own study based on OECD Database (http://stats.oecd.org)

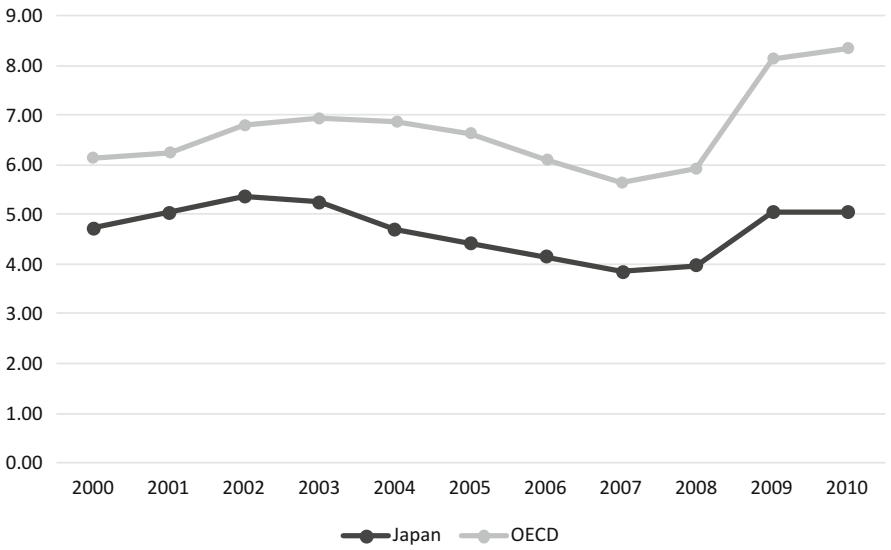

Fig. 11 Unemployment Rate in Japan in 2000–2010. Source: Author's own study based on OECD Database (http://stats.oecd.org)

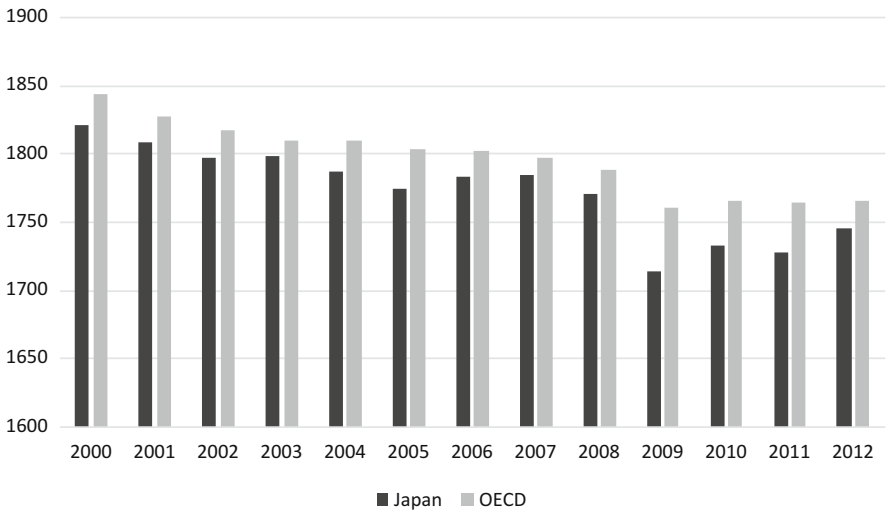

Fig. 12 The average number of working hours in Japan in 2000–2012. Source: Author's own study based on OECD Database (http://stats.oecd.org)

Table 4 Labor productivity in Japan in 2000–2010

	GDP per employee in USD (2005 = const.)	GDP growth rate per employee (%)	GDP per hour worked in USD (2005 = const.)	GDP per hour worked USD (2005 = 100)
2000	55644	2.9	30.6	91.3
2001	56267	1.1	31.1	92.9
2002	57097	1.5	31.8	94.9
2003	58028	1.6	32.3	96.4
2004	59061	1.8	33.1	98.8
2005	59398	0.6	33.5	100
2006	60111	1.2	33.7	100.7
2007	61168	1.8	34.3	102.4
2008	60820	−0.6	34.3	102.6
2009	58352	−4.1	34	101.7
2010	61329	5.1	35.4	105.8

Source: Author's own study based on OECD Database (http://stats.oecd.org)

Japanese society is distinguished not only a high level of education, but also the common and systematic replenishment. In Japan the social prestige is determined to a greater extent in the education level than income or professional position. According to OECD statistics in 2009, was 44% of people with higher education in Japan, while for OECD countries was only 32% (Fig. 13).

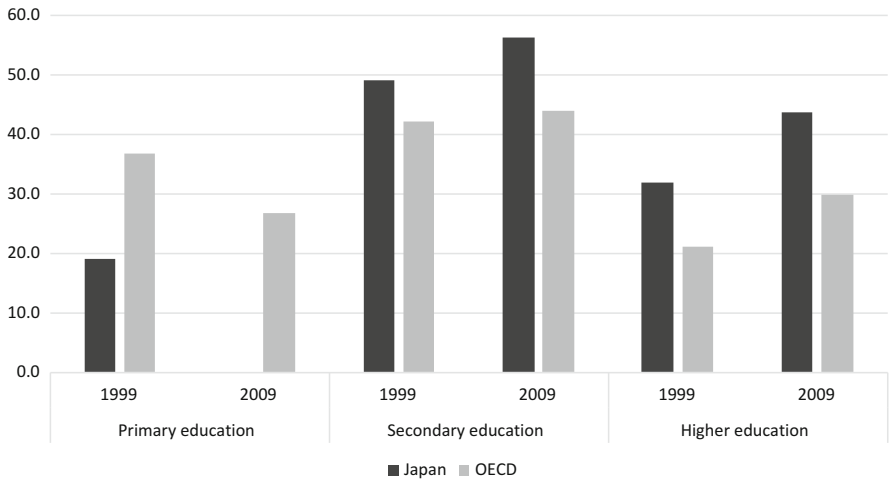

Fig. 13 The level of education in Japan and in OECD in the population aged 25–64 in 1999 and 2009. Source: Author's own study based on OECD Database (http://stats.oecd.org)

6 Conclusion

The competitive advantage of the country stems from its specifics related to the history, geopolitical and economic policy of the state and its resources. Japan represents a social and economic model, which differs significantly from European economies. The structure of the economy is a former industrial with a large share of the services sector. In addition, the country is actively participating in international trade—is one of the world's largest exporters.

Japanese model is market economy with a specific active role of the state in the economy. Government integrates economic processes through economic policy instruments in order to achieve long-term development strategy contained in multiannual plans. Currently, the Japanese economic system is a combination of independent private companies with a significant degree of state control exercised by several major state agencies.

Due to the lack of natural resources, Japan is a country forced to import most of the raw materials industry. However, it is the economy highly innovative, characterized by one of the best rated the world's capacity for innovation and advancement of the production process. The economy is also dedicating significant resources to R&D activities, a significant amount comes from the private sector.

Japan is characterized by the high rate of social activity. Furthermore, Japanese society is characterized not only a high level of education. Japan is an example of the so-called welfare society, characterized by high life expectancy and a large share of people in working age. In the future, this could significantly burden the social system and health care. The average number of working hours in Japan is much lower than in OECD countries, while productivity relatively high.

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The Role of FDI in the Economic Development of Transition Countries: The Case of Republic of Macedonia

Ljubica Kostovska and Jelena Tast

Abstract The increased of foreign direct investment (FDI) worldwide, as a driving forces of globalization, is the main characteristics of a new world economy. Understanding of the contradictory nature of FDI as the main factor for integration and disintegration processes is crucial to define their place in the government policy to attract FDI and assess their importance for the economic development of the country. Therefor the objective of research in the paper is the relationship between foreign capital inflow and FDI-related polices in transition economies, due to the country's economic development. We analyze the FDI determinants in the Republic of Macedonia according to OLI-Paradigm. The research in the paper is made with the SWOT analysis in context of the FDI policy of the country. The conclusion is that Republic of Macedonia has to ensure their specific location advantages in order to transform FDI in the economic development.

Keywords Globalization • Foreign direct investment • FDI determinants • Transition countries

1 Introduction

In transition countries, FDI is considered as a key instrument in the process of transforming the former centrally planned economies and stimulating economic growth. FDI become a necessary factor for structural reforms and macroeconomic stability during the transition period. The FDI inflow is taken as a measure for integration of the country or the region in the world economy and therefor the FDI attraction policy is included in the agenda of each government in transition countries. Simultaneously, more than two decades since the transition, as well as the accession of the Central and Eastern countries into EU, are given a possibility to

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compare the FDI attraction policies in the context of economic development of the countries.

The economic literature suggests that FDI can be a catalyst to the economic development of the country, but the effects depends primarily on its absorbing capacities, which are related with the FDI determinants. At the same time, the late twentieth century brought rapid economic and political changes in the world. Global changes in the world economy have created a new environment of development processes. In terms of global imbalances, the less developed countries faced with the challenge of structural changes to participate in the global economy, their internalization and regionalization. The Republic of Macedonia as a small country, in the period of transition, looked for the way out of the economic crisis in the greater inflow of foreign capital. But the data show that FDI inflows in the country are still far from the expectations and needs. In this context, the paper detects the conditions related to FDI in the Republic of Macedonia as a starting framework for defining the policy of attracting foreign capital for the economic development of the country.

The paper is organized as follows. In introduction we point out the importance of FDI policy due to its determinants in transition countries. Section 1 review FDI as a driving forces of globalization and their contradiction role in the world economy. Section 2 reviews the theoretical framework on the FDI determinants, with particular reference to the OLI-paradigm. Section 3 analyses the specific location advantages in the Republic of Macedonia, wherein a SWOT analysis is carried out in context of the FDI policy of the country. The conclusion represents the key insights on the relationship between FDI and economic development in transition period.

2 Foreign Direct Investment as a Driving Forces of Globalization

In modern conditions of the world economy, there are structural changes caused by rapid technological development, from the strong impulses that bring revolutionary changes in the technological base of production. These rapid changes replaces the old so called Ford's industrial mass production system, with the new technological development model. The main feature of the old "Ford's" growth model was the mass production, which relied on the abundant raw materials, auxiliary materials, energy and human labor, which inevitably caused serious disruption of the ecological balance. Based on these bases, the classic industries have developed until the 1970s when the first serious crisis after the Second World War signaled that it was about exhaustion of this model of development and there was a period of change that required quick structural adjustments. The technological model that is based on high consumption of energy, raw materials and labor, became inefficient. In these conditions, the capital required for an exit in moving and supporting the production facilities to new areas, seeking to cushion the blows of the crisis. This phenomenon

of the spread of Ford's model of growth through internationalization of production and capital, which are performed by Transitional corporations (TNCs), opens the first chapter in the globalization of production under the influx of technological change. In the interspace of the release of the Ford's industrial model of development in the developed countries and their resettlement in developing countries (which dampened the global economic crisis), the developed countries rushed to find a way out, taking structural changes in the production whose preferences were the development and use of microprocessors, electronics, automation, biotechnology and new materials.

In congested conditions of competition on the world market for penetration with their products and in the struggle for access to capital, given the low accumulative capacity, the developing countries and later the transition countries found themselves in a complicated situation. Common advantage of the transition countries was the existence of trained, skilled and quality human factor as a central potential of new processes that have paved the way to global society in those countries. Since the total movements and process in the world, and particularly in highly developed countries indicate that the technological process has become a decisive factor in the development and that in future the structural changes will take place under this common denominator, the new market economies are hampered by significant and ominous matter to take urgent activities and to conduct economic and systemic changes, in order to stop the lag in development and with less inferiority to adopt the new quality of creating the world economic system—globalization and world production.

Development is not a one-sided process, especially not if it happens in capital shaped conditions, since its primary appearance and its constant aiming at developing and conquering not only the domestic but the global market as well. In fact, under nowadays' circumstances, the market appears to be a deficit factor and an essential need, without which the capital could not exist at all, although it has always been an exit and end point of each activity of the capital. In this exit and end point also derogates the meaning the production has for the satisfaction of the people's needs, in accordance with the regenerative and the absorption capability of nature, to turn itself into an end in itself. This means that it produces itself in order to sell itself, its conduct is in accordance with the needs of consumer for the purpose of constantly getting profit. Here is the difference between the interests of the national economy, on one hand, and the big capital whose active carriers are the TNCs, on the other hand.

TNCs perform integration of the global economy primarily from the standpoint of their own interests. They are carriers of strong processes of disintegration at national and international level, which are not built-in in a compact national system within the economy of the country where the capital has its break-through. TNCs in their operations tend towards having a vertical integration controlling each phase of the production process. More than 30% of the world trade is going on between the corporations and their subsidiaries. This is not real trade, it's a trade without real competition. This is how instead of competition it is TNCs that successfully isolate

the market laws, determine the price of each phase from production to sale (Uzunov and Kostovska 2000).

Another aspect of sector connection and build-up in the 1990s are the mergers and the acquisitions that were largely made in the oil sector, in the sector of telecommunications and financial services industries, where also happened significant inter-sector activities of this kind (globalization of media conglomerates), (Sklair 2002). Further, TNCs create alliances and global networks for connection, something that leads to drawing the conclusion about outlining the shapes of the new form of global economy in which the states shall slowly lose their place and role in the creation of economic policies in their national economies, and the TNCs enhance their role—corporate capitalism.

With the deregulation and privatization that appeared in the developed countries in the 1980s and the disintegration of the socialist system in 1990s opened new areas for TNCs actions for which free movement of goods and services appear to be favorable. Whereas the developing countries fell into an in debt crisis, and when the socialist countries entered transition, the International Community (via its agents the IMF and the World Bank), acted equally, by recommending economic policy with appropriate instrument within the frameworks of programs for structural adjustment. Because the programs for structural adjustment entered many areas of economic policies, the acceptance of loans practically meant letting the economic control over the state into the hands of the World Bank and the IMF. The officials of these institutions have the power to change the trade and fiscal policy, the law on labor, the health-care, the ecological regulations, the energetic policy, the movement of population, the budget policy.

Together with the WTO as a third pillar of this international order, TNCs become a major power in the world economy. TNCs can freely cross all over the world and start business deals where the labor force is the cheapest, the laws in environment are less strict, the fiscal regimes are the easiest and the subsidies the most generous ones.

The rule of these giants does not mean having unlimited opportunities for overall development, on the contrary, their operation leads to deepening the economic gap and the unequal distribution of force and the development in the world. The real result i.e. the consequence from the operations of TNC should be measured with other indicators, except for the GDP as an integral indicator that does not show the real social cost, due to methodological reasons. The real cost of development is in fact the social and the public cost that contains the destruction of environment, which is presented through the flow of raw materials, on one hand, and the disposal of the waste materials, on the other hand, that have already gone over the critical limit; the deterioration of the family; the increase in the criminal actions and the asocial actions, and due to this the increased economic, social and existential insecurity. Here can be listed a whole range of indicators that would only prove the actual image of corporate capitalism and the damages caused on its behalf regarding the whole life on the Planet Earth. The only alternative, as opposed to the progress and the domination of TNCs is the survival of the Planet Earth. This is too

big of a stake to allow to be predicted. The corporate capitalism—the contemporary colonialism of planetary size hits its limits within which it unstoppably led itself.

3 Theoretical Approach

The economic literature related to FDI is very extensive. Early publications are based on the classical theory of international trade and comparative advantages of the nation as determinants of the trade. But, the classical approach encountered criticism regarding the inability to explain the export of capital in the form of FDI in terms of having an imperfect market. In the context of the transition, not only there is no imperfect market, but the market institutions in transition countries are still underdeveloped. However, the assumption of the classical approach that the capital moves from economically developed countries in the economically less developed countries, due to the differences in profit margins, represents a starting framework for an explanation of the motives for export of capital in the form of FDI. However, the classical theory failed to consider the reasons for the differences in profit margins. The need to synthesize various aspects of motives for export of capital in the form of FDI and simultaneously enable their empirical study led to the occurrence of eclectic theory, or OLI-paradigm.

3.1 OLI-Paradigm

The eclectic theory, known as OLI-paradigm (Dunning, 1988), represents a modern concept that explains the motives and determinants for export of capital in the form of FDI. OLI-Paradigm has proposed that the returns to FDI can be explained by the competitive-ownership advantages of firms (O), indicating "who is going to produce abroad", by location factors (L) "influencing where to produce" and by the internalization factor (I) that "addresses the question of why firms engage in FDI rather than license foreign firms" (Dunning 2001).The basic hypothesis of OLI-Paradigm is that the company will engage FDI if and when they realize all three groups of advantages The Paradigm point that the combination of Ownership, Location and Internalization advantages and their exact configuration defines which companies become TNCs, where to locate their production and how they are involved in international production. In explaining the paradigm Dunning considers that in the formulation of operational hypotheses about the relationship between individual variables and OLI-level and pattern of international production, it is important to determine the context in which the relation is researched (Dunning 2001).

One of the applications of the eclectic paradigm is to examine its relevance in explaining the change in the international position of the country depending on the stages of economic development of the national economy, so called the concept of

Investment development pad or cycle (IDP). The concept of investment development cycle describes the movement of FDI in transition countries in the last decade, conditioned by the level of development in the country. The main hypothesis is that as the country reaches a higher level of economic development, the configuration of OLI-advantages faced by the company that has invested or will invest in the country, is subject to change.

The country can go through several stages of development. The first stage is pre-industrialization, which assumes that the country has no inflow and outflow of FDI, because there is insufficient location advantages on the one hand and, on the other hand, domestic companies possess little or no own proprietary advantages. Depending on the availability of land resources, the national policy of the country related to FDI and strategy of the company in the second stage of development may influence the OLI-configuration and the country to attract FDI in resource-based sectors, traditional and labor-intensive manufacturing sectors, trade, distribution, transport and communications. Furthermore, in the third stage, depending on the extent to which the country is able to create an effective legal system, skilled workforce and good business environment, may influence the improvement of location advantages and FDI to continue to grow. In the next stage, as the country moves further in its development, so the OLI-advantages of the country are changing. By attaining a certain level of economic development, the location advantages relating to skilled labor and technological infrastructure become more important. The final stage occurs when there is a fluctuating balance between the inflow and outflow of FDI. According to Dunning, at this stage the role of the country is particularly important, because it can affect the quality of location advantages and setting of competitive environment for domestic companies to effectively exploit the opportunities offered by the global economy.

4 The FDI Determinants in the Republic of Macedonia

The Republic of Macedonia, in the period of transition, given the weak economy and the low household savings, looked for the way out of the economic crisis in the greater inflow of foreign capital. But the data show that FDI inflows in the country are still far from the expectations. On the other hand, according to UNCTAD, the Republic of Macedonia is among the countries that have managed to attract FDI in the framework of its economic potential by four determinants for FDI, suggesting that FDI inflows in the country, is within its potential that it has based on the attractiveness of the market, the availability of skilled labor force, the abundance of natural resources and the level of growth of infrastructure (UNCTAD 2012).

At the same time, the Republic of Macedonia, according to the relevant international indicators in recent years has made significant progress in setting the legal framework and improving the investment climate in the country. According to the indicators of doing business by the World Bank, in 2015, the Republic of Macedonia is in 14th place out of 189 countries (World Bank 2015). The Republic of

Macedonia, according to the Investment reform index (IRI) of OECD, has 3.7 score (ranging from 1 to 5) in terms of investment policies (OECD 2010). According to the EBRD transition indicators, in 2015, the Republic of Macedonia has made a progress in corporate sector and infrastructure, whereas the lowest results are related to financial sector, especially to private equity and capital market (EBRD 2015). While international indicators do reflect the progress of the country in the international framework, these indicators refer more to the setting of legal framework than for its implementation. Given this, a question arises as how the Republic of Macedonia can improve its potential for FDI. In the race for FDI, transition countries seeking to attract foreign capital by creating national policies in line with the suggestions of economic literature, while taking into account the experiences of the countries that were example of success in attracting FDI.

In order to examine the relationship between FDI inflow and the absorbent capacity, an analysis of the determinant factors of FDI was made in the Republic of Macedonia. The starting framework wherein the analysis is based represents OLI-paradigm. The determinants of FDI are divided into two groups: the so-called traditional and specific factors.

The traditional determinants of FDI inflow include:

- Macroeconomic stability (As variables of the inflation rate);
- Factors related to the size of the market (As variables of GDP per capita and the growth rate of GDP);
- Factors related to workforce (As variables of the average monthly salary and the rate of unemployment);
- The process of privatization (As variables of the potential share of the private sector in GDP);
- Openness of the country (As variable of the percentage share of trade in GDP of countries);
- Tax policy (As variable of the corporate income tax rate);
- Infrastructure (As variable of the infrastructure reform index according to EBRD);

The specific determinants of FDI inflow include:

- Rule of law (As variable of the indicator for the rule of law indicator (according to WGI) of the World Bank);
- The level of corruption (As variable of the corruption index, according to "Transparency International");
- Country's risk (As variable of the credit rating, according to "Fitch").

In terms of national policies related to FDI, one of the main priorities are the political and macroeconomic stability of the host country's capital. In the Republic of Macedonia, the political stability was a key factor that negatively affected the inflow of FDI in the 1990s, but in the present days, as a candidate country for EU membership, it is unacceptable for the political stability to be deterrent to the FDI inflows into the country. However, it should be borne in mind that the Republic of Macedonia is in a relatively unstable region. The Republic of Macedonia is a small

Table 1 FDI determinants in the Republic of Macedonia

Traditional FDI determinants	
GDP per capita (in EUR)	9090[a]
Inflation rate (%)	3.7[a]
GDP growth rate (%)	−0.3[a]
The rate of unemployment (%)	26.1[a]
Labor costs (gross salary, in EUR)	522[b]
Participation of the private sector in GDP (%)	72[a]
The share of trade in GDP (%)	80.4[a]
Corporate income tax (%)	10[a]
Infrastructure reforms (1–4, EBRD, Transition Indicators)	3[c]
Specific FDI determinants	
Rule of Law	−0.03[d]
(from −2.5 to 2.5 higher index of improved performance, The Worldwide Governance Index)	
Index of corruption (0–100 higher index of improved performance, Corruption Perception Index)	42[e]
Credit rating (Fitch, Credit Rating)	BB+[f]

Sources: [a]Ministry of Finance (2015), [b]WIIW (2015), [c]EBRD (2015), [d]World Bank (2014), [e] Transparency International (2015), [f]Trading economics (2015)

country with a relatively low level of economic development. In 2015, the GDP per capita was 9090 Euros. Also, the country has a relatively low inflation rate of 3.7%. (Table 1) According to the Ministry of finance the Republic of Macedonia has a sustainable budget deficit of 3% of GDP and balance of payment was −1.4% of GDP, but the trade deficit amounted 21% of GDP (Ministry of Finance data 2015). The data show that the country faces a high public and external debt. In 2015 public debts amounted 46.5% of GDP and the external debts was 69.9% of GDP (Ministry of Finance 2015).

In terms to the legislation related to FDI, The Republic of Macedonia, as well as other transition countries, applies the principle of national treatment of FDI. Free entry and establishment of foreign affiliates, as well as free transfer and repartition capital and profits are regarded as norms related to FDI in the transition countries and in the Republic of Macedonia. The foreign investors have the right to own private property and the right to land ownership by way of registration of the company in the country. In the Republic of Macedonia, the rate of income tax is 10%. To attract greater FDI inflows, the Republic of Macedonia has introduced the so-called flat tax. The exemption from tax on reinvested income is also applied, as an attempt to encourage foreign investors to invest in the country. Due to the FDI attraction policy, in 2006, the Republic of Macedonia has introduced a TIDZ model by adopting the Law on Technological-Industrial Development Zones.

The Republic of Macedonia is a country with a small market and low level of development, growth based on labor-intensive factors, weak technological capabilities and limited export. At the same time, the Macedonian economy has a relatively liberal trade regime and regional cooperation. The issue is making the Republic of

Macedonia more attractive than other countries in the region. The Republic of Macedonia can increase its potential for FDI by improving the location and ownership advantages. In this context, the economic factors in the country are of particular significance, whose influence depends on the motives for investment.

In terms of economic factors related to the market, in an era of globalization, economic literature suggest that the access to regional and global markets have a major impact on the inflow of FDI in the host country's capita (Dunning 2004). In this context, the openness of the country and the regional cooperation are of a particular importance and indicate the level of integration of the economy in regional and global economic trends. The Republic of Macedonia has a relatively open economy. The share of trade in GDP was 80.4% (Table 1). The EU member states are the ones that have the largest share in the foreign trade of the Republic of Macedonia. According to the Ministry of finance the trade exchange between the Republic of Macedonia and the EU-27 accounted for around 50% of total foreign trade. The trade policy of the Republic of Macedonia is in accordance with the country's membership in the WTO, as well as with the Stabilization and Association Agreement with the EU. Also, the membership in CEFTA has resulted in completing the network of bilateral free trade agreements with all Member States. According to UNCTAD, the country has signed agreements on avoidance of double taxation, but is still a country with the least signed agreements compared to other countries in the region.

In context of the economic factors associated with the market, an important limiting factor for FDI in the Republic of Macedonia is the weak market growth of the country. The rate of GDP growth in 2015 was negative, amounted to −0.3% (Table 1). The Republic of Macedonia is attractive for FDI that are looking after resources, since a relatively cheap labor force is available, but has limited natural resources. In 2015, the average gross salary in the Republic of Macedonia amounted to 522 Euros (Table 1). However, if compared with other SEE countries, the work force in the country is not the most competitive. The Republic of Macedonia, like most transition countries, is facing high rates of unemployment. In 2015 the rate of unemployment in the country is 26.1% (Table 1). What is worrying is the fact that the unskilled labor largely takes part in the structure of the active population by considering the degree of education. According to the State Statistic Office around 40% of the active population has no education or has not completed secondary education. Also, the labor productivity is very low. The growth rate of labor productivity was negative and amounted to −1% (State Statistic Office 2015).

In recent decades, the globalization has contributed to reduce the importance of traditional determinants of the FDI inflow, while the importance of the so-called institutional infrastructure of the host country's capital is increasingly growing compared to other factors. Hence, the creation of modern "institutional infrastructure" is one of the necessary preconditions for joining of the country in the global capital flows. The Republic of Macedonia and other transition countries faces with inefficient institutions stemming from the transition process. The lack of institutional quality infrastructure represents an important limiting factor for FDI in the

country. Also, in the Republic of Macedonia it has been proven that it is quite difficult to establish institutional stability. The weak mechanisms for the implementation of the regulatory framework for the business sector, as well as for the non-transparent operations significantly affected the inflow of foreign capital into the country. Bureaucracy and inefficient administration as a result of the transition are still present. Foreign investors face lengthy bankruptcy procedures and unclear privatization, which means an opportunity for corrupt activities in certain countries. At the same time, the judiciary still suffers from a lack of independence, as well as low operational efficiency.

The lack of quality institutions in the Republic of Macedonia is also confirmed by the relevant international indicators. Namely, compared to the Index of the Rule of Law of the World Bank, in 2014, the Republic of Macedonia valued at −0.03, which eliminates all measures adopted for favorable business climate. In 2015, according to "Transparency International", the Republic of Macedonia ranks 66th out of 177 countries. The index of corruption for the Republic of Macedonia is 42, which is correlated to the poor rating and the actual state of the rule of law. In terms of the country risk, according to "Fitch", in 2015, the credit rating of the Republic of Macedonia was BB + (Table 1).

4.1 SWOT Analysis of FDI Policy in the Republic of Macedonia

Considering the previous analysis of FDI determinant factors in the Republic of Macedonia which are directly correlated with the economic development of the country, the following question arises: what strategy should the Republic of Macedonia create in terms of FDI?

The question is answered by the SWOT analysis of the FDI attraction policy in the Republic of Macedonia made in the paper (Table 2). The SWOT analysis indicates the following advantages, disadvantages, opportunities and threats of the country associated with FDI. Namely, the FDI inflow in the Republic of Macedonia is within its capabilities. At the same time, the practice has shown that FDI is moving toward economies that have reached a certain level of economic development. Given this, the future FDI inflow will depend on the successful implementation of structural reforms in the country.

The Republic of Macedonia given the small market and low growth potential in the market, there are limited opportunities to attract FDI looking for new markets. Also, Macedonia has a relatively low labor costs, but, the world trends show that low labor costs is no longer a sufficient factor to attract FDI. The promotion of the development of skilled labor forces is of particular importance. Also, it is necessary to create conditions for development of proprietary technology and research base. Hence, according to the economic literature the development of human capital, along with the technological development and encouraging scientific research

Table 2 SWOT analysis of the FDI attraction policy in the Republic of Macedonia

Advantages	**Disadvantages**
Political and macroeconomic stability	Small domestic market
Legal framework for FDI	Low potential for market growth
National treatment of FDI	Insufficient skilled labor
Protection of the right of ownership	Limited natural resources
Completed privatization process	Underdeveloped technological base
Competitive tax policy	Low level of knowledge (know how)
Restructured banking system	Underdeveloped infrastructure
Developed telecommunication infrastructure	Administrative barriers
Relatively cheap labor	High level of corruption
Access to European markets	Ineffective institutions
Opportunities	**Threats**
Improving technological capacities	Relatively unstable region
Creating research base	Competitiveness in the region
Improving the quality of institutions	Slowing of structural reforms
Promotion of education	Institutional instability
Strengthening of financial sector	Blocking the EU and NATO membership
Non-discriminatory fiscal policy	
Modernization of infrastructure	
Meeting the criteria for joining the EU	
Regional promotion	
CEFTA	

Sources: own conclusions

activities is a necessary process (Dunning 2004). This is also important for the Macedonian economy. At the same time, for more dynamic economic development it is necessary to promote the export. The Republic of Macedonia has a relatively open economy, but the question is how the country is willing and able to face foreign competition, which is a challenge for the country in future. Macedonia has the make an effort to create a development strategy which will rely on export-aggressive sectors in order to slowly, but certainly rely on its own accumulation and FDI to be an additional source of accumulation.

The Republic of Macedonia also has to face the challenge of modernizing its infrastructure. In this context, the public and private partnerships can have significant effects on the Macedonian economy. Experience shows that the public and private partnerships, given the limited budgetary resources, can be an effective tool for funding and management of infrastructure and other public facilities. Furthermore, the structural reforms should be intensified to improve the quality of institutions. The creation of modern institutional infrastructure is one of the necessary preconditions for the country to join in the global capital flows. The Republic of Macedonia and other transition countries, faced with inefficient institutions stemming from the conditions of the previous system and undue adaptation of the terms of the market economy. It is necessary to eliminate the administrative barriers

which still represent a limiting factor for the foreign investors through institutional reforms. Also, a greater transparency and continuity of government policies is required. At the same time, it is necessary to improve the independence of the judiciary as a guarantee of impartiality and equal working conditions.

In recent years, the Republic of Macedonia has paid particular attention to the FDI incentives. But, FDI incentives cannot compensate for the disadvantages related to business climate in the country. The experience shows that the improvement of the so-called general terms for investment has a greater effect in attracting FDI than the special incentives for FDI. In this context, it may be necessary to promote a policy of stimulating investments in certain regions, through preliminary analysis of the country's priorities, which would positively affect the regional policy of the country. What is necessary is to create conditions by which foreign and domestic potential investors would be equally treated, not only declaratively but also in practice. The foreign direct investments should only complement the domestic investment in the country, and not to replace. With the involvement of all economic entities, it practically mobilizes all factors of development in the country and simultaneously avoids potential mistake of favoring certain entities. Moreover, promoting cooperation between foreign and domestic companies is an important prerequisite for using FDI aimed at economic development of the country.

The Republic of Macedonia has labor-intensive activities, and therefore attracting FDI in more capital-intensive activities could adversely affect the already high rate of unemployment in the country. Also, the country is facing high trade deficit, so it would be better to focus on export-oriented FDI. Also, when elaborating the issue on what strategy should the Republic of Macedonia should employ for attracting FDI, the origin of the capital should be also considered, or whether the Republic of Macedonia needs FDI from developed countries or the country needs to create conditions for attracting FDI from former transition countries that are now EU members. FDI from developed countries can provide transfer of high technology and knowledge. On the other hand, attracting FDI from former transition countries could mean an entry of smaller companies in the country, which in turn means a greater chance of the Republic of Macedonia to be actively involved in the local companies in the manufacturing process. At the same time, the possibility of attracting export-oriented FDI is higher due to lower transport costs, as well as traditional economic relations and cultural and historical ties. In terms of the form of FDI, in the Republic of Macedonia the process of privatization is completed and the sale of profitable companies and the strategic capacity of the country is exhausted, and therefore in future the key challenge in attracting foreign capital in the country should be Greenfield investments.

All this suggests that the creation of the strategy to attract FDI in the Republic of Macedonia, despite the global trends and experiences, the absorbing capacities and capacities of the country should also be taken into account. Competition is a fight in which the better, the stronger and the more successful one wins, but the efficient government is the one that with its efficient measures and actions should prevent and limit the damaging influence on the unfair competition that derogate the market and worsen the conditions in which the real competition shall produce positive

effects both for the firm, the individuals and the economy as well. Therefore considering the SWOT analysis of FDI in the Republic of Macedonia, the Republic of Macedonia in attracting foreign capital should consider the advantages, eliminate the disadvantages, realize the opportunities and protect against threats.

5 Conclusion

The Republic of Macedonia belongs to the group of countries with the slow progress in the structural reforms during the transition, necessary for integration into the global economy. The economic literature suggests that FDI can be a catalyst to the development of the country, but the extent and nature of the effects depends primarily on the absorbing capacities of the capital's host country. In the Republic of Macedonia the FDI effects in the context of the economic development are insignificant, which is largely due to the weak progress in transition. The development of the market institutions is one of the basic preconditions for attracting FDI. In the era of globalization, the openness of the country become an increasingly necessary precondition for attracting foreign capital. Also experience of the countries indicate that the comparative advantages such as natural resources, low labor costs etc., do not create long-term economic development. Changes are necessary in order to create conditions for development based on knowledge so that the country can be integrated in the global economy. At the same time, the modern institutional infrastructure is one of the major factors for FDI. In this context, it is necessary to eliminate the administrative barriers, which still represent a limiting factor for foreign investors through institutional reforms. In parallel with the implementation of structural reforms, for Macedonia as a candidate country it is necessary to intensify the process of EU integration. Meeting the criteria for joining the EU represents an important prerequisite for attracting FDI in the country.

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Part IV
Inequality

Social Economic Inequality from the Gender Perspective: Lithuanian Case

Egle Krinickiene

Abstract Gender equality as one of the main values of the European Union still has not been totally reached in none of the European Union countries. The European Institute for Gender Equality (EIGE) announced the Gender Equality Index for the year of 2012 for the EU 28 countries, which was only 52.9 out of 100. Persisting inequality between women and men deepens the social economic inequality of the society and serves for the development of such negative trends as persisting pay gap and society polarization, which lead to diminishing middle class and growing gap between the rich and the poor. Due to prevailing stereotypes of gender roles, the group of women is constantly facing bigger social economic challenges caused by, firstly, stereotypical choice of education/profession, secondly, vertical and horizontal segregation of labor market and thirdly, less income, which in the long term forms less old age pensions for women. This research aims to analyze what is the influence of gender inequality to society's social economic inequality and to explore the different positions of women and men in the fields of income, material deprivation, vulnerability and resilience as well as to suggest recommendations for the reduction of gender inequality as inseparable part of social economic inequality and for the effective use of women's labor force as one of the hidden potentials for economic growth. The background of this research is theoretical framework and empirical evidence based on a sociological survey methodology (questionnaire). It is found that position of Lithuanian women is worse than men and requires special measures to be taken in the fields of income, material deprivation, vulnerability reduction and other spheres.

Keywords Gender equality • Social economic inequality • Gender pay gap • Vertical and horizontal labor market segregation • Income differentiation

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1 Introduction

Latest research on social economic inequality and quality of life of population could hardly be perceived without gender as one of the main components of human identity, capital and possibilities. Gender mainstreaming is one of the most important strategies for the economic growth in the European Union taking into account women as ineffectively used source of hidden talents and potential.

Gender inequality begins in the early childhood as learned/acquired behavior in families. For many ages, boys have been nurtured to be breadwinners and decision-makers while girls have been taught to be cares in households responsible for growing and aging generations as well as housework. The times have changed dramatically but gender inequality still persists in our minds and real lives leaving the trace of gender role stereotypes, which have impact on social economic inequality by gender as hardly changeable phenomena even in progressive societies of Europe and the world.

Based on stereotypic perception "women and men continue to choose very different fields of study in secondary and tertiary education. The fields of study that men and women choose feed into their occupational choices, which in turn affect the wages they earn throughout their adult lives" (World Bank 2012, p. 107). Women's professions (education, human health and social work activities; arts, entertainment and recreation and etc.) being more flexible at the same time are unattractive as less paid. Working part time, which is popular amongst European women and considered to be as retaining of positions in the labor market, actually serve as the source of incomparably less women's income, in the long term—less old age pension, and bigger financial dependence on a partner. Stereotypically female occupations such as nursing, domestic health care, education and others remain undervalued and financially undercompensated. Stiglitz (2015, p. 54) claims that regardless of gender or skill level, workers in these female-dominated fields earn less than their equivalents employed outside the "caring economy."

Formation of uneven income creates gender pay gap, which serves as a background for social economic inequality between women and men and is constantly maintained by such phenomena as both vertical and horizontal segregation in the labor market. An important obstacle for women's equal participation in the labor market is their major role in the unpaid domestic care economy, which is stereotypically understood as the main women's function and creates a double burden for women as well as hard attempts to reconcile career and family. The main resources that women dispose to incomparably lesser extent than men are, firstly, finance, and secondly, time. Women spend more time in unpaid work in households while men spend more time in paid work in the labor market herewith disposing more income and more time for leisure. "The implication is that women provide household services but other members of the household benefit. This distributional issue within households gets lost when income or consumption per household are considered" (Stiglitz et al. 2010, p. 128).

Another important consequence of gender pay gap is the threat of poverty that women face more than men worldwide. Combating inequality becomes not only the question of moral values but also one of the ways to increase the economic welfare

for families and the effectiveness of the economy as a whole. Stiglitz (2015, p. 55) claims that "implementing equal pay would mean an income increase for nearly 60% of U.S. women. Two-thirds of single mothers would get a raise of 17% (equal to more than $6000 a year), and the poverty rate among these families would drop from 28.7% to 15%". Gender equality issues, necessity to introduce the gender aspect into the public and socio-economic life/strategy of a country, negative impact of gender stereotypes on women and their position in the labor market, stability of family institution, mental and physical health, transfer of negative phenomena of poverty, social exclusion and economic passivity to the growing generation have been studied by Beneria and Savitri (1996), Daly (2000), Moser (2003), Kimmel (2004), Reingardiene (2004), Jankauskaitė and Mackevičiūtė (2005), Bagdonas et al. (2007), Rakauskienė et al. (2014) and others.

Restricted women's possibilities to increase their involvement to the labor market also determine less input of women into GDP compared to men. European Commission states that gender equality leads to economic growth: the increase of number of women in labor market and in decision-making positions becomes an economic issue. The most relevant economic and employment goals could be reached if all the human resources in labor market are used including in the very top decision-making positions (European Commission 2012). The link between gender equality and economic effectiveness is analyzed by foreign classics of gender economics and has been developed in recent years by researchers, who note that provision, on a national scale, of equal conditions to women for realization of their human and professional potential would benefit the economy, and its growth would be promoted (Bakker 1994; Dollar and Gatti 1999; Elson 1999; Cagatay et al. 2000; Budlender et al. 2002; Balmori 2003; Kabeer 2003 and 2016; Stiglitz et al. 2010; Rakauskienė et al. 2014; Mitra et al. 2015; Rakauskienė and Krinickienė 2015; Žalėnienė and Krinickienė 2015; Stiglitz 2015). Most of the researchers come to the conclusion that the effect of the global financial system for both men and women cannot be viewed as being absolutely positive, as women are a group of society which has suffered economically and is socially discriminated.

The gender aspect of social economic inequality becomes, firstly, an issue dealing with growing society polarization in terms of "richer men" and "poorer women", secondly, with the need of fair distribution of results of economic growth between the two genders, and thirdly—with equal access to resources—both financial and time—for women and men. "The rules of the game matter not just for the efficiency of the economic system but also for distribution. The wrong rules lead to a less efficient economy and more divided society" (Stiglitz 2012, p. 214).

2 Empirical Research Methodology

The purpose of the research is to analyze society's social economic inequality from a gender perspective and to explore the different positions of women and men in the fields of income, material deprivation, vulnerability, resilience and others. The

research methodology was chosen as combination of theoretical and empirical methods. The method for empirical data collection is survey.

The group of scientists of Mykolas Romeris University provided questionnaires on social economic inequality in the fields of income, material deprivation, dwelling, psychological capital, vulnerability and resilience, health, human capital, skills and capabilities and others. The questionnaires were based on evaluation tools approved and validated by the American Psychological Association (APA). These tools have also been adapted to Lithuanian society in order to explore not only the condition of social economic inequality but the provisions of population, behavior, attitude to social economic inequality and other subjective moments as well.

To implement the survey, a service of data collection was bought from the sociological research company, as this research is funded by the Research Council of Lithuania. The time of sociologic interviews lasted from 21 January to 5 February 2016. Number of respondents was 1000. The object of research became Lithuanian residents over 18 years. The method of survey was the interview in a person's home. The method of selection was multi-stage, probabilistic selection. Respondent's selection was organized in such a way that every Lithuanian resident could have a probability to be interviewed. The interviews were held in: Vilnius, Kaunas, Klaipėda, Šiauliai, Panevėžys; in districts of Alytus, Šakiai, Utena, Tauragė, Švenčionys, Raseiniai, Kupiškis, Molėtai, Akmenė, Rokiškis, Telšiai, Mažeikiai, Marijampolė, Trakai, Varėna, Kretinga and Ukmergė. The survey was performed in 19 cities and 24 villages.

3 Analysis of the Survey Results

One of the main reasons of social economic inequality is income differentiation amongst population. Taking into account that gender pay gap still persists in most countries of the EU and other regions of the world, it should be treated as the major obstacles for women's possibilities to increase their income and gain financial independence.

The sociological survey conducted in 2016 by the order of Mykolas Romeris University revealed that women are concentrated in the least income intervals while men dominate in the biggest ones. In 2015, at-risk-of-poverty threshold for single person was 259 EUR per month (Statistics Lithuania 2016b). The sociological survey confirmed it by revealing that in the income intervals proposed to the respondents beginning from 151 EUR until 300 EUR women's percentage is much higher than that of men's. And vice versa, beginning from the income interval of 501–550 EUR per month men start dominating exceeding women by 1.2 percentage points. The following and the biggest interval offered to the respondents is 551–600 EUR per month, where men's part is increasing—they outrun women by 2.1 percentage points (Table 1).

The survey analysis of income distribution revealed that even 20.2% of the respondents over the age of 70 get the income of 251–300 EUR per month. Having

Table 1 Distribution of women and men by income per month after tax, in percent

Income		151–200 EUR	201–250 EUR	251–300 EUR	301–350 EUR	351–400 EUR	401–450 EUR	451–500 EUR	501–550 EUR	551–600 EUR
Gender	Male	4.9	5.3	7.6	4.9	3.6	6.1	6.6	5.9	7.4
	Female	7.0	9.3	10.8	6.6	5.9	6.4	7.4	4.7	5.3

Source: Compiled by author

in mind that in 2015, in Lithuania the average life expectancy of women was 79.6 years and that of men—only 69.1 years (Statistics Lithuania 2016a), i.e. women live 10.5 years longer than men, there is evidence to suggest that significantly bigger part of women compared to men of the old age live at-risk-of-poverty. This is confirmed by the official statistics, according to which in 2015 women of the age of 65 and older were at the highest risk of poverty, which made even 29.7% and exceeded that of men's by 14 percentage points (at-risk-of-poverty rate of male over 65 years—15.7%) (Statistics Lithuania 2016b).

The survey showed that wage is the main income for both genders however women's part is bigger—53.7% of women and 48.7% of men responded in favor of wage. As for income from own business and farming, we can see the opposite trend, which is also proved by the official statistics, i.e. more men than women get income from this kind of activity, respectively 5.5% and 3.4% (Table 2). In 2015 women made only 39.5% of self-employed persons while men—60.5% (Statistics Lithuania 2016a). This may serve as an argument that the sphere of private business is more open and friendly for men as it requires more financial and time resources, which women dispose to much lesser extent than men.

Benefits for children including alimony make incomparably bigger women's income than that of men. 1.7% female respondents get such kind of income while only mean 0.2% of men named this as their income, survey revealed. This trend demonstrates a dramatic position of single, divorced or widowed Lithuanian mothers, whose status might be an appropriate expression of social-economic vulnerability of women in Lithuania (Table 2).

The proportion of men who declared easy possibilities to subsist was almost twice bigger than that of women. The proportion of perceiving themselves as easy-living ones is mean comparing to the critical mass of the respondents who sometimes face difficulties, and the part of women in this group overcomes men by 6 percentage points (respectively 52.6% and 46.6%). The opposite trend to the easy-living ones is the group of women, whose subjective evaluation of possibilities to subsist was "cannot subsist" (5.1%) and exceeds men by 0.9 percentage points (4.2% of male respondents indicated of not being able to subsist) (Table 3). This enables to conclude that women tend to face material deprivation more often than men. In 2014, material deprivation was faced by 29.9% of women and 26.5% of men, severe material deprivation—by 14.3% of women and 12.8% of men (Statistics Lithuania 2016a). Older people face material deprivation more often than younger. Two out of five (41.1%) women aged 65 and older and a third (34.1%) of men of the same age face material deprivation, 18.9 and 15.8%—severe material deprivation (Statistics Lithuania 2016a).

The analysis of financial shortage of the respondents showed not only different possibilities of women and men (to women's disadvantage) to allow themselves expenses in the main spheres of population life such as material living, recreation, considerable purchase and vacation but also revealed the considerably big social economic inequality amongst Lithuanian society. More than 40% of the survey respondents affirmed that they feel financial shortage for material living, 76.2% claimed that they lack money for recreation (or merry-making) and even 86.2% of

Table 2 Income sources by gender, in percent

		Wage	Income from private business or farming	Pension	Benefits for children (including alimony)	Unemployment benefit, disability pension or other social benefits	Other (savings interest, dividends, property, stock income and other)	Don't know/ No answer	Total
Gender	Male	48.7	5.5	32.4	0.2	10.2	1.3	1.7	100
	Female	53.7	3.4	31.8	1.7	5.9	2.1	1.5	100

Source: Compiled by author

Table 3 What are your possibilities to subsist when all the income of your household put together? (In percent)

		Can't subsist	Have serious financial problems	Sometimes face difficulties	Normal	Easily	Don't know/ No answer	Total
Gender	Male	4.2	10.4	46.6	32.6	3.2	3.0	100
	Female	5.1	9.8	52.6	30.1	1.7	0.8	100

Source: Compiled by author

respondents stated their financial shortage to make considerable purchase (automobile, domestic appliances etc.). Survey demonstrated that only 18.5% of the respondents could afford expenses on vacation while the rest 80.7% felt the lack of money for the main right of every working person—to have some rest.

In every single position proposed for the respondents' subjective evaluation, women tend to be in worse situation than men: the shortage in material living of women is bigger than that of men by 8.1 percentage points, in recreation/merry-making—by 1.1 percentage points, in considerable purchase—by 2.8 percentage points, and in vacation—by 4.8 percentage points (Table 4). The main finding is that gender aspect is inseparable and considerable part of social economic inequality in Lithuanian society.

As in the case of income analysis, consumption expenditure by gender showed that in the lowest and middle intervals proposed for the respondents' women prevail while men are concentrated in the highest intervals of consumption expenditure—501–550 EUR and 551–600 EUR. The biggest gap in consumption possibilities is observed in one of the lowest intervals—201–250 EUR per month, where women exceed men by 4 percentage points (Table 5). This is the evidence of less financial income and possibilities of women.

Women tend to expend more on children's education than men, the survey showed. 100 EUR and more as the highest sum offered for the respondents was chosen by 11.9% of women and 7.6% of men (Table 6). Research revealed that worldwide especially focusing on developing or "emerging economy" countries extra income going to mothers has a more positive impact on household investment in nutrition, health and education of children than extra income going to fathers (Budlender et al. 2002). Being naturally born to be responsible for nurturing their children, women have different consumer behavior related to the needs of family members compared to men, who in their turn care more about financial investment in order to increase the capital. Survey demonstrated that even 11% of male respondents compared to only 5.9% of female ones invest their financial resources.

Women are more vulnerable society group compared to men. The sociological survey revealed that women more often than men experience fear, worry and tension for not being able to pay for education and not graduating the tertiary education, not finding the appropriate job and on the contrary—to lose the job, a fear of reluctant emigration abroad looking for job, a threat of decreased income

Table 4 Financial shortage in different fields by gender, in percent

Do you feel lack of money for:		Living			Recreation/Merry-making			Considerable purchase (automobile, domestic appliances and similar)			Vacation		
		Yes	No	N.a.[a]	Yes	No	N.a.[a]	Yes	No	N.a.[a]	Yes	No	N.a.[a]
Gender	Male	35.8	64.0	0.2	75.6	24.4	0	84.7	15.3	0	78.2	21.4	0.4
	Female	43.9	56.0	0.2	76.7	23.1	0.2	87.5	12.5	0	83.0	15.9	1.1

Source: Compiled by author
[a]*N.a.* no answer

Table 5 Consumption expenditure per month by gender, in percent

		151–200 EUR	201–250 EUR	251–300 EUR	301–350 EUR	351–400 EUR	401–450 EUR	451–500 EUR	501–550 EUR	551–600 EUR
Gender	Male	4.4	5.1	7.2	4.2	7.0	7.6	6.6	5.9	6.4
	Female	7.9	9.1	9.1	7.9	7.4	6.2	8.9	4.9	4.9

Source: Compiled by author

Table 6 Expenditure for children's education per month, in percent

		0 EUR	Up to 49 EUR	50–99 EUR	100 EUR and more	Don't know/No answer	Total
Gender	Male	45.6	11.4	5.5	7.6	29.9	100
	Female	40.6	10.2	8.3	11.9	28.9	100

Source: Compiled by author

and poverty or material deprivation, a threat of not creating family and fear of loneliness, fear of disease and loss of family members, a fear of becoming disabled and old age, a fear of discrimination and social injustice (Table 7). All this speaks about weaker resilience of women to combat life difficulties while men perceive this more naturally.

4 Conclusion

Gender is an obligatory component of research on social economic inequality as it is directly related to the complex issues of human identity, consumer behavior, needs and motivation, human capital and possibilities to realize it in the modern market economy. From the early childhood, women and men being nurtured in very different ways, which are tightly linked with gender roles' stereotypes, gain different and unequal possibilities that in the middle-term perspective transform into uneven financial positions and deepen the social economic inequality for women's disadvantage.

The vicious circle starting from stereotypical choice of education and later on—profession—leads women for domination in less profitable fields of economic activities. In its turn it directly influences the lesser women's income and more vulnerable positions in society. Persisting gender pay gap that is constantly maintained by vertical and horizontal labor market segregation creates income differentiation, which is one of the main features of social economic inequality of society.

The results of sociological survey showed that Lithuanian women dominate in the lowest income intervals while men are concentrated in the highest ones. This could serve as the evidence that women face the threat of poverty and material deprivation more than men, which is proved by the official statistics. Income sources by gender revealed that more Lithuanian women than men live from the wage while more men have their income from own business and farming. This speaks about the sphere of private business as more open and friendly for men for it requires more financial and time resources, which women dispose to much lesser extent than men. Consequently, men have wider possibilities to raise their income and expand their influence in decision-making spheres.

Subjective evaluation of the respondents of financial shortage in the main spheres of population life such as material living, recreation, considerable purchase

Table 7 Vulnerability by gender, in percent

Do you feel the following fears, worry and tension? (The answer "I do feel fear/threat"):		For not being able to pay for education	To lose the job	Of reluctant emigration abroad looking for job	Of income decrease	Of poverty or material deprivation	Of loneliness	Of disease	Of discrimination	Of social injustice
Gender	Male	2.8	15.5	8.7	33.5	31.6	15.9	30.7	8.7	18.9
	Female	4.0	18.0	11.2	35.3	32.5	18.5	36.1	10.8	24.4

Source: Compiled by author

and vacation showed not only different possibilities of women and men (to women's disadvantage) to afford themselves expenses but also revealed the considerably big social economic inequality amongst Lithuanian society. Women just like in the case of income analysis dominate in the lowest intervals of consumption expenditure but, confirming the overall behavior model, spend more on children's education while men in their turn are more tend to make financial investment in order to increase the capital.

Another important subjective evaluation revealed that women more often than men experience fear, worry and tension in considerable social economic spheres of life (payment for education, losing the job, reluctant emigration, poverty etc.). It enables to conclude that women are more vulnerable society group compared to men. This speaks about weaker resilience of women to combat life difficulties while men perceive this more naturally. The different nurturing of a boy and a girl from the early childhood has a direct and vitally strong influence for ability to survive and succeed under the extremely competitive social and economic circumstances prevailing in labor market, business, research and other spheres. Equal possibilities for both genders could be created and strengthened by forming the resilience capabilities for both women and men. Raising gender competence at schools, universities and in the whole society could be one of the appropriate and effective tools.

The gender aspect is inseparable and considerable part of social economic inequality in Lithuanian society. Therefore, the recommendation for the Government could be, firstly, to start implementing gender equality policy de facto, making equal possibilities for women to raise their income, and secondly, to pay considerable attention to re-distribution of budget expenses in more social, i.e. gender-sensitive way having purpose to meet the needs of both genders according to their major demands. Gender equality in its turn shows the level of country's economic and cultural development and is one of the ways to reduce social economic inequality of the society.

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Socio-economic Inequality: Threat to Economic Growth and the Quality of Life of the Population (Lithuania's Case)

Ona Gražina Rakauskienė and Vaida Servetkienė

Abstract In Lithuania, socio-economic inequality (hereinafter: 'SEI') has recently overstepped the threshold of economic security and has become an impediment to economic development and the source of social tension. As the global research shows, firstly, excessive inequality impedes economic growth; secondly, distribution of the products created in defiance of social justice also has a negative impact on the population's quality of life. The object of the present research is interdisciplinary, it encompasses economics and psychology and is examined at the macro- (state) and micro- (individual) levels. The methodology of the assessment of SEI adapted to Lithuania is developed, the factors determining SEI in Lithuania are explored at the macro- and micro-levels, social and economic inequality (income, consumption, material standard of living) of various groups of Lithuanian society and its consequences for the country's economic and social development and the population's quality of life are analyzed. The research pursues the aim of examining SEI in Lithuania as the essential factor of the quality of life of the population, basing the factors determining SEI and consequences for the population's quality of life by means of scientific research and providing possible methods and tools for the reduction of SEI.

Keywords Socio-economic inequality • Excessive inequality • Quality of life • Vulnerability of individual and state • Human and societal resilience

1 Introduction

The recent global research shows that economic growth and increase of the population's quality of life are hindered by socio-economic inequality (hereinafter: 'SEI'). Representatives of the neo-liberal model argue that in the market economy, the increase of SEI is inevitable as long as the economy is growing and its level of development still low. However, global theoretical and practical studies show that

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such provisions are flawed. Excessive inequality hampers economic growth (World Bank 2005). The increase of inequality, which is managed by means of a regressive tax system and other methods of income distribution, significantly increases solely the income of the rich and reduces the income of the remaining population, thus impoverishing the majority of the population. For this reason, the economy becomes ineffective and reduces investment and innovation opportunities. Stiglitz (2012) claims that inequality is inevitable, it is not a social problem, but an economic one. Inequality is not the price of economic growth, according to proponents of the liberal model, but the reason for the slowing economic growth. The underlying thesis is that a price of inequality—an economic system that is less stable and less efficient with less growth (Stiglitz 2012). Inequality is a systemic problem, a feature of the economic system.

Two main conclusions have been made by Stiglitz (2012): *first*, inequality is the result of the economic policy being implemented which is favorable for the rich; *second*, the roots of the problem cannot be reduced to any one single fragmented factor, e.g., income tax, health and labor market reform. They encompass the totality of factors, their system. Combating inequality requires a systemic approach and systemic solutions in many areas, such as finance reform, corporate management, tax policy, anti-trust policy, monetary, education and health policies, regulation of labor relations.

Similar questions are raised also by Reich (2010) claiming that the cause of the global crisis is not the increase of the public debt or the population living beyond their means, but considerable socio-economic inequality, when GDP growth is based on an unfounded increase in the income of the rich. During the past 30 years, the loan boom was accompanied by a widening gap between the richest US population and the rest of the population, while the 2008 crisis was the outcome of the increasing unfair distribution of income (Reich 2010).

Inequality has a negative impact also on human well-being. Studies show that the distribution of a created product in defiance of social justice not only hinders economic growth and reduces state budget revenues, but also adversely affects the quality of life of the population, namely, demographic processes, health, the material situation of the population, reduces access to education. In this context, it is understood as extreme inequality, viewed as excessive inequality, rather than as any inequality, which in itself promotes development and competition.

Inequality becomes excessive if it reaches the level of 30–40% of the Gini coefficient (the Gini coefficient estimated in 2016 for Lithuania according to data of our survey accounts for 35.56). Excessive inequality is not merely deep inequality (deep does not yet mean excessive), but the one which, starting from a certain level, impedes economic growth rather than promotes it and leads to adverse social and economic consequences. In this sense, SEI grows out of being a social issue to a major bottleneck for economic growth and the improvement of the quality of life. The negative social consequences of excessive inequality pose a threat, in particular, by creating a 'poverty trap': individuals realize that they cannot escape anywhere, there are no major social and economic spurs, an individual loses motivation to be active. The person loses heart, and negative phenomena, such as

the increasing number of suicides, the increasing the number of cardiovascular disease cases, the growing crime rate, etc., become increasingly prominent.

In recent years, the world has become increasingly aware of the impact of SEI on the quality of human potential. It is argued that inequality not only hampers economic growth and reduces the quality of life, but also reduces the quality of the human capital, i.e., beyond a certain critical threshold it impedes human development and the growth of human potential.

Inequality increases the insecurity and vulnerability of an individual and a state. For individuals, the following two problems are vital—insecurity and vulnerability (World Bank 2005). Vulnerability is perceived as the threat of a drop in the standard of living, which is a particularly worrying phenomenon if there is a risk that the living standards will drop down to deprivation. The traditional one-sided aspirations of economists related to GDP growth have driven the focus away from the issue of vulnerability. One of the factors that 'makes the greatest contribution' to the increase of vulnerability is SEI, when the poor are incapable of overcoming life's difficulties. We have to think of inequality not as a moral issue, but as an economic challenge, closely linked, *firstly*, to economic growth and, *secondly*, to the increase of vulnerability (Stiglitz 2016).

2 Theoretical and Methodological Aspects

The view, prevailing until recently, that economic growth is the basis for social and economic development has been subject to sharp criticism over the past 20 years. In discussing the causes of the 2008–2010 crisis, studies highlight the growing gap between economic growth (GDP) and the parameters characterizing the well-being of the population (Stiglitz et al. 2009). In the literature (Shevyakov and Kiruta 2002; Reich 2010; Berg and Ostry 2011), there is growing evidence that the distribution of income has a particularly strong influence on economic growth, i.e., reduction of inequality is a necessary precondition for steady economic growth.

The dependency between statistical data (GDP/capita, the Gini coefficient) and the subjective assessment of society's satisfaction with life reveals that the well-being of society increases almost linearly with the decrease of wealth differentiation. The deepening income differentiation in society leads to dissatisfaction of the population and social tensions, because, with the rise of the overall standard of living, the situation of individual groups is not improving.

A large gap between adjacent deciles shows not only the uneven wealth distribution of a country's population, but also the overall ineffectiveness of the economic policy implemented in the country and uneven distribution of resources. SEI in respect of the current generation leads to unequal opportunities also for future generations. Therefore, it is essential to explore the distribution of resources and the output of economic growth between the richest and the poorest (Mercan and Azer 2013).

In assessing the degree of SEI, data on income inequality (e.g. Eurostat, World Bank, OECD, etc., in Lithuania—the Income and Living Conditions studies) are usually presented. The Gini coefficient, the Robin Hood, Atkinson and Theil's

entropy indices can be used to assess the inequality of income distribution. However, the assessment of SEI needs to take account also of other aspects of material well-being, i.e., wealth at the disposal of the population, living conditions, access to means of first necessity, consumption, savings, it is also necessary to evaluate not only the nominal income of the population, but also to take into account changes in prices, the purchasing power of money.

Although in Lithuania there have been conducted a large number of socio-economic (mainly income-focused) inequality studies, there is a lack of a more in-depth research that would evaluate the differentiation of consumption and material living conditions, disparities between certain groups in society. The factors influencing SEI, causal relationships and the link between SEI and the psychological well-being of the population, their values, behavior and personal characteristics have not been investigated sufficiently thoroughly.

Studies show that the factor of inequality is of particular significance. Thus, upon reducing the decile differentiation coefficient from 10 to 7, GDP growth may increase by 30–50% (Shevyakov and Kiruta 2002), and given a 10% annual growth in the income of the population the natural population growth rate will amount to 3.3%. Such a distribution of income could be considered socially fair. Research allows for the identification of normal and excessive inequality, which is a certain security margin beyond which macro-economic and demographic indicators are negatively affected (Atkinson 2008).

In addressing this issue, it is important to objectively assess the actual inequality in Lithuania, to identify its causes and to evaluate consequences for the development of the country and society. The examination of this phenomenon requires in-depth research, the results of which could reasonably provide for the measures preventing the spread of SEI and effective ways of reducing it. Reduction of inequality would help to reduce social exclusion, poverty, the gap between the opposite social poles and the resulting tensions in society and to seek social justice.

Research methodology is based on the concept of socio-economic inequality (Fig. 1), methods of evaluation, analysis of the factors determining socio-economic inequality at the macro- and micro- levels, assessment of the socio-economic situation (income, consumption, material standards of living) of various groups of Lithuanian society (rural and urban population, the youth and the elderly, females and males) and determination of consequences for the economic and social development of the country and the population's quality of life. At the macro-level, socio-economic inequality is researched using official data of statistics agencies and the Lithuanian state institutions analyzing Lithuania's state economic policy (tax system, social benefits, employment policy, etc.). At the micro-level, the factors of socio-economic inequality are analyzed based on a representative sample of the population using the tools approved and validated by the American Psychological Association. The research is conducted and the recommendations based on this research will be provided to state administration institutions indicating the specific methods of inequality reduction and the tools of its prevention.

Sociological research methodology at the micro-level:

- Duration of the research: 21 January 2016—5 February 2016
- Number of respondents: N = 1001
- Object of the research: Lithuanian population aged 18 years and over
- Manner of survey: interview at a respondent's home
- Method of sampling: multi-stage random sampling. The selection of respondents has been designed so that every inhabitant of Lithuania would have an equal chance of being interviewed.
- Survey held in: Vilnius, Kaunas, Klaipėda, Šiauliai, Panevėžys, Alytus, Šakiai District, Utena District, Tauragė District, Švenčionys District, Raseiniai Districti, Kupiškis District, Molėtai District, Akmenė District, Rokiškis District, Telšiai District, Mažeikiai District, Marijampolė District, Trakai District, Varėna District, Kretinga District and Ukmergė District. The research was conducted in 19 cities and 24 villages.

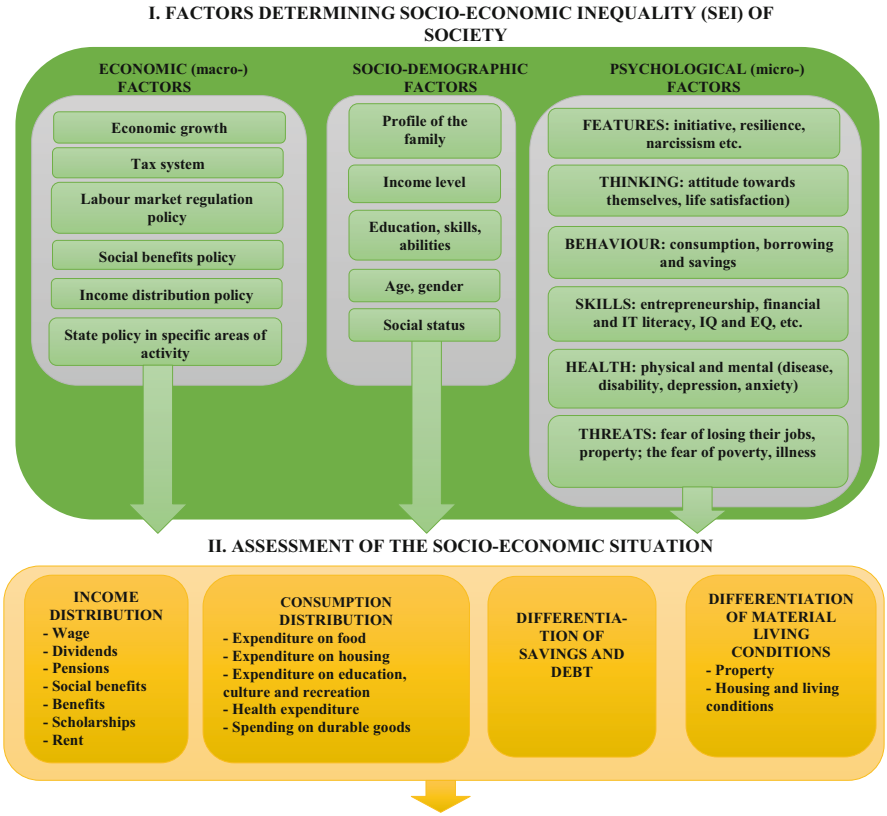

Fig. 1 The concept of socio-economic inequality. Source: Created by authors

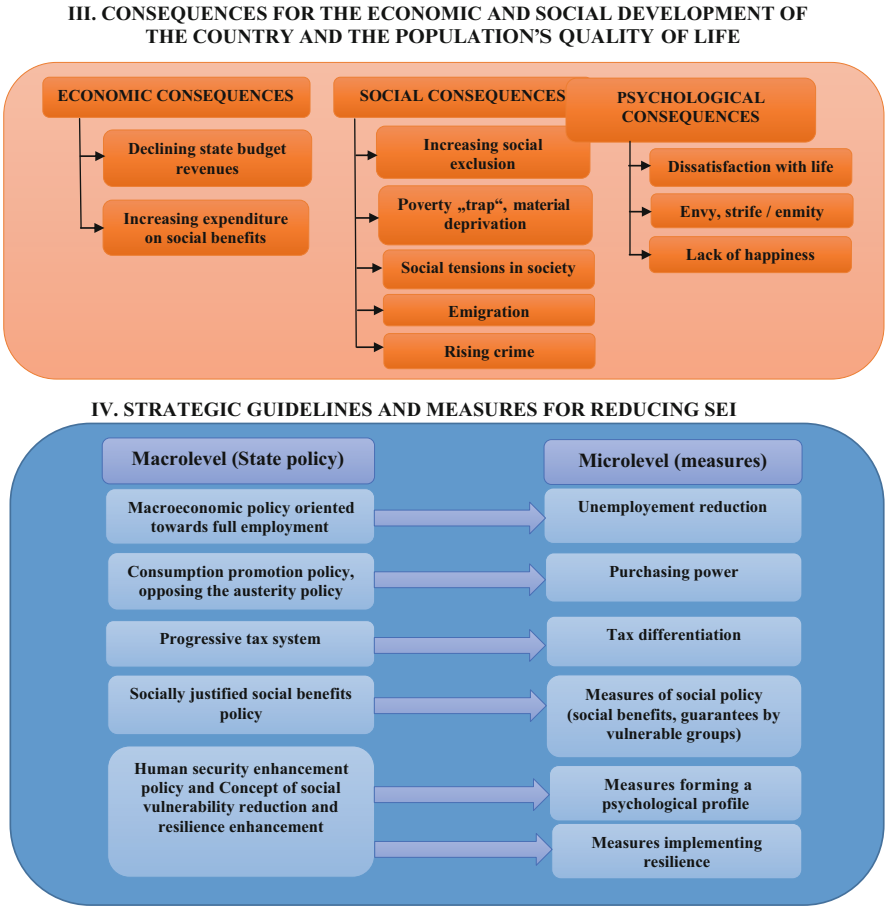

Fig. 1 (continued)

3 Findings: Assessment of Socio-economic Inequality

The growing societal polarization with an absent or extremely small middle class is the key reason for the decline of the Lithuanian economy demanding attention at the national level, as this phenomenon promotes social tension and societal cataclysms, i.e. social threats, emigration, which can impede the growth of the whole economy.

Lithuania is among the leaders in the European Union by income distribution. Global experience shows that a 10-time difference in income (decile coefficient equals to 10) causes a threat to a country's macro-economic stability. In Lithuania, at the moment this threshold is crossed. The unreasonably large disproportion in income distribution (decile income differentiation coefficient—10.48) is one of the most significant problems in Lithuania. Leaving this issue unaddressed makes it

impossible to implement any long-term strategy and medium-term programs. As our research shows, in many Lithuanian regions the human development losses caused by inequality have increased. In the regions, income disproportion and wealth inequality are increasing.

Today, the state of the quality of life, a country's economic environment and the international situation reinforce the sense of human insecurity and instability. The research (Rakauskienė et al. 2015) demonstrates that recently, 78–84% of the Lithuanian population have been mostly concerned over the threats which enhance human vulnerability, i.e., the fear to lose a job and income, the fear to fall sick, socio-economic inequality, the decline of moral and ethical values and ineffective state policy.

Presently, with the view to maintaining momentum it is necessary to address the problem of vulnerability by reducing stable and systemic vulnerability. The problem of inequality reduction is not fully perceived by Lithuanian authorities. Inequality reduction and creation of equal opportunities for various groups of the population should be one of the priority tasks of the Government. In order to tackle vulnerability, particularly that of the youth, the elderly, females and the rural population, it is vitally important to enhance the life potential of an individual and society, it is necessary to seek that progress would stimulate the development of human and societal resilience.

The findings of our research point out to the following trends in the area of SEI:

- The growth of income of the Lithuanian population during the post-crisis period applies only to 1% of the population, as a result SEI is increasing;
- Wealth differentiation is much higher than income inequality;
- Inequality is determined not so much by income disparities, but rather by a whole range of factors of the quality of life, including wealth distribution, savings and investment, socio-economic security, access to education and science and health care health, as well as differences in their quality;
- The poor live in poverty, and the continuing recession worsens their situation;
- In Lithuania, the middle class is vanishing, its representatives are forced to limit their expenses and do not always have means for a dignified life (Fig. 2);
- Low 'mobility' in respect of changes in income can be observed—if a person belongs to the poor, it is highly difficult for him to rise to a higher income group;
- In regions, income disproportion is growing, wealth inequality is increasing. In many regions of Lithuania, human potential losses have increased due to inequality.

The Lithuanian population is sensitive to the current situation in respect of SEI. According to data of the 2016 survey, inequality affects adversely and puts a strain on as much as 75.5% of the Lithuanian population. 79.1% of the population are of the opinion that in Lithuania, inequality is too high. As little as 5.1% of the population believe that inequality is a normal phenomenon encouraging to make more money. 42.9% of the population view inequality as a negative phenomenon, when 'the rich have usurped the property belonging to all the people of Lithuania'.

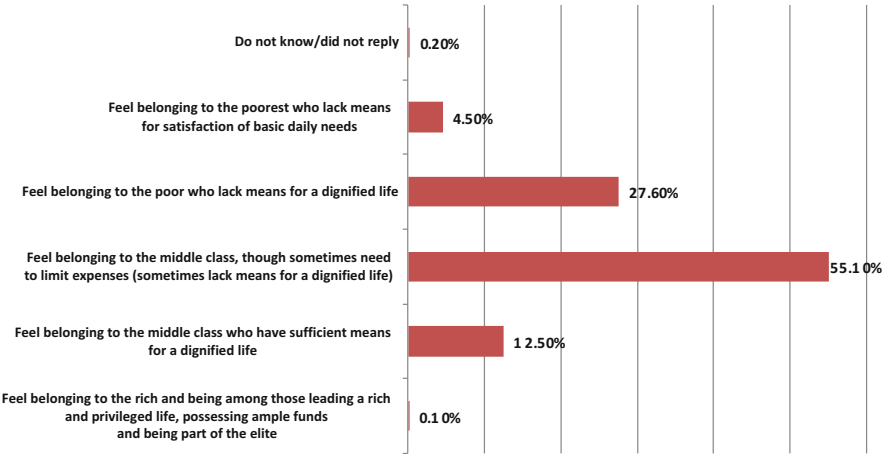

Fig. 2 Which group of the population would you attribute yourself to? Source: Based on data of a survey of the Lithuanian population conducted in 2016 (N = 1001)

Such is the assessment of the Lithuanian market economy and privatization results. However, one-third (30%) of the population still believe that inequality should exist, though it should be based on knowledge, the level of education, qualifications and professional skills.

The majority of the Lithuanian population (55.1%) attribute themselves to the middle class forced to limit expenses and lacking means for a dignified life. 12.5% of the population note that they belong to the middle class and they have enough means for a dignified life. As little as 0.1% of the population in Lithuania believe that they could be classified as the rich who lead a rich and privileged life, possess ample funds and feel themselves being the masters of life (the elite). Meanwhile, as much as 32.1% of the population classify themselves as the poor (Fig. 2).

Today we see that the economic system is not oriented towards the majority of the population, hence the growing level of inequality and its consequences for the well-being and human development cannot be ignored. In assessing income differentiation by groups of society, income distribution shows high inequality (Fig. 3). According to data of the 2016 survey, the average monthly income of all respondents amounts to EUR 497.7 (by comparison, according to data of the 2014 survey—EUR 563.8). However, the most common average amount of income (median), i.e. the income of the majority of the population, makes up EUR 225 (in 2014—EUR 352.3), i.e., by 45% less than the average income, and only two times above the poverty line.

43.4% of the Lithuanian population earn as little as 10.0% of the total income, whereas 10.0% of the rich have at their disposal 40.2% of the total revenue. Thus, the vast majority of the Lithuanian population, or 72.3%, earn up to EUR 750 (on average EUR 450), and only 26.6% of the population have at their disposal an income of more than EUR 750. The income of as little as 3.2% of the population makes up more than EUR 1500 per capita.

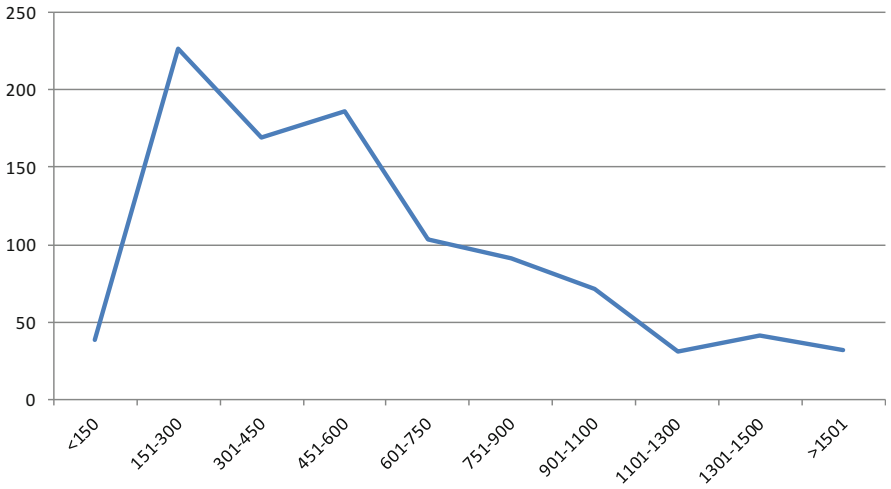

Fig. 3 Distribution of income of the Lithuanian population in 2016. Source: Based on data of a survey of the Lithuanian population conducted in 2016 (N = 1001)

Distribution of income by age shows that the lowest income, that is, up to EUR 200, is received by elderly persons aged 55 to 70 years and over (32.9%). The income level of the youth (aged 18–34 years) is slightly higher than that of the elderly and makes up on average EUR 250–300 (28.4%). The income of the population of the average working age (35–54 years) usually ranges between EUR 250 and EUR 350; such income is earned by 26.2% of the population, i.e. the largest share in this age group. The income of females within the lower range—31.0% of females receive up to EUR 300, while the income of males is mostly at higher income levels, e.g., income in the amount from EUR 500 to EUR 600 is earned by 13.3% of males and 10.0% of females. The average income of the rural population usually amounts to EUR 200–300, which is earned by 17.1% of the population; 25.4% of the urban population and 15.7% of inhabitants of Vilnius receive an income from EUR 200 to EUR 350.

It is conspicuous that the overall income level of the Lithuanian population is low, and the income of vulnerable social groups, such as the youth, the elderly and the rural population, is much lower than the country's average income per capita.

By surveying 450,000 Americans, Kahneman and Deaton (2010) established the well-being index (the Gallup-Healthways Well-Being Index) and found the average amount which a US citizen should earn so that he would feel satisfaction with his life, the researchers in the present project accordingly attempted to identify the financial needs of the Lithuanian population which could make them happy. In the American case, for a person to be able to overcome various life's difficulties he needs to earn at least USD 75,000 per year, or USD 6250 per month. The majority of the Lithuanian population (30.6%) indicate that their income should range from EUR 1000 to EUR 1500 per month, 23.5%—exceed EUR 1500, however as much as a quarter of the respondents indicate that they would be happy with the income of up to EUR 600 (Fig. 4), which in fact speaks of a low overall level of income in Lithuania.

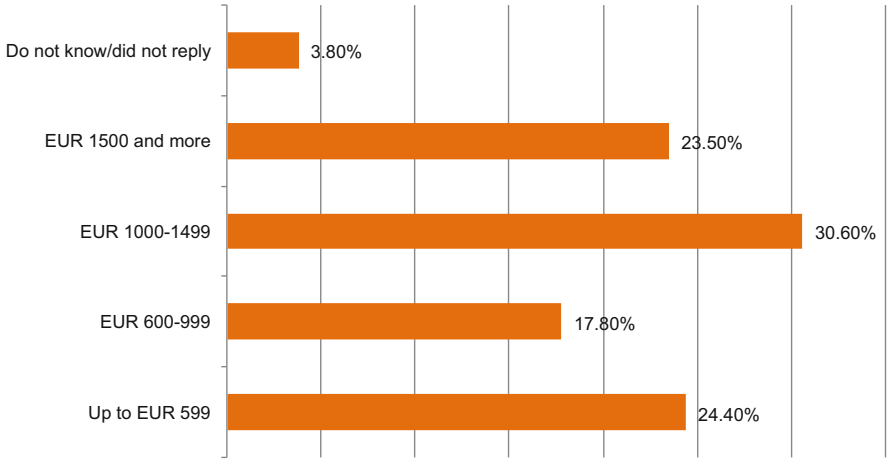

Fig. 4 How much money do you need per month to be happy? Source: Based on data of a survey of the Lithuanian population conducted in 2016 (N = 1001)

The current state of the quality of life, the country's economic environment and the international situation strengthen individuals' sense of insecurity and instability. The findings of the research show a low level of socio-economic security and considerable vulnerability of the Lithuanian population. In recent years, the greatest concern of as much as 78–84% of the Lithuanian population has been the threats increasing an individual's vulnerability: the fear to lose their jobs and income, the fear to fall sick, socio-economic inequality, the decline of moral and ethical values, ineffective state policy.

The primary factors raising concern and increasing vulnerability are health factors—from 52.0% up to 55.4% of the population fear deterioration in their health condition and falling sick and are afraid of becoming disabled. The main reason is that a person feels the fear of becoming incapable for work, because in this case he may be deprived of livelihood and does not expect to receive social support. The second group of factors consists of the threats of the standard of living, deterioration in material circumstances and poverty, which constitutes a concern for respectively 51.1%, 47.6% and 47.3% of the population. The situation in which half of the Lithuanian population is at risk of deterioration in material well-being is not normal and speaks eloquently of ineffective state economic policy. The fear of social injustice can be attributed to the third group of vulnerability factors (31.1%).

In the opinion of the Lithuanian population, the largest threats in the country which increase vulnerability are unemployment (as reported by 83.8% of the population), ineffective state economic policy (82.8%) and poverty (81.7%). The threat of the decline of moral and ethical values and degradation of society is noted by 80.7% of the population; the threat of SEI is identified by 78.4% of the population.

Today, with the view to maintaining momentum it is necessary to solve the problem of vulnerability by reducing stable and systemic vulnerability. The problem of vulnerability reduction in Lithuania is being addressed ineffectively through the active labor and social policy measures which are often far from being justified. In order to combat vulnerability, especially among the youth and the elderly, females and the rural population, it is important to strengthen the human potential of individuals and society, to promote the development of a society which would be resilient to life's difficulties.

4 Discussion: Directions for Reducing Inequality

In Lithuania, an economic breakthrough should have as its challenge the implementation of social justice and, in particular, the adjustment of tax policy through the introduction of a progressive tax system and the consistent implementation of a tax increase policy in respect of the richest segments of the population and large businesses. For example, US President Roosevelt, in tackling the Great Depression, raised the income tax ceiling from 24% up to 63% and subsequently up to 79%. During the subsequent period, the income tax rate ceiling decreased, but remained at the level of 70% until President Reagan's era. Both corporate profit and inheritance tax rates increased. As a result, wealth became less concentrated in certain segments of society and was distributed more evenly. Afterwards, the period of prosperity in the United States continued for 25 years.

Transformation of the taxation and social security systems should be one of the main directions in reducing SEI in Lithuania. Social welfare states usually apply two key methods of SEI reduction, namely, reformation of the taxation system and expansion or development of the social security system (social benefits policy), which are the most effective as regards redistribution of the income earned on the market. Based on the experience of other countries and the opinion of researchers (Joumard et al. 2012), benefits reduce income inequality better than taxes. Nearly 75% of the decrease in income inequality depends on benefits, the remaining quarter—on taxes.

Countries with a higher inequality of income, in order to absorb its impact, are usually interested in the redistribution of as much income as possible. Therefore, in many countries income taxes are mostly progressive, whereas consumption and property taxes—regressive.

Lithuania relies the most, i.e. the major part of state budget revenues consists of, consumption taxes (according to the consumption tax rate, Lithuania ranks third in the EU), the rates of taxes on income from employment are at a medium level among the EU countries (Lithuania ranks 15th in the EU), whereas taxes on profits from investment are the lowest among the EU countries (Lithuania ranks penultimate in the EU). Thus, consumption taxes make up the largest share in low-income groups of the population, as all of their income tends to be spent on current consumption (means of first necessity), which results in a situation when poorer

inhabitants pay more taxes than those with higher earnings. In order to soften the regressive character of consumption taxes, some countries have reduced them for the basic goods in a household's consumption basket. Certainly, such a subsidy by the state also benefits the higher-income population, thus, again, the problem of inequality is not resolved. In this case, more effective measures are benefit payments to a certain target group or vouchers for the purchase of means of first necessity to a group of society having a certain standard of living.

In assessing the effectiveness of social benefits policy in Lithuania, it is necessary to find out what impact such benefits have on the initiative of their beneficiaries to undertake employment and their motivation to work. It is proposed to introduce, for example, the payment of benefits in the decreasing order, when the duration of the payment of the benefits would be limited and would encourage or even force the return to the labor market. The experience of other countries shows that an effective benefits policy should go along with the active implementation of recruitment and retraining programs (e.g., Sweden has developed a 'one-stop shop' multi-professional network joining social assistance and employment agencies; Denmark has adopted a law on municipal activity promotion, according to which municipalities must seek to implement the model of an 'active beneficiary of social assistance' by providing a variety of qualification improvement and other services to beneficiaries of such assistance).

In light of the recently increasing occurrence of abuse of social benefits and allowances, we would suggest to thoroughly review and, if necessary, to tighten requirements for the granting of social benefits and allowances. Such conditions may, certainly, lead to an even higher level of poverty in the groups of society which are beneficiaries, though, on the other hand, they make the return to the labor market a necessity, rather than the free choice of a beneficiary. However, in order to prevent even greater deepening of inequality and the cases when the persons unprepared for the labor market may be left without basic assistance as many as possible cases must be analyzed on an individual basis and clearly regulated, giving priority to the measures which would facilitate the transition from the status of a beneficiary and unemployed to that of an active employee.

Attention should be paid to the tax burden to be borne by a person moving from the status of a beneficiary of social assistance or of the unemployed to the labor market. In Lithuania, this tax burden is relatively high, so if a job-seeker cannot expect the amount of net earnings which would be at least 1.5 times higher than during the 'idle' period, his motivation to work would be low. Thus, such taxation of income from employment which almost equals the rates of social benefits and wages does not create incentives for work. Therefore, we recommend reviewing the rates of taxes on income from employment for the persons entering and/or returning to the labor market, so that the population would be encouraged to move from an inactive life depending on social benefits and allowances to the labor market and to remain there.

According to the structure of the Lithuanian population, it is concluded that the share of old-age pensions is among the largest in the total disposable income (the number of beneficiaries of such pensions accounts for approximately one third of

the Lithuanian population). Thus, it can be claimed that old-age pensions have a significant impact on the overall distribution of income. While the number of beneficiaries of other social benefits is not small either (approximately 22–23%), their share in disposable income is not high due to the amount of such benefits.

Based on the experience of other countries (Austria, Czech Republic, Germany, Luxembourg, France, Poland, etc.), we suggest providing for the partial alignment of pensions and unemployment benefits with income from employment, for example, by stipulating certain income 'ceilings' upon reaching which a part of a pension or an unemployment benefit would be paid or by establishing other conditions, for example, the maximum duration of working time over a certain period of time, thus not limiting the opportunities to work and to earn for the active individuals who are willing to work.

In many cases, the loss of income in the case of unemployment means that a person chooses illegal employment in order to survive. This is becoming a fully justified course of action, because a person having lower professional qualifications is mostly likely to be offered only the minimum wage. In this case, we would suggest improving the social assistance system for the active individuals returning to the labor market, rather than for passive beneficiaries of social benefits, for example, by providing a range of incentives, covering basic utility costs, reimbursing the costs of qualification improvement or retraining, thus increasing the motivation for the unemployed to search for jobs. In this way, it should be possible to 'sift through' the persons who are not motivated to look for a job, as they receive income from the informal economy.

Promotion of conscious consumption among the population and regulation of consumption would also contribute to the normalization of excessive inequality. Depletion of natural resources, environmental pollution and awareness of the damage caused to an individual promote a responsible approach to consumer behavior. Conscious consumption improves the quality of life of the population: orientation towards spiritual, cultural and personal growth values will enable members of society to move away from immoderate consumption and to devote less attention to the 'essential' products and services proposed by advertising. It is likely that the supply of goods and services will adjust itself accordingly and will focus on environmental protection and sustainable products. The relevant government authorities (the Ministry of Environment, the Ministry of Education and Science, etc.) are recommended to pay attention and to provide funding for social educational campaigns focused on society and educating responsible and consciously consuming individuals.

In order to achieve favorable changes in the direction of consumption consciousness, it is possible to utilize fiscal measures. One of the proposals currently popular in the EU is to shift taxation from the taxes related to labor relations (such as the income tax and the taxes paid by the employer) to consumption taxes, including sales taxes. The EU Commission calls on governments to opt for the fiscal measures promoting sustainable behavior, rather than to emphasize revenue collection. However, in the case of Lithuania there is a hidden threat: these measures should not become disproportionately large for lower- and middle-income households, i.e., such decisions may further increase SEI.

5 Conclusions

The main conclusion that suggests itself upon analyzing the findings of the research into SEI in Lithuania is that in Lithuania, inequality has reached limits and is at a level when it has ceased to be effective and has turned into a serious impediment to economic and social progress. It has become an economic problem that cannot be resolved solely by applying social policy measures. Excessive inequality hampers economic growth, improvement of the quality of life of the population and increases the vulnerability of an individual and society.

Inequality is the outcome of the economic policy being implemented in Lithuania. The increase of inequality, which is managed by means of a regressive taxation system and other methods of income distribution, significantly increases only the income of the rich and reduces the income of the rest of the population thus impoverishing the majority of the population. For this reason, the economy is becoming ineffective and reduces investment and innovation opportunities.

The seriousness of the problem of SEI in Lithuania (extent, causes and consequences for the economy) is not understood sufficiently well, decisions in this area are often fragmented. A much broader, rather than fragmented, approach to this issue is needed, because the key causes lie not only in specific areas of social policy in which appropriate measures (e.g., reduction of poverty and resolution of social problems of vulnerable groups, such as the youth, the unemployed, the elderly, etc.) apply, although they are undoubtedly also needed, but they are not decisive, because in the current situation they merely eliminate the consequences of the situation. Reduction of SEI requires a systemic decision-making in a number of areas—labor and employment, tax policy, social policy, wages and income policy, the policy of balancing of consumption and savings, enhancement of security of an individual, i.e., the policy of reduction of vulnerability and the enhancement of resilience to life's difficulties, the policy of the increase of access to education and health services.

The causes of the growing inequality lie primarily in the ascetic macroeconomic policy being implemented and focused on deficit reduction, austerity measures and combating inflation, which distracts attention from the resolution of the most pressing issues. The main objective of state economic policy must be to improve the quality of life and the income level, to reduce unemployment, poverty and the number of the poor, to increase socio-economic security, to improve access to education and health services for all groups of the population.

In this context, the key strategic guideline for addressing the issue of SEI is the need for Lithuania to implement the macro-economic policy aimed at enhancing employment (as opposed to austerity policies), which would ensure the creation of dignified jobs, expand employment opportunities and promote business by eliminating negative consequences and at the same time ensuring the stability of public finances and the tax base. Full employment should be the key goal of macro-economic policy. The macro-economic policy focused on the promotion of employment would provide a basis for addressing other issues, that is, would create

conditions for the attraction of investment, creation of jobs, expansion of the tax base and increase of social security contributions, reduction of the informal economy, balancing of labor supply and demand and reduction of regional disparities.

An economically strong state is the one that takes into account the interests of the population of the country (rather than exclusively those of large businesses) and focuses its activities on the quality of life and social security of the majority of the population as well as on the reduction of unemployment, poverty and vulnerability. An economically weak state is the one whose priorities are the interests of large businesses and the decision-makers linked with them, with the focus on reduction of taxes on profits and income and privatization of state-owned property at a price less than the market price.

The state of the quality of life, the country's economic environment and the international situation are currently strengthening individuals' sense of insecurity and instability. The findings of the research show the low level of socio-economic security and high vulnerability of the Lithuanian population. In recent years, the greatest concern of as much as 78–84% of the Lithuanian population has been the threats increasing an individual's vulnerability: the fear to lose their jobs and income, the fear to fall sick, SEI, the decline of moral and ethical values, ineffective state policy.

Traditionally, the concept of vulnerability describes risks and their management, including protection against shocks and threats. However, we prefer a new approach according to which the issue of socio-economic vulnerability is resolved not by traditional social policy measures, but by strengthening human and societal resilience to life's difficulties (RLD) (Zeer 2015): (1) by developing an educated, high-culture and morality and solidarity-oriented society, (2) by reducing excessive SEI and social tensions, (3) by developing an active, spiritually strong and happy individual aware of the meaning and fullness of life.

We emphasize the strengthening of an individual's RLD, which ensures for individuals the stability and reliability of choices in the present and in the future, allows them to better cope with negative phenomena and to adapt to them. The strengthening of RLD means the ability to remove the obstacles which prevent a person from acting freely, taking part in his life and being the architect of his own future. It means the enhancement of choices and competences (knowledge and expertise) and consolidation of psychological characteristics. The bottom line is that every individual should be given a possibility to live the life which he/she believes is valuable and meaningful.

In human evolution, the following circumstances are of much importance: *firstly*, life's potential is affected by investment in science and education at all stages of the human life cycle. In this context, the key role is played by investment in the education of children and the youth.

Secondly, culture and the system of values may affect—either increase or decrease—the RLD of an individual and society. The answer to the question of why one country is under-developed and the other is well-advanced and whether the under-developed country can become a leader is linked, according to the growing number of researchers worldwide (Auzan 2007; North 2005), to values and norms

of behavior. Thus, the cause is culture, which can change depending on the population's level of education, system of moral and ethical values, behavioral provisions.

Thirdly, state policy can enhance human capabilities in overcoming obstacles and threats, however SEI can reduce the capabilities of various social groups to overcome obstacles. One of the factors that 'makes the greatest contribution' to the increase of socio-economic vulnerability is excessive inequality, especially when the poor cannot overcome life's difficulties. We need to think of inequality not as a moral issue, but as an economic concern closely linked, *firstly*, to economic growth and, *secondly*, the increase of vulnerability (UNDP 2014). In order to maintain momentum, today it is necessary to raise, to investigate and to address the problem of vulnerability.

Fourthly, the enhancement of psychological resilience of the population to life's difficulties can improve the quality of life of vulnerable social groups. The psychological resilience of the Lithuanian population in a representative sample of the population has not been researched yet. Based on data of the analysis of the Lithuanian population's representative sample and with the view to reducing the vulnerability of the Lithuanian population, it is recommended to strengthen psychological resilience of the population by applying specific interventions, which develop psychological resilience of the population, empathetic communication skills and emotional intelligence.

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General Equilibrium Simulations on the Income Distribution

Toshitaka Fukiharu

Abstract We begin with examining the variation of income distributions after trade starts from the viewpoint of globalism. Specifying parameters in the Heckscher–Ohlin model randomly, we compute the probability of declining *international* income inequality to be 63%, while that of rising *domestic* income inequality to be 62%. Extending the model to the three-country-three-factor model, we compute the probability of declining *international* income inequality to be 70%, while the one of rising *domestic* income inequality to be 70%. Subsequently, from the viewpoint of innovation, we construct the Pareto-type or log-normal type income distribution for a society. The model is constructed from the idea of dynamic population growth and successive commodity invention. It is shown that when each sector producing the newly invented commodity is possessed solely by the workers specific to that sector, the income distribution tends to follow that of the Pareto-type; when each sector is possessed by the whole workers, it tends to follow that of normal type; and finally when each sector is partly possessed by part of the workers specific to that sector, it tends to follow that of the log-normal type. We conclude that the econometric observations are compatible with the pure economic theory.

Keywords General equilibrium • Simulation • Income distribution • Gini coefficient • Pareto distribution • Log-normal distribution

1 Introduction

The rising inequality of income distribution has attracted worldwide attention since Krugman (2007) criticized the rising inequality in the U.S. especially after the 1980s. This phenomenon became well known worldwide when the "Occupy Wall Street" movement broke out in 2011, and contributions such as Stiglitz (2012) and

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Piketty (2014) succeeded. At the same time, we must not forget that Pareto (1896) had noticed that the income distribution in European countries did not follow a normal distribution, in which the share of high income groups is negligible, intuitively. Since he proposed the Pareto distribution (or the power-law distribution) for high income earners, with a considerable share in the whole society, it has been known that a large number of phenomena, including income distribution, follow this distribution.

This aim of this paper is to extend Fukiharu (2013) twofold. Internationally, a distribution consisting of a large number of national GDPs shows the declining inequality after 1990, while the rising inequality of income distribution, mentioned above, is a domestic one. Utilizing general equilibrium models in simulation approach, such as Fukiharu (2004), Fukiharu (2013) showed that the phenomenon of rising domestic income inequality can be derived probabilistically from the viewpoint of globalism and innovation. In the present paper, from the viewpoint of globalism, we begin with examining if the phenomenon of both rising domestic income inequality and declining international income inequality can be derived by the same general equilibrium model. Subsequently, from the viewpoint of successive innovation, we examine if the Paretian (or log-normal) property of national income distribution can be derived by a theoretical model in the general equilibrium framework.

2 Rising Domestic Income Inequality and Declining International Income Inequality

The aim of this paper is to shed new light on the economic theory of the income distribution. It must be noted, first, that Krugman (2007) and Stiglitz (2012) mentioned both globalization and innovation as part of the reason for the rising inequality of income distribution without model building. The model building in terms of general equilibrium theory was attempted in Fukiharu (2013). Second, the rising inequality, Krugman (2007) and Stiglitz (2012) point out, is a domestic one, as in the US, France, or any particular country. In the following, Fig. 1 shows a time series of domestic Gini coefficients for some Western European countries and the US between 1990 and 2012.

The data in this figure between 1990 and 2008 are collected from Ortiz and Cummins (2011), while those in 2012 are collected from the World Bank (2016). In this paper, from the viewpoint of globalism, the year 1990 is selected as the base year, by assuming that the collapse of the socialist countries took place in 1990 and began to integrate themselves into the world economy. Figure 2 shows some of the time series of domestic Gini coefficients in Eastern Europe between 1990 and 2012.

Finally, Fig. 3 shows the time series of domestic Gini coefficients for some Eastern Asian countries between 1990 and 2012.

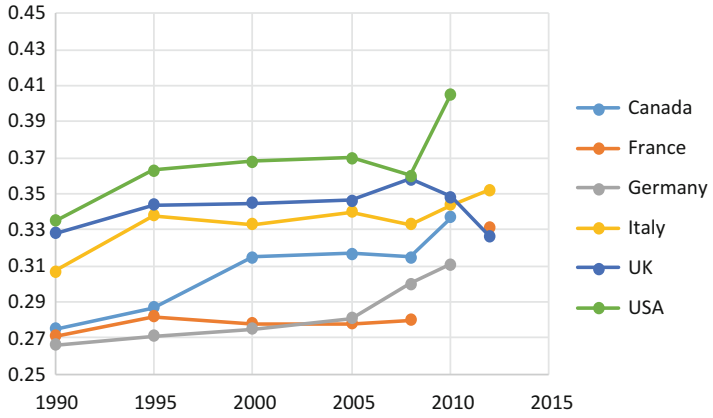

Fig. 1 The variation of domestic Gini coefficients in Western Europe and US. Sources: Ortiz and Cummins (2011) and the World Bank (2016)

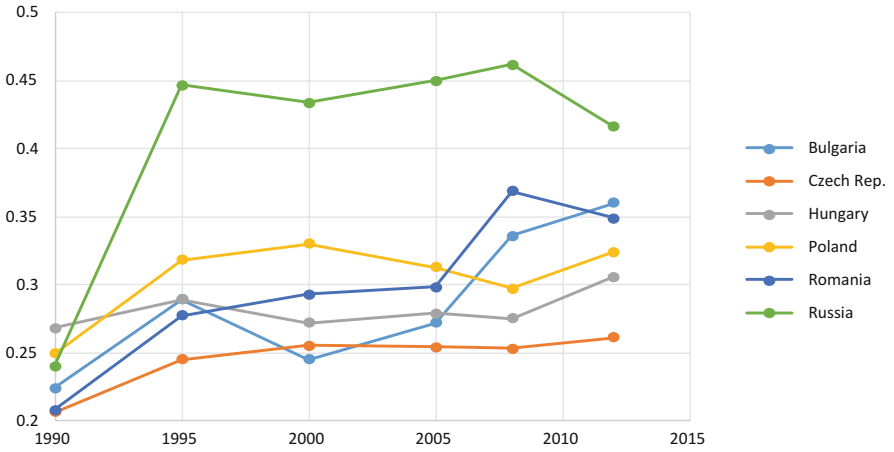

Fig. 2 The variation of domestic Gini coefficients in the Eastern Europe. Sources: Ortiz and Cummins (2011) and the World Bank (2016)

Except for a few countries, we may conclude that domestically, the income distribution inequality is rising. Meanwhile, the international inequality of the whole world incomes appears to have declined, as shown in Fig. 4.

In Fig. 4, the upper part corresponds to the Gini coefficient computed from the national GDP data on 76 countries between 1990 and 2012 in World Statistics 2014, Statistics Bureau of Japan, and the lower part corresponds to the one computed from the per capita GDP data. These 76 countries were selected, since all the GDP and per-capita GDP are available in Statistical Bureau (Japan Ministry of Internal Affairs and Communications) (2014). This section deals with examining the phenomenon of rising domestic income inequality and declining international income

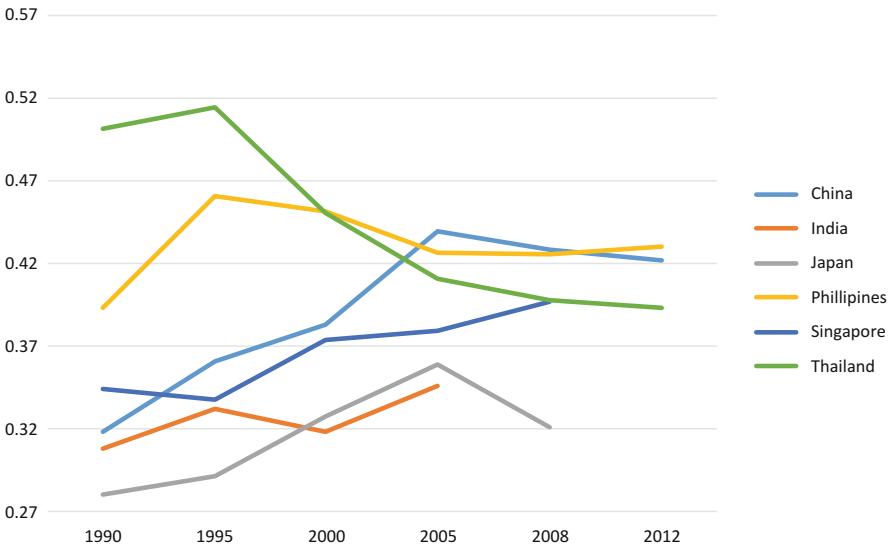

Fig. 3 The variation of domestic Gini coefficients in Eastern Asia. Sources: Ortiz and Cummins (2011) and the World Bank (2016)

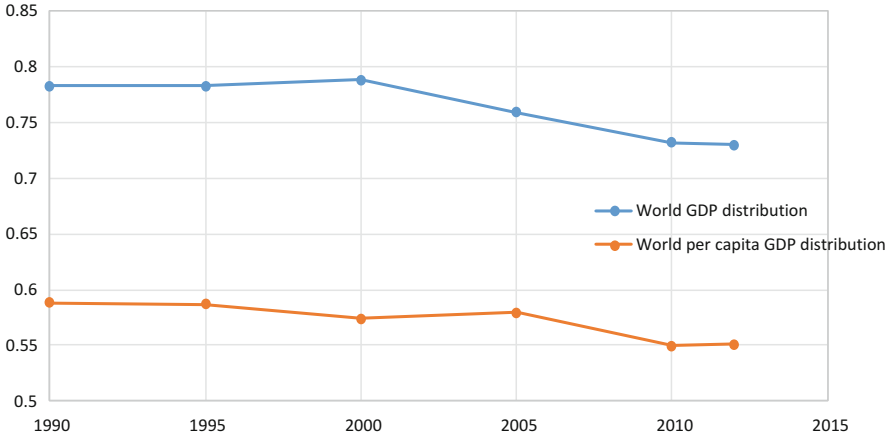

Fig. 4 The variation of international Gini coefficient of 76 national GDPs. Source: Statistical Bureau of Japan (2014)

inequality from the viewpoint of globalization, utilizing general equilibrium simulation: e.g., the IS trade model and the Heckscher–Ohlin trade model. This simulation approach, adopted in Fukiharu (2013) is differentiated from the traditional ones. Traditionally, in the simulation approaches, the parameters of functions and others are specified, for example, in terms of the Cobb–Douglas type. In some cases, sufficient and/or necessary conditions on the parameters are derived for the

desired properties to hold. In other cases, parameters are specified numerically through the econometric method, and the desired effect, such as "gains from trade" and/or undesired effect, such as "dead weight loss" are evaluated numerically. Meanwhile, Fukiharu (2013) adopted a probabilistic approach, in the sense that computing the number of cases in which the desired property holds after computing the general equilibrium for a large number of randomly (numerically) specified parameters, and the author computes the probability for the desired property to hold.

We begin with the phenomenon of the declining international income inequality utilizing the Keynes IS trade model. Proceeding to the examination of rising domestic income inequality and declining international income inequality utilizing Heckscher–Ohlin type trade model with two countries and two agents, we extend it to the three-country, three-agent trade model and examine the phenomenon. In this paper, Fukiharu (2015a) conducts the simulations in Sects. 2.1 and 2.2, while Fukiharu (2015b, c) jointly conduct the simulation in Sect. 2.3.

2.1 *Keynes-Type IS Trade Model: International Inequality of Income*

As a first step toward the full analysis, we examine the textbook-type income distribution on the primitive Keynesian IS model, a special type of general equilibrium model. In the one-country model, country A has basic consumption, C_{0A}, constant, and marginal propensity to consume, c_A, $0 < c_A < 1$. Under the assumption of "all the output is distributed to household", "no investment", and "no trade (isolation)", the output in country A, y_{AI}, is determined by the following "supply = demand" condition.

$$y_{AI} = C_{0A} + c_A y_{AI}$$

In order to examine the international inequality of income, we assume that there are other countries. In this section, we start with two-country IS trade model. We assume that there is another country, B, which has basic consumption, C_{0B}, constant, and marginal propensity to consume, c_B, $0 < c_B < 1$. Under the same assumption of "all the output is distributed to household", "no investment", and "no trade (isolation)", the output in country B, y_{BI}, is determined by the following "supply = demand" condition.

$$y_{BI} = C_{0B} + c_B y_{BI}$$

From now on, it is assumed that trade begins between the two countries. For simplicity, it is assumed that each country's marginal propensity to consume falls to c_J', and the marginal propensity to import, m_J, $0 < m_J < 1$, satisfies the following. Also for simplicity, we assume that C_{0J} remains the same. (J = A, B)

$$c_J' + m_J < 1 \quad (\mathrm{J} = \mathrm{A}, \mathrm{B})$$

Trade equilibrium, $\{y_{AT}, y_{BT}\}$, is determined as follows.

$$y_{AT} = C_{0A} + c_A' y_{AT} + m_B y_{BT}$$
$$y_{BT} = C_{0B} + c_B' y_{BT} + m_A y_{AT}$$

Let Gini $[\{I_1, I_2, \ldots I_n\}]$ be the Gini coefficient of the set of incomes, $\{I_1, I_2, \ldots I_n\}$. In what follows, we conduct a simulation to examine if Gini $[\{y_{AI}, y_{BI}\}]$ is greater than Gini $[\{y_{AT}, y_{BT}\}]$. If it is the case: the former is greater than the latter, we define that it is the phenomenon of declining international income distribution inequality. In this simulation, we first select 10,000 tuples of $\{C_{0A}, C_{0B}, c_A, c_B, c_A', c_B', m_A, m_B\}$, where C_{0J} is randomly selected as an integer from [1,10,000], c_J is selected randomly as a real number from [0.5,1], c_J' is selected randomly as a real number from [0.5,1] such that $0.5 \leq c_J' \leq c_J$, and m_J is selected randomly as a real number from [0,1], such that $c_J' + m_J \leq 1$. (J = A, B) Out of 10,000 tuples, 7818 cases indicate the phenomenon of the declining international income distribution inequality. Continuing this simulation ten times, we have the following result, in which each element indicates the number of "phenomenon of declining international income distribution inequality" cases out of 10,000 tuples.

$$\{7881, 7893, 7888, 7840, 7828, 7892, 7812, 7877, 7827, 7859\}$$

We may conclude that the probability of "phenomenon of declining international income distribution inequality" in the two-country IS trade model is approximately 79%.

Extension to the three-country IS trade model is straightforward. We start with the no trade case, assuming that there are three countries, A, B, and C, which have basic consumption, C_{0I}, constant, and marginal propensity to consume, c_I, $0 < c_I < 1$ (I = A, B, C). Under the same assumption as in the two-country IS trade model, isolation equilibrium, $\{y_{AI}, y_{BI}, y_{CI}\}$ and trade equilibrium $\{y_{AT}, y_{BT}, y_{CT}\}$ are determined as in what follows, where m_{JK} is the country J's marginal propensity to import from country K.

$$y_{CI} = C_{0C} + c_C y_{CI}$$
$$y_{AT} = C_{0A} + c_A' y_{AT} + m_{BA} y_{BT} + m_{CA} y_{CT}$$
$$y_{BT} = C_{0B} + c_B' y_{BT} + m_{CB} y_{CT} + m_{AB} y_{AT}$$
$$y_{CT} = C_{0C} + c_C' y_{CT} + m_{AC} y_{AT} + m_{BC} y_{BT}$$

where $c_A' + m_{AB} + m_{AC} < 1$ etc.

In the three-country IS trade model, we conduct a simulation to examine if Gini $[\{y_{AI}, y_{BI}, y_{CI}\}]$ is greater than Gini$[\{y_{AT}, y_{BT}, y_{CT}\}]$. If it is the case: the former is greater than the latter, we define that it is the phenomenon of declining international income distribution inequality. In this simulation, first, we select 10,000 tuples of $\{C_{0A}, C_{0B}, C_{0C}, c_A, c_B, c_C, c_A', c_B', c_C', m_{AB}, m_{AC}, m_{BC}, m_{BA}, m_{CA}, m_{CB}\}$ with similar conditions as in the two-country case. Out of 10,000 tuples, 8344 cases indicate the

phenomenon of declining international income distribution inequality. Continuing this simulation ten times, we have the following result, in which each element indicates the number of "phenomenon of declining international income distribution inequality" cases out of 10,000 tuples.

$$\{8291, 8283, 8311, 8264, 8337, 8302, 8273, 8312, 8258, 8276\}$$

Thus, we may conclude that the probability of "phenomenon of declining international income distribution inequality" in the three-country IS trade model is approximately 83%, which is higher than the one in the two-country case.

2.2 *Heckscher–Ohlin Model: Two-Country, Two-Commodity-Two-Factor Model*

In the previous section, utilizing primitive IS trade model, we examined the international income distribution inequality. Unfortunately, this model cannot examine the domestic income distribution inequality. In this section we proceed to the Heckscher–Ohlin model, in order to examine both the international and domestic income distribution inequalities in the same model.

The traditional Heckscher–Ohlin model is an application of the general equilibrium model with two commodities and two factors of production, labor and capital, for two trading countries- country A and country B with two sectors (industries). Since Ohlin (1933) explicitly asserted that capital-rich countries export capital intensive commodities, while labor-rich countries export labor intensive commodities, the Heckscher–Ohlin (H–O) theorem has been one of the fundamental theorems in international economics. Sufficient conditions for the H–O theorem are as follows (Layard and Walters 1978):

1. Production technologies are the same between the two countries.
2. Constant returns to scale in production.
3. Perfect competition prevails.
4. Imperfect specialization prevails.
5. Homothetic utility functions are the same between the two countries.

In this subsection, we start with the strict H–O model: all the conditions are satisfied. Specifying production and utility functions by Cobb–Douglas type, we first compute the general equilibria, GE, for country A and B in national isolation, which are utilized for the computation of the Gini coefficient for the GE income distribution concerning countries A and B in isolation. Next, supposing that country A trades with country B, we compute the Gini coefficient for the GE income distribution concerning countries A and B in the context of trade, examining the probability of the phenomenon of rising domestic income inequality and the one of declining international income inequality from the viewpoint of globalization.

Formally, there are two countries, A with two sectors and B with two sectors. The production functions for the two countries are assumed to be of the same Cobb–Douglas type, where the one for the first sector is $y = f_{1A} = f_{1B} = {L_1}^{a1}{K_1}^{b1}$ and the one for the second sector is $x = f_{2A} = f_{2B} = {L_2}^{a2}{K_2}^{b2}$ where $a_i + b_i = 1$ $(i = 1, 2)$. It is assumed that country A is endowed with L_{eA} units of labor and K_{eA} units of capital, while country B is endowed with L_{eB} units of Labor and K_{eB} units of capital. In each country, the aggregate worker possesses all the initial endowment of labor, and the aggregate capitalist possesses all the initial endowment of capital. Thus, the incomes of aggregate worker and aggregate capitalist of country J are $w_{LJ}L_{eJ}$ and $w_{Kj}K_{ej}$, respectively, where w_{LJ} is wage rate and w_{KJ} is rental price of capital in country J (J = A, B).

In this Section, all the agents in country J (the aggregate worker and aggregate capitalist) have the same Cobb–Douglas utility function, $u_J[y, x] = y^a x^b$. (J = A, B) In other words, it is assumed that all the initial endowments of labor and capital are supplied in labor and capital markets. It is not difficult to derive the equilibrium rental prices of capital in "national isolation": w_{KAI} and w_{KBI}, and the one in "trade": w_{KT}, by assuming $w_{LA} = w_{LB} = 1$. Note that in the strict H–O model, the factor-price-equalization holds. The equilibrium rental prices of capital are derived as follows.

$$w_{KJI} = \frac{(a - aa2 + b - a1b)LeJ}{(aa2 + a1b)KeJ} \quad (\mathrm{J} = \mathrm{A}, \mathrm{B}) \tag{1}$$

$$w_{KT} = \frac{\begin{array}{c} a\{(1-a2)a(LeA + LeB) + b(LeA - a2LeA + LeB - a1LeB)\} \\ +b\{(1-a1)b(LeA + LeB) + a(LeA - a1LeA + LeB - a2LeB)\} \end{array}}{\begin{array}{c} a\{a1bKeB + a2(bKeA + aKeA + aKeB)\} \\ +b\{a2aKeB + a1(aKeA + bKeA + bKeB)\} \end{array}} \tag{2}$$

In country J, domestic income inequality is rising if Gini $[w_{LJ}L_{ej}, w_{KJI}K_{eJ}]$ < Gini $[w_{LJ}L_{eJ}, w_{KJT}K_{eJ}]$ (J = A, B), while international income inequality is declining if Gini $[w_{LA}L_{eA} + w_{KAI}K_{eA}, w_{LB}L_{eB} + w_{KBI}K_{eB}]$ > Gini $[w_{LA}L_{eA} + w_{KAT}K_{eA}, w_{LB}L_{eB} + w_{KBT}K_{eB}]$. In what follows, simulations are conducted with parameters selected randomly.

In the first simulation, after we construct 10,000 tuples of parameters, where $0 < a_1, a_2 < 1$, $1 < a, b < 100$, $1 < L_{eA}, K_{eA}, L_{eB}, K < 1000{,}000$ are selected randomly, it is examined how many cases indicate the declining international income inequality and rising domestic one. First, out of 10,000 tuples, 6379 cases indicated the declining international income inequality. Out of 10,000 tuples, 6231 cases indicated the rising domestic income inequality for country A, while 6304 cases indicated the rising domestic income inequality for country B. Continuing this simulation ten times, we have the following set of the number of cases indicating the declining international income inequality for each session.

$$\{6361, 6398, 6338, 6393, 6431, 6359, 6357, 6482, 6396, 6398\}$$

We may conclude that the probability of "phenomenon of declining international income distribution inequality" in the Heckscher–Ohlin trade model is more than 63%, i.e., globalism may play a part in causing "declining international income distribution inequality." In the same way, we have the following set of the number of cases indicating the rising domestic income inequality for country A.

$$\{6282, 6266, 6265, 6259, 6304, 6243, 6176, 6262, 6223, 6161\}$$

We may conclude that the probability of "phenomenon of rising domestic income distribution inequality in country A" in Heckscher–Ohlin trade model is approximately 62%, i.e., globalism may play a part in causing this phenomenon in country A. Also in the same way, we have the following set of the number of cases indicating the rising domestic income inequality for country B.

$$\{6221, 6234, 6242, 6203, 6183, 6234, 6311, 6202, 6196, 6296\}$$

We may conclude that the probability of "phenomenon of rising domestic income distribution inequality in country B" in the Heckscher–Ohlin trade model is approximately 62%, i.e., globalism may play a part in causing this phenomenon in country B.

In the second simulation, suppose that country A is a developing country with small amount of capital and large amount of labor, while country B is an advanced country with small amount of labor and large amount of capital. After we construct 10,000 tuples of parameters, where $0 < a_1, a_2 < 1$, $1 < a, b < 100$, $900{,}000 < L_{eA}$, $K_{eB} < 1{,}000{,}000$, $1 < K_{eA}, L_{eB} < 1{,}000{,}000$, are selected randomly, it is examined how many cases indicate "the declining international income inequality" and "rising domestic one". First, out of 10,000 tuples, 9977 cases indicated the declining international income inequality. Out of 10,000 tuples, 9074 cases indicated the rising domestic income inequality for country A, while 9167 cases indicated the rising domestic income inequality for country B. Continuing this simulation ten times, we have the following set of the numbers of cases indicating the declining international income inequality for each session.

$$\{9966, 9969, 9981, 9975, 9969, 9978, 9970, 9976, 9975, 9971\}$$

We may conclude that the probability of "phenomenon of declining international income distribution inequality" in the Heckscher–Ohlin trade model is more than 99%, i.e., globalism may play an important part in causing this phenomenon. In the same way, we have the following set of the number of cases indicating the rising domestic income inequality for country A.

$$\{9059, 9105, 9113, 9079, 9098, 9089, 9150, 9086, 9029, 9144\}$$

We may conclude that the probability of "phenomenon of rising domestic income distribution inequality in country A" in the Heckscher–Ohlin trade model is more than 90%, i.e., globalism may play an important part in causing this

phenomenon. Also in the same way, we have the following set of the number of cases indicating the rising domestic income inequality for country B.

$$\{9132, 9149, 9161, 9088, 9136, 9126, 9114, 9064, 9095, 9119\}$$

We may conclude that the probability of "phenomenon of rising domestic income distribution inequality in country B" in the Heckscher–Ohlin trade model more than 90%, i.e., globalism may play an important part in causing this phenomenon. Other simulations for special cases are conducted in Fukiharu (2015a) with the conclusion that the globalism causes rising domestic income distribution inequality and declining international income distribution inequality.

2.3 *Extended Heckscher–Ohlin Model: Three-Country, Two-Commodity-Three-Factor Model*

From the results in Sect. 2.1, we might be tempted to propose a prediction, in which as the number of participating countries into world trade increases, the probability of declining international income inequality rises. In this section, this prediction is examined theoretically, by comparing the result in the strict two-country H–O model with the one in the extended H–O model with three countries and three economic agents.

The strict two-country Heckscher–Ohlin model is extended to the three-country H–O model with three (representative) economic agents: workers, capitalists, and entrepreneurs. Formally, there are three countries, A, B, and C with two sectors. The production functions for the three countries are assumed to be of the same Cobb–Douglas type, where the one for the first sector is $y = f_{1A} = f_{1B} = f_{1C} = {L_1}^{a1} {K_1}^{b1} {E_1}^{c1}$ and the one for the second sector is $x = f_{2A} = f_{2B} = f_{2C} = {L_2}^{a2} {K_2}^{b2} {E_2}^{c2}$, where E_i is the entrepreneurial factor and $a_i + b_i + c_i = 1$ ($i = 1, 2$). It is assumed that country J is endowed with L_{eJ} units of labor, K_{eJ} units of capital, and E_{eJ} units of entrepreneurial factor (J = A, B, C). In each country, the aggregate worker possesses all the initial endowment of labor, the aggregate capitalist possesses all the initial endowment of capital, and the aggregate entrepreneur possesses all the initial endowment of entrepreneurial factor. Thus, the incomes of the aggregate worker, the aggregate capitalist and the aggregate entrepreneur of country J are $w_{LJ}L_{eJ}$, $w_{KJ}K_{eJ}$, and $w_{EJ}E_{eJ}$, respectively, where w_{LJ} is wage rate, w_{KJ} is rental price of capital, and w_{EJ} is rental price of entrepreneur, in country J (J = A, B, C).

In this section, all the agents in country J (the aggregate worker, aggregate capitalist, and aggregate entrepreneur) have the same Cobb–Douglas utility function, $u_j[y, x] = y^a x^b$ (J = A, B, C). In other words, it is assumed that all the initial endowments of labor, capital and entrepreneurial factor are supplied in each national market. It is not difficult to derive the equilibrium rental price of capital in "national isolation": w_{KJI}, and the equilibrium rental price of entrepreneurial factor in "national isolation": w_{EJI}, by assuming $w_{LJ} = 1$ (J = A, B, C).

$$w_{KjI} = \frac{(ab2 + b1b)LeJ}{(aa2 + a1b)KeJ}$$
$$w_{EJI} = \frac{(ac2 + c1b)LeJ}{(aa2 + a1b)EeJ} \quad (\mathrm{J} = \mathrm{A}, \mathrm{B}, \mathrm{C})$$

It is confirmed that:

Observation 1: Country J's Gini coefficient for "national isolation" is independent of $w_{LJ} = 1$. (J = A, B, C)

Observation 2. Gini $[w_{LA}L_{eA}, w_{KAI}K_{eA}, w_{EAI}\,E_{eA}]$ = Gini $[w_{LB}L_{eB}, w_{KBI}K_{eB}, w_{EBI}\,E_{eB}]$ = Gini $[w_{LC}L_{eC}, w_{KCI}K_{eC}, w_{ECI}\,E_{eC}]$ where $w_{LJ} = 1$. (J = A, B, C)

It is, however, too difficult to analytically derive the equilibrium rental prices of capital and entrepreneurial factors in "trade": w_{KAT}, w_{KBT}, w_{KCT}, w_{EAT}, w_{EBT}, w_{ECT}, as done in Eqs. (1) and (2) for the strict H–O model. In this section, the Newton method is utilized to derive those equilibrium prices approximately, although the method suffers from the initial position problem: i.e. the method cannot always find equilibrium prices starting from arbitrarily selected initial position. It must be noted that in this extended H–O model, the factor price equalization theorem does not hold. In order to see this, select the parameters as follows:

$$\begin{aligned} &a_1 = 1/6, b_1 = 1/3, c_1 = 1/2, a_2 = 2/3, b_2 = 1/6, c_2 = 1/6, a = 2, b = 3, \\ &L_{eA} = 100, K_{eA} = 50, E_{eA} = 80, L_{eB} = 70, K_{eB} = 90, E_{eB} = 130, \\ &L_{eB} = 110, K_{eB} = 150, E_{eB} = 90. \end{aligned} \tag{3}$$

Assuming $w_{LA} = 1$, we obtain the following "trade equilibrium" prices via Newton method.

$$\begin{aligned} p_{xT} = 2.2985988356804591736, p_{yT} = 2.4721310779024583804, w_{LA} = 1, \\ w_{LBT} = 1.0121433258313730056, w_{LCT} = 1.0593808572577099612, \\ w_{KAT} = 1.0032044570487833232, w_{KBT} = 0.878470699344505601, \\ w_{KCT} = 0.5318830140148256222, w_{EAT} = 0.8067186631729121924, \\ w_{EBT} = 0.877841713783367510, w_{ECT} = 1.208055680676371716 \end{aligned}$$

Clearly, the famous theorem does not hold, and Gini coefficients satisfy the following:

$$\begin{aligned} 0.0666667 &= \text{Gini}\,[L_{eA}, w_{KAI}K_{eA}, w_{EAI}E_{eA}] < \text{Gini}\,[L_{eA}, w_{KAT}K_{eA}, w_{EAT}E_{eA}] \\ &= 0.1547595322946014422 \quad (\text{A : Rising Domestic Inequality}) \\ 0.0666667 &= \text{Gini}\,[L_{eB}, w_{KBI}K_{eB}, w_{EBI}E_{eB}] > \text{Gini}\,[w_{LBT}L_{eC}, w_{KBT}K_{eB}, w_{EBT}E_{eB}] \\ &= 0.045153889542661907 \quad (\text{B : Declining Domestic Inequality}) \\ 0.0666667 &= \text{Gini}\,[L_{eC}, w_{KCI}K_{eC}, w_{ECI}E_{eC}] < \text{Gini}\,[w_{LCT}L_{eC}, w_{KCT}K_{eC}, w_{ECT}E_{eC}] \\ &= 0.108898244085107935 \quad (\text{C : Rising Domestic Inequality}) \\ 0.0952381 &= \text{Gini}\,[L_{eA} + w_{KAI}K_{eA} + w_{EAI}E_{eA}, L_{eB} + w_{KBI}K_{eB} + w_{EBI}E_{eB}, L_{eC} \\ &\quad + w_{KCI}K_{eC} + w_{ECI}E_{eC}] \end{aligned}$$

$$> \text{Gini}\,[L_{eA} + w_{KAT}K_{eA} + w_{EAT}E_{eA}, w_{LBT}L_{eB} + w_{KBT}K_{eB} + w_{EBT}E_{eB}, w_{LCT}L_{eC} + w_{KCI}K_{eC} + w_{ECI}E_{eC}]$$
$$= 0.052019043149727551 \quad \text{(Declining International Inequality)}$$

Under (3), two countries, A and C, experienced "rising domestic income inequality," and the whole economy experienced "declining international income inequality." In what follows, we examine the probabilities of "rising domestic income inequality" and "declining international income inequality," by selecting parameters randomly.

In this simulation, three integers are first selected randomly from [1, 5], with each divided by the sum of those integers. These rational numbers are parameters for the first sector: a_1, b_1, and c_1. Exactly the same procedure provides parameters for the second sector: a_2, b_2, and c_2. The parameters for the utility function, a and b, integers, are selected randomly from [1, 10]. All the initial endowment parameters: L_{eA}, K_{eA}, E_{eA}, L_{eB}, K_{eB}, E_{eB}, L_{eC}, K_{eC}, E_{eC}; are integers selected randomly from [1,10,000]. In the Newton method, utilized for the computation of trade equilibrium, the initial positions are selected as {1, 1, …, 1}. Randomly selecting 100 tuples of parameters, $\{a_1, b_1, c_1, a_2, b_2, c_2, a, b, L_{eA}, K_{eA}, E_{eA}, L_{eB}, K_{eB}, E_{eB}, L_{eC}, K_{eC}, E_{eC}\}$ as explained above, we compute the "trade equilibrium." In the first simulation, 69 cases show the successful convergence to the "trade equilibrium." On the one hand, among these 69 cases, the probability of "rising domestic income inequality" in country A was 69.5652%, the one in country B was 81.1594%, and the one in country C was 76.8116%. On the other hand, the probability of "declining international income inequality" was 73.913%.

Repeating this simulation ten times, we have Table 1.

In Table 1, SC implies the number of successful convergence, PrRJ is the probability of "rising domestic income inequality" in country J (J = A, B, C), and PrDI is the probability of "declining international income inequality." Increasing the number of simulations to 100, we have the following result:

The mean of SC = 70.86
The mean of PrA = 69.6222
The mean of PrB = 68.836
The mean of PrC = 69.5737
The mean of PrDI = 73.328

From this simulation, we may conclude that the probability of the successful convergence is approximately 70%, the one of "rising domestic income inequality" in each country is approximately 70%, and finally, the probability of "declining international income inequality" is approximately 73%.

Table 1 Result of ten simulations

SC	PrRA	PrRB	PrRC	PrDI
69	69.5652	81.1594	76.8116	73.913
67	70.1493	67.1642	67.1642	71.6418
75	66.6667	62.6667	66.6667	72
70	72.8571	60	71.4286	67.1429
65	67.6923	67.6923	78.4615	64.6154
69	69.5652	73.913	69.5652	68.1159
75	73.3333	76	69.3333	76
68	72.0588	69.1176	70.5882	77.9412
69	57.971	68.1159	69.5652	71.0145
71	77.4648	71.831	63.3803	67.6056

3 The Paretian and Log-Normal Properties of National Income Distribution

With the income distribution inequality in mind, Pareto (1896) had noticed from the empirical viewpoint that the income distribution in European countries did not follow the normal distribution, in which the share of high income groups is negligible, intuitively. Pareto noticed the non-negligible share of the high income group among the population in European countries, proposing the Pareto distribution (or the power-law distribution), and it is known nowadays that income data in a large number of countries follow this distribution. Bar chart in Fig. 5 shows the Japanese income distribution in 2009.

Applying statistical estimation on the subset of the fourth element to the last of this distribution with $y = Ax^{-a}$, we have the best-fit estimation and its R^2 as follows.

$$1.22924\ \mathrm{x}^{-1.54754},\ \ 0.966944$$

In the same way, applying statistical estimation on this distribution with the log-normal distribution, we have the best-fit estimation and its R^2 as follows.

$$0.523163\ e^{-0.859853\ (-1.60306+\mathrm{Log[x]})2}/\mathrm{x},\ \ 0.992657$$

The solid curve in Fig. 6 is the best-fit log-normal distribution function. In this section, we examine if we can construct a theoretical model in which income distribution follows the Pareto type distribution or log-normal type. In this paper, Fukiharu (2016) conducts the simulations in this section.

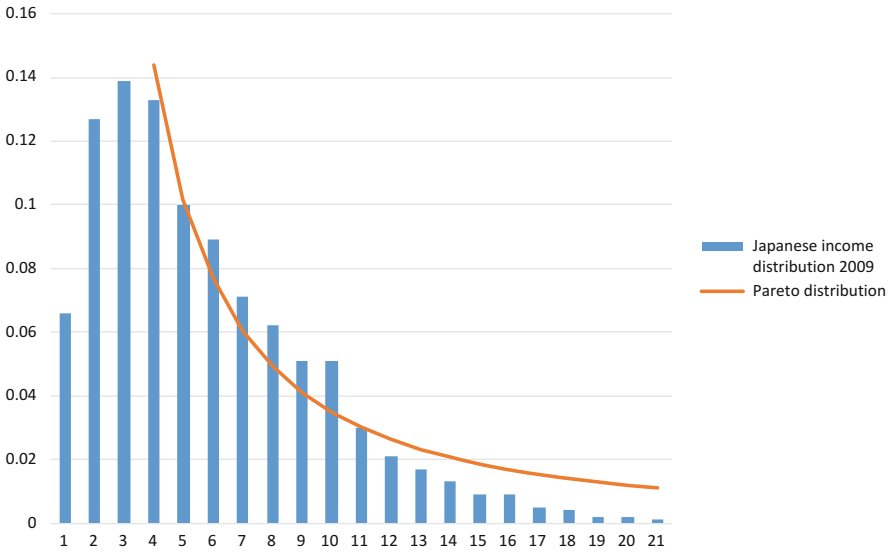

Fig. 5 Japanese income distribution in 2009 and the best-fit Pareto distribution. Source: Ministry of Health, Labor and Welfare (2010)

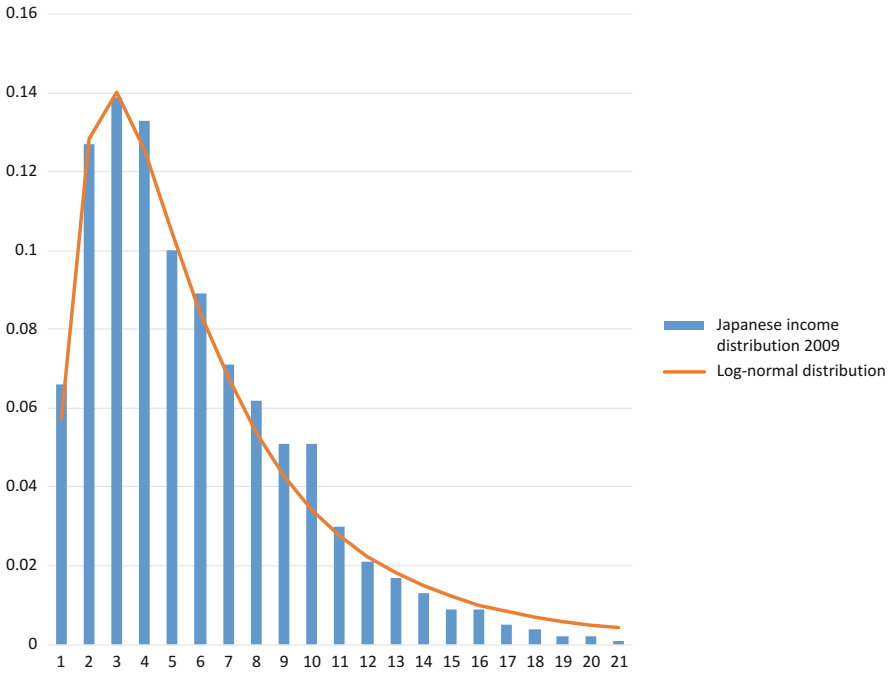

Fig. 6 Japanese income distribution and the best-fit log-normal distribution. Source: Ministry of Health, Labor and Welfare (2010)

3.1 Specific-Labor General Equilibrium Model with Successive Innovation

In this GE model, there are n commodities, with quantities $y_1, y_2, \ldots, y_n$. The production function of the ith commodity (sector), y_i, is produced by the specific labor, L_i, with the production function, $y_i = L_i^{bi}$ ($i = 1, 2, \ldots, n$). There are N_0 workers for each ith type specific labor ($i = 1, 2, \ldots, n$), with each worker possessing L_0 (hours) of initial holding of labor. The jth worker of the ith industry is identified by (i-1) N_0 + jth worker. In this GE model, the ith industry producing the ith commodity is possessed by the workers with the profit distribution shares,

$$\theta_i = \{\theta_{i,1,1}, \theta_{i,1,2}, \ldots, \theta_{i,1,N0}, \theta_{i,2,1}, \theta_{i,2,2}, \ldots, \theta_{i,2,N0}, \ldots, \theta_{i,n,1}, \theta_{i,n,2}, \ldots, \theta_{i,n,N0}\},$$
$$\sum_{j=1\sim n,\ k=1\sim N0} \theta_{i,j,k} = 1 \quad (i = 1, 2, \ldots, n) \tag{4}$$

where $\theta_{i,j,k}$ is the nonnegative share of the kth worker in the jth sector for the ith sector's profit ($i, j = 1,2, \ldots, n$. $k = 1, \ldots, N_0$). Each worker (stock holder) has the same utility function, stipulated by the following CES type, where x_i is the consumption of output of the ith sector ($i = 1, 2, \ldots, n$)

$$u = \left(c_1 {x_1}^k + c_2 {x_2}^k + \ldots + c_n {x_n}^k\right)^{1/k} \quad c_1 < c_2 < \quad \ldots \quad < c_n$$

This model was constructed essentially from the idea of dynamic population growth and successive commodity invention (innovation), with n periods. Intuitively, as time elapses from i to $i + 1$, N_0 new specific workers emerges with the invented new commodity x_{i+1} ($i = 1, 2, \ldots, n-1$). The idea of this model stems from Simon (1955) and Fukiharu (2006). The classical contribution in Simon (1955) contains an application to the urban growth model. In the Simon process, when cities grow depending on the probability with higher probability for the larger city size and/or the larger number of that city size, the city distribution follows that of the Pareto distribution. In order to understand the idea of the present model, suppose that $n = 3$ with 300 workers, $c_i = i$ and $k = 1/2$.

$$u = \left({x_1}^{1/2} + 2{x_2}^{1/2} + 3{x_n}^{1/2}\right)^2, y_i = {L_i}^{1/2}, L_0 = 100, N_0 = 100$$

with p_i, the commodity price, w_{Ki}, the wage rate, and $\theta_i = \{\theta_{i,1,1}, \theta_{i,1,2}, \ldots, \theta_{i,1,100}, \ldots, \theta_{i,3,1}, \theta_{i,3,2}, \ldots, \theta_{i,3,100}\}$, arbitrarily given profit distribution parameters in the ith sector. ($i = 1, 2, 3$). General equilibrium prices are computed as follows, independently of $\{\theta_1, \theta_2, \theta_3\}$, with $w_{K1} = 1$:

$$\{w_{K2} = 2, w_{K3} = 3, p_1 = 200, p_2 = 400, p_3 = 600\}$$

Subsequently, suppose that $n = 4$ with 400 workers, the new generation of 100 specific workers is born, and the fourth commodity is newly invented and produced by them, where

$$u = \left({x_1}^{1/2} + 2{x_2}^{1/2} + 3{x_3}^{1/2} + 4{x_4}^{1/2}\right)^2, y_i = {L_i}^{1/2}, L_0 = 100, N_0 = 100$$

with p_i, the commodity price, w_{Ki}, the wage rate, and $\theta_i = \{\theta_{i,1,1}, \theta_{i,1,2}, \ldots, \theta_{i,1,100}, \ldots, \theta_{i,4,1}, \theta_{i,4,2}, \ldots, \theta_{i,4,100}\}$, arbitrarily given profit distribution parameters in the ith sector. ($i = 1, 2, 3, 4$) General equilibrium prices are computed as in what follows, independently of $\{\theta_1, \theta_2, \theta_3, \theta_4\}$, with $w_{K1} = 1$.

$$\{w_{K2} = 2, w_{K3} = 3, w_{K4} = 4, p_1 = 200, p_2 = 400, p_3 = 600, p_4 = 800\}$$

In this procedure, the new generation of 100 specific workers is born, and the fifth commodity is newly invented and produced by them. When $n = 5$ with 500 workers, we have GE prices, independently of $\{\theta_1, \theta_2, \theta_3, \theta_4, \theta_5\}$:

$$\{w_{K2} = 2, w_{K3} = 3, w_{K4} = 4, w_{K5} = 5, p_1 = 200, p_2 = 400, p_3 = 600, p_4 = 800, p_5 = 1000\}$$

We may reasonably assume that (5) holds for arbitrary n.

$$w_{Ki} = i, \quad p_i = 200i \quad (i = 1, 2, \ \ldots, \ n) \tag{5}$$

In what follows, we examine if the Pareto-type and/or log-normal type income distributions are derived, depending on the assumption on (4).

3.2 *Simulation I: Each Sector Is Possessed Wholly by the Specific Workers in that Sector*

In this subsection, assuming that (5) holds, we investigate the shape of the resulting income distribution when there are $n = 1000$ sectors with specific labor, and each sector is possessed by the 100 workers with the corresponding specific labor. It is assumed furthermore that the set of profit shares of the sector i, θ_i, is given randomly, as follows.

$$\begin{aligned} &\theta_i = \{0, 0, \ldots, 0, \ldots, \theta_{i,i,1}, \theta_{i,i,2}, \ldots, \theta_{i,i,N0}, \ldots, 0, 0, \ \ldots, \ 0\}, \\ &\quad \textstyle\sum_{k=1\sim N0} \theta_{i,i,k} = 1 \quad (i = 1, 2, \ \ldots, \ n) \\ &\quad \theta_{i,i,k} = \theta_{1,1,k} \quad \{i = 1, \ \ldots, 1000, k = 1, \ \ldots, \ 100\}. \end{aligned} \tag{6}$$

In this case, the simulation with profit share parameters selected randomly, which satisfy (6), produces 100,000 workers' incomes, whose income distribution is depicted by the bar-chart in Fig. 7.

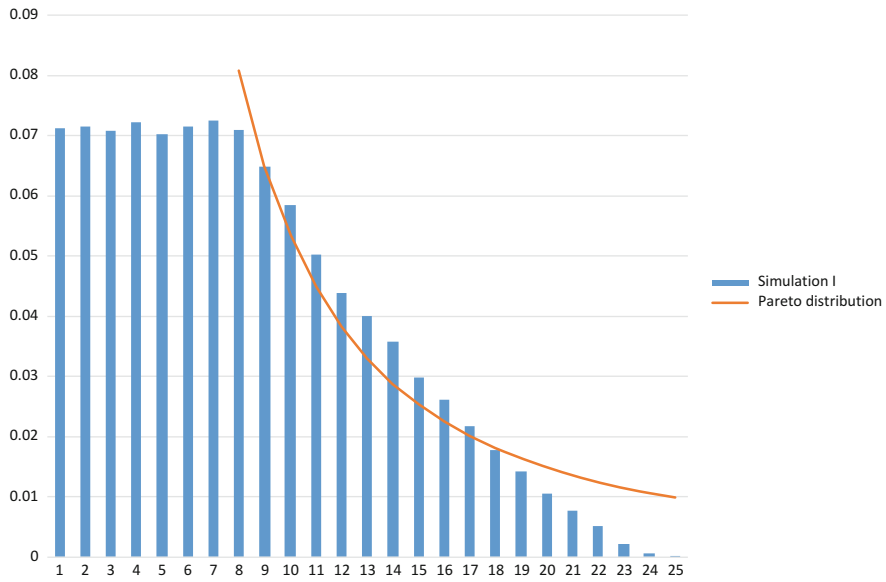

Fig. 7 Each sector is possessed by the specific workers in that sector. Source: Fukiharu (2016)

Applying the statistical analysis on the bar-chart data, with the first ten elements discarded, the best-fit function for the Pareto distribution, depicted as the solid curve and R^2 for this best-fit function in Fig. 7, are given as follows.

$$3.57230x^{-1.82488}, \quad 0.966627$$

3.3 Simulation II: Each Sector Is Possessed by All the Workers

In this subsection, we examine the opposite case to the one in the previous subsection. Assuming that (5) holds, we investigate the income distribution when there are $n = 100$ sectors with specific labor, and each sector is possessed quasi-randomly by the 100 n workers across the sectors, while the vector of shares of specific labor group is the same for all the sectors. In other words,

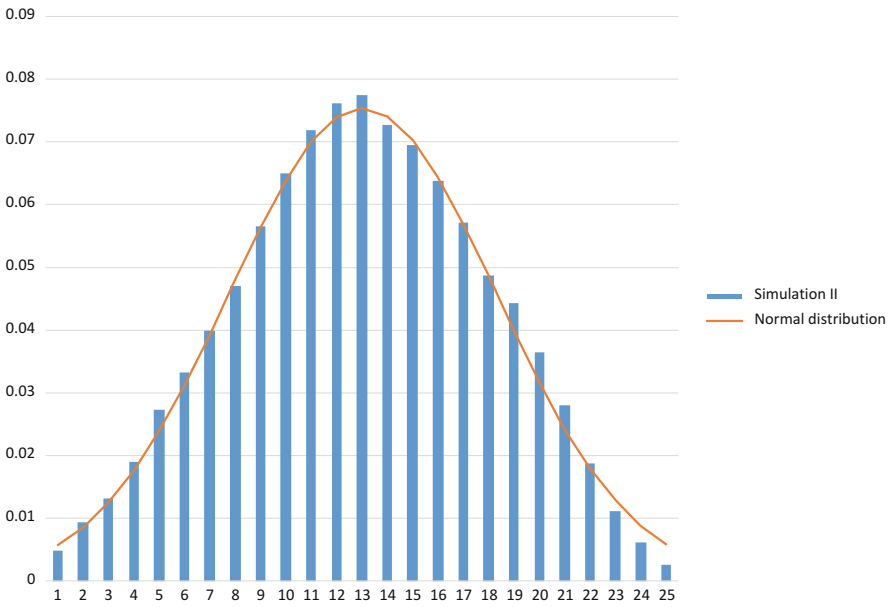

Fig. 8 Each sector is possessed by all the workers. Source: Fukiharu (2016)

$$\theta_i = \{\theta_{i,1,1}, \theta_{i,1,2}, \ldots, \theta_{i,1,100}, \theta_{i,2,1}, \theta_{i,2,2}, \ldots, \theta_{i,2,100}, \ldots, \theta i, 100, 1, \theta_{i,100,2}, \ldots, \theta_{i,100,100}\},$$

$$\sum\nolimits_{j=1\sim100,\ \ k=1\sim100} \theta_{i,j,k} = \theta_i = \theta_1 \quad (i = 1, 2, \ \ldots, \ 100). \tag{7}$$

In this case, the simulation with profit share parameters selected randomly, satisfying (7), produces the income distribution, consisting of 10,000 incomes, as depicted by the bar-chart in Fig. 8.

Applying the statistical analysis on the bar-chart data, the best-fit function for the normal distribution, depicted as the solid curve in Fig. 8, and R^2 are given as in what follows.

$$0.073258 \ e^{-0.0168601 \ (-13.5481+x)2}, 0.996008.$$

3.4 *Simulation III: Sixty Percent of Each Sector Is Possessed by Twenty Percent of the Specific Workers in that Sector*

In this subsection, we examine the third case, between the above two opposite cases. Assuming that (5) holds, we investigate the shape of income distribution

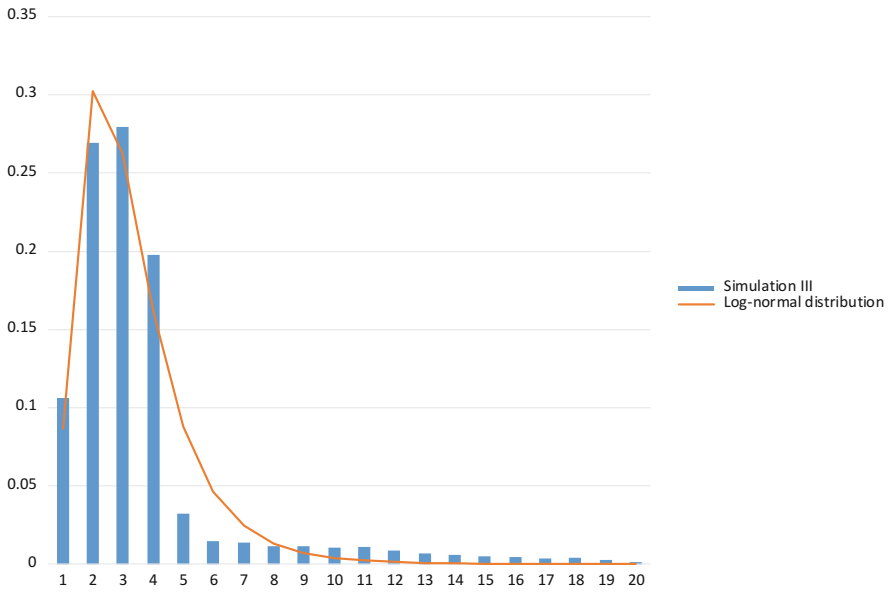

Fig. 9 Sixty percent of each sector is possessed by twenty specific workers in that sector. Source: Fukiharu (2016)

when there are $n = 100$ sectors with specific labor, and 60% of each sector's profit is possessed randomly by the 20 specific workers and the remaining 40% of the profit is possessed by the remaining 9980 workers across the sectors. In other words,

$$\begin{aligned}&\theta_i = \{\theta_{i,1,1}, \theta_{i,1,2}, \ldots, \theta_{i,1,100}, \theta_{i,2,1}, \theta_{i,2,2}, \ldots, \theta_{i,2,100}, \ldots, \theta_{i,100,1}, \theta_{i,100,2}, \ldots, \theta_{i,100,100}\},\\ &\quad \sum\nolimits_{k=1\sim 20} \theta_{i,i,k} = 6/10, \theta_{i,i,k} = \theta_{1,1,k} \ (i = 1,2,\ldots,100, k = 1,2,\ldots,20),\\ &\quad \sum\nolimits_{j=1\sim 100,\ k=1\sim 100} \theta_{i,j,k} = 1 \end{aligned} \tag{8}$$

In this case, the simulation with profit share parameters selected randomly, which satisfy (8), produces the income distribution, consisting of 10,000 incomes, as depicted by the bar-chart in Fig. 9.

Applying the statistical analysis on the bar-chart data, the best-fit function for the log-normal distribution, depicted as the solid curve in Fig. 9, and R^2 are given as follows.

$$0.853086\, e^{-2.28631\ (-0.726702+\mathrm{Log}[x])}/x, \quad 0.984294.$$

We may conclude that when each sector producing the newly invented commodity is possessed wholly by the workers specific to that sector, the resulting income distribution tends to follow that of the *Pareto type*; when it is possessed by the whole workers randomly, the resulting income distribution tends to follow that

of the *normal type*; and finally when it is partly possessed by part of the workers specific to that sector, the resulting income distribution tends to follow that of the *log-normal type*.

4 Conclusion

The aim of this paper was to examine if the present-day observations concerning the income distribution is compatible with the pure economic theory, by extending Fukiharu (2013) further. We started from the viewpoint of globalization and the phenomenon of rising domestic inequality and declining international inequality was examined.

In Sect. 2, we computed the probability of declining international income inequality in the two-country Keynesian IS mode, with the probability of this phenomenon slightly smaller than 80%. When there are three countries, the probability rose: i.e. slightly greater than 80%.

In this section, we proceeded to an examination of the Heckscher–Ohlin (H–O) trade model. After actually solving the trade model without specifying parameters numerically, we computed the probability of declining international income inequality to be approximately 63% in general, while the one of rising domestic income inequality to be approximately 62% in general. If the region of random selection of the initial holdings is restricted, the resulting probabilities were different. For instance, if the first country is an advanced country with large capital and small labor and the second is a developing country with small capital and large labor, the probability of declining international income inequality was almost 99%, while the one of rising domestic income inequality was slightly greater than 90%.

In this section, we further extended the two-country H–O model to the three-country model. Constructing three-country H–O model with three (representative) economic agents (workers, capitalists, and entrepreneurs), we showed that the probability of the successful convergence was approximately 70%, the one of "rising domestic income inequality" in each country was approximately 70%, and finally, the probability of "declining international income inequality" was also slightly greater than 70% (73%). Thus, we can conclude that the present-day trend concerning the income distribution inequality is compatible with the pure economic theory, and the compatibility enhances as the number of countries increases.

In Sect. 3, from the viewpoint of innovation, the phenomenon of the Pareto-type or log-normal type income distribution observed in any present-day country was examined: i.e., if it is compatible with the pure economic theory. The general equilibrium model in this section was constructed essentially from the idea of dynamic population growth and successive commodity invention, with n periods and n sectors. Intuitively, as time elapses, 100 new workers emerged each period who produced specifically the newly invented commodity in each period. This idea

was borrowed from Simon (1955), whose general process is applicable to the urban growth model.

In this section, by simulation, first, we produced a Pareto-type income distribution for a country in which each sector is wholly possessed by the workers specific to that sector. Second, the opposite case to the first case was examined. By simulation we produced a normal-type income distribution for a country in which each sector is possessed by all the workers across the whole sectors. Finally, the third case, in between the above two opposite cases was examined. By simulation we produced a log normal-type income distribution for a country in which 60% of each sector is possessed by 20% of the workers specific to that sector. Thus, we may conclude that the phenomenon of Pareto-type or log-normal type income distributions observed in arbitrary country is compatible with general equilibrium theory. From these examinations, we may safely conclude that the present-day observations concerning income distribution is compatible with the pure economic theory.

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Erratum to: Complementarities of Innovation Strategies: Evidence from Transition Economies

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The original version of this chapter was inadvertently published with incorrect spelling of surname of the authors. The name should read George Berulava and Teimuraz Gogokhia and not Berulava George and Gogokhia Teimuraz. The chapter has been updated.

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