Contributions to Economics

Anastasios Karasavvoglou
Persefoni Polychronidou *Editors*

# Economic Crisis in Europe and the Balkans

## Problems and Prospects

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Editors

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## Problems and Prospects

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# About the Book: The Economic Crisis in Europe and the Balkans

The economic situation in each of the South-Eastern European countries before the appearance of the crisis was very different and the impact of the crisis on each country was also different. In 2008, in countries such as Bulgaria, Romania, Poland, Slovenia, Czech Republic, Albania and Serbia, the rate of BIP growth was over 3 %, while in Hungary and Turkey the equivalent rate was almost zero or slightly positive (Ukraine). In the same year, the rate of growth in the eurozone was 0.5 % and in the EU-27 1.0 %.

One year later, the crisis led to the collapse of almost all the economies of SE Europe, except for Albania and Poland that managed to achieve, despite the crisis, positive growth rates. Comparatively, the BIP of the eurozone fell by 4.2 % and of the EU-25 by 4.1 %.

Although the return to earlier growth rates was not feasible, the conditions for financing investment plans deteriorated further. Moreover, as the macroeconomic environment in general was not favorable in Europe and the rest of world, most countries in the East Central Europe exploited foreign exchange policy and productivity improvement measures in order to cope with the problems of competitiveness brought about by the crisis. Therefore, the countries of South Eastern Europe, such as Poland, Russia, Hungary, Romania, Czech Republic, Serbia, Turkey and others, decided on the devaluation of their national currencies against the euro. Following this, the price level followed rising trends and was accompanied by an increase in the rate of unemployment. The activation of fiscal policy became the counterweight to the reduction in economic activities, with an emphasis on construction and on a contraction in private consumption.

The situation was temporarily improved during the years 2010 and 2011. The improvement, however, was limited and growth did not approach the level before the 2008 crisis. The devaluation of currencies boosted exports and temporarily improved the balance of payments. Nevertheless, this trend was reversed due to the increased prices of food and raw materials and contributed to rising inflation.

The estimates for 2013 show that the recovery for SE European countries will be slow but sustained. The injections to the economy will firstly be applied to the domestic demand by loosening of the fiscal policy. However, the situation of the

European economy is expected to play an important role as well, the recovery of which will have beneficial effects on the SE European economies.

The consequences of the crisis were not the same for all the countries of the region. Thus, some countries (Romania, Bulgaria, the Baltic countries) showed a stronger growth rate momentum compared with other countries, whereas countries that had serious structural problems (Western Balkan countries) benefited less from the boost in international demand for exports of their products. Finally, countries such as the Czech Republic, Poland and Slovakia experienced growth rates that supported their efforts to address the serious debt problems they were facing.

In this particular economic environment, the SE European countries should go ahead and gain competitive advantages. The 4th International Conference EBEEC 2012, held in Sofia, Bulgaria in May 2012, hosted scientists and analysts of the particular region's economies, who discussed many different aspects of the progress of the economies. This book contains selected articles presented at the conference that analyze important aspects of the situation of these economies.

In Part I, Nikitas-Spiros Koutsoukis and Spyridon Roukanas present the economic crisis, starting from the subprime events in the USA, continuing with the Greek economic crisis and then with other European countries such as Italy and Spain, until reaching the present status as dictated by the Greek Private Sector Involvement (PSI) in restructuring the Greek debt. The authors align the timeline with a suitably adapted reputation risk framework in order to interpret the development of the crisis and to anticipate, where possible, its future evolution.

Murat Sadiku, Luljeta Sadiku and Nimete Berisha refer to the relationship between the Greek economy and the Western Balkan economies and investigate the probability of a spillover effect of the current Greek crisis to the countries of the Western Balkans. After presenting an outline of macroeconomic data for the sample countries, the authors test for this possibility using a binary logit model. They provide an interesting approach to a contemporary issue that has not received adequate attention in terms of the spillover effect on neighboring countries.

Bisera Gjosevska and Goran Karanovic discuss the various roads followed by a number of very similar albeit very different countries in their efforts to join the EU and survive during the current financial distress. The structure and nature of each economy is contrasted along with the divergent level of integration in global economic flows. According to the authors, what needs further discussion is whether the situation of one country being an acceding EU member and another in danger of being a perpetual EU candidate is due to the policy responses linked to the economic crisis.

Magoulios George and Chouliaras Vasilis examine the impacts of the financial crisis on the foreign trade between Greece and the Balkan countries (BCs) for the period 2007–2010. There is a reduction in the Greek trade volume with most of the BCs compared to the trade volume with the EU and the world. This is due to Greece's geographical position and, to a lesser extent, to this country's trade completion with the BCs compared to the EU. Despite the fact that the terms of trade between Greece and the BCs have generally become worse, they remained favourable for Greece, whereas the terms of trade between Greece and the EU and

the world as a whole are unfavourable for Greece and have further deteriorated. The authors state that 2009 was the year not only of the greatest recession in the BCs, but also of the greatest reduction in Greek imports and exports, concluding that the extent of recession in the BCs and the progress of Greek exports to these countries are directly related.

Georgios Makris and Thomas Siskou make an effort to analyze the arguments of the predominant theoretical foundations of globalization that could explain the recent crisis. They argue that traditional economic theory cannot successfully interpret the current international economic reality. By examining the empirical findings concerning the 2007 world economic crisis, they claim that the causes of this systemic crisis are due to "real economy". Apart from analyzing the characteristics and dimensions of both the financial sphere and macroeconomic imbalances of the globalized "real economy", the authors wish to establish the relationship between them and the global economic crisis. This approach enables them to state that despite the excesses or omissions of economic policies that could be considered contributing factors to the eruption of the crisis, the main cause lies in the way that the process of globalization is materialized.

Elefterios Thalassinos, Konstantinos Liapis and John Thalassinos demonstrate a holistic framework for measuring a bank's financial health by classifying its main responsibilities as either conformance or performance. Responsibilities are classified into five categories: Corporate Financial Reporting (CFR), Risk Management Procedures (RMP), Corporate Governance (CG), Corporate Social Responsibility (CSR) and Stockholders Value Creation (SVC). Based on this framework, their article correlates all qualitative and quantitative components with the bank's ratings. With the use of financial and other published data of the Greek banking sector, the authors propose a new model and a procedure for the explanation, management and monitoring of a bank's financial health.

In Part II, Konstantinos Liapis, Antonios Rovolis and Christos Galanos analyze the trends in the tax regimes of different countries for the period from1995 to 2009 and use multivariate cluster analysis to identify similarities between cross-country tax regimes in the EU. They argue that there are significant differences between the tax regimes of EU countries and that no policy has been implemented to ensure tax homogeneity across the EU, nor is there any likelihood of such. Budget deficits have an impact on taxation and, invariably, countries manage the recent debt crisis by selecting different taxes as fiscal policy tools. This article shows that the level of economic growth affects the structure of taxes at work and alters the performance of different types of taxes. The article attempts to explain the factors that differentiate tax regimes by using multi-dimensional criteria and, thus, contributes to the debate for a common tax regime between EU countries.

Abdylmenaf Bexheti and Luan Eshtrefi claim that the governments of the Former Yugoslav Republic of Macedonia (FYROM) have proceeded to policymaking decisions based on political instead of economic cycles, focusing on the needs of individual elites and not on the priority of eventual EU integration. This situation has resulted in a decade-long failure to create priorities for eventual EU accession. By a comparative and benchmark analysis, the writers examine the present economic

situation in FYROM and what is needed to intensify the process of economic policy harmonization to EU standards. They state that the lack of sufficient economic policy outcomes from Skopje may lead the EU to regard this as a retreat from its obligations. They also believe that by moving one step forward and two steps back, the current economic national strategy of reforms will leave FYROM out of the EU enlargement agenda.

Karen Crabbé and Michel Beine study the impact of economic integration and institutional reforms on export specialization in Central and Eastern Europe. The integration and transition process in Central and Eastern Europe offer a good empirical setting for examining this question. An empirical analysis was conducted for ten Central and Eastern European countries (CEEC) over the period 1996–2008. The authors show that better protected property rights and a fair credit policy lead to more diversified exports. Trade integration, on the other hand, stimulates export specialization, but institutions seem to be more important in explaining export patterns.

In Part III, Pantelis Sklias and Maria Tsampra argue that, despite the significant political, institutional and socio-economic advances of individual countries during the last 20 years, regional integration and endogenous business development are still lagging. They also argue that regional integration from a socio-cultural point of view constitutes a solid base for cross-border business cooperation and that Western Balkan countries can accelerate their economic development by exploiting their potential for cross-border trading and entrepreneurship. Finally, they suggest the political, institutional and financial support of intra-regional business, especially in cross-border areas where clusters can capitalize on geographic proximity, shared historical background and culture.

Adrian Costea constructs a framework that enables us to make class predictions about the performance of non-banking financial institutions (NFIs) in Romania. By implementing a two-phased methodology, the author aims at: (a) validating the dimensionalities of the map used to represent the performance clusters and to quantify errors associated with it; and (b) using the obtained model to analyze the movements of the three largest NFIs in the period 2007–2010. By the validation procedure, which is based on a bootstrap technique, the proper map architecture and training-testing dataset combination for a particular problem can be found. Furthermore, the visualization techniques employed in the study make clear how different financial factors can and do contribute to the companies' movements from one group/cluster to another.

Eleni Zafeiriou, Karelakis Christos, Chrisovalantis Malesios and Theodoros Koutroumanidis empirically test the existence of a causal relationship between economic growth and the development in the banking sector and stock market in ex transition economies, recent Member States of the EU and, especially, Bulgaria. Their findings indicate a sole relationship between the banking sector, the stock market and economic growth and also a bilateral relationship between economic growth and the development in the stock market, as well as between economic growth and the development in the banking sector.

Dimitrios Kyrkilis, Simeon Semasis and Constantinos Styliaras discuss whether and how agriculture has contributed to the economic growth in Greece by exploring the relationship of agriculture with the main non-agricultural economic sectors. The use of proper econometric and statistical techniques that utilize time series data collected over the last five decades shows that agriculture has not influenced the other economic sectors and at the same time has not been influenced by them.

We would like to express our thanks to all the participants of the EBEEC 2012 conference in Sofia. We also thank the reviewers who evaluated the articles in this book, as well as our colleague Mrs. Fotini Perdiki for her excellent work in editing. Last but not least, we owe sincere thanks to Assoc. Prof. Dr. Stavros Valsamidis, Dr. Ioannis Kazanidis and Dr. Theodosios Theodosiou for their efficient and continued efforts to support the conference in various ways.

Kavala
March 2013

Prof. Dr. Anastasios G. Karasavvoglou
Dr. Persefoni Polychronidou

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# Part I
# Economic Crisis in Europe

# A Reputation Risk Perspective on the European Economic Crisis

**Nikitas-Spiros Koutsoukis and Spyridon Roukanas**

**Abstract** The current economic crises in Europe, and especially the case of Greece, Spain, and Italy has brought forward the complex interaction among States and Markets. At first instance, the European crises seemed to be originated in, and dominated by the Markets' financially-motivated preferences, especially in the case of Greece, Spain and Italy. However, the balance in the interplay is gradually being restored due to the unrehearsed yet coordinated and still mighty, at the European Union, State-based Political decisions to overcome the crisis, apparently in favor of a political union throughout the EU.

In this paper we are considering a reputation risk framework as a descriptive device for interpreting this interaction, the reasons that lead to it, and consequently the pitfalls that should be avoided in the future. In particular, we consider the timeline of events leading to the economic crisis, commencing form the starting subprime events at the USA, continuing with the Greek economic crisis, and consequently with other European countries, such as Italy or Spain, until we reach the present status as dictated by the Greek Private Sector Involvement (PSI) in restructuring the Greek debt. Subsequently, we present an instantiation of the reputation framework that allows us to use and interpret the State-Market interplay and its dynamics in the context of the crises. We then align the timeline with a suitably adapted reputation risk framework in order to interpret the development of the aforementioned crisis and to anticipate, where possible, its evolution henceforth. Finally, we discuss the main findings and the prospects of this work.

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## 1 Introduction

The global financial crisis that firstly occurred in the U.S.A in 2007 was a result of certain borrower's weakness to repay the mortgages of high risky they had received. The existence of the "shadow banking system" according to Paul Krugman enhanced the instability of the financial system (Krugman 2009). Gradually since 2006, house prices began to decline and the demand was limited. More and more borrowers defaulted on their payments. As mortgages were issued by sources that sold loans to financial institutions, the mortgage crisis had negative effects to international financial markets. The strong interconnection among financial markets expanded the crisis into the international banking system.

Then, the crisis became a crisis of the European financial system. It evolved as a debt crisis in certain Euro area Member States. Major reasons for the manifestation of the debt crisis on the economies of certain Member States of the Euro zone were both structural weaknesses in some economies, namely high public debt and government deficit, but also the structural and operational weaknesses of governance of European Monetary Union–EMU (The Economist 2010). In other words, and in hindsight, it appears that there are euro zone members, which lacked the fiscal rigor and institutional infrastructure that would allow them to tackle the consequences of an economic crisis equivalent to the global financial crisis in 2007. In essence this implies the lack of a unified economic governance perspective (De Grauwe 2006; Jones 2010).

The management of the crisis by the European side was almost always short-term focus and was lower than expected at each stage of the European debt crisis. Fundamental weakness of the European side was the deficit of institutionalized mechanisms of crisis management which is defined as follows. First, there was the fear of the powerful European countries that giving aid to countries like Greece would create a precedent for other countries and would therefore sought the financial support of the Member States of the Euro zone. Second, Member States of the Euro zone delayed in addressing the Greek debt crisis because of the timidity of politicians to take decisions that might affect negatively their domestic political audiences. Third reason, but of particular importance, is the fact that the Treaty provided for the prohibition of commitment of an EMU Member from other Member States (Kotios et al. 2012).

Initially, the EMU has created a funding mechanism for Greece, which occurred as a consequence of fear for a default of the Greek economy. The banking systems of Germany and France had at their disposal large amounts of Greek bonds, at aggregate of 51 and ~112 billion US or approximately 51 % of the country's foreign exposure (BIS 2010, p. 16). Gradually, as it became clear that the European debt crisis affecting other Member States of the Euro zone, the Euro zone created also

other institutions to deal with the crisis such as the European Financial Stabilization Mechanism (EFSM) (European Commission 2012a). At the same time, the European Stability Mechanism (ESM) that was adopted, has a permanent character and is aimed at ensuring financial stability in the Euro zone.

Greece as well as other Euro zone countries, such as Portugal and Ireland jointed in a support mechanism for their economy. This financial mechanism is supported by the International Monetary Fund, the European Commission and the European Central Bank. The main objective of this mechanism is the financial support of the economies of the Member States of the Euro zone and the parallel implementation of a program of fiscal and structural adjustment (European Commission 2012b). Strong criticism was expressed about the possibility of achieving the objectives set by the transnational support mechanism for the following reasons. First, the borrowing rate of the Greek economy set at too high level of about 5 % per year (Roumeliotis 2012). At the same time, Greece was required to apply a very strict fiscal adjustment program with little chance of success, which was marked by the beginning of the implementation by a number of economists (e.g. Featherstone 2011; Kotios et al. 2011).

The Greek fiscal adjustment program showed a strong deviation from the targets that have been set and consistently made decisions by the Summit on October 26, 2011. The Summit resulted in the following decisions:

(a) Voluntary haircut of private debt by 50 %,
(b) Recapitalization of Greek banks with capital of € 30 billion,
(c) Grant a loan to Greece of €130 billion and
(d) Signing of a new Memorandum (Council of the European Union 2011).

The fiscal adjustment programs in Ireland and Portugal did not lead to positive results that initially were expected. In contrast, markets felt that countries like Spain and Italy are experiencing serious financial problems consistently to borrow from the markets to refinance debt with very high interest rates.

It is now widely accepted that apart from structural weaknesses in some Euro zone economies during the crisis key factor for the expansion of the debt crisis in the Euro zone were and still remain weaknesses in the system of governance of the Euro zone.

## *1.1 Scope and Purpose*

We find that the following remarks are valid when one looks at the described chain of events that led to the current situation in the euro zone:

– The economic interpretation, *on its own,* namely narrowing the problem to debt and deficit figures, in most cases, has failed to anticipate the likelihood of this outcome. Debt and deficit are outcomes reflecting other structural problems in an economy, but which ones?

– The political leaders and policy makers, in essence Europe's decision making echelons, both at the EU and the member-State level, have evidently failed to 'nail' the roots of the escalating crises in its tandem connection to the real economy; this holds as much for the 'in-trouble' member-states, as it does for the more fortunate states that still refrain from getting into trouble.
– The complexity, speed of development, and magnitude of this crisis in parallel to the economic modeling and political decision making inefficiencies clearly show that a synergy of hard(er) and soft(er) science methodologies is required in order to be able to anticipate, and in the worst case deal with situations like this in a pragmatic manner.

In this paper we suggest that in addition to the political and economic interpretations, there are other descriptive, and essentially qualitative models, which are often more insightful in interpreting the 'real' economy. It could be argued that, such approaches can be just as predictive as economic forecasts, and can highlight a number of the key risks which, clearly, were not anticipated and not dealt with in the situation we are facing today.

We support the view that Risk Management is such a field and is rapidly becoming a management paradigm and practice (Koutsoukis 2010). In addition we have used a reputation risk framework to interpret solely the Greek crisis (Koutsoukis and Roukanas 2011; Koutsoukis et al. 2012). In this paper we take our approach one step further and extend it to the Euro-zone members in an effort to evaluate the potential of our approach on a larger data set. Given that, evidently, the Greek crisis has not been contained at the EU level, we believe that our approach is just as relevant for a larger set of EU, and particularly Euro zone members.

This paper is organized in the following way: In Sect. 2, we consider the literature on reputation risk and present the framework considered at the State-level decision making setting. In Sect. 3, we present comparative empirical data along each of the key reputation risk drivers and discuss key observations accordingly. In Sect. 4, we discuss the main conclusions of this work and the potential of our approach.

## 2 A Reputation Risk Perspective

Reputation is increasingly being considered as an organizational asset which, therefore, can be managed just as any other organizational asset (e.g. Tadelis 1999; Turner 2000; Mailath and Samuelson 2001; Siano et al. 2010). From this perspective, it is easily seen that the potential of a negative impact on an organization's reputation forms the organization's '*reputation risk*.' Therefore, management of reputation risk should be part of an effective risk management strategy or process. This is a challenging feat, however, since reputation is, literally, intangible and by definition quite vague and abstract to be evaluated directly. Hence, most researchers and analysts suggest that reputation can evaluated via its effect on various stakeholders related to the organization, such as market share, partnerships and alliances, employees views, local communities and '*professional*

*mediators*' like journalists (Liehr-Gobbers and Storck 2011). From similar viewpoint other researchers suggest that organizational reputation has a direct effect on financial performance, namely the penultimate indicator of an organization's performance across the board (e.g. Siano et al. 2010; see also Quevedo Puente et al. 2011 for a comprehensive literature review).

Rather intuitively, many suggest that the way to measure reputation is by measuring its outcomes directly; that is by looking at perceptions regarding organization in the various stakeholder groups (e.g. for a review see also Bebbington et al. 2008).

Many researchers suggest instead that reputation consists of other more tangible qualities regarding a firm's activity, and go further to suggest that it can be managed, albeit indirectly through the management of reputation's key drivers or constituent elements (Gaultier-Gaillard et al. 2009; Rayner 2003). Others also have similar perspective on proactive reputation [risk] management, such as Murray (2003).

In this paper we adopt Rayner's perspective which focuses proactively on reputation 'drivers' (2003). This approach is in line with the elementary principle of risk management, which is to manage risks before they materialize (e.g. ISO 2009; FERMA 2003; COSO 2004; CSA 1997; AIRMIC/ALARM/IRM 2002).

## *2.1 The Reputation Drivers*

We consider Rayner's approach as an integrative, high level approach, although it is possible to disaggregate high level risks to more detail indicators as necessary. In this approach the key reputation drivers are the following, most of them self explanatory, but we comment nonetheless:

1. Regulatory Compliance. *Is the organization playing by the rules? Does it comply with the relevant laws and regulations, standards, policies and procedures?*
2. Communications and Crisis Management. We quote directly from Gaultier-Gaillard et al. (2009) "*Does the business provide meaningful and transparent information which allows stakeholders to understand its values, goals, performance and future prospects? How good is it at handling crises?*"
3. Financial performance and long term investment value. *Is the organization a solid performer and a good investment opportunity in the long term? What is the track record showing? Were there any surprises in the past?*
4. Corporate Governance and Leadership. *What is the quality of the organization's top-level drive?*
5. Corporate Responsibility. *Is the organization a good 'citizen'? One that respects other citizens, the society and the environment?*
6. Workplace Talent and Culture. *What is the quality of the organizations people and their culture? How do the employees perceive their organization and which perceptions does the organization encourage internally?*

7. Delivering Customer Promise. *Does the organization deliver successfully, consistently and satisfactorily to its target groups?*

## 2.2 Reputation Risk and State-Level Decision Making

The reputation drivers presented capture two dimensions of organizational activity:

A. The interaction of an organization with the outside world (#1, #2, #3, #5 and #7)
B. The organization's internal coherence and quality of governance (#2, #3, #4, #5, and #6).

It has been suggested that reputation and its environment's (i.e. the markets') (re)actions are interrelated. From this perspective, an organization's (in)actions as well as the those of its competitors, also have a strategic impact on reputation, meaning that the reputation risk is not controlled exclusively by the stakeholder organization but also from factors in the environment. As we have also argued in the beginning of this paper this interaction implies that organizational performance may be directly affected by market (inter-)actions which affect reputation (Basdeo et al. 2006). This perspective also implies that the relationship between organizations and markets may be a spiral as opposed to the outcome of a (mis-) calculated risk taking game originating in either the markets, or the state's public financiers.

## 2.3 Why Use Reputation Risk to Interpret the Euro Zone Crisis?

It is well known that one of the major issues in the euro zone crisis stems from the inability of the member states to continue borrowing from the market. For reasons that are not well understood with absolute certainty to anyone yet, some member states with high deficit or national debt as a percentage of GDP or both are forced, by the markets, to borrow at increasingly higher interest rates. Eventually these rates make borrowing unsustainable, and so euro-members like Greece, Portugal, Spain, or Italy, are forced to halt growth, devaluate their economies, and take emergency measures to ensure either that they do not default or leave the euro zone. This is, naturally an oversimplified version of the current crisis which comprises of multifaceted political and economic issues and interactions.

However, the reputation risk framework we have adopted, as we will show in the next section, reveals a comprehensive and qualitative view of some of the main reasons behind the increases in state borrowing interest rates. We state that all the necessary information is already encapsulated in the debt and deficit figures, but

this is not really helping to solve the problem; solving the problem would require to identify the root causes and not just their effects.

Currently, the problematic member states in the euro zone crisis are often dealt with like oversized organizations that can only survive the crisis through flat downsizing. Certainly, downsizing may be a solution to the debt and deficit equations, but it is barely the solution to the underlying problem – which no one has accurately defined yet; if they had, the crisis would have dealt with. For any of the problem states we are only aware of the problematic outcomes on the aggregate macroeconomic indicators. As we show in this paper, our approach offers an alternative yet insightful and high level interpretation on many aspects, if not the causes of the current crisis, which are excluded from the discussion tables, and should at least be taken into consideration when trying to overcome the crisis.

## 3 The Euro-crisis Reputation Risk Perspective

Henceforth we adapt the reputation driver framework to an empirical framework that we use as an approximation to evaluate the reputation 'performance' of the seventeen (17) euro zone member states during the first decade of the euro, that is until the events beginning of Greek crisis in 2010.

For each of the reputation drivers we searched for indicators, which are defined at the state level that were as directly related to the definition of the reputation of the drivers as possible. In an attempt to remain pragmatic and to use reliable empirical data we have strived to sort list the indicators from either primary sources or reliable data collections, such as Eurostat or the World Bank. We understand that choosing indicators form a pool, such as Eurostat, is proprietary and pretty much a hit-and-miss game and that the process of eliciting risk indicators should be more structured, for instance by implementing other risk identification methods such as the expert opinions, scenario analysis, etc. Still, this is novel research territory and one has to start somewhere. In addition to the indicators from reputable sources, it was also necessary to analyze primary data for some reputation drivers.

### *3.1 Regulatory Compliance*

For regulatory compliance we are using two indicators from Eurostat, namely Transposition of Community Law and New Infringement Cases.

Transposition of Community Law shows the percentage of EU directives that have been adequately enacted into national law. Naturally, there is not a single member-state with a 100 % rate of transposition. The below 100 % rate can be justified due to the naturally lengthy legislation process at the state level as well as the corresponding red tape present in each state, respectively. However, if a state

**Table 1** Worst-to-best member-state ranking/ Transposition of community law

| Transposition of community law | | |
|---|---|---|
| Rank | Avg/pa | State |
| ***1*** | ***96.33*** | ***Greece*** |
| ***2*** | ***96.89*** | ***Italy*** |
| ***3*** | ***96.92*** | ***Portugal*** |
| 4 | 97.05 | Luxembourg |
| 5 | 97.29 | France |
| 6 | 97.55 | Ireland |
| 7 | 97.56 | Austria |
| 8 | 97.61 | Germany |
| 9 | 97.73 | Belgium |
| 10 | 97.96 | Netherlands |
| 11 | 98.11 | Finland |
| ***12*** | ***98.22*** | ***Spain*** |
| 13 | 98.47 | Cyprus |
| 14 | 98.63 | Estonia |
| 14 | 98.63 | Malta |
| 16 | 98.75 | Slovakia |
| 17 | 98.87 | Slovenia |

Source: Euro stat (2012a)

performs consistently better or worse than the group average it follows that, its reputation is affected accordingly, from the regulatory compliance perspective of course.

In Table 1 we present the member-states' ranking (worst-to-best performer), by using the average percentage rate of community law transposition throughout the period of study (2000–2009) according to the data available. We note that the top-3 [worst] performers, Greece, Italy and Portugal are three of the euro zone members that are at the forefront of the euro zone crisis. Spain however is not a 'top' performer in this sense; overall, Spain is a good, an above-average performer in this particular indicator.

New Infringement Cases. This refers to the number of new infringement cases brought before the European Court of Justice. It shows the total number of new actions for failure of a Member State to fulfill its obligations brought before the Court of Justice. By definition the indicator shows regulatory 'non-compliance of a member state. Similarly, one should be able to identify better-than-average and worse-than-average performers as well. The member states' ranking from worst-to-best is shown in Table 2.

In this case, only Italy and Greece are at the top of the list. Spain is in the 5th place with Belgium (hence, there is no 6th place) and Portugal is at the 8th place. What is surprising is that Germany, presumably a custodian and guardian of the Euro zone, is in the worst performing half with a score directly comparable to the previous worst performer, and that France, presumably another strong EU custodian is the 3rd worst performer.

**Table 2** Worst-to-best ranking 2000–2009/ Infringement cases

| New infringement cases | | |
|---|---|---|
| Rank | Avg/pa | State |
| ***1*** | ***21.3*** | ***Italy*** |
| ***2*** | ***17.6*** | ***Greece*** |
| 3 | 17.1 | France |
| 4 | 13.4 | Luxembourg |
| *5* | *12.9* | *Belgium* |
| ***5*** | ***12.9*** | ***Spain*** |
| 7 | 12.0 | Germany |
| ***8*** | ***11.5*** | ***Portugal*** |
| 9 | 10.0 | Austria |
| 10 | 9.1 | Ireland |
| 11 | 6.1 | Netherlands |
| 12 | 4.2 | Finland |
| 13 | 2.8 | Estonia |
| 14 | 2.2 | Malta |
| 15 | 1.5 | Slovakia |
| 16 | 1.2 | Cyprus |
| 17 | 0.8 | Slovenia |

Source: Euro stat (2012b)

## *3.2 Communications and Crisis Management*

As we discussed in the introduction, the international economic crisis unfolded fully in 2007, but Euro zone's troubles stem mostly from its weakness as a monetary union as well as some of its members and most notably Greece, Spain, Italy, and Portugal to react promptly in the aftermath of 2007. Hence, for the period of study, i.e. the decade leading to the current Euro zone crisis (largely attributed to the weakness of the Greek economy and the first support package of 2010) we have a critical event that can be used to evaluate crisis-management responses for the economies in question. From this perspective, we look at tax and spending packages (i.e. measures that impact directly economic development), especially for the period post-2007. The data is shown in Table 3. The ranking was based on the absolute value of the net effect. The lesser the absolute value of net effect the less reactive the respective economy to the economy crisis that began in 2007.

The combined effect of the Tax and Spending measures reflects the effect of fiscal policies on GDP, in other words it reflects the combined reaction of each economy to the aftermath of 2007. For instance among the troubled euro zone members, only Ireland reacted promptly by putting together measures (increase tax, reduce spending) with positive effect on its GDP. Spain, also reacted in a notable way, but in the opposite direction to Ireland: it reduced taxation and increased spending, presumably in an effort to support economic growth. In contrast Italy, Greece, and Portugal remained relatively dormant; the corresponding net effect was insignificant for Italy, and less than 1 % of their GDP in either direction (spending or taxation) for either Portugal or Greece. In other words, from a risk management

**Table 3** Composition of fiscal packages total over 2008–2010 period as % of GDP in 2008

| | | | | Tax measures | | | | | Spending measures | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Countries | Rank | Abs. | Net effect | Total | Ind | Bus | Con | SoC | Total | FC | Inv | TrH | TrB | TrSnG |
| Ireland | 1 | 8.3 | 8.3 | 6.0 | 4.5 | −0.2 | 0.5 | 1.2 | −2.2 | −1.8 | −0.2 | −0.1 | 0.0 | 0.0 |
| Luxembourg | 2 | 3.9 | −3.9 | −2.3 | −1.5 | −0.8 | 0.0 | 0.0 | 1.6 | 0.0 | 0.4 | 1.0 | 0.2 | 0.0 |
| ***Spain*** | ***2*** | ***3.9*** | ***−3.9*** | ***−1.7*** | ***−1.6*** | ***0.0*** | ***0.0*** | ***0.0*** | ***2.2*** | ***0.3*** | ***0.7*** | ***0.5*** | ***0.7*** | ***0.0*** |
| Finland | 4 | 3.2 | −3.2 | −2.7 | −1.9 | 0.0 | −0.3 | −0.4 | 0.5 | 0.0 | 0.3 | 0.1 | 0.0 | 0.0 |
| Germany | 4 | 3.2 | −3.2 | −1.6 | −0.6 | −0.3 | 0.0 | −0.7 | 1.6 | 0.0 | 0.8 | 0.3 | 0.3 | 0.0 |
| Netherlands | 6 | 2.5 | −2.5 | −1.6 | −0.2 | −0.5 | −0.1 | −0.8 | 0.9 | 0.0 | 0.5 | 0.1 | 0.0 | 0.0 |
| Belgium | 7 | 1.4 | −1.4 | −0.3 | 0.0 | −0.1 | −0.1 | 0.0 | 1.1 | 0.0 | 0.1 | 0.5 | 0.5 | 0.0 |
| Slovakia | 8 | 1.3 | −1.3 | −0.7 | −0.5 | −0.1 | 0.0 | −0.1 | 0.7 | 0.0 | 0.0 | 0.1 | 0.6 | 0.0 |
| Austria | 9 | 1.2 | −1.2 | −0.8 | −0.8 | −0.1 | 0.0 | 0.0 | 0.4 | 0.0 | 0.1 | 0.2 | 0.0 | 0.1 |
| ***Greece*** | ***10*** | ***0.8*** | ***0.8*** | ***0.8*** | ***0.8*** | ***0.0*** | ***0.0*** | ***0.0*** | ***0.0*** | ***−0.4*** | ***0.1*** | ***0.4*** | ***0.1*** | ***0.0*** |
| ***Portugal*** | ***10*** | ***0.8*** | ***−0.8*** | ***–*** | ***–*** | ***–*** | ***–*** | ***–*** | ***–*** | ***0.0*** | ***0.4*** | ***0.0*** | ***0.4*** | ***0.0*** |
| France | 12 | 0.7 | −0.7 | −0.2 | −0.1 | −0.1 | 0.0 | 0.0 | 0.6 | 0.0 | 0.2 | 0.3 | 0.0 | 0.0 |
| Cyprus | 13 | | – | – | – | – | – | – | – | – | – | – | – | – |
| Estonia | 13 | | – | – | – | – | – | – | – | – | – | – | – | – |
| ***Italy*** | ***13*** | ***0*** | ***0.0*** | ***0.3*** | ***0.0*** | ***0.0*** | ***0.1*** | ***0.0*** | ***0.3*** | ***0.3*** | ***0.0*** | ***0.2*** | ***0.1*** | ***0.0*** |
| Malta | 13 | | – | – | – | – | – | – | – | – | – | – | – | – |
| Slovenia | 13 | | – | – | – | – | – | – | – | – | – | – | – | – |

Source: OECD (2009)

**Tax measures**: *Ind* individuals, *Bus* businesses, *Con* consumption, *SoC* social contributions

**Spending Measures**: *FC* final consumption, *Inv* investment, *TrH* transfers to households, *TrB* transfers to businesses, *TrSnG* transfers to sub-national government

**Table 4** Ranking worst-to-best euro zone members/Government deficit

| Government deficit | | | | |
|---|---|---|---|---|
| Rank | Avg/pa | Count x > 3 % | % years worse than limit | Member state |
| ***1*** | ***−7.36*** | ***9*** | ***100.0*** | ***Greece (2000–. . .)*** |
| 2 | −5.58 | 5 | 47.1 | Slovakia |
| 3 | −5.43 | 5 | 52.9 | Malta |
| ***4*** | ***−4.5*** | ***9*** | ***52.9*** | ***Portugal*** |
| 5 | −3.65 | 6 | 41.2 | France |
| ***6*** | ***−3.64*** | ***7*** | ***52.9*** | ***Italy*** |
| 7 | −3.26 | 4 | 29.4 | Slovenia |
| 8 | −3.19 | 5 | 41.2 | Cyprus |
| ***9*** | ***−2.99*** | ***4*** | ***23.5*** | ***Spain*** |
| 10 | −2.93 | 4 | 23.5 | Ireland |
| 11 | −2.75 | 4 | 41.2 | Germany |
| 12 | −2.4 | 3 | 17.6 | Austria |
| 13 | −1.72 | 3 | 17.6 | Belgium |
| 14 | −1.45 | 3 | 25.0 | Netherlands (1996–. . .) |
| 15 | 0.29 | 0 | 5.9 | Estonia |
| 16 | 1.44 | 0 | 0.0 | Finland |
| 17 | 1.97 | 0 | 0.0 | Luxembourg |
| *1995–2011* | *−3.06* | *6* | *46.0* | *Euro area (17 countries)* |
| *1995–2011* | *−3.06* | *6* | *46.0* | *Euro area (16 countries)* |

Source: Euro stat (2012c)

perspective, it seems as if Spain took a gamble that did not pay off in the end; Italy, Greece and Portugal, seemed to underestimate the potential impact of the crisis on their economies, and scored.

## *3.3 Financial Performance and Long term Investment Value*

For this reputation risk driver, we keep things simple. We consider only the deficit and debt figures, typically at the heart of any discussion around the euro zone crisis. In Table 4 we rank the worst-to-best performers in terms of maintaining their deficit below the 3 % limit that applies to all euro zone members, sorted by the average debt per annum. Where the data series regard as different time series we point it out in the member state column.

The results here are not really anticipated. While Greece is obviously the worst performer, it is interesting to note that only 2/17 (or less than 12 %) of the Euro zone members, on average, have really complied to the 3 % limit throughout the period of study. Germany and other strong economies countries, that are in essence 'imposing' the severe austerity measures to countries like Greece, Portugal, Spain and Italy, were average performers themselves. Most notably, Germany and France have failed on average 42 % of the times to keep their deficit at or below the 3 % limit. In contrast comparison Portugal, Italy and especially Spain were above

**Table 5** Ranking, worst-to-best performers/ Government debt

| Government debt | | |
|---|---|---|
| Rank | Avg/pa | Member state |
| ***1*** | ***110.57*** | ***Italy*** |
| ***2*** | ***105.44*** | ***Greece*** |
| 3 | 104.14 | Belgium |
| 4 | 65.79 | Austria |
| 5 | 64.54 | Germany |
| 6 | 63.48 | France |
| ***7*** | ***61.36*** | ***Portugal*** |
| 8 | 60.57 | Cyprus |
| 9 | 58.96 | Malta |
| 10 | 58.21 | Netherlands |
| ***11*** | ***53.74*** | ***Spain*** |
| 12 | 47.62 | Ireland |
| 13 | 45.02 | Finland |
| 14 | 37.14 | Slovakia |
| 15 | 26.09 | Slovenia |
| 16 | 8.38 | Luxembourg |
| 17 | 5.79 | Estonia |
| 1995–2010 | 71.70 | Euro area (17 countries) |
| 1995–2010 | 71.78 | Euro area (16 countries) |

Source: Euro stat (2012d)

average performers in this regard, although in absolute numbers their average deficits are higher than Germany's which averages below the limit at 2.75 %.

The equivalent rankings for government debt are presented in Table 5. We used the average and not the absolute government debt in order to identify the consistency of over-or under-achievement in this indicator. Again, it is surprising to see, first that Germany is among the five worst performers in this context and second that Portugal and Spain are, apparently, more consistent performers than Germany or France.

## *3.4 "Corporate" Governance and Leadership*

There are many governance or government related indicators which may be taken into consideration but we narrowed the choice down to three indicators. The first one is Availability of eGovernance, a Eurostat indicator and then a pair of indicators related to the stability of the executive branch in each country, which we developed from primary data analysis. The first one is the percent of the 10 most recent administrations that completed a full term, and the second is the duration, in years of the 10 most recent administrations. The first indicator, we think, indicates, in the long term, the stability at the top-level decision making echelons in each member state. Higher stability shows fewer shifts in setting strategic objectives, policies and their implementation, and vice versa. The second indicator again

**Table 6** eGovernment ranking worst-to-best availability

| Rank | % Avail | State |
|---|---|---|
| 1 | 47.5 | Greece |
| 2 | 55 | Cyprus |
| 3 | 62.5 | Slovakia |
| 4 | 72.37 | Luxembourg |
| 5 | 78.75 | Belgium |
| 6 | 85 | France |
| 7 | 93.75 | Estonia |
| 8 | 94.74 | Germany |
| 8 | 94.74 | Netherlands |
| 10 | 95 | Finland |
| 10 | 95 | Slovenia |
| 10 | 95 | Spain |
| 13 | 100 | Austria |
| 13 | 100 | Ireland |
| 13 | 100 | Italy |
| 13 | 100 | Malta |
| 13 | 100 | Portugal |
| | 84.28 | EU (27 countries) |
| | 85.82 | EU (25 countries) |
| | 90.4 | EU (15 countries) |

Source: Eurostat (2012e)

shows stability in the executive branch; the longer the duration of the last ten administrations the fewer the shifts in strategic objectives, policies and goals.

The data for the indicators selected are shown in succession, in Tables 6, 7, and 8.

The interpretation of the indicators is inconclusive from our point of [reputation risk] view. It shows either that these indicators are not really conclusive regarding the Governance effect on reputation, or that the executive branch stability is not a significant factor.

Having said that, we note that Italy is a poor performer in both accounts (10 governments' duration and nominal term completion rate) and Greece is also just an average performer. The relative positioning of the other two countries, Spain and Portugal is not as conclusive, but neither is a good performer on accounts. We acknowledge that, clearly, there is more work to be done, on our part, in this direction, i.e. regarding the [reputation risk's] Governance indicators.

## *3.5 "Corporate" Responsibility*

In terms of corporate responsibility, we find that Eurostat has a spot-on indicator Transposition of community law (%) by policy area for Energy, Health & Consumer protection and Energy intensity of the economy. The indicator implies the rate at which each member state is adopting the relevant regulations and policies. The relevant worst-to-best ranking is shown in Table 9.

**Table 7** Executive branch, nominal term completion rate (%) euro zone member states (multiple sources[a])

| Rank | State | Ratio (%) |
|---|---|---|
| ***1*** | ***Italy*** | ***34.0*** |
| 2 | Belgium | 37.5 |
| 3 | Estonia | 45.0 |
| 4 | Slovakia | 50.0 |
| 5 | Austria | 52.0 |
| ***6*** | ***Greece*** | ***57.5*** |
| 7 | Luxembourg | 58.0 |
| 8 | Slovenia | 60.0 |
| 9 | Ireland | 64.0 |
| ***10*** | ***Portugal*** | ***67.5*** |
| ***11*** | ***Spain*** | ***70.0*** |
| 12 | Malta | 72.0 |
| 13 | Finland | 72.5 |
| 13 | Netherlands | 72.5 |
| 15 | Cyprus | 76.0 |
| 16 | Germany | 80.0 |
| 17 | France[b] | 87.5 |

[a]The data sources typically were, per member state, the websites of the governments or executive branches, wikipedia articles per country stating the dates and duration of the governments for each country and the online repository rulers.org (http://rulers.org). The analysis was done for each country individually and the data set was compiled into the summary 'euro zone' table. From this perspective listing all sources for Tables 6 and 7 would yield an unusually large number of references ($17 \times 3 = 51$ references at least). We will be pleased, however, to give full references and citations on request – please contact the corresponding author

[b]This is taking into account that, in France, the nominal presidential term changed from 7 years to 5 years from 24/9/2000

**Table 8** Duration in years of the 10 most recent governements in eurozone member states

| Rank | State | Years |
|---|---|---|
| 1 | Cyprus | 17 |
| 1 | Estonia | 17 |
| ***1*** | ***Italy*** | ***17*** |
| 4 | Slovakia | 19 |
| 5 | Belgium | 20 |
| 6 | Slovenia | 21 |
| ***7*** | ***Greece*** | ***22*** |
| 8 | Austria | 25 |
| ***9*** | ***Portugal*** | ***26*** |
| 10 | Finland | 29 |
| 10 | Luxembourg | 29 |
| 10 | Netherlands | 29 |
| 13 | Germany | 31 |
| 14 | Ireland | 32 |
| ***15*** | ***Spain*** | ***33*** |
| 16 | Malta | 35 |
| 17 | France | 53 |

**Table 9** Ranking transposition of community law (%): energy, health and consumer protection

| Transposition of community law | | |
|---|---|---|
| Energy, health and consumer protection | | |
| Rank | Avg/pa | Member |
| ***1*** | ***94.92*** | ***Greece*** |
| 2 | 95.5 | France |
| ***3*** | ***95.51*** | ***Italy*** |
| ***4*** | ***96.09*** | ***Portugal*** |
| ***5*** | ***96.29*** | ***Spain*** |
| 6 | 96.33 | Luxembourg |
| 7 | 96.59 | Ireland |
| 8 | 96.6 | Germany |
| 9 | 96.85 | Austria |
| 10 | 96.87 | Belgium |
| 11 | 97.08 | Netherlands |
| 12 | 97.36 | Finland |
| 13 | 97.88 | Estonia |
| 14 | 98.08 | Malta |
| 15 | 98.45 | Slovenia |
| 16 | 98.63 | Cyprus |
| 17 | 99.18 | Slovakia |
| *2007–2009* | *98.57* | *EU (27 countries)* |
| *2004–2009* | *98.47* | *EU (25 countries)* |
| *2000–2009* | *97.5* | *EU (15 countries)* |

Source: Euro stat (2012f)

The usual culprits together with France are in the top positions once more. It is even more interesting to note, however, that nearly the entirely euro zone is performing worse than any group average. Only the four relatively 'smallest' economies (both in relative and absolute numbers) of Estonia, Malta, Slovenia, Cyprus and Slovakia are performing better than the group average(s). Perhaps the bar has been set too high in this regard?

## *3.6 Delivering "Customer" Promise*

In corporate reputation terms, delivering on customer promise is more or less focusing on the product (or service) offering of the organization, which is usually measured in term of customer share, revenues, or some other organization's-reach-to-the- market type indicator. However, member states do not really target particular markets or segments, in the same way a business does, and in most situations a state's market is the state itself. Naturally, certain member states are more active in some industries and less so in others. For instance the Mediterranean countries have strong and comparable Tourism industries, whereas countries like Germany are more active in industrial markets and consumer consumption. For this purpose, we

**Table 10** Ranking low-to-high of % share of extra EU-27 exports

| Share of exports by member state[a] | | |
|---|---|---|
| Rank | Avg | State |
| 1 | <0.1 | Cyprus |
| 2 | 0.1 | Malta |
| 3 | 0.14 | Luxembourg |
| 4 | 0.15 | Estonia |
| 5 | 0.37 | Slovakia |
| 6 | 0.46 | Slovenia |
| ***7*** | ***0.5*** | ***Greece*** |
| ***8*** | ***0.66*** | ***Portugal*** |
| 9 | 2.13 | Finland |
| 10 | 2.5 | Austria |
| 11 | 3.04 | Ireland |
| ***12*** | ***4.15*** | ***Spain*** |
| 13 | 5.9 | Belgium |
| 14 | 6.48 | Netherlands |
| ***15*** | ***11.39*** | ***Italy*** |
| 16 | 12.54 | France |
| 17 | 27.18 | Germany |

Source: Euro stat (2012g)
[a]The total is less than 100 % since the % share shown is in relation to the EU27

resorted to the (%) contribution of each member to the total EU export, in extra-EU trade. The relevant ranking is shown in Table 10.

The ranking is not surprising, although it is somewhat surprising that Italy, which, in a high-to-low ranking would be the 3rd most dominant exporter is part of the in-crisis group together with Spain (6th), Portugal (10th) and Greece (11th).

## *3.7 Workplace Talent and Culture*

At this point we digress slightly from the 'hard' statistics of Eurostat and we delve into softer realms. Initially, we look at the corruption perceptions index (CPI) from Transparency International. The CPI is often the subject of debate as to whether it is a true indicator of corruption. However, for our purposes, the perception of corruption is obviously at the heart of reputation, therefore, quite suitable for use in the context of the framework we are considering here. The relevant data and ranking is shown in Table 11 and is organized in the following way:

– 2011 position: The position in the CPI ranks in 2011. A higher ranking number indicates that the corruption perception for the country is higher than a country with a lower rank. Greece's rank of 80 implies that Greece is perceived as far more corrupted than Finland's 2, which would be the equivalent of nearly minimal perceived corruption.

**Table 11** Corruption perception index 'performance' of member states

| 2011 | Rel rank | Lost | Gained | Steady | Start-finish | Range | State |
|---|---|---|---|---|---|---|---|
| ***80*** | ***1*** | ***9*** | ***4*** | ***0*** | ***−44*** | ***45*** | ***Greece*** |
| ***69*** | ***2*** | ***9*** | ***4*** | ***0*** | ***−31*** | ***40*** | ***Italy*** |
| 66 | 3 | 7 | 5 | 1 | −13 | 19 | Slovakia |
| 39 | 4 | 5 | 2 | 1 | −14 | 20 | Malta |
| 35 | 5 | 6 | 5 | 2 | −10 | 10 | Slovenia |
| ***32*** | ***6*** | ***6*** | ***3*** | ***4*** | ***−11*** | ***14*** | ***Portugal*** |
| ***31*** | ***7*** | ***7*** | ***5*** | ***1*** | ***−9*** | ***12*** | ***Spain*** |
| 30 | 8 | 5 | 3 | 1 | −3 | 12 | Cyprus |
| 29 | 9 | 5 | 6 | 2 | −2 | 9 | Estonia |
| 25 | 10 | 6 | 5 | 2 | −3 | 7 | France |
| 19 | 11 | 5 | 7 | 1 | 9 | 11 | Belgium |
| 19 | 12 | 4 | 8 | 1 | −4 | 9 | Ireland |
| 16 | 13 | 4 | 7 | 2 | 1 | 7 | Austria |
| 14 | 14 | 4 | 6 | 3 | 0 | 6 | Germany |
| 11 | 15 | 4 | 6 | 3 | 0 | 6 | Luxembourg |
| 7 | 16 | 4 | 6 | 3 | 1 | 5 | Netherlands |
| 2 | 17 | 3 | 5 | 5 | 0 | 5 | Finland |

Source: TI (2011)

- Rel Rank: Between the states in the Table.
- Lost: Number of times the country ranked lower (i.e. worse) than the previous year for the period of study (2000–2011).
- Gained: Number of times the country ranked higher (i.e. better) than the previous year for the period of study (2000–2011).
- Steady: Number of times the country ranked neither lower nor higher than the previous year for the period of study (2000–2011).
- Start-Finish: The difference in positions for the period of study (2000–2011) between the first and the last observation. Negative implies a worse positioning.
- Range: The difference between best and worst position for the period of study (2000–2011).
- State: The euro zone state concerned.

We interpret the CPI index in direct analogy to the workplace culture: In a culturally 'healthy' organization the perception of increased corruption should lead to at least counter corruption-perception measures and ideally to counter-corruption measures- that is, if the organization is to improve upon this reputation risk driver. The results show that only a handful of the euro zone members is doing either, since most of them have managed to worsen their CPI rank in the period of study.

In Table 12 we consider another 'soft' indicator which describes indirectly the dominant 'spirits' within each member state, as direct analogy to the workplace environment that would the equivalent aspect of this driver, if this was a corporate reputation risk evaluation.

In this context, political stability points at the internal environment of an organization, and in this case the member states. We view high(er) political stability

**Table 12** Ranking worst-to-best for political stability performance

| Political stability and absence of violence/Terrorism | | | | | | | |
|---|---|---|---|---|---|---|---|
| Rel rank | Avg | StDev | Finish-start | Loss | Gain | Steady | Member |
| 1 | 74.2 | 3.8 | 6.6 | 0 | 9 | 0 | Slovakia |
| ***2*** | ***78.6*** | ***4.0*** | ***−5.9*** | ***1*** | ***7*** | ***1*** | ***Greece*** |
| ***3*** | ***80.9*** | ***4.0*** | ***−10.2*** | ***2*** | ***6*** | ***1*** | ***Italy*** |
| 4 | 81.6 | 3.5 | 10.3 | 0 | 8 | 1 | Estonia |
| 5 | 82.6 | 2.8 | −0.2 | 1 | 7 | 1 | Cyprus |
| 6 | 83.5 | 3.2 | −9.8 | 1 | 8 | 0 | Slovenia |
| ***7*** | ***87.2*** | ***1.9*** | ***−3.2*** | ***1*** | ***7*** | ***1*** | ***Spain*** |
| 8 | 88.4 | 3.6 | 1.6 | 1 | 7 | 1 | France |
| 9 | 88.8 | 1.8 | 0.2 | 0 | 8 | 1 | Malta |
| ***10*** | ***90.7*** | ***3.0*** | ***−10.4*** | ***2*** | ***6*** | ***1*** | ***Portugal*** |
| 11 | 92.9 | 2.7 | 1.1 | 0 | 9 | 0 | Ireland |
| 12 | 93.0 | 1.6 | 1.5 | 0 | 8 | 1 | Austria |
| 13 | 93.2 | 1.8 | 2.0 | 1 | 7 | 1 | Belgium |
| 14 | 93.2 | 2.2 | 3.5 | 1 | 8 | 0 | Germany |
| 15 | 96.1 | 1.9 | 2.9 | 0 | 9 | 0 | Luxembourg |
| 16 | 97.9 | 1.2 | −1.4 | 2 | 6 | 1 | Netherlands |
| 17 | 98.0 | 1.5 | 1.0 | 1 | 8 | 0 | Finland |

Source: World Governance Indicators (2012)

and absence of violence/terrorism as the analogy to a workforce in peace or even harmony with its management – or, in this case the society with its governing institutions. The worst-to-best ranking in the data shows again that two of the member states (Greece, Italy) in crisis are poor performers, and the other two (Spain, Portugal) are average performers, both observations made in relation to the remaining euro zone members of course.

When viewed altogether, however it shows that in terms of workplace talent and culture, Italy and Greece are performing poorly, Spain and Portugal averagely.

## 4 Putting it All Together: The Comparative View

Under the reputation risk framework the main objective is to consistently pursue a 'good' performance for each reputation driver individually and all the drivers as a whole. This is the main reason why we prefer to rank the euro zone members for each driver as opposed to an absolute performance measurement. From this perspective, the approach is not dissimilar to other approaches that characterize state-level performance with a compound indicator, such as the KOF Index of Globalization (Dreher 2006; Dreher et al. 2008).

We proceed to consider how it all adds up. The combined score and ranking from all the reputation drivers is depicted in Table 13. The ranking is from worst-to-best; for each member we added their position value in each driver indicator, so that consistently 'worst' performers will always have a lower score.

**Table 13** Aggregate view/reputation risk portfolio per member state

| | | | Drv.1 | | Drv.2 | Drv.3 | | Drv.4 | | | Drv.5 | Drv.6 | Drv.7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | Rank | Sum | Transp. | Infring. | Fiscal | Deficit | Debt | eGov | Gov term | Dur. | Transp. | Exports | CPI | Stability |
| ***Greece*** | ***1*** | ***41*** | ***1*** | ***2*** | ***10*** | ***1*** | ***2*** | ***1*** | ***6*** | ***7*** | ***1*** | ***7*** | ***1*** | ***2*** |
| ***Italy*** | ***2*** | ***61*** | ***2*** | ***1*** | ***13*** | ***6*** | ***1*** | ***13*** | ***1*** | ***1*** | ***3*** | ***15*** | ***2*** | ***3*** |
| ***Portugal*** | ***3*** | ***92*** | ***3*** | ***8*** | ***10*** | ***4*** | ***7*** | ***13*** | ***10*** | ***9*** | ***4*** | ***8*** | ***6*** | ***10*** |
| Slovakia | 3 | 92 | 16 | 15 | 8 | 2 | 14 | 3 | 4 | 4 | 17 | 5 | 3 | 1 |
| Belgium | 5 | 96 | 9 | 5 | 7 | 13 | 3 | 5 | 2 | 5 | 10 | 13 | 11 | 13 |
| Luxembourg | 6 | 103 | 4 | 4 | 2 | 17 | 16 | 4 | 7 | 10 | 6 | 3 | 15 | 15 |
| Cyprus | 7 | 106 | 13 | 16 | 13 | 8 | 8 | 2 | 15 | 1 | 16 | 1 | 8 | 5 |
| ***Spain*** | ***7*** | ***106*** | ***12*** | ***5*** | ***2*** | ***9*** | ***11*** | ***10*** | ***11*** | ***15*** | ***5*** | ***12*** | ***7*** | ***7*** |
| France | 9 | 107 | 5 | 3 | 12 | 5 | 6 | 6 | 17 | 17 | 2 | 16 | 10 | 8 |
| Austria | 10 | 110 | 7 | 9 | 9 | 12 | 4 | 13 | 4 | 8 | 9 | 10 | 13 | 12 |
| Estonia | 11 | 113 | 14 | 13 | 13 | 15 | 17 | 7 | 3 | 1 | 13 | 4 | 9 | 4 |
| Ireland | 12 | 116 | 6 | 10 | 1 | 10 | 12 | 13 | 9 | 14 | 7 | 11 | 12 | 11 |
| Malta | 13 | 123 | 14 | 14 | 13 | 3 | 9 | 13 | 12 | 16 | 14 | 2 | 4 | 9 |
| Germany | 14 | 125 | 8 | 7 | 4 | 11 | 5 | 8 | 16 | 13 | 8 | 17 | 14 | 14 |
| Slovenia | 14 | 125 | 17 | 17 | 13 | 7 | 15 | 10 | 8 | 6 | 15 | 6 | 5 | 6 |
| Netherlands | 16 | 140 | 10 | 11 | 6 | 14 | 10 | 8 | 14 | 10 | 11 | 14 | 16 | 16 |
| Finland | 17 | 144 | 11 | 12 | 4 | 16 | 13 | 10 | 13 | 10 | 12 | 9 | 17 | 17 |

The reader will easily notice that the first three positions are occupied by three out of four of the euro zone members at the forefront of the crisis. Notably, Spain is consistently a better performer than the other three countries.

One could make a number of observations, given Table 13. For instance, as noted by one of our reviewers, Slovenia is also in a very difficult fiscal situation, yet in the context of the framework it is in the top 5 (best to worst) performers. Should one look more carefully though they would notice that Slovenia is in the top 10 worst-to-best performers in 7 out of the 12 indicators, which is perhaps a hint that some kind of indicator weighting is appropriate. This is also justified by Germany's position, apparently a worst performer than Slovenia. However, this line of argumentation is *not* relevant to our thesis, as it would be if we were trying to do, for example, a credit rating exercise. Our emphasis on reputation risk management implies that (a) we are trying to be proactive in the risk management perspective, and (b) from the reputation risk perspective, we are focusing a comprehensive indicator for an intangible asset: reputation. From this perspective, the ranking(s) here are only indicative of risk drivers that could present reputation risks, assuming of course that there is universal agreement on our choice of indicators for each of the reputation drivers.

Given Table 13 however, the risk-alerted decision maker would either take action to improve the performance of its constituency in as many reputation drivers as possible if he thought that the risks are immediate or materializing to the organization, or he would carefully monitor and take mitigation or avoidance actions to ensure that the risks do not materialize or evolve into undesirable outcomes for the organization. Given that the data in Table 13 (and previously) is the outcome of a decade long time series, it should be obvious that, at the EU level, the reputation driver approach could have been used as a decision making aid – in essence identifying not only some of Eurozone's weakest links, but also by specifying the qualities that are lacking in each of these links. Considering the Eurozone situation today, obviously nobody thought of this before.

## 5 Concluding Remarks

Taking into consideration the data and analysis presented we are inclined to suggest that the reputation drivers framework is consistent with the current situation in the Euro zone. We consider this a very positive research outcome given the presumption that reputation risk really encapsulates a comprehensive, top down view of organizational-like performance at the state level, or the view that markets (i.e. investors) would take into account, for instance at the respective state borrowing/bond markets.

We are puzzled at the same time. Spain is in crisis, although it is also an above-average-performer in this framework. This observation calls for further investigation in two directions: from our perspective, we should look more closely to the composition and application of our framework in order to improve its descriptive

capacity and correspondence to the real world. From an economic analysts' perspective, and given the analysis we presented here of course, it is important to identify the reasons that Spain is as much and in a similar crisis as the top three although apparently quite different [from the reputation risk perspective]. Perhaps the main reason Spain is in crisis is that the fiscal 'gamble' did not pay off – as discussed in 3.2 above, but not some consistent systemic weakness such as those that are captured by the reputation driver framework. Such an analysis is beyond the scope of this paper however.

Presumably a choice of different reputation driver indicators could have yielded an altogether different ranks table; for instance a different choice of indicators could have brought Spain to the 5th position and Slovenia to the 10th in Table 13 with the ranking method. But this level of position sifting is to be expected when dealing with something as intangible as reputation risk. Nonetheless, if the assumption that reputation is an aggregate performance indicator is correct, then, regardless of the choice of indicators we would expect the ranking trends to remain, more or less, consistent with our findings, especially at the top and bottom ends of the table. Similarly, another aggregation method, such as weighted scoring could also have yield a different perspective on the reputation risk of the euro zone's members. Again, we would expect the overall trends to remain consistent with our findings.

In any case, the empirical data shown here, shows that reputation risk is a promising approach that provides a valid interpretation to some of the less highlighted causes of the current euro zone crisis, such as governance, regulatory compliance, corporate responsibility which are constituent performance aspects of any organization; and we believe this is a valid analogy for states functioning [also] as organizations. From this perspective, reputation risk is a valuable decision aid; it shows that just getting the fiscal numbers 'right' is not always sufficient; if it were, then the Eurozone's Stability pact would have been the only tool necessary to avoid the crisis. Obviously, there is more to just monitoring debt and deficit, and the reputation risk framework we have utilized shows exactly that. We only hope that decision makers and the relevant stakeholders including citizens and society members will promptly take notice.

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# The Financial Crisis in Greece and Its Impacts on Western Balkan Countries

**Murat Sadiku, Luljeta Sadiku, and Nimete Berisha**

**Abstract** The issue of financial crisis still remains a matter of concern for Western Balkan countries and Europe as a whole. In moments when the economies of these countries recover from recessions of global financial crisis, a new crisis threatens the region. Indeed, a considerable part of the financial sector of the Western Balkan countries is from the Greek capital, and the economic interdependency among them is relatively great. Therefore, the purpose of this paper is to investigate the probability of a spillover effect of the current Greek crisis to the countries of the Western Balkans. To test for this possibility, the authors make use of a binary logit model after outlining macroeconomic data for the sample countries. The authors conclude by discussing remedies on the impact of the contagion effect on the part of policy makers. The paper provides an interesting approach to a contemporary issue, having attracted little attention in terms of the spillover effect on neighboring countries. How the issue of debt crisis is handled by respective authorities and the European Union and which strategies are followed for crisis alleviation are discussed as well.

**Keywords** Greek financial crisis • Western Balkan countries • Binary logit

**JEL Clasification Codes** C10 • E60 • C50

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## 1 Introduction

After a period of continuous economic growth, the financial turmoil that erupted in the developed economies affected the economies of the least developed countries, not excluding even the Western Balkans.[1] In 2009 all Western Balkan countries fall into recession, except Albania and Kosovo that still had positive economic growth (see Fig. 1). When the economies of these countries started to recover from the global financial crisis, a 'new' crisis threatened the region, despite the fact that the reasons and circumstances were different. The debt crisis which started in Greece in 2010 will have a little time lag on the Western Balkan countries, thus these countries are susceptible to the effects of the financial turbulence of Greece and the euro zone. This is mainly due to higher trade and financial integration between them, namely the share of foreign owned banks, particularly Greek, in the total assets of the region's banking system. As a consequence, the probability is high that the economic development of the entire region will slow down in the upcoming period.

The forecasts of the world economic growth for 2012 are optimistic at about 3.5 %,[2] but still the euro zone is in risk of facing debt crisis. A potential risk stems from the fact that except Greece other countries of the euro zone are in danger of default of debt as well, since warning lights are blinking again in Italy and Spain, two countries that are considered to be most susceptible to a second round of debt problems.[3] This may cause additional economic problems to the Western Balkan countries, notably to Albania, which has a relatively high economic interdependency with Italy, as the remittances by emigrants in Italy provide a source of livelihood for a great number of population.

The impact of the Greek crisis and euro zone as a whole is likely to vary significantly among Western Balkan countries, depending on the national economic situation and on their sectors' structure. These challenges that emerge as consequence of the debt crisis imply the need for rapid response, innovatively and resolutely through macroeconomic policies. Therefore, this paper investigates the probability of a spillover effect of the current Greek crisis to the countries of the Western Balkans. To test for this possibility the authors make use of a binary logit model after outlining macroeconomic data for the sample countries. The authors conclude by discussing remedies on the impact of the contagion effect on the part of policy makers. The paper provides an interesting approach to a contemporary issue, having attracted little attention in terms of the spillover effect on neighboring countries.

The paper is structured in six sections. The first section illustrates some introductory points that characterize the Western Balkan economies. The second section

[1] The following countries are included in Western Balkan: Albania, Bosnia and Herzegovina, Croatia, Kosovo, FYROM, Montenegro and Serbia.

[2] IMF World Economic Outlook (WEO) (2012) forecast of global economic growth for year 2012.

[3] The New York Times, April 8 2012. http://topics.nytimes.com/top/reference/timestopics/subjects.

explores the economic development of the Western Balkan countries before and during the crisis by giving and analyzing statistics on main macroeconomic indicators, such as GDP growth, unemployment rate, current account balance and budget deficit. The third section discusses in short the strategies that are followed by respective authorities, namely the European Union and the International Monetary Fund (IMF), for the alleviation of the crisis. In the fourth section, we briefly explain the methodology and data that are used for the empirical results. The fifth section explores the empirical findings of the logit model and the limitations of the study while in the last section the conclusions of the study are given.

## 2 Economic and Financial Development in the Western Balkan Countries

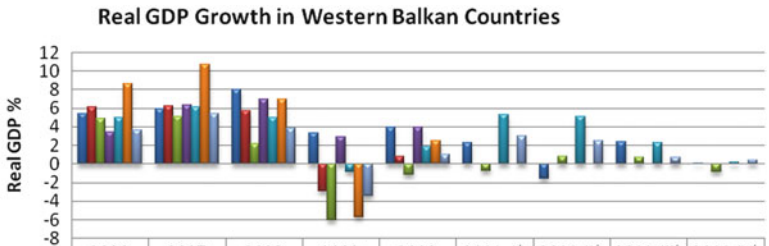
The Western Balkan countries performed a strong economic growth over the past few years. The growth rate reached 6.5 % in 2007,[4] but in the last quarter of 2008 the global financial crisis affected the respective economies. As regards the Albanian economy, the crisis was transmitted through several channels causing a strong deceleration of the economic growth from 8 % to 3.3 % in 2009, despite the fact that Albania is one of the few countries in Europe that continued with a still positive GDP growth in the period of the crisis. The Republic of Kosovo also was accompanied with a positive real GDP growth during the period of crisis, but there was a decline by 4 % in 2009 compared to the previous year. The other countries were sharply affected by the global crisis, notably Croatia, Montenegro and Serbia. As regards Bosnia & Herzegovina and FYROM the effects of the crisis on real GDP growth were moderate.

The debt crisis of the euro zone, particularly linked to the Greek crisis, gradually started to give the first signal in the third and fourth quarter of 2011, and as Fig. 1 indicates, the real GDP growth started to slow down, almost in the entire region. A general growth slowdown throughout 2011 is visible for countries with available quarterly statistics. Based on sector composition and economic and financial interdependencies, there is a general perception that in 2012 there will be worse effects. Growth forecasts have been revised almost in all Balkan countries. Countries whose growth is dependent on exports will suffer more (Bartlet and Prica 2011) as in 2009 when the global financial crisis affected the economies of these countries.

While the real GDP shows slight signs of the euro zone crisis, the financial sector, capital flows and lending indicators show worrying proportions (EBRD 2011). The real credit has been weak, particularly in Croatia and FYROM.

The financial system in the Western Balkan countries is dominated by the banking sector, and it has the most important role in stabilizing the financial system

[4] The data are provided by EBRD. The average is calculated as a simple average.




| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 -I* | 2011-II* | 2011-III* | 2011-IV* |
|---|---|---|---|---|---|---|---|---|---|
| Albania | 5,4 | 5,9 | 8 | 3,3 | 3,94 | 2,3 | -1,6 | 2,4 | 0,1 |
| Bosnia &Herzegovina | 6,1 | 6,2 | 5,7 | -2,9 | 0,8 | | | | |
| Croatia | 4,9 | 5,1 | 2,2 | -6 | -1,2 | -0,8 | 0,8 | 0,7 | -0,9 |
| Kosovo | 3,4 | 6,3 | 6,9 | 2,9 | 3,9 | | | | |
| FYROM | 5 | 6,1 | 5 | -0,9 | 1,8 | 5,3 | 5,1 | 2,3 | 0,2 |
| Montenegro | 8,6 | 10,7 | 6,9 | -5,7 | 2,5 | | | | |
| Serbia | 3,6 | 5,4 | 3,8 | -3,5 | 1 | 3 | 2,5 | 0,7 | 0,4 |

**Fig. 1** The real GDP growth in the Western Balkan countries (Source: Countries' Statistical Agencies)

as a whole. Unlike the global financial crisis where the real sector was mostly affected and the financial system remained stable, now the roles are opposite due to the high level of exposure of these countries to the Greek financial system. The banking sector of the Western Balkan countries is highly integrated with the euro zone banks, therefore, it is expected that these countries will be affected by the Greek and euro zone debt crisis. The asset share of foreign banks in 2008 in Albania, Bosnia and Herzegovina, Croatia and FYROM reached more than 90 % (see Table 1).

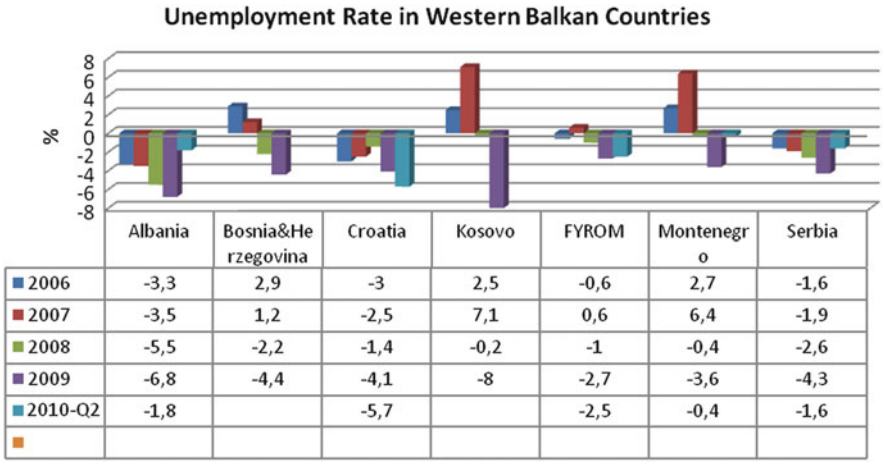
Backe and Gardo (2012) claim that an increase in foreign investors' risk aversion towards the region would lead to higher risk premiums, which would raise financing costs or might even limit access to funding. This would result in a slowdown or sudden stop of capital inflows, which would particularly hit nonfinancial corporations and banks in countries with strong reliance on foreign funding. Thus, the repercussions of the current debt crisis will be felt in the long term.

The unemployment figures indicate that the Western Balkans had serious unemployment levels even before the crisis. All countries have higher unemployment rates than the EU average of 8.9 %. But while most of the countries have high yet still manageable problems, in FYROM, BiH and Kosovo more than a third, quarter and nearly half of the working force, respectively, is officially unemployed. As regards the effects of crisis, there are differences between countries in the region. One can say that Albania and FYROM did not seem to experience severe consequences, especially FYROM marked positive effects during the period 2008–2010 (see Fig. 2 below). Bosnia and Herzegovina and Montenegro experienced negative effects in 2009 and 2010 by increasing the unemployment rate by average 1.5 %. The labour market was mostly affected in Croatia and Serbia.

**Table 1** Foreign banks (% ownership)

| Albania | Bosnia and Herzegovina | Croatia | FYROM | Montenegro | Serbia |
|---|---|---|---|---|---|
| 94 | 90 | 91 | 92 | 92 | 75 |

Source: Western Balkan countries' national banks




| | Albania | Bosnia&Herzegovina | Croatia | Kosovo | FYROM | Montenegro | Serbia |
|---|---|---|---|---|---|---|---|
| 2006 | -3,3 | 2,9 | -3 | 2,5 | -0,6 | 2,7 | -1,6 |
| 2007 | -3,5 | 1,2 | -2,5 | 7,1 | 0,6 | 6,4 | -1,9 |
| 2008 | -5,5 | -2,2 | -1,4 | -0,2 | -1 | -0,4 | -2,6 |
| 2009 | -6,8 | -4,4 | -4,1 | -8 | -2,7 | -3,6 | -4,3 |
| 2010-Q2 | -1,8 | | -5,7 | | -2,5 | -0,4 | -1,6 |
| | | | | | | | |

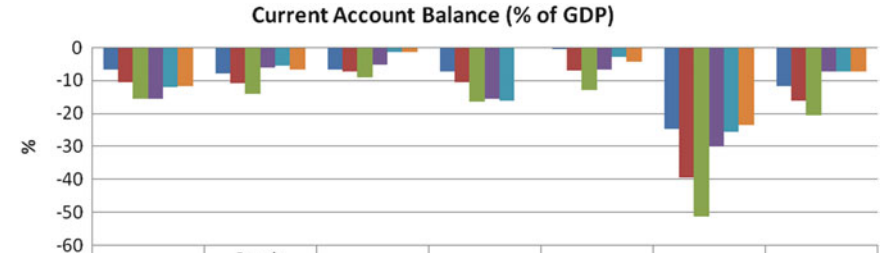
**Fig. 2** Unemployment rate in Western Balkan countries (Source: EU Candidate and Pre-accession Countries Economies Quarterly-CCEQ 2011)

According to the estimated data, the unemployment rate of Croatia weakened in 2010 and in the first quarter of 2011. In the figure below it is noticeable that in Serbia the unemployment rate deteriorated further in 2010. As far as Kosovo is concerned, the unemployment rate is the highest in the region, but it was very high even before the crisis.

The current account deficit varies between countries (see Fig. 3). It was extended in some countries, in the first quarter of 2011; for instance in FYROM and Bosnia & Herzegovina it was extended by an average of 1.35 %, whereas in the other countries of the region there were not any substantial differences compared to the previous year (2010).

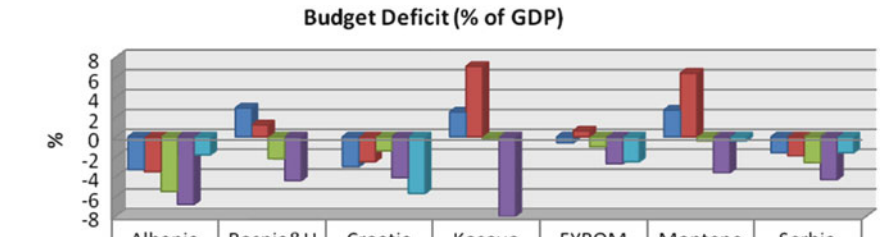
The deterioration of the budget deficit in 2009 reflects the effects of global financial crisis on the Western Balkan economies. For instance, it reached −6.8 % in Albania; −8.0 % in Kosovo; −4.3 % in Serbia and −4.1 % in Croatia. Data shows (see Fig. 4) that in the second quarter of 2010 the budget deficit deepened in Croatia. It is noticeable that except Albania, all other countries had met the direction of Maastricht criteria in the previous year.

In Table 2 data about the linkages of the Western Balkan countries with Greek economy are summarized. Exports are considered as a transmission channel, so the data shows that Greece is a major export market for FYROM and Montenegro and to a somewhat lesser extent for Albania.




| | Albania | Bosnia &Herzegovina | Croatia | Kosovo | FYROM | Montenegro | Serbia |
|---|---|---|---|---|---|---|---|
| 2006 | -6,6 | -8 | -6,7 | -7,2 | -0,4 | -24,7 | -11,7 |
| 2007 | -10,6 | -10,7 | -7,2 | -10,4 | -7,1 | -39,6 | -16,1 |
| 2008 | -15,4 | -14,2 | -8,9 | -16,3 | -12,8 | -51,3 | -20,6 |
| 2009 | -15,4 | -6,2 | -5,3 | -15,4 | -6,7 | -30,1 | -7,4 |
| 2010 | -11,9 | -5,6 | -1,3 | -16 | -2,8 | -25,7 | -7,4 |
| 2011-Q1 | -11,8 | -6,7 | -1,4 | | -4,4 | -23,6 | -7,3 |

**Fig. 3** Current account of Western Balkan countries (Source: EU Candidate and Pre-accession Countries Economies Quarterly-CCEQ 2011)




| | Albania | Bosnia&Herzegovina | Croatia | Kosovo | FYROM | Montenegro | Serbia |
|---|---|---|---|---|---|---|---|
| 2006 | -3,3 | 2,9 | -3 | 2,5 | -0,6 | 2,7 | -1,6 |
| 2007 | -3,5 | 1,2 | -2,5 | 7,1 | 0,6 | 6,4 | -1,9 |
| 2008 | -5,5 | -2,2 | -1,4 | -0,2 | -1 | -0,4 | -2,6 |
| 2009 | -6,8 | -4,4 | -4,1 | -8 | -2,7 | -3,6 | -4,3 |
| 2010-Q2 | -1,8 | | -5,7 | | -2,5 | -0,4 | -1,6 |

**Fig. 4** Budget deficit for Western Balkan Countries (Source: EU Candidate and Pre-accession Countries Economies Quarterly-CCEQ 2011)

Given the relatively low export bases of most western Balkan economies, the share of exports to Greece relative to GDP is fairly small in almost all countries in the region. Thus, a possible further decline in exports to Greece would in itself not be expected to distress the respective economies.

**Table 2** Exports of Balkan countries with Greece, 2008

| Countries | Exports to Greece, % of total goods exports | Total goods exports (% of GDP) | Exports to Greece (% of GDP) |
|---|---|---|---|
| Albania | 11.6 | 8.9 | 1 |
| Bosnia and Herzegovina | 0.4 | 19.4 | 0.1 |
| Croatia | 0.3 | 20.4 | 0.1 |
| FYROM | 12.4 | 42.1 | 5.2 |
| Montenegro | 12.3 | 15.9 | 2 |
| Serbia | 2.2 | 18.5 | 0.4 |

Source: National statistics, IMF, Economist Intelligence Unit

## 3 Debt Crisis in Greece and Strategies for Crisis Alleviation

The economic policies that governments of Greece implemented in the last 30 years, have contributed to the current debt crisis. These policies have led to the almost complete des-industrialization of the economy and abandonment of the agricultural production (Papantoniou 2011). The agriculture production corresponds only to 3.3 % of GDP, while services to 78.8 % and industry to 17.9 % of GDP.

In the period of 2001–2008 Greece recorded budget deficits averaged 5 % per year, in comparison to the euro zone average budget deficit of 2 % and in 2009 the budget deficit was −15.6 %. Also its current account deficit averaged 9 % per year, compared to euro zone average of 1 %. These deficits were funded by borrowing from international capital markets, leaving the country with chronically high external debt: 129 % of GDP in 2009. When the crisis posed a direct threat to the stability of the European monetary union, Brussels intervened, asking the country to adopt a programme of economic shock therapy. After the pressures of the European Union authorities and suggestions of relevant world institutions, such as the IMF and the World Bank, the government announced tax increases and a 30 % cut to the 2 month bonuses for the public workers. Besides this, the Greek government announced a series of other measures and also agreed with the euro zone countries and the IMF to a 3 year loan package of €110 billion at an interest rate of 5.5 %. It was hoped that Greece's first adjustment plan together with this sum of funds would establish Greek access to private capital markets by the end of 2012, but these perceptions failed when it was found that this process may take much longer.

Due to the limited economic effects of these measures, the Government of Greece in collaboration with relevant European and world institutions brought five austerity packages of anti crisis measures.[5] The Greek government adopted a

[5] Such aspects and comprehensive details on anti-crisis packages are outside the domain of this study.

fiscal consolidation programme in order to reduce the public debt and provide the framework to improve stability and growth to the economy. In addition to this the government introduced a strategy of fight against corruption and tax evasion,[6] but based on the opinions of scholars and economic experts, it is very doubtful that the problems will be overcome in the short term.

## 4 Methodology and Data

The idea behind the model presented in this paper consists from the approaches followed in other crisis models. The economic literature offers a large body of theoretical and empirical studies that attempt to predict crisis, see e.g., Berg et al. (1999), Kaminsky et al. (1998), Kaminsky (2006).

Davis and Karim (2008), in a study on the ability of different early warning systems to correctly predict crises, conclude that the *econometric method* is suitable for building a global model based on data for a large number of countries, while developing a specific model for a specific country. Thus, this paper attempts to predict the probability of an eventual contagion of the crisis in the upcoming period on the economies of countries in the region following the models of early warning systems for crises,[7] i.e. the probability model over the "signals" with some modifications. We estimate a logit model by using a set of determinants of crisis in order to determine the probability of a future crisis on different indicators.

The dependent variable of the model Y has the following values:

$$Y_{it} = \begin{cases} 1, & \textit{if incountry } i \textit{ at time } t, \textit{ there was a systemic crisis} \\ 0, & \textit{otherwise}. \end{cases}$$

The model used to estimate the probability of a crisis has the following form:

$$Prob\,(Y_{it} = 1) = F(\beta X_{it}) = \frac{e^{\beta X_{it}}}{1 + e^{\beta X_{it}}} = \frac{1}{1 + e^{-\beta X_{it}}}$$

[6] According to estimations of Schneider et al. (2010) the average size of shadow economy of Greece in the period 1999–2007 is 29.9 %. See for details in: Schneider et al. (2010), p. 28.

[7] There are three generations of early warning models for crises.The first generation developed by Krugman (1979) was focused on macroeconomic indicators and the evolution of international reserves, the budget deficit, current account deficit and credit developments as potential indicators of a crisis. The second generation of models, which could be considered that of Obstfeld (1996), added elements of economic expectations in predicting crises, and the third generation, which was developed in the last two decades, include indicators of financial sector as potential determinants of a crisis.

Where: $Prob\,(Y_{it} = 1)$ represents the probability of a systemic crisis; $Y_{it}$ is the binary dependent variable for country i at time t; $\beta$ is the vector of parameters estimated in the model by maximum likelihood estimation method; $X_{it}$ is the vector of explanatory variables that includes the following variables:

- Real GDP growth (as a real sector variable)
- Ratio of domestic bank loans (as financial sector variable)
- Current account deficit (as external sector variable)
- Inflation (is used to measure macroeconomic stability)
- Budget deficits (as a fiscal variable)

Other variables considered are eliminated from the model since it was found that they are statistically insignificant for this set of data. The timing of the crisis is considered to be year 2009 when almost all countries fall into recession due to global financial crisis.

The data used in the empirical research consists of a balanced panel of annual observations for the period 2000–2011 for six Western Balkans economies (Albania, Bosnia and Herzegovina, Croatia, FYROM, Montenegro and Serbia) that are taken from three main sources from the World Bank database (WDI), EBRD online data and the countries' national banks.[8]

## 5 Empirical Findings

In the following table are summarized the empirical results of the logit model (Table 3):

The estimation results reveal that all coefficients are statistically significant. The variables *Loans* and *Budget* deficits are highly significant at the level of significance of 1 % and the other variables are statistically significant at the level of significance of 10 %.

The LR statistic which tests the joint null hypothesis that all slope coefficients except the constant are zero is rejected at level of significance of 0 %, and the pseudo $R^2$ indicates relatively good goodness-of-fit of the model. The probability of a financial crisis incidence in the Western Balkan countries increases when the real GDP is decreasing and the budget surplus to GDP is decreasing, the inflation rate is increasing, the current account deficit is worsening and the share of loans in GDP is growing.

If the real GDP increases by 1 %, then the estimated probability that crisis will occur decreases by almost 3 % keeping all other variables constant. If current account increases by 1 %, the estimated probability that crisis will happen increases by almost 13 %. If loans increase by 1 %, the estimated probability that crisis will

[8] The data for some years and some variables are not available for the Republic of Kosovo, for this reason it is excluded from the sample.

**Table 3** Estimation of logit model

| Variable | Coefficient | Standard error | z-statistic | P |
|---|---|---|---|---|
| Constant | −21.33105 | 9.715 | 1.142 | 0.198 |
| Real GDP | −0.12273 | 1.088 | −1.934 | 0.062 |
| Current account | 0.79152 | 5.877 | 1.924 | 0.088 |
| Loans | 2.03523 | 10.012 | 3.244 | 0.003 |
| Budget deficits | −0.02872 | 3.341 | −3.266 | 0.001 |
| Inflation | 0.19065 | 11.008 | 2.022 | 0.058 |

Pseudo $R^2 = 0.662$
Log-likelihood = −8.6632
LR chi2(1) = 17.56
Prob (LR-statistic) = 0.0001
No. of observations = 72

take place increases by almost 42 %. If budget deficits increase by 1 %, the estimated probability that crisis will occur decreases by 1.2 %. If inflation increases by 1 %, the estimated probability that crisis will take place increases by almost 5 %.

Based on the estimates above, the variables relating to the ratio of domestic bank loans and current account deficit give a sense of a strong impact in predicting the incidence of a financial crisis in the Western Balkan countries. As far as the other variables are concerned, they show a relatively low impact to an eventual incidence of a crisis.

To predict the probability of a systemic crisis in the upcoming period we take into consideration the mean value for each variable specified in the model and substitute in the above logit model; then we obtain:

$$\hat{p} = F(\beta X_{it}) = F(0.4071) = 0.563$$

Since the probability that crisis will occur is higher than 0.5, we can conclude that chances are relatively high for a systemic crisis in the upcoming period in the Western Balkan countries.

## *5.1 Limitations of the Study*

However**,** the study shares the common limitations of the studies in the field. First, the sample size is relatively small; also, it is based on the annual data and not on quarterly or monthly data.[9] Second, the designed logit model defines the financial crisis as a specific event in time. In this case, only 2009 is taken as crisis time. Third, the constructed model suffers from temporal instability of the model parameters as well as of the selection of explanatory variables. Fourth, the model does not provide

[9] It is very difficult, almost impossible, to systematize time series for quarterly or monthly data for all Western Balkan countries, even for some countries, some variables do not exist.

a direct measure of the intensity or weakness of the signal of each explanatory variable. In addition, this model does not include any variables of directly linkage of each country with Greece that can have a significant impact on the timing of a financial crisis. Due to the fact that crisis in Greece is still present, we have observed an absence of empirical studies linked with it.

## 6 Conclusions

The main objective of this study was to predict the probability of a systemic crisis and an eventual contagion of the debt crisis on Western Balkan countries by using a binary logit model. The estimates show that the variables such as the ratio of domestic bank loans and current account deficit give a sense of a strong impact in predicting the incidence of a financial crisis in the Western Balkan countries. Also, the probability that crisis will occur is higher than 0.5; this means that odds are relatively high for a systemic crisis in the upcoming period in the Western Balkan countries.

Developing reliable prediction models therefore can be of substantial value by allowing policy-makers to obtain clear signals when and how to take pre-emptive measures in order to mitigate or even prevent financial turmoil.

The likelihood is higher that banking and financial sector as well as the external sector as risk transmission channels may be more affected than real economy sector, particularly in terms of potential vulnerabilities that could materialize in an adverse scenario in countries with a strong presence of Greek banks such as Albania, FYROM and Serbia.

In spite of the above limitations, we contend that our logit model performs well in predicting the occurrence of financial crisis in the Western Balkan countries and as such provides a promising step towards developing a more comprehensive model which will capture more variables, such as portfolio investments variables, exports, remittances etc. by finding country-specific proxies for these omitted variables in the model. Also, increasing the resolution of the data points to quarterly or even monthly measurements could expand our findings in a more robust way.

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# A Comparison of Policy Responses to the Global Economic Crisis in the Balkans: Acceding Versus EU Candidate Countries

**Bisera Gjosevska and Goran Karanovic**

**Abstract** Current research shows that the severity of the first global economic crisis of the twenty-first century tested the resilience of even the most developed economies in the world, as it caught them unprepared to battle their own systemic deficiencies. With the biggest and most powerful global economies teetering on the verge of collapse, the question about the fate of the globally insignificant economic players remains unresolved. Yet, many of those small countries survived the financial tsunami, and while not unscathed, they did emerge more robust than earlier. Still not a complete member of the EU bandwagon, but refusing to be branded by its dark Balkan past, these small countries were caught between two contrasting worlds – one not ready to embrace them yet, the other one refusing to let them go without a fight. The purpose of this paper is to examine the various roads taken by a host of very similar, yet very different countries in their pursuits of joining the EU and remaining afloat during the largest financial calamity of recent times. The structure and nature of each economy is contrasted along with the divergent level of integration in global economic flows. The main questions raised center around the changes to the oversight to the financial system and coordination with the already rigid EU policy framework. With one country already an acceding EU member, and the other one in danger of being a perpetual EU candidate yet never a member, the main issue to be discussed is whether this situation is due to the policy responses linked to the economic crisis.

**Keywords** Balkans • Crisis • EU • Integration • Policy response

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## 1 Introduction

The eruption of the global economic crisis during 2007 and its prolonged presence in diverse parts of the world until mid-2012 has been particularly detrimental to a host of countries in Southeastern Europe gathered under the umbrella term 'Balkan States'. Since the bloody breakup of the former Yugoslavia, they have been exposed to various degrees of fortune, but each has persevered holding on to the same goal in mind: joining the European Union. Until recently, Slovenia has been an upstanding member of the EU, Croatia has been set to join the elite club on July 1, 2013, while Serbia, Montenegro, Bosnia and Herzegovina, Kosovo,[1] the Former Yugoslav Republic of Macedonia as well as Albania are still patiently waiting in line to transform their pre-accession limbo into something much more substantial – an actual date for joining the European Union.

In the meantime, the world economy has been put under a stress-test of financial turbulence unseen for almost a generation. While trying to catch up with their prestigious Western and Northern European cousins, the Balkan states have been left to deal with the effects of the global financial crisis on their domestic economies mainly on their own. The purpose of this paper is to examine the different approaches each country has taken in order to combat its economic malaise as well as to compare the impact of the various policy responses, the degree of proactivity and regulatory interventionism, while bearing in mind the candidate/acceding country distinction, incorporated as an information signal in the global credit rating and overall economic standing of each country. Section 2 describes the EU accession mechanism and the Balkan countries' respective statuses. Section 3 specifies in detail the various policy responses undertaken in order to deal with the global economic crisis. Section 4 compares and contrasts the impact of those responses on the domestic economies, while Sect. 5 concludes.

## 2 Walking Down the EU Path at Various Speeds

According to the European Commission, "a country is deemed to be a candidate country when, having examined its application for EU membership, the EU formally recognizes the country as candidate, thus granting the country candidate status" (Directorate-General for Economic and Financial Affairs 2011). In contrast, "acceding countries are those candidate countries which have completed accession negotiations and signed an accession treaty with the EU" (ibid).

In order to achieve this, the governments of the countries which have applied for this status are expected to fulfill a strict set of criteria concerning the following issues:

[1] Here and throughout the text, Kosovo refers to Kosovo under United Nations Security Council Resolution 1244.

- Stability of institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities;
- The existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the Union;
- The ability to take on the obligations of membership including adherence to the aims of political, economic & monetary union.

These criteria are identical for all the countries, and still remain as defined by the 1993 Copenhagen European Council. The only additional membership criterion has been underlined by the 1995 Madrid European Council, which requires that the membership country must have created the conditions for its integration through the adjustment of its administrative structures.

Prior to becoming a candidate or a potential candidate, each Western Balkan country was subjected to an additional EU capacity-building framework under the name of Stabilisation and Association Process, created in order to "stabilize the countries, encourage their swift transition to market economies, promote regional cooperation, and ensure the possibility of eventual EU membership" (European Commission 2012).

While it has already been mentioned that Croatia is the only EU-acceding country at the moment, one must distinguish among the other Balkan countries still waiting in line. Turkey, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia have all attained *candidate* status, while Albania, Bosnia and Herzegovina as well as Kosovo have only been deemed *potential candidates*. For the purposes of this paper, however, the analysis will cover only Western Balkan countries, sans Turkey. According to a report from the EU Council, all Western Balkan countries have the prospect of joining the EU (European Council 2003). Table 1 gives a short overview of the current state of affairs.

Economically, Croatia has been the leader of the Western Balkan pack, with an average per capita GDP of US$14,309.83 during the 2007–2010 period, and a growth rate of 1.63% during the same period, reflecting a level of maturity not yet attained by the other countries. Kosovo, on the other hand, has lagged behind the rest, accumulating only US$2,958.36 annual average GDP per capita for the 3 year period under observation; but it has been exhibiting a catch-up effect, as seen with the highest average GDP growth rate, at 5.78 %. Driven by high investment growth and strong consumption patterns, all of the Balkan pre-accession countries exhibited strong growth rates. As the global economy ground to a halt in 2007, the structural break regarding growth rates is be positioned at 2007, as this was the year when the global economic crisis started unraveling.

In addition, the next table it is showed the credit rating of each country, defined as the assessment of the relative likelihood that a borrower will fulfill its obligations and pay back borrowed money to the lender. This credit rating in Table 1 is taken from the Standard & Poor's rating agency that, along with Moody's and Fitch rating agencies, represents one of most prestigious and most often quoted credit agencies in the world. The credit rating of the observed countries ranges from BBB- to B, where only Croatia's credit rating (BBB-) is regarded as investment-grade rating

**Table 1** EU status and key financial parameters of Balkan pre-accession countries

| Country | Country status | Date | Credit rating[a] | Average GDP[b] 2007–2010 | Average GDP[b] growth 2007–2010 (%) |
|---|---|---|---|---|---|
| Croatia | Acceding | 09 December 2011 | BBB- | 14,309.83 | 1.63 |
| The Former Yugoslav Republic of Macedonia | Candidate | 17 December 2005 | BB | 4,441.20 | 4.42 |
| Montenegro | | 17 December 2010 | BB | 6,524.97 | 4.47 |
| Serbia | | 01 March 2012 | BB | 5,632.20 | 1.21 |
| Albania | Potential candidate | 12 June 2008 | B+ | 3,725.91 | 3.58 |
| Bosnia and Herzegovina | | 16 June 2008 | B | 4,468.02 | 3.77 |
| Kosovo | | –[c] | –[d] | 2,958.36 | 5.78 |

[a]S&P Credit rating
[b]GDP per capita (current US$)
[c]This designation is without prejudice to positions on status, and is in line with United Nations Security Council resolution 1244 and ICJ Opinion on the Kosovo declaration of independence
[d]S&P rating agency will visit Kosovo in June 2012

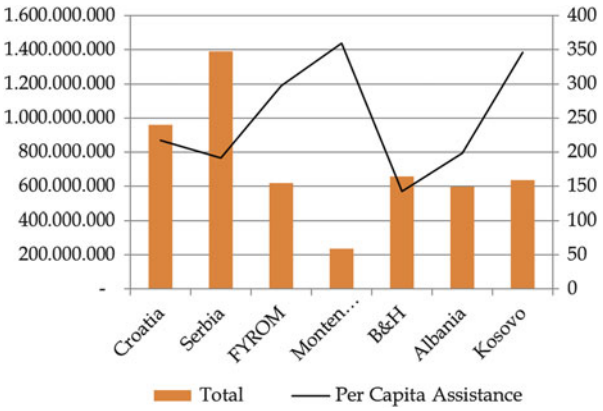
with the description 'adequate payment capacity', whereas all the other countries and their credit rating are included in the speculative-grade rating. The credit ratings (BB) for FYROM, Montenegro and Serbia can be described as 'likely to fulfill obligations with ongoing uncertainty', while credit rating of Albania (B+) and Bosnia and Herzegovina (B) can be described as high-risk obligations. Speculative grades and gradation within indicate the risk of investing in bonds or other financial instruments of the country. In effect, the credit rating of the country is one of its key factors in determining the cost and availability of international financing for an economy. From the economic, political and social factors and variables that credit rating agencies use to calculate credit rating it can be interpreted that the credit rating of the county is an indicator of the country's overall economic stability. Cantor and Packer (1996, p. 41) presented these variables as per capita income, GDP growth, inflation, fiscal balance, external balance, external debt, economic development and default history. Regardless of the variables presented they have come to the definition that "a high per capita income appears to be closely related to the high rating ... Lower inflation and lower external debt are also consistently related to higher ratings". In the observed period, almost all the countries have experienced the reduction of their credit rating as financial crises have negative impact on the overall economies of each observed country.

The following table gives an overview of the financial assistance received and/or to be received, by each European Union candidate country during the 2007–2013 period (Table 2).

**Table 2** EU assistance to Balkan pre-accession countries, 2007–2013[a] (in euro)

| Component | Croatia | FYROM | Montenegro | Serbia | Albania | B & H | Kosovo |
|---|---|---|---|---|---|---|---|
| Transition assistance and institution building | 237,993,220 | 242,944,981 | 166,703,086 | 1,313,354,798 | 531,155,228 | 624,802,360 | 628,683,264 |
| Cross-border cooperation | 97,974,549 | 32,476,703 | 30,065,037 | 78,713,172 | 66,135,585 | 33,698,883 | 7,118,679 |
| Regional development | 345,928,127 | 202,038,532 | 23,200,000 | • | • | • | • |
| Human resources development | 95,017,000 | 55,080,000 | 5,757,077 | • | • | • | • |
| Rural development | 183,251,182 | 86,749,815 | 10,900,000 | • | • | • | • |
| Total | 960,164,078 | 619,290,031 | 236,625,200 | 1,392,067,970 | 597,290,813 | 658,501,243 | 635,801,943 |
| Per capita financial assistance | 217.62 | 297.4 | 359.34 | 191.36 | 198.91 | 142.46 | 346.2 |

[a]source: http://ec.europa.eu/enlargement/instruments/funding-by-country/index_en.htm




**Graph 1** EU per capita assistance to Balkan pre-accession countries, 2007–2013

What one can derive from the above table is that not all financial assistance components have been made available to each candidate. The biggest net recipient over the 2007–2013 period has been Serbia at 1,392,067,970 EUR, while Montenegro has received the greatest per capita financial assistance package at 359.34 EUR, as shown in the above Graph 1:

While the EU has been rather generous with regards to pre-accession assistance, a financial stimulus package targeted at alleviating the effects of the global financial crisis on the domestic economies has been largely non-existent.

## 3 The Global Economic Crisis and the Various Policy Responses

A large number of authors, most notable among them Minchev, Lessenski, Ralchev, etc., had initially warned about the dangers of the crisis spilling over in the highly fragmented Balkan markets. Left outside the EU umbrella, these pre-accession countries appeared ex-ante more vulnerable to the crisis, yet, "not withstanding their vulnerabilities, and fears that they could suffer deeply in the global deleveraging process, (they) demonstrated a high degree of resilience" (Directorate-General for Economic and Financial Affairs 2010a, b). This could, in part, be attributed to lower levels of integration with the global financial flows, which automatically reduced the exposure of the domestic economies to the worldwide deleveraging process.

The global economic crisis struck the Balkan countries like a tsunami, easily noticeable through the decreasing, or in some cases even negative GDP, a constant rise of unemployment (a common feature of all concerned countries), a negative trend of financial stability expressed through decreasing credit rating, an increasing trend of budget deficit, which is considered for the Balkan countries a usual phenomenon in their short history of independence. Governments and politics in

some countries like Croatia carry heavy responsibility for an exacerbated impact of the financial crisis on the economy. For instance, in November 2007, the Prime Minister at the time, Ivo Sanaderalong with the Finance Minister Ivan Suker, supported by the government cabinet did not pay any heed to the IMF's warning on the possible impact of the financial crisis on the Croatian economy, declaring that "There is no such question that we are facing financial crisis .... what we are supposed to hear from the IMF could refer to the time 4 years ago, not today". This rhetoric and political attitude on the financial crisis of the government continued until September 2009 when the new Prime Minister of the government coalition, Jadranka Kosor, finally admitted that Croatia is in a financial and economic crisis. Only in April of 2010, when the crisis percolated into all structures of the economy and society, did the government create an "Economic recovery program". Similar behavior of politicians is visible in all of the observed countries, including FYROM in 2008, where their Finance Minister, Zoran Stavrevski declared that "We believe that if certain negative consequences come over the (FYROM) economy, they will not be serious, i.e. despite that, FYROM will keep performing with high percentage of economic development". Finally, in June 2009, the government acknowledged that the country is in recession. The Bosnian and Herzegovinian complicated, counter-productive and overall unstable political system emerging from the Dayton Accords was primarily focused on local politicking colored, in most cases, with ethnic animosities. For the financial crises the political elite did not have too much interest or "time" and the crisis was more than welcome to cover the flawed economic policy. In that confused situation, where all the entities,the Republic Srpska, Federation and District Brcko, have finance ministers, along with the ten Federation cantons with their respective ministers of finance, one cannot speak about political cohesion and a responsible, uniform economic policy that can be implemented across the entire country. It is well known that trust in government and stability of political government is the key factor for prosperous and stable economy, what is not fact in Bosnia and Herzegovina. A single bright light of reason and rationality in Bosnia and Herzegovina at the time was the B&H's Central Bank Governor who in several occasions urged the citizens not to withdraw their deposits and the politicians to pay more attention to the economy and stop talking about entities and referenda. Lack of politically synchronized acting is visible on fall of credit rating and in need for IMF's interfering. Montenegro's politicians and their rhetoric where similar to Croatia's, for example when the Montenegrin Minister of Economy Branimir Gvozdenovic declared in October 2008 that: "The global crisis will not influence growth of Montenegro's economy that should keep up the rate of 7 % ...". The Prime Minister Milo Dukanovic stated in December of 2008: "We should not have fear because we have experience and we went through worse crisis, threat of war and sanctions ... reform of justice and state administration are key factors for Montenegro to overcome global economic crisis". Such reflection on crisis in time when, according to all the available economic and statistical data, the countries in West Balkans were deep in crisis can be described like politicking. In Albania the politicians had at least mentioned the term 'crisis' and its influence on economy but their predictions of the impact where too optimistic. Prime Minister

Sali Berisha during his address mentioned that foreign investment and cash flows from Albanians outside the country will be reduced under the impact of the crisis. The actions that were taken weren't enough for reducing the impact of financial instability that had spilled over the fragile Albanian economy. In Serbia, however, the situation was quite different from the other countries as their political elite had a timely response, yet the main political focus during that period remained "keeping territorial integrity" (Kosovo) and cooperating with the Hague International Tribunal. Economic actions with the government making budget cuts, external financing through privatization of the main oil and gas company and other measures were insufficient and inadequate to resist the crisis. Kosovo and their political elite in this period had just one fundamental goal – independence and stability – thus, the financial crisis that befell the region was acknowledged as of secondary importance, as can be deduced from the actions taken by the Kosovar government at the time.

These late reactions of the political structures and their response policies, combined with the opportunistic and irresponsible behavior of ruling political parties have had an even deeper impact on the financial crises in the small and fragile economies of the West Balkans.

Having experienced different growth rates and convergence patterns with the EU economy, each pre-accession country devised its own measure for combating the impact of the global economic crisis.

The following table shows the various approaches formulated by each country separately in order to limit the effects of the crisis and strengthen the economy. Please note that the list, while comprehensive, may not be complete. The enumerated measures are subject to change as newer and more innovative policies are developed each day (Table 3).

As stated in the 2010 Ohrid Agenda, candidate and neighboring countries of Southern and Eastern Europe as well as those of the Caucasus region are faced with severe, often common, challenges. Thus, it can be observed from the above table that the current crisis put public spending and fiscal severity at the heart of each anti-crisis measure design. The ultimate objective for each economy indiscriminately is to emerge from the crisis, reduce disparities and draw one step closer to becoming a fully-fledged European Union member.

## 4 No Country is an Island Unto Itself: A Comparison of Approaches

The following section examines each country's state of affairs as seen through the IMF's lenses:

For the case of Croatia, balance sheet vulnerabilities were built up during the boom years of 2002–2007. Yet, the government refused to acknowledge the impending doom throughout 2009. At the insistence of the IMF, the overexposure to debt is to be countered by growth-enhancing structural reforms, developing a

**Table 3** Various anti-crisis policy responses of Balkan pre-accession countries

| Country | EU Status | Crisis response policies |
|---|---|---|
| Croatia | Acceding | Five key leverage measures:<br>Public sector expenditure reduction<br>Redirecting budget assets<br>Reducing state intervention in economic flows<br>Jump-starting a new investment cycle<br>Accelerating reform measures |
| The Former Yugoslav Republic of Macedonia | Candidate | Four different packages of anti-crisis measures aimed at:<br>Fiscal severity<br>Introduction of new credit support lines<br>Reduction od VAT and tax breaks<br>Subsidized loan interest rates<br>Various employment support schemes<br>Expansionary monetary policy<br>External financing |
| Montenegro | | Stimulus package measures:<br>Reduction of personal income tax and social contribution rates<br>Introduction of full guarantee of bank deposits<br>Lowering of reserve requirements<br>Additional credit support for distressed banks |
| Serbia | | A programme of policy responses:<br>Restrictive measures aimed at budget cuts<br>10% public sector salary & pension increases<br>Stimulus package of cca EUR 300 million of direct and indirect budget subsidies and cca EUR 800 preferential conditions loans<br>Budget rebalance<br>External financing |
| Albania | Potential candidates | Anti-crisis policies:<br>Raising bank deposit guarantees, covering more than 80 % of all bank deposits<br>Upward revision of budget deficit |
| Bosnia and Herzegovina | | Combined measures:<br>Current expenditure cuts and excise taxes increases<br>Budget revision<br>Lower bank reserve requirements<br>Increased deposit insurance coverage |
| Kosovo | | None, except for a large Telecom dividend |

fiscal consolidation path, building buffers and preserving financial sector stability (IMF Country Report Croatia 2011). All of these goals were introduced in a separately drafted strategy to counter the global crisis, significantly lagging behind the first signs of a downturn in the economy. Despite all of this, the confidence

levels are returning to their pre-crisis levels as Croatia is set to join the European Union in 2013.

The case of the Former Yugoslav Republic of Macedonia is a curious one, as the conservative, yet reform-oriented government adopted four sets of comprehensive response policies, all aimed at improving the overall economic conditions. The results have been mixed and inconclusive, despite the government's best efforts. The drawing of a Precautionary Credit Line arrangement was initially intended to provide insurance against external risks (IMF Country Report FYROM 2011), however it is increasingly being used for short-term financing of budget gaps. A prominent local expert calls for "a cyclical regulated fiscal balance… [as well as] not to mix up intervention and structural reform measures" (Bexheti 2010). FYROM is running the danger of becoming the next perennial EU candidate, after Turkey, unless the name issue is resolved – case in point of political matter hindering economic development.

The Montenegrin economy has been taken on a rollercoaster ride since declaring its independence from Serbia in 2006, going from boom to bust in just a few short years. According to the IMF, "the global financial crisis has left the banking system in Montenegro in a worse shape than in emerging Europe in general" (IMF Country Report Montenegro 2011). The country's increasing reliance on tourism has been a major source of cyclicality, thus the measures adopted by the government have attempted to ameliorate this condition.

The Anti-crisis Programme adopted by the Serbian government, despite its ambitious name and the timely appearance, offers a number of contradictory measures aimed at both expanding and restricting the fiscal budget (Kabinet Predsednika Vlade Republike Srbije 2008). According to the IMF, the country's unbalanced mix of weak structural, expansionary fiscal, and tight monetary policies undermined competitiveness and macro stability (IMF Country Report Serbia 2010), yet under the Stand-By Arrangement the authorities' policies have been broadly consistent with the Fund advice. The comprehensive policy package focused on financial adjustment and substantial external financing designed to address the roots of the economy's weaknesses through a slow but balanced recovery. These efforts were acknowledged by the EU, which awarded Serbia a candidate status in 2011.

The sound economic policies already put in place before the global crisis hit Albania ensured that the country weathered the storm well. Apart from that, it also proved to be an impetus for a faster fiscal consolidation and the adoption of a new policy framework. As per IMF advice, "in the near term, contingency planning with respect to euro-area periphery developments is essential" (IMF Country Report Albania 2011).

The policy response of Bosnia and Herzegovina is a fragmented one, reflecting the fact that the Serbian-populated part of the country, Republika Srpska, aims at developing a separate economic policy from the rest and refuses to acknowledge the central government in Sarajevo. Against this backdrop, the IMF was obliged to hold talks with two separate entities and engage in dual discussions. Yet, the fiscal deficit appeared a common problem, with the only mutually agreed policies encompassing

relaxed bank reserve requirements, increased deposit insurance coverage, relaxed prudential rules on restructuring and stable foreign bank exposure (IMF Country Report Bosnia and Herzegovina 2010).

Finally, the Kosovo economy was only weakly affected by the global economic crisis, due to the country's limited exposure to the international trade and financial channels. According to Stojkovski, the Kosovo economy "is founded on three main pillars: EU donors, the Kosovar diaspora, and the mineral and metal deposits" (Stojkovski 2010). The main involvement on the part of the IMF has been to "build the capacity to provide emergency liquidity assistance to the banking system, strengthen the institutional framework, and establish a Staff-Monitored Program designed towards restoring fiscal sustainability and improving budget execution" (IMF Country Report Kosovo 2011).

## 5 Conclusion

One could infer from the above analysis that while the global economic crisis has affected every EU pre-accession Balkan country to a different degree, each has attempted to combat the crisis with a mix of measures devised to address its specific needs. The rapid expansion of the financial sector in the pre-crisis period generated the growing imbalances in all of these economies. From 2000 onwards, the entire region enjoyed tremendous growth rated, mainly riding on the wave of the booming global economy.

The outbreak of the global economic crisis had only squeezed the pre-accession countries to attempt to transform their economies faster, in order to exhibit sufficient robustness to weather the financial tsunami. What is noticeable, however, is that the crisis assistance, which has been available to the Balkan countries, has mainly arrived from the IMF and the World Bank. The EU, while generous at providing pre-accession assistance, does not have an existing mechanism set up to specifically address crisis-affected countries.

In conclusion, the policy responses examined in this paper all lack a common point: a guiding and giving hand in the form of EU which would provide a first-instance source of funding in conditions of distress to pre-accession countries, while leaving the IMF to its original lender of last result role. Only in this case would the European Union truly fulfill its mission.

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# The Repercussions of the Financial Crisis (2008) on the Foreign Trade Between Greece and the Balkan Countries (BCs)

**George Magoulios and Vasilis Chouliaras**

**Abstract** In this paper we will examine the repercussions of the financial crisis on the foreign trade between Greece and the BCs. Based on the literature and findings related to the financial crisis and international trade, we examine the quantitative data on the foreign trade between Greece and the BCs during the 2007–2010 period (Greek exports and imports to and from the BCs, the balance of trade and the trade volume). When investigating the changes of the foreign trade between Greece and the BCs during the financial crisis period, a correlation is made between the annual change of the BCs GDP and the change in Greek exports and imports to and from the BCs. Based on the course of Greek exports over the last three decades (1980–2007), it appears that they are intensely influenced during periods of global recession. With 2008 being the financial crisis reference year, Greek trade imports and exports to and from the BCs marked a decrease in 2009. Tracking Greek exports from 2007 to 2010, it can be seen that they present a greater reduction towards the BCs compared to the EU and the rest of the world. From 2007 until 2010 there is a continuous trend in the reduction of Greek imports from the EU and the world, whilst imports from the BCs present a slight increase. With most of the BCs, Greece's balance of trade is in surplus throughout the period in question, although a reduction in the surplus is noted in 2008. Its geographical significance during the financial crisis period has also negative repercussions for Greece's neighbour countries and the volume of foreign trade transactions. The Greek trade volume with most of the BCs is reduced to a lower level compared to the trade volume with the EU and the world and this seems to be due to its geographical position and to a lesser extent to Greece's trade completion with the BCs compared to the EU. Although the terms of trade between Greece and the BCs have generally deteriorated, they remained favourable for Greece, while the terms of trade between Greece and the EU and the world as a whole are unfavourable for Greece and have further deteriorated. In 2009, a GDP reduction is marked in almost all the BCs as a

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consequence of the 2008 financial crisis. Correlating the changes of the BCs's GDP and Greece's imports and exports to and from the BCs, one is able to ascertain that 2009, which coincides with the greatest recession of the BCs, also presents the greatest reduction in both Greek imports and exports. Furthermore, it is ascertained that the countries that went through the greatest recession during 2009 also experienced the greatest reduction in Greek imports and exports. Finally, it is concluded that the extent of the recession of the BCs is directly related to the progress of the Greek exports towards these countries.

**Keywords** Greece • Financial crisis • Foreign trade • Balkans

**JEL Classification Codes** F10 • R10

## 1 Introduction

The repercussions of the financial crisis on foreign trade between Greece and the BCs are examined in this paper. Based on the bibliography and findings related to the financial crisis and international trade, we examine the quantitative data on foreign trade between Greece and the BCs during the 2007–2010 period. Specifically, the exports and imports of Greece to and from the BCs, the balance of trade and the trade volume are being examined. When investigating the changes of the foreign trade between Greece and the BCs during the financial crisis period, a correlation is made between the annual change of the BCs' GDP with the change in Greek exports and imports to and from the BCs. The outcome of the BCs' shares in Greek exports and imports, as well as Greece's terms of trade with the BCs are examined.

## 2 Theoretical References

In an article of Bastian J. concerning the impact of the Greek crisis on the neighboring countries of SE Europe, among other things, the rippling effects of the Greek crisis in three other basic areas are identified: the volume of exchanges in foreign trade, the level of remittances sent from Greece and the cost of loans by local subsidiaries of Greek banks operating in the region. The secondary effects of the global economic and financial crisis in SE Europe involve the real economy of those countries (demand reduction, over-indebtedness of households and companies and an increase in unemployment). During the last decade, foreign direct investments from Greece, an increase in the volume of trade and economic migrants contributed to Greece assisting the economic transition of its neighbors. This positive influence has been placed on hold for a considerable amount of time still, due to the crisis (Bastian 2011, pp. 95–96).

The full dynamics of the global economic downturn began to be felt in the SE Europe region in various ways including: (a) Between the years 2000 and 2008 the ratio of external debt of the GDP rose from 45 % to 51 % in the CE and SE Europe. (b) Foreign Direct Investments (FDI) are expected to be reduced. (c) Exports were expected to have zero growth in most of the BCs in 2009. The EU is the largest export destination for all of the countries in the area, however a reduction in exports to i.e. Germany, France, Italy and Austria due to a drastic drop in consumer demands in these countries, will have unfavorable consequences and will affect all of the Balkan economies. With regards to Greece, for over a decade it enjoyed a growing trade surplus with the BCs, most of which was recycled back into neighboring economies, through foreign direct investment in commercial banks, telecommunications, constructions and the food industry. Amongst other things, the geographical proximity prompted Greek companies to invest in emerging markets in the Balkans. However, the importance of geographical proximity also has rather adverse consequences for Greece's neighbors. Balkan economies are particularly affected by external factors in their neighborhoods. This is especially the case with bilateral trade relations, the extension of credit to finance trade and foreign direct investment between the Balkan region and Greece (Bastian 2009, pp. 2–4).

Greek exports to the BCs are at extremely high levels and their share has significantly increased in the last 15 years with Greece reaching one of the top positions in ranking as one of the leading exporters in the region. An increase in exports to neighboring countries shows a significant change in the structure of Greek export activity. The most important incentives for exporting enterprises are the economic and political environments, followed by the potential gain from exports to the markets of SE Europe. A survey indicated that 22 % of all respondents pay particular attention to market characteristics, the economic environment, the political environment and the competitive advantage in quality. From reviews of the competitive advantage in quality, the profit margin and the corresponding market share, it is deduced that the reality for these variables was slightly better than the original estimate. The values are still closer to the original business projections compared to the reality that they are dealing with (Liargovas et al. 2008, pp. 377, 383, 391).

In particular, economic relations with FYROM have offered Greece tremendous opportunities to fill the still existing gap in the market of FYROM, since competition with other Western suppliers displays slow growth. Moreover, FYROM has proved to be a *"stepping stone"* that is useful for further expansion into other Balkan markets, in an attempt to exploit the advantage of low wages and skilled labor. Further improvements in the domestic political setting, along with the promotion of structural reforms in FYROM and the gradual, but steady growth of the middle class are expected to contribute significantly to further economic activity in the country and thereby to enhance business cooperation and greater economic cooperation and trade between the two countries in the future (Panagiotou 2008, pp. 247–248).

As experts on the stabilization of the Western Balkans support, huge opportunities have opened to Greek commerce and businessmen wishing to invest in these countries, which constitute important markets for Greek products. Simultaneously these countries have adopted, or are in the process of adopting, liberal regimes that affect the flow of services, the establishment and operation of foreign businesses. The areas where investment opportunities exist are financial services, construction, telecommunications and retail trade (Michalopoulos 2002, p. 125). However, the final accession of Bulgaria and Romania into the EU has brought more international players into these markets, a development that is a challenge not only for the strategic position of Greek enterprises, but also for their competitive advantages (Kitonakis and Kontis 2008, p. 279).

In an article that compares the countries of the SE Balkans focusing on the business climate, on intra-regional trade and investments, it was found that: (a) Despite differences in socio-political developments in the last 100 years, Bulgaria, Greece, FYROM, Romania, Serbia and Turkey appear to represent many sides of a common economic area in their overall level of economic development, dealing with similar problems in their economies and with essentially similar levels of competitiveness development. (b) In the intra-regional trade and in investment activities, the opportunities for regional integration and economic development are under-used at best. (c) With regards to the future and the enlargement of the EU, intensive regional cooperation will certainly enhance competition and improve the overall competitiveness of the region as a whole (Zashev 2008, pp. 16–17).

During the transition procedure of the Central Eastern European Countries (CEEC), the dynamics of trade and foreign direct investment were vital for restructuring the modernization of the economies of new members, thus helping to sustain growth and convergence with the EU. Trade liberalization between the EU and the CEEC has promoted the intensification of bilateral relations.

From the results of a gravity model for investigating the factors affecting overall and sectoral trade flows and predicting the potential of trade between the CEECs and trade flows between the CEEC and EU countries, it is implied that geographical and economic factors must be taken into account when predicting the impact of trade expansion. Another conclusion is that, although the potential of trade between the EU and the CEECs has been reached for most countries in the short term, there is still some potential for expansion of trade in other cases. In the long run, despite the strengthening EU-CEECs relations, the empirical analysis suggests that there is room for further improvement in trade relations, mainly due to the economic development of the new Member States. It is also possible to conclude that trade within the CEECs will continue to grow faster than that between the EU and the new members. This can be seen mainly as a result of industrial strategic positioning of western multinational corporations, which has led to the emergence of flows between the countries of the CEE. Trade flows will tend to increase as income levels converge, structural demands will become similar and international production networks will be expanded (Caetano and Galego 2006, pp. 83–84).

As far as foreign trade is concerned, Greece has benefited from the advantages offered by the eurozone (currency risk elimination and currency conversion costs elimination). Moreover, liquidity for foreign trade has improved, since trade within the eurozone is carried out in euro and an important part of pricing and payment for imports in trade with the non members of eurozone is also carried out in euro. With regards to the disadvantages, among other things, the International Monetary Fund (IMF) estimates that the loss of competitiveness of the Greek economy over the past 10 years was 25 %. Moreover, most of the indexes of Greek products traded internationally converge continuously compared with those of other EMU countries, resulting in higher indexes, with adverse effects on foreign trade (Kotios et al. 2011, pp. 264–265).

A study examining the extent to which economic conditions contributed to lower sales of businesses in the global financial crisis of 2008–09, in six developing Asian economies (China, India, Indonesia, Malaysia, Taiwan and Thailand), found that economic conditions adversely affected sales during the crisis and that the use of trade credit played an important part in the relative performance of businesses. In particular, when financing conditions worsened, the most financially vulnerable companies turned to the market through credit from suppliers. Companies that were able to replace external funding by trade credit were more effective with sales (Coulibaly et al. 2011, pp. 17–18).

Financial crises temporarily affect safe and efficient resource allocation. As far as international trade is concerned, this manifests itself in reduced business access to commercial credit, in insurance policies, incomplete information on creditworthiness and foreign institutions, the volatility of exchange rates etc. Historical events like the Great Depression suggest that recourse to protectionism increases in times of economic uncertainty that might jeopardize a relatively rapid economic recovery. In response to this, an increasing number of developed countries and developing markets have established programs for the public financing of exports. The state guarantees for these export credits and insurance policies. The expectation is that government intervention corrects market failures (Herger 2009, p. 14).

When examining the trade restrictive measures that have been implemented in both developed and developing countries, as a policy response to the financial crisis of 2008, and their interaction with existing multilateral trade rules under WTO, it is deduced that those rules have functioned effectively as a *"stronghold"* against protectionism in light of the concerns of the global recession. However, a closer look at the rules of the WTO reveals that they are not sufficient for today's rapidly changing economic realities, as international trade undergoes far more complicated processes, with the involvement of a large number of countries, enterprises and products, and it is also linked with a large range of non-trade issues (e.g. environmental protection). For this reason the more developed and emerging economies seem to increasingly gravitate toward regional and bilateral Free Trade Agreements (FTAs) as a way to replace the missing trade rules in the multilateral trade framework (United Nations 2010, pp. XI–XII).

## 3 Greece's Economic Crisis and Its Effect on Foreign Trade

The global GDP recorded an unprecedented contraction of 2.4 % in the market rates in 2009, which led to an unusually large drop of 12 % in the world trade in the same year. The products most affected by the industrial recession (consumer durables, industrial machinery etc.) have a higher share in world trade than in the global GDP. This is a factor that has increased the magnitude of trade decline, compared to the GDP in 2009. Other factors that have contributed to this development are the effort of European governments to reduce their budget deficits through a combination of spending cuts and revenue measures and the high prices of oil that increase energy costs for households and businesses. Finally, persistent unemployment prevented domestic consumption in developed countries and the limited increase in income reduced the demand for imports. Despite the recovery in 2010, the negative impact of the financial crisis and global recession is likely to continue (WTO 2011, pp. 20–22).

According to the Bank of Greece, the GDP has been reducing since 2008, while in 2011 it was estimated that the decline would reach 5.5 %, which eventually reached 7 % (ELSTAT). The decline in the GDP is due to a decrease in private and public consumption and investment. The decline in private consumption is attributed to the reduction in the disposable income of households, due to lower wage labor and a significant reduction in the number of employees, a reduction of bank financing, as well as widespread uncertainty. Since 2009, the deficit of current accounts has displayed a steady decline both in absolute size as well as in the GDP percentage, almost exclusively, due to recurrent macro-economic developments in Greece and its trading partners. In particular, after the external deficit reached 14.9 % of the GDP in 2008, it then declined to 11.1 % in 2009 and to 10.1 % in 2010, while in 2011 it was expected to fall further to 9.8 % of the GDP, with potential for it to continue to decrease over the following decade. The limited decline in the current account deficit in 2010 and in 2011 reflects the fact that structural issues impede the rapid development of the low structural competitiveness of the economy. The strict limitation of the trade deficit is a result of the recession, since the reduction of import costs (more than double of export revenues) is mainly due to eroding consumer and investment activity, while the increase in exports is associated with the efforts of exporters to access foreign markets in light of the reduced demand in the domestic market. With regards to the region of SE Europe, the apparent slow-down of the initial strong recovery of most economies is mainly due to external factors. Specifically, there are three main transmission channels of the crisis in the region. The first is related to the real economy and the apparent slow-down of growth in 2011 compared to 2010 in the major economies (USA, Japan and China) and in European countries. The second is related to the presence of large banking groups in the countries of the Eurozone and the weakening of the already low credit growth rate in most countries. Finally, the third channel refers to the role of the financial markets and the possibility to

increase the *"risk aversion"* in investor behavior, which could create financial problems in countries with relatively high short-term debt, as was the case in the crisis of 2008 (Bank of Greece 2011, pp. 58, 72, 92).

According to Eurostat figures, the income of Greeks recorded the biggest drop not only in the Eurozone, but also generally in the EU27 during 2010. The GDP per capita measured in Purchasing Power Standards (PPS) decreased in Greece in 2010 by 4 points compared with 2009, from 94 to 90 (EU = 100). This is the greatest reduction in the Europe of 17 and 27. The per capita real consumption in the country decreased from 104 units to 100 and the corresponding Greek index is 10 % of the EU average. The path of the per capita GDP, calculated in PPS in Greece is as follows: In the 5 year period of 1995–2000 it remained unchanged at 72 % of the EU average, in 2001 it reached 74 %, in 2002 at 78 %, in 2003 at 81 %, in 2005 at 82 %, in 2006–2007 at 98 %, in 2008 at 92 %, in 2009 at 94 % and in 2010 at 90 % (Eurostat 186/2011).

According to the ELSTAT survey (2011), based on the income of 2009, the population that is at risk of poverty or social exclusion amounts to 27.7 % of the Greek population. The risk of poverty in the Europe of 27 Member States is estimated at 16.4 % (provisional data) and in the Eurozone at 16.1 %. Based on the study of indicators on living conditions of the population, the deprivation of basic goods and services (difficulty in meeting basic needs, poor housing, inability to repay loans or purchases in installments, difficulties in paying fixed accounts etc.) does not concern poor people only, but it is a problem of the non-poor as well (ELSTAT 2011, pp. 16, 1).

Taking into account the progress of Greek exports in the last three decades (1980–2007), we can conclude that Greek exports are affected strongly during periods of global recessions. During the economic crisis of the period 1981–1983, exports decreased by 17 % in 1981, they remained unchanged in 1982, they displayed a very slight rise in 1983 (4 %) and eventually surpassed the levels that had been reached in 1980 six years later. In the recession period 1991–1993, for which any impacts appear time lagged, exports in 1991 compared to 1990 increased by 8 % and marked a new increase of 14 % in 1992, but declined by 15 % in 1993. In the recession period of 1996–1998, exports declined by 6 % in 1997, and only reached the levels of 1996 in 2000. In the 2000–2002 recessions, exports declined by 2 % in 2001 compared to 2000 and a further decline by 1 % is noted in 2002. Their recovery began at 2003 and continued until 2007. It becomes clear from the above that Greek exports are adversely affected by global recessions in the last three decades. However, their duration or depth indicates that the downturn in economic activity around the world is not the sole cause of this negative development. Endogenous causes also affect export activity. These include: competitiveness, composition of exports, and the fact that for most Greek products exported the elasticity for demand regarding disposable income is high (i.e. olive oil) or the fact that many of these products are directly related to manufacturing or industrial activity (e.g. aluminum products, copper, iron and steel). As far as the current crisis is concerned, there is no doubt that the fall or severe weakening in economic activity will lead to reduced import demand in developed countries (and others)

and restriction on international trade, with adverse effects on Greek exports. The sluggish economic activity worldwide and the limited expansion and stagnation of international trade will affect Greek overall exports, as Greek products exported are not essentials in their vast majority. The products that will be particularly affected are: those associated with industrial production (e.g. non-ferrous metals) and products directly related to construction activity, products that are reliant on income elasticity demand (i.e. types of clothing and most food exported by Greece), because of heightened international competition and reduced international demand (PanHellenic Exporters Association 2008, pp. 4–7; www.pse.gr/node/14).

According to the research by BSE, FEIR, NTUA-EVEO (2011), the economic crisis affects the entire business community in Greece, with a reduction of sales in large businesses reaching a cumulative of 20 % in the period of 2009–2011. Businesses appear to be quite vulnerable to illiquidity mainly because their customers/suppliers face similar problems (48 % of businesses), and also, due to limited or even no funding from the banking system (36.5 % of businesses). A key determinant of good economic performance of enterprises is extroversion. Those who manage to export show higher resistance to the economic crisis and replace part of their losses in turnover from the domestic environment. An indication of this is that companies that expect sales growth in 2011 are export cooperations. However, there is considerable scope for improving both the base of export operations and the volume of exports, with only 45 % of the country's larger companies exporting (70 % in manufacturing).

## 4 External Trade of Greece with Balkan Countries (BCs) (2007–2010)

By using the financial crisis of 2008 as an indicator, Greek exports of goods to the BCs reduced in all countries in 2009, with Bosnia – Herzegovina being an exception. A declining trend of Greek products to the EU appeared from 2008, while globally from 2009. In 2010 compared to 2009, Greek exports increased in the BCs, as well as in the EU and globally (Table 1).

As a result of the economic crisis, Greek imports of goods reduced from 2009 in the BCs (with Croatia being an exception), as well as in the EU and worldwide. In 2010, the decline of Greek imports from the EU and the world continued, while the BCs' imports appeared to increase compared to 2007 by 0.43 % (Table 2).

The trade balance between Greece and the BCs is in surplus throughout the period considered (2007–2010), with the exception of Montenegro, Croatia (2009, 2010) and Slovenia (2010) that are in deficit. Since 2008, a decrease in the surplus has been noted, that amounts to 43.08 % from 2007 to 2010. The trade balance between Greece, the EU and the world is in deficit throughout this period, and from 2009 a reduction in the deficit is noted which in 2007 and 2010 amounts to 32.16 % and 21.56 % respectively (Table 3).

**Table 1** Exports of Greece to the BCs, 2007–2010 (thous. Euros)

| a/o | Countries | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| 1 | Albania | 452.937 | 378.334 | 389.604 | 394.306 |
| 2 | Bosnia-Herzegovina | 26.354 | 37.941 | 43.983 | 44.677 |
| 3 | Bulgaria | 1.077.995 | 1.236.980 | 968.158 | 1.049.267 |
| 4 | Croatia | 114.926 | 89.624 | 38.756 | 52.807 |
| 5 | Montenegro | 46.789 | 29.958 | 28.314 | 39.217 |
| 6 | FYROM | 389.940 | 442.126 | 396.582 | 321.535 |
| 7 | Romania | 715.340 | 772.417 | 557.720 | 594.015 |
| 8 | Serbia | 218.921 | 234.205 | 175.536 | 167.908 |
| 9 | Slovenia | 208.968 | 248.469 | 99.873 | 91.548 |
| | Total BCs | 3.252.170 | 3.470.054 | 2.698.526 | 2.755.280 |
| | BCs % Total | 18.97 | 20.01 | 18.38 | 17.25 |
| | EU 25 | 9.323 .000 | 9.093.000 | 7.751.000 | 8.530.000 |
| | World | 17.140.000 | 17.334.000 | 14.675.000 | 15.963.000 |

Source: ELSTAT (2007, 2008), HEPO (Hellenic Foreign Trade Organization) (2009, 2010), www.hepo.gr

**Table 2** Imports of Greece from the BCs, 2007–2010 (thous. Euros)

| a/o | | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| 1 | Albania | 68.052 | 99.101 | 76.600 | 98.400 |
| 2 | Bosnia-Herzegovina | 6.014 | 11.508 | 8.000 | 6.900 |
| 3 | Bulgaria | 874.322 | 1.162.626 | 873.800 | 957.308 |
| 4 | Croatia | 16.718 | 23.767 | 42.600 | 59.800 |
| 5 | Montenegro[a] | 49.015 | 64.898 | 42.480 | 64.470 |
| 6 | FYROM | 299.240 | 360.913 | 214.600 | 186.000 |
| 7 | Romania | 537.764 | 525.251 | 451.300 | 424.200 |
| 8 | Serbia[a] | 139.964 | 151.799 | 99.120 | 150.430 |
| 9 | Slovenia | 86.797 | 85.357 | 80.700 | 139.400 |
| | Total BCs | 2.077.886 | 2.485.220 | 1.889.200 | 2.086.908 |
| | BCs % Total | 3.73 | 4.09 | 3.79 | 4.51 |
| | EU 25 | 30.786.000 | 31.664.000 | 26.788.000 | 23.090.000 |
| | World | 55.654.000 | 60.670.000 | 49.791.000 | 46.173.000 |

Source: ELSTAT (2007, 2008), Panhellenic Exporters Association (2009, 2010)

[a]The data 2009, 2010 are estimations, since a cumulatively (30 % Montenegro and 70 % Serbia) is provided for these two countries

The volume of Greek trade with the BCs is reduced in 2009 and rebounds in 2010. However, from 2007 to 2010 the decrease amounts to 9.15 %, and concerns all the countries, with the exception of Bosnia - Herzegovina, Bulgaria and Montenegro. In addition, in 2009 the volume of trade with the EU and the world decreases and in 2007–2010 the decrease amounts to 21.16 % and 14.64 % respectively. The lowest degree of reduction in the trade volume with the BCs in relation to the EU appears to be due to geographical proximity and the lower degree of trade integration of Greece with the BCs rather than the EU (Table 4).

**Table 3** Trade balance of Greece with the BCs, 2007–2010 (thous. Euros)

| a/o | Countries | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| 1 | Albania | 384.885 | 279.233 | 313.004 | 295.906 |
| 2 | Bosnia-Herzegovina | 20.340 | 26.433 | 35.983 | 37.777 |
| 3 | Bulgaria | 203.673 | 74.354 | 94.358 | 91.959 |
| 4 | Croatia | 98.208 | 65.857 | -3.844 | -6.993 |
| 5 | Montenegro | -2.226 | -34.940 | -14.166 | -25.253 |
| 6 | FYROM | 90.700 | 81.213 | 181.982 | 135.535 |
| 7 | Romania | 177.576 | 247.166 | 106.420 | 169.815 |
| 8 | Serbia | 78.957 | 82.406 | 76.416 | 17.478 |
| 9 | Slovenia | 122.171 | 163.112 | 19.173 | -47.852 |
| | Total BCs | 1.174.284 | 984.834 | 809.326 | 668.372 |
| | EU 25 | -21.463.000 | -22.571.000 | -19.037.000 | -14.560.000 |
| | World | -38.514.000 | -43.336.000 | -35.116.000 | -30.210.000 |

Source: ELSTAT, Edited data

**Table 4** Trade volume (X + M) of Greece with the BCs, 2007–2010 (thous. Euros)

| a/o | Countries | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| 1 | Albania | 520,989 | 477,435 | 466,204 | 492,706 |
| 2 | Bosnia-Herzegovina | 32,368 | 49,449 | 51,983 | 51,577 |
| 3 | Bulgaria | 1,952,317 | 2,399,606 | 1,841,958 | 2,006,575 |
| 4 | Croatia | 131,644 | 113,391 | 81,356 | 112,607 |
| 5 | Montenegro | 95,804 | 94,856 | 70,794 | 103,687 |
| 6 | FYROM | 689,180 | 803,039 | 611,182 | 507,535 |
| 7 | Romania | 1,253,104 | 1,297,668 | 1,009,020 | 1,018,215 |
| 8 | Serbia | 358,885 | 386,004 | 274,656 | 317,528 |
| 9 | Slovenia | 295,765 | 333,826 | 180,573 | 230,948 |
| | Total BCs | 5,330,056 | 5,955,274 | 4,587,726 | 4,842,188 |
| | BCs % Total | 7,32 | 7,63 | 7,11 | 7,79 |
| | EU 25 | 40,109,000 | 40,737,000 | 34,539,000 | 31,620,000 |
| | World | 72,794,000 | 78,004,000 | 64,466,000 | 62,136,000 |

Source: ELSTAT, Edited Data

## 5 Changes in Greece's Foreign Trade with the BCs in the Period of The Financial Crisis

In 2008 the GDP of the BCs increased, with the exception of a −0.2 % reduction in Greece. In 2009, with the exception of Albania, a decrease in the GDP is noted in all the BCs, as a consequence of the financial crisis of 2008. Taking into consideration the GDP of the BCs and the exports and imports of Greece towards and from them, in 2009 the biggest decline in the GDP is marked in almost all the BCs, also presenting the biggest decrease in Greek exports (−22.23 %) as well as in Greek imports (−23.98 %). In addition, it appears that in 2009, most of the countries that display the largest decline (in order: Slovenia, Romania, Croatia, Montenegro, Bulgaria, Serbia), are included in the countries with the largest decline in Greek exports (in order: Slovenia, Croatia, Romania, Serbia, Bulgaria), as well as the

**Table 5** Annual percentage (%) of the BCs GDP change 2007–2011

| α/o | Countries | 2007 | 2008 | 2009 | 2010[a] | 2011[b] |
|---|---|---|---|---|---|---|
| 1 | Albania | 5.9 | 7.5 | 3.6 | 3.8 | 1.9 |
| 2 | Bosnia-Herzegovina | 6.2 | 5.7 | -2.8 | -3.0 | 2.1 |
| 3 | Bulgaria | 6.4 | 6.2 | -5.5 | 0.2 | 2.2 |
| 4 | Greece[c] | 3.0 | -0.2 | -3.2 | -3.5 | -5.5 |
| 5 | Croatia | 5.1 | 2.2 | -6.0 | -1.2 | 0.6 |
| 6 | Montenegro | 10.7 | 6.9 | -5.7 | 2.5 | 2.7 |
| 7 | FYROM | 6.1 | 5.0 | -0.9 | 1.8 | 3.0 |
| 8 | Romania | 6.3 | 7.3 | -6.6 | -1.9 | 1.7 |
| 9 | Serbia | 5.4 | 3.8 | -3.5 | 1.0 | 2.1 |
| 10 | Slovenia[d] | 6.8 | 3.5 | -7.8 | 0.8 | 2.4 |
| | BCs Average | 6.19 | 4.79 | -3.84 | 0.05 | 1.32 |

Source: Bank of Greece, Monetary Policy, Interim Report, November 2011, pp. 59, 70

[a]Estimation
[b]Forecast
[c]Constant market prices for the year 2005
[d]IMF 2010

countries with the biggest reduction of Greek imports (in order: FYROM, Serbia, Montenegro, Bosnia-Herzegovina, Bulgaria). Taking into account that during the reporting period have not been changes in other factors which probably affect the size of external trade such as tariff and non-tariff measures (quotas, subsidies, quality standards, administrative procedures etc.), we could conclude that the extent of the intensity of the recession in the BCs is directly related to the course of Greek exports to them as well as imports from them and thus, with the volume of Greece's trade with the BCs (Tables 5 and 6).

With the exception of Bosnia-Herzegovina, Greek exports to the BCs declined from 2007 to 2010, with the largest changes marked in Slovenia, Croatia (over 50 %), Serbia (almost 23 %) and FYROM, Romania, Montenegro (approximately from 16 % to 17 %). The declining trend of Greek exports to the EU and the world started to become evident in 2008. From 2007 to 2010 Greek exports to the BCs were reduced by 15.27 %, to the EU by 23.26 % and to the globe by 6.86 %. From 2007 to 2010, Greek imports from the BCs were reduced by FYROM and Romania, while there was an increase by the rest of the BCs. From 2007 to 2010 Greek imports from the BCs showed a small increase (0.43 %), while from the EU they declined by 28.28 % and from the globe by a total of 17.03 % (Table 6).

With respect to the BCs share in Greek exports and imports in 2010 compared to 2007, the following group of countries is distinguished: countries with a share increase in exports and imports (Bulgaria and Bosnia- Herzegovina only in exports), those with a share decline in exports and imports (FYROM, Romania,) and those with a share decrease in exports and an increase in imports (Albania, Croatia, Montenegro, Serbia and Slovenia). The BCs' share in Greek exports from 20.01 % in 2008 was reduced to 18.38 % in 2009 and to 17.26 % in 2010, while their share in Greek imports reached 4.51 % in 2010 from 3.73 % in 2007 (Table 7).

**Table 6** Percentage changes X & M of Greece to and from the BCs, 2007–2010, (%)

| | | 2008/2007 | | 2009/2008 | | 2010/2009 | | 2010/2007 | |
|---|---|---|---|---|---|---|---|---|---|
| a/o | Countries | X | M | X | M | X | M | X | M |
| 1 | Albania | −16.47 | 45.62 | 2.97 | −22.70 | 1.20 | 28.45 | −12.94 | 44.59 |
| 2 | Bosnia-Herzegovina | 43.96 | 91.35 | 15.92 | −30.48 | 1.57 | −13.75 | 69.52 | 14.73 |
| 3 | Bulgaria | 14.74 | 32.97 | −21.73 | −24.84 | 8.37 | 9.55 | −2.66 | 9.49 |
| 4 | Croatia | −22.01 | 42.16 | −56.75 | 79.24 | 36.25 | 40.37 | −54.05 | 257.69 |
| 5 | Montenegro | −35.97 | 32.40 | −5.48 | −34.54 | 38.50 | 51.76 | −16.18 | 31.53 |
| 6 | FYROM | 13.38 | 20.60 | −10.30 | −40.53 | −18.92 | −13.32 | −17.54 | −37.84 |
| 7 | Romania | 7.97 | −2.32 | −27.79 | −14.07 | 6.50 | −6.00 | −16.96 | −21.11 |
| 8 | Serbia | 6.98 | 8.45 | −25.05 | −34.70 | −4.34 | 51.76 | −23.30 | 7.47 |
| 9 | Slovenia | 18.90 | −1.65 | −59.80 | −5.45 | −8.33 | 72.73 | −56.19 | 60.60 |
| | Total BCs | 6.69 | 19.60 | −22.23 | −23.98 | 2.10 | 10.46 | −15.27 | 0.43 |
| | EU 25 | −0.12 | 3.51 | −30.18 | −19.63 | 10.05 | −13.80 | −23.26 | −28.28 |
| | World | 1.13 | 9.01 | −15.33 | −17.93 | 8.77 | −7.26 | −6.86 | −17.03 |

Source: ELSTAT, Processed data

**Table 7** BCs' share (%) in Greek Exports (X) and Imports (M) during 2007–2010

| | | 2007 | | 2008 | | 2009 | | 2010 | |
|---|---|---|---|---|---|---|---|---|---|
| a/o | Countries | X | M | X | M | X | M | X | M |
| 1 | Albania | 2.64 | 0.12 | 2.18 | 0.16 | 2.65 | 0.15 | 2.47 | 0.21 |
| 2 | Bosnia-Herzegovina | 0.15 | 0.01 | 0.21 | 0.01 | 0.29 | 0.01 | 0.27 | 0.01 |
| 3 | Bulgaria | 6.28 | 1.57 | 7.13 | 1.91 | 6.59 | 1.75 | 6.57 | 2.07 |
| 4 | Croatia | 0.67 | 0.03 | 0.51 | 0.03 | 0.26 | 0.08 | 0.33 | 0.12 |
| 5 | Montenegro | 0.27 | 0.08 | 0.17 | 0.10 | 0.19 | 0.08 | 0.24 | 0.13 |
| 6 | FYROM | 2.27 | 0.53 | 2.55 | 0.59 | 2.70 | 0.43 | 2.01 | 0.40 |
| 7 | Romania | 4.17 | 0.96 | 4.45 | 0.86 | 3.80 | 0.90 | 3.72 | 0.91 |
| 8 | Serbia | 1.27 | 0.25 | 1.35 | 0.25 | 1.19 | 0.19 | 1.05 | 0.32 |
| 9 | Slovenia | 1.21 | 0.15 | 1.43 | 0.14 | 0.68 | 0.16 | 0.57 | 0.30 |
| | Total BCs | 18.97 | 3.73 | 20.01 | 4.09 | 18.38 | 3.79 | 17.26 | 4.51 |
| | EU 25 | 54.39 | 55.31 | 52.45 | 52.19 | 52.81 | 53.80 | 53.43 | 50.00 |

Source: ELSTAT, Processed data

The terms of trade between Greece and the BCs were favorable for Greece throughout the 2007–2010 period, with the exception of Montenegro, Croatia (2009, 2010) and Slovenia (2010). In 2010 compared to 2007, the terms of trade of Greece with Albania, Bulgaria, Serbia and Slovenia deteriorated, remaining favorable for Greece, while the terms of trade between Greece and Bosnia-Herzegovina, FYROM and Romania were improved. During the same period, Greece's terms of trade with the EU and the world overall were unfavorable for Greece and were especially aggravated in 2008 and 2009 (Table 8).

**Table 8** Terms of Trade (X/M) of Greece with the BCs, 2007–2010

| a/o | Countries | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| 1 | Albania | 6.65 | 3.81 | 5.08 | 4.00 |
| 2 | Bosnia-Herzegovina | 4.38 | 3.29 | 5.49 | 6.47 |
| 3 | Bulgaria | 1.23 | 1.06 | 1.10 | 1.09 |
| 4 | Croatia | 6.87 | 3.77 | 0.90 | 0.88 |
| 5 | Montenegro | 0.95 | 0.46 | 0.66 | 0.60 |
| 6 | FYROM | 1.30 | 1.22 | 1.84 | 1.72 |
| 7 | Romania | 1.33 | 1.47 | 1.23 | 1.40 |
| 8 | Serbia | 1.56 | 1.54 | 1.77 | 1.11 |
| 9 | Slovenia | 2.40 | 2.91 | 1.23 | 0.65 |
| | Total BCs | 1.56 | 1.39 | 1.42 | 1.32 |
| | EU 25 | 0.30 | 0.28 | 0.29 | 0.36 |
| | World | 0.30 | 0.28 | 0.29 | 0.34 |

Source: ELSTAT, Processed data

## 6 Conclusion

Based on the progress of Greek exports in the last three decades (1980–2007), it appears that they are strongly affected during periods of global recession. Using the year 2008 as a reference point, Greek exports of goods to the BCs underwent a decline in almost all countries. From 2007 to 2010 Greek exports are reduced more in the BCs and less in the EU and globally. In addition, a decline is noted in the Greek import of goods from the Balkans, as well as from the EU and the world. In 2007–2010 the decline of Greek imports from the EU and the world continues, while imports from the BCs appear to be on the increase slightly. The trade balance of Greece with most of the BCs is in surplus throughout all the period examined, while in 2008 there is a decrease in the surplus.

The importance of the geographical proximity during the crisis period is adversely significant for Greece's neighbors as well. The impact of the Greek crisis can also be felt in most of the volume of external trade in the BCs. The volume of Greek trade with most of the BCs declines to a lesser scale than the volume of trade with the EU and the world. The smallest degree of reduction of the trade volume appears to be due to the geographical proximity with the BCs compared with the EU.

The terms of trade between Greece and most of the BCs, though somewhat deteriorating, remain favorable for Greece throughout the period under examination, while the terms of trade for Greece with the EU and the world are unfavorable overall for Greece and deteriorate further.

In 2009, a decline in the GDP is marked in almost all of the BCs, due to the financial crisis of 2008. Relating to the changes of the BCs GDP and Greece's exports and imports to and from them, it appears that it is in 2009 that the biggest decline of Greek exports and Greek imports takes place. Moreover, it appears that in 2009, most of the countries that display the biggest decline in GDP are included in the countries with the biggest drop in Greek exports and imports. It therefore

follows that the degree of intensity of the BCs recession is directly related with the progress of the Greek exports to them.

In the midst of the economic crisis a diversification of the geographical distribution of Greek trade abroad, in areas where room for further development exists, as is the BCs, would improve the terms of trade in favor of Greece and would be in the interests of the country. This matter deserves further investigation in the progress.

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# Global Imbalances, Financial Sphere and the World Economic Crisis

**Georgios Makris and Thomas Siskou**

**Abstract** The recent global financial crisis, although initially manifested itself in the field of mortgages in the USA, spread to the international banking system and the stock markets, led to the introduction (mainly by governments of strong economies) of monetary measures, had serious implications on the "real economy" and finally led both the decision-making of economic policies (particularly of European countries) and the theoretical understanding of the whole phenomenon into an impasse. This specific description of events does not, however, necessarily mean that there is also a similar coherence in the theoretical interpretation of the crisis, despite the fact that such an approach became dominant, even among academics. As a first step, we attempt to analyse the arguments of the prevailing theoretical foundations of globalization which could explain the recent crisis. Our conviction is that modern international economic reality cannot be successfully interpreted with the help of traditional economic theory; whether it is Ricardian analysis, the later neoliberal HOS approach, or the more recent dynamic models of the advantages of international trade. On the contrary, we could find useful assistance in the Keynesian principles. Observing the empirical findings concerning the world economic crisis of 2007, we are in a position to claim that the causes of this systemic crisis are in the area of the "real economy", as it has been shaped during the last three decades, where national economies affect one another in an environment characterized by the process of growing globalization. The two main aspects of the present stage of globalization – that is, on the one hand, the network organization of firms at a global level, and, on the other, the gradual autonomization

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of the financial sector are not in a position anymore to interpret the hypotheses upon which the normative theory of international trade is based. According to that logic, as a second step, we proceed with an analysis of the features and dimensions of the financial sphere as well as of the macroeconomic imbalances of the globalized "real economy", seeking to establish the relationship between them and the global economic crisis. This approach permits us to assert that despite the excesses or the omissions of economic policies that could be viewed as contributing factors to the eruption of the crisis, the main cause lies in the way the process of globalization is materialized.

**Keywords** Crisis • Globalization • Macroeconomic imbalances • Financial sphere

**JEL Classification Codes** F110 • F600 • G010

## 1 Introduction

During the summer of 2007, in the USA, there was a generalized and abrupt credit crunch when two of the Bear Sterns investment funds, active in the field of subprime mortgages, went bankrupt, in a climate of a devaluation of assets and an increase in the number of risky borrowers. European banks were affected by the collapse of derivative products and the inversion of the trend towards the domestic real estate market. There was a decrease in liquidity, and loans as well as interbank lending stopped. As a result, the European Central Bank – along with other central banks after a while – had to intervene drastically, thus supporting liquidity. Consecutive bankruptcies, buyouts and nationalizations of financial institutions took place – Countrywide Financial (USA), Northern Rock (U.K.), Landesbank Sachsen and IKB (Germany), Bear Sterns, AIG, Washington Mutual and Freddie Mac and Fannie Mae (USA) among others – despite the positive climate created by the interference of the central banks and the reduction of interest rates. At the same time, however, in early 2008, emerging difficulties of the financial guaranty insurance companies and speculation in raw materials, foodstuffs and oil – that resulted in yet another bubble – brought new concerns back to the markets. Eventually, Lehman Brothers (USA) was left to go bankrupt on 15 September 2008 and its short term liquid securities caused a generalized confidence crisis. The result was the stock market crash of October 10. The US reaction was state aid to Goldman Sachs and Morgan Stanley, and central banks reduced key interest rates, though without any positive results concerning liquidity, given the fact that interbank interest rates remained prohibitive. Most countries' financial policies focused on direct aid of bank recapitalization and on deposit guarantee, and negative outcomes on real economy started to appear.

The main reason for this crisis is considered to be the enormous growth in bank lending and especially in subprime mortgages, in many countries and especially in the USA, where in 2008, 40 % of these loans concerned less creditworthy

borrowers. During the period in which there was an increase in real estate prices, the function of the "granting of mortgage loans – increasing property prices – increasing mortgage value – rescheduling of loans on a more beneficial basis for borrowers and often re-allocation of new loans" channel starting in 2002, did not face any problems. However, the dropping rate in new housing construction and the following drop in prices, in combination with rising interest rates, prepared the ground for the eruption of the crisis. The real estate bubble was nothing but a part of the general bubble concerning loans to households and businesses.

The transmission of the financial sector crisis to the real economy was expected and interpreted linearly, as a result of the loss of trust of the investors in the effectiveness of the means used by the governments to tackle the crisis. The above became obvious after the stock markets' collapse (Dow Jones dropped from 14,000 points in October 2008 to 8,500 points in 1 year). Real economy was affected by credit contraction and asset devaluation and by cuts in production and in overall demand, which had already indicated a downward trend, because of the rise in prices of raw materials, foodstuffs and oil worldwide, as well as of the real estate bubble.

Researching on the causes of this severe systemic crisis, which is often compared to that of 1929, one reaches the conclusion that they cannot be traced exclusively in the crisis' starting point, namely in the subprime mortgage institutions in the USA. Although this view is widely spread, we believe that said causes are connected to the real economy and, more specifically to the way national economies have integrated, or are in the process of being integrated to the globalized economy. Analyzing the two basic characteristics of globalization, that is, fragmentation of the production process of intra-firm networks in the context of international trade and the massive expansion of the financial sphere, we trace patterns of interaction between the two, which lead, inexorably, to crises. In our analysis we proceed to a review of the arguments that support globalization and in some cases we find useful help in Keynesian and Post Keynesian theories.

## 2 Globalization in Search for Theoretical Background

During the 1980s, while the dominant paradigm was reaching its end, there was an increasing reinforcement of globalization, a process that becomes more and more intensified and to which the reasons for the global crisis of 2007 are widely attributed. The main characteristics of globalization – as a socioeconomic phenomenon of contemporary capitalism, with specific characteristics and ideological extensions – are, on the one hand, the emergence of the intra-firm networks on a global level and, on the other hand, the major development and specialization of the financial sphere. The first characteristic corresponds to the Anglo-Saxon model of globalized intra-firm networking, still in a hybrid stage, where massive production is combined with flexible specialization of production as well as with external labor

flexibility, not necessarily on a national level only (Coste 1997).[1] Intra-firm networking is no longer based on comparative advantage between countries but considers all countries to be a single market thus resulting to the segmentation of production process.

As far as the second characteristic is concerned, it is related to the deregulation policy of the financial system and to the major development of the financial sphere, which was accompanied by an excessive trust in self-regulation of the markets. This development depended on a number of factors, many of which had already come into view in the 1980s. The main said factors are:

- The foreign exchange markets liberalization, the origin of which dates back to the abolishment of the Bretton Woods agreement in 1971.
- The liberalization of the bond market, on which budget deficits funding increasingly depended.
- The lifting of control over long-term interest rates, a fact that has contributed to the development of hedging markets, since the early 1980s.
- The development of wide markets of derivative products, which were related to interest rates, to progress in the stock markets or even to mortgage loans and oil, raw material and foodstuff prices.
- The emergence of hedge funds.
- The creation of big oligopolistic banking groups.
- The Securitization techniques, which are extremely complex and more often than not opaque, with controversial risk management methods, where bad credit is often converted into secure stocks, thus encouraging even more bad credit issues.
- The repeal of the Glass-Steagall Act in the USA in 1999, which was voted in 1933 and its aim was to deter speculative banking operations, separating the powers of commercial and investment banks.

## *2.1 International Trade and Comparative Advantage*

An important question that rises from the above description is whether traditional economic analysis is able to provide an adequate interpretation of this new economic reality. It is indeed true that the international trade theory, based on the comparative advantage principle, reaches the conclusion that any country involved in international trade will only profit. A. Smith's and D. Ricardo's analyses concerning the matter, as well as the subsequent development of the neoclassical models and especially that of the Heckscher-Ohlin-Samuelson (HOS) model, support that a country's integration to international exchange leads to greater

[1] See also: Crochet, Alain. 1997. La globalisation, stade ultime de la convergence. In Faugère, J. P. & alii (eds) *Convergence et diversité à l'heure de la mondialisation*, ed. Jean-Pierre Faugère et al., 43–52. Paris: Economica.

specialization and consequently there is better resource allocation, namely there is productivity growth and production cost reduction, with lower prices being the end result. In addition, the international increase in competition will create the conditions for full employment and for realization of necessary structural changes required for globalization. As far as the balance of current account balances is concerned, it will be ensured by the price mechanism. This idealized image of a self-regulating exchange economy had already received a strong blow in the crisis of 1929. From a theoretical point of view, Harcourt's (1972) questioning of the Capital Theory and the Keynesian Theory of effective demand have proved that, even under ideal conditions, there is no guaranteed trend towards full employment.

The Keynesian position would help us to better understand the function of globalization mechanisms. In the short and medium term, prices, quantities and employment are determined by productive activity and may be different from those in the long term. Indeed in a globalized economy, technological superiority of certain countries or sectors, in combination with diminishing average costs, which are due to the economies of scale (Kaldor 1985), prevail in the markets over less dynamic and developed countries, by exporting high-value added products and services, due to superior embedded technology. In this way weaker countries are deprived of the opportunity to use the decisive independent variable, which could rebalance their economy, namely the exports, affecting production and employment negatively.

Despite the fact that the model's – as well as the other models' which are further refinements – theoretical consistency has been criticized from within, as the two-factor, two-commodities version (Ethier 1982), international trade experience gained after World War II indicates a growth of trade mainly between developed industrial countries, unlike what is supported by the dominant theory. At the same time, not only is there no increased specialization, but sometimes it is even being reduced. There is also growth in exports of many industries simultaneously, as well as in intra-industry trade (Ethier 1982). This dispute is later verified empirically by Rodriguez and Rodrik (2000) and by Rodrik (2001).

Now let us go back to our initial question. More specifically, does the present stage of globalization allow us to resort to the traditional framework analysis of international economic relations, which is in fact based on principles set forth in the late eighteenth century, in order to gain a convincing interpretation of the phenomenon? The analysis according to comparative advantage is based on the perfect competition and the constant returns to scale hypotheses, and its argument is based on the productivity differences between two countries as well as on branch specialization. The neoclassical model of comparative advantage adopts – apart from the perfectly competitive market hypothesis – different assumptions than the classical Ricardian model. On one hand, production costs are variable and are increasing insofar as the use of factors of production in a country, due to export growth, is increasing. On the other hand, technological production functions are identical in all countries. Furthermore, comparative advantage is explained with the difference in relative prices of the production factors. As far as the result of the exchange is concerned, the neoclassical model also accepts the creation of benefits for both participants in the exchange without problems. Although reality is often simplified

in order to promote phenomena essential for the models, Bernard Lassudrie-Duchêne and Deniz Ünal-Kesenci (2002) have shown that no model is able to highlight the complexity of international trading motives, profits and limits. Despite the advanced dynamic models that enriched the international trade theory, mainly with P. Krugman's (1980) introduction of scale economies and imperfect competition hypotheses, which once again sparked off the controversy over free trade and globalization (Coissard 2009), there are no satisfactory interpretations of the new international economic reality.

## 2.2 The Financial Sphere

The huge development of the financial and banking sector,[2] its growing specialization and the complexity of the financial products, as well as the practices of securitization[3] of the debt and removing of risk practises, force us to question the neutrality of this system in relation to real economy. The principle of financial neutrality is of particular importance, as it has decisively influenced the formation of the dominant theoretical paradigm. The majority of the "orthodox" economists accepts the fact that the financial sphere is independent from the sphere of the real economy, and views it as the result of the logic of the construction and of the internal consistency of the paradigm, which both refer to the famous Modigliani-Miller theorem (1958). If this paradigm is moved into the sphere of the international financial system, it supports that, under the assumption of perfect capital mobility, there is no relation between domestic saving and domestic investment, as long as the market rate is uniform and therefore exogenous (Crochet 1997). Optimism and trust in the effectiveness of financial markets prevailed in this theoretical environment where later there was a development of theories such as the rational choice theory and the self-realized expectations theory. As a result, risks of monetary instability were underestimated. These risks are related to risk "transfer" and speculation practices simultaneously, and result in the development of self-sustaining trends. As Henri Bourginat (1997) points out, contrary to the theory of asset pricing, expectations are not based on fundamental determinants but on each other. Unlike the logic of these findings, the reliance on the neutrality of the financial sphere governs accelerated liberalization as well as deregulation of financial markets during the 1980s and the 1990s. The outcome is a series of minor systemic crises and eventually, the outbreak of a global crisis like the one in 2007.

[2] On the eve of the crisis of 2007, transactions concerning the real economy represented less than 2 % of worldwide interbank transactions. The rest concerned coverage of price fluctuations (30 % of transaction fluctuations and 66 % of interest rate, stock market, raw materials and credit risks fluctuations). Source: Morin, François. 2010. La crise financière internationale: une crise de la globalisation et de la libéralisation des marchés. *Les Cahiers du CEDIMES* 4(1):51–82, p. 60.

[3] For a profound analysis sec: Minsky, Hyman P. 1987. Securitization, Bard College, Hyman P. Minsky Archive, Paper 15.

In the general context of the financial theory, the interpretation of the mechanisms and behaviors that govern the financial capital movement and the efficiency of the markets was not able to prove its experiential validity. The double object of its function, namely securing resource allocation over time on the one hand, and spatial distribution on the other hand, in the paretian sense, still remains in the universe of the general equilibrium and of a perfectly competitive market. Even the development of the informational efficiency theory, which could guarantee this function on a theoretical basis, seems unable to provide the desired solution. Although the two basic hypotheses on which it is based, transparency and information accessibility on the one hand, and information optimization through rational expectations on the other, suggest a perfect internal cohesion model, they are some of the reasons why the efficiency hypothesis is often being rejected.[4]

It is not therefore strange that trust in the neutrality of the financial sphere as well as liberalization and deregulation of the financial markets policies, which initiated during the 1980s and 1990s, did not give the dominant theory the chance to realize that financial globalization does not contribute to optimal allocation of savings worldwide. The fact that a large part of the available savings is "trapped" in the asset price bubbles is the strongest evidence of the impact of this dichotomy. In theory, dichotomy between the real and the financial economy, a belief that has inspired the economic policies of this period, seems to be one of the fundamental causes of the current crisis.

## 3 Financial Sector and Real Economy: What Is the Relationship Between the Two?

Gerald Epstein (2002) seeking a broad definition of the term "Financialization" suggests conceiving it as a process according to which the financial sphere (motives, markets, actors and institutions) gains a growing influence over economic policy both at the national and the international levels. Financialization increasingly affects economic policies and the progress of real economy, overstating the importance of the financial sector in relation to the real sector, transferring income from the latter to the former, sharpening income inequality and thus contributing to the stagnation of wages.[5] As Palley (2007) points out, its action is conducted through three channels: bringing about changes in the structure and function of financial markets, causing diversification of non-financial corporations' behavior, and affecting the governments' economic policies.

[4] An in-depth analysis is attempted by Dominique Plihon *in Les mouvements internationaux de capitaux,* ed. Léonard Jacques and Raymond Barre, 1997. Paris: Economica.

[5] For further analysis see: Hazakis, Konstantinos. 2012. Analyzing the Logic of International Monetary Cooperation in Group Twenty-Summits. *UNU-CRIS,* Working Papers, W-2012/2.

Going even further, we should wonder about the relationship between the financial sector and the real economy. At this point, we are able to receive considerable assistance from the classical-Keynesian approach of monetary production economy. Keynes' analysis of the demand for money shows that part of the quantity of money remains in the financial sector and funds investments in finance products and securities which already exist with the aim to resell them with profit (Keynes 1973/36). Moreover, a part of the amount of money in the financial sector comes from yield of accumulated savings, while another part heads towards the real sector for financing new real investments. In contrast, the financial sector receives the inflow of savings from the real sector. If, in addition, we accept the fact that, in reality, money supply is to a large extent endogenously determined (Parker-Foster 1986 and Howells and Hussein 1998) namely that the banking system is able to create money, then an additional amount of money coming from bank reserves is being diffused in the banking system and is being added to the possibility of commercial banks funding by the Central Bank and to the increase in the amount of money because of the GDP growth. As the creation of money by the banking system is directed to the financial sector, the amount of money in this sector continues to grow a lot faster than that of the real sector, and as a result the available funds always exceed the value of the investments required, both at a national and at a global economy level.

The most important effect of the above factors leading to – disproportionate to the real sector – accumulation of cash surplus in the financial sector is the pressure exerted on banks for continuous profitable asset placement, in order for them to offset interest paid for deposits they accept. In this way though, a vicious cycle is created, where an ever growing amount of money needs to be invested in order to maximize the profit of the banking system, that is, according to Mc Culley (2009), a "Minsky Moment". But due to the fact that, in the long term, investments in the real sector are determined by effective demand which is not unlimited, there is a quest for investments in the financial sector, in existing financial products and securities, which however do not correspond to the creation of added value in the real sector; namely, the productive base of the economy is not expanded. As a consequence, security prices are increasing, forcing enterprises to greater profitability, a fact that ultimately supports the formation of savings and worsens the income distribution at the expense of employees. The vicious cycle is further reinforced: effective demand is shrinking, discouraging productive activity in real economy, and an even greater amount of cash is inevitably directed to the financial sector (Skidelsky 1992). Financial intermediation has failed to direct saving towards productive investments in real economy, undertaking long-term risks. Saving is now directed where there is greater and quick return, namely to the financial sector, and not to productive investments where it is more expected. This mechanism could describe a process of cyclically reappearing crises in the sense of lasting long waves.

Post-Keynesian interpretation of the medium-term economic cycle demonstrates the close relationship between the financial and the real sector. Credit policy of the banks is able to broaden the cycle, as during expansion, easy lending reinforces the interaction between profits and investments. This happens because at this point,

there is an increase in the amount of investments, as well as in profits due to price rises in relation to monetary wages, leading to a more intensive operation of production facilities. In this way, the downturn in the upward phase goes beyond the limit that is set by technology and the institutional system, and as a result, by the end of the upward phase, profit rates are compressed. In other words, excessive production capacity of the economy in relation to the absorption capacity of the production causes a drop in profits, and consequently a decline in investment activity and the beginning of recession (Bortis 1997). During this phase the banking system dramatically reduces the credit, thus further limiting investment activity, and causes a drop in production, investments and employment.

Another way of the transmission of the crisis has monetary characteristics: on one hand, we have the depreciation of the dollar since 2002 – a fact that caused a decline in U.S. imports – and on the other hand, to remain in monetary economics, the deleveraging phenomenon, which also played an important role. This phenomenon was observed as soon as there was a decline in the price of the assets of investment banks. The markets saw the capital loss of the investment banks that had borrowed and refused to renew short-term funding, thus forcing investment banks to make extra sales of healthy assets they had in their possession. As a result, the price of assets decreased even more. Deleveraging, namely the refusal of new borrowing to banking and ancillary institutions, which were investing on their own account with borrowed funds, played an important role to the extension of the crisis in the real economy.

Of course other factors as well, which are to be analyzed below, played an important part in the characterization of the crisis of 2007 as systemic and in the fact that it has reached such a dimension. But the theoretical insistence on this dichotomy, which allowed policies inspired by neoliberalism and monetarism, is the main reason.

## 4 Global Imbalances

The term “global imbalances” is used in contemporary bibliography to refer firstly to the imbalances that are observed worldwide, on a current account balances level, and to the capital flows implied by them. These flows are moving from non-deficit developing countries with rapidly emerging productivity (mainly Asian and oil-producing countries) towards developed countries in deficit (mainly the USA), unlike what would be expected according to the neoclassical theory. This phenomenon had been formerly named the “Lucas puzzle”. Lucas (1990) attributed it to lack of appropriate return on equity due to internal distortions in the developing countries. According to the principle of diminishing marginal returns, these savings should be directed to economies with insufficient capital reserves, namely to emerging economies. Nevertheless, weak institutions (Alfaro et al. 2005), inadequate infrastructure, the level of education and the legal framework act as a deterrent to the attraction of investments. The surpluses of these balances, which

are characteristic of many emerging economies, are considered to be responsible for triggering the massive credit growth in developed economies with deficits in the balance sheet and for the crisis that followed. Regardless of the fact that global imbalances also concern income inequality, inequality between real and financial flows or between production and consumption, which are all strongly connected to each other and to which we are going to refer below, let us examine the imbalances of current balance sheets.

The question deriving from the above observations is how it is possible to explain the particular international real and financial flows. The traditional theory, which is based on the factors determining exports and imports of goods and services in relation to income and the foreign-exchange rate, suggests the devaluation of the currency of a country that has a strong external deficit. For the US though – if we are to take the most significant economy that attracts foreign savings as an example – the external deficit, which was unsustainable in the long term, should have caused a greater devaluation of the dollar than the one observed. We are thus left with the approach on the basis of national accounts, according to which the balance of the external accounts is equal to the difference between national saving and national investment, namely the twin deficits theory of the 1980s. This approach supports that high investment activity entails the absorption of all available national investment and is completed by external funding. Still remaining in the US though, how is it possible to explain that during the recession period, in early 2000, namely with low investment rates, the deficit of the external balance was increasing? Consequently, in order to analyze the relationship between the financial and the real sector, we have to shift our focus towards the search for profitable investments on behalf of the global savings, a solution that only the US and other western European states' financial markets are able to offer, due to their size and yield. In this way, the mainly American financial market became the world financial intermediate.

In recent years, many authors have been concerned with global imbalances, often with an aim to discuss their relationship with the 2007 world crisis. Some of them, among others Mendoza et al. (2007) and Caballero et al. (2008), have presented them as an expected and natural consequence of the delay in the financial sector of emerging economies. Others, like Obstfeld and Rogoff (2009), although they have linked them with the financial crisis, they support that they were caused by specific economic policies that were or were not followed by certain states. More specifically, some, including Borio and Disyatat (2011), support the view that the flexibility of the financial system and particularly the inability of monetary authorities to control the credit boom are responsible for the crisis.

Based on what was elaborated in the above paragraphs, our view is that global macroeconomic imbalances – and not the structural problems or the problematic capacity to regulate the financial sector – are the real cause of the crisis of 2007. In fact, these imbalances interact with the sector's problems and create distortions, which result in crises.

For over 15 years, the continuous decline in real interest rates worldwide indicates the presence of excess savings and the lack of investment in the real

sector. As explained previously, the operative event of this imbalance is the way in which national economies are being integrated in the globalized environment.

Artus and Virard (2008) mention that saving rates of emerging economies are more than twice that of developed countries (USA, E.U.-15 and Japan). This imbalance is linked to the one between production and consumption, observed chiefly between the USA on the one hand, and Asian and oil-producing countries on the other, according to which consumption in the US far outweighs production. The opposite is true for the second group of countries. Of course the high level of consumption in the US (from 62 % of GNP in 1960 it reached 73 % in 2008) would not have been possible without the high rate of indebtedness of the economy, which reached 350 % of GNP in 2007! To put it in a simplified way, the US commercial deficit is offset by the Asian surplus, while at the same time there is a capital flow by countries exporting to the US. These huge sums, which pour into the US, are invested in securities denominated in US dollars, enhancing liquidity of the financial sector.

Another factor that contributes to the increase in liquidity in the financial sector is the continuous rise in public debt in almost all the developed countries after 1980, a result of the decline in growth rates and of the ineffective, as evidenced, effort to boost this growth. This practice proves the failure of the development model of the last three decades, which is based on the encouragement of household indebtedness which came as a result of the decline in demand, due to worsening income inequalities worldwide – among other reasons. Granting of government loans, depending on the timeframe for which those are issued and on the progress of the growth rate of economies, may lead to difficult situations, as it is subject to assessment by rating agencies, and may enter a vicious cycle of speculation, as for example was demonstrated by the recent experience of credit default swaps in the case of some of the eurozone countries.

The crisis of 2007 proves that the productive capital does not sufficiently attract investors, who prefer investments in the financial sector, whether because they want to retain the value of their savings, or simply because they want to speculate. Another phenomenon that is closely related to this imbalance is unemployment, a proof that globalization is not able to determine the appropriate amount of savings, so as to be consequently channeled to long term efficient investments in the real sector. We could argue that globalization has trapped global economy in Keynesian type equilibrium: saving is excessive, consumption is inadequate, thus the production capacities appear to be more than adequate, and adjustment is achieved through hoarding. Moreover, globalization managed to maintain the production cost so that inflation is negligible.

## 5 Epilogue

In this paper, we expressed doubts over the capacity of the traditional theory of international trade to offer a sufficient explanation of the causes of the contemporary "globalized" world economy as well as of the recent world economic crisis. More even, investigating the characteristics and the imbalances that are linked to globalization allows a theoretical approach of this worst recession since the Great Depression, which in a sense, brings the famous controversy between neoclassical and Keynesian interpretations to the surface. We also attempted to demonstrate that the main cause of the crisis lies in the way the process of globalization is materialized. The analysis of the relationship between the real economy and the financial sector, its dimensions, practices and tools, reveals the profound interaction between the two. The use of elements of the Keynesian and Post Keynesian theories contributed to the interpretation of this relationship. We were also able to note that the global economy, apart from facing the impacts of the crisis, also has to deal with a complex problem: imbalances between current account balance sheets, transfer of savings to long-term risk investment activities, inequality in income distribution between and within countries, leading to inadequate demand, are all factors which, when interacting with the financial sector, will permanently constitute potential causes for crises. Our analysis raises a number of questions which may open new fields for further research. We think that the more important among them should be an in depth analysis of the connection existing between the causes of the current crisis and the theory of long cycles.

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# The Role of the Rating Companies in the Recent Financial Crisis in the Balkan and Black Sea Area

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**Abstract** The main aim of this article is to demonstrate a holistic framework for measuring a bank's financial health by classifying its main responsibilities between conformance and performance. Responsibilities are classified into five categories as follows: First, Corporate Financial Reporting (CFR) that integrates General Accepted Accounting Principles (GAAP), Generally Accepted Auditing Standards (GAAS), Securities Exchange Commission (SEC), Financial Services Authority (FSA), and International Accounting Standards (IAS). Second, Risk Management Procedures (RMP), that incorporates methods and directives which arise from Basel I, Basel II, Capital Adequacy frameworks or solvency ratio benchmarks. Third, Corporate Governance (CG), that integrates Sarbanes – Oxley Act, Audit Committees, and Internal Audit Mechanisms. Fourth, Corporate Social Responsibility (CSR), that consists of instructions and standards such as Global Reporting Initiative (GRI) – social and environmental, Social accountability (SA 8000) – working conditions, International Organization for Standardization (ISO 9000). Fifth, Stockholders Value Creation (SVC), that is a set of methodologies and ratios used in order to measure value creation for shareholders such as Strategic and Balanced scorecard, Economic Value Added EVA®, and other business performance management tools. On the other, the Rating Agencies (RA) applies various rating systems in different fields.

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Based on this framework, the article correlates all qualitative and quantitative components, with the banks' ratings. The dependent variable is the bank's financial health score, represented by a dummy variable based on the bank's rating by the rating agencies and from the relevant value of each bank that arises from its performance in the above mentioned framework of responsibilities. The independent quantitative variables belong to a set of financial, risk and market key ratios and the qualitative variables to a set of dummy variables which describe the above framework.

With the use of financial and other published data of the Greek banking sector the article proposes a new model and a procedure for the explanation, management and monitoring of a bank's financial health.

**Keywords** Banks • Financial risk • Corporate governance • Bank regulations

**JEL Classification Codes** G21 • G32 • G33 • M14 • M48

## 1 Introduction

After the recent financial crisis a new round of market turmoil on the occasion of the financial indebtedness of the Greek public sector has began. The rating agencies failed to provide helpful insights on the main causes of the crisis in an efficient way. On the contrary, they negatively reassessed their reviews (rating levels) regarding governments' debt and banks' financial strength.

This article starting from the above necessity constructs a framework for a new rating approach of the banking industry based on transparency and responsibility. The work is organized as follows: First, in Sect. 2 the major items for European Monetary Union, European legislation for the banking sector and the main financial figures of European banking industry are presented. European Banking Institutions operate in this financial, monetary, and economic environment since 2002, following the introduction of Euro. Then the construction of the framework for banks' rating follows according to the work by Bhimani and Soonawalla (2005) for corporate responsibilities continuum by changing and adding components suitable for the banking industry.

Section 3 presents the Corporate Financial Reporting (CFR) standards that banks follow globally. Section 4 presents the Risk Management Procedures (RMP) followed by banks focusing on solvency ratios according to Capital Adequacy (CAD), Basel I and Basel II procedures. Section 5 analyses Corporate Governance procedures, especially the index that presents the level of the Corporate Governance within a Bank (GOV-Index).

Section 6 discusses issues of Corporate Social Responsibility (CSR) and Sustainable Development (SD) of a bank in order to incorporate these items into the proposed framework as rating components. Section 7 examines Stockholders' Value Creation (SVC), mainly with Value Based Management (VBM) indexes.

Section 8 presents the global rating system and the rating agencies. Section 9 chooses from Macroeconomic and Monetary environment indexes that have an impact on the ratings of banks in order to integrate some external economic environment indexes in the banks' rating system.

Section 10 presents the proposed framework for rating of the banking industry, while Sect. 11 presents a simple model for measuring banks' financial health by using data of the Greek Banking Industry. Finally, Sect. 12 presents the conclusions and recommendations for the construction of a holistic – multivariate Rating System for the Banking Industry.

## 2 European Legislation for the European Banking Industry

Based on the works of John H. Rogers (2007), Barros et al. (2007), Jardet and Le Fol (2010), Savva et al. (2010), Davis (1999), and John Goddard et al. (2007) and by collecting data from various reports from the European Central Bank and the Central Bank of Greece the present study describes the environment established in the European Monetary Union (EMU). Then the legislation and directives that regulate the banking industry in EMU as well as the main accounting and other quantitative figures of the banking sector of EU as follows:

1. *European Monetary Union*

   European Monetary Union starts form 1957 and till has followed a certain economic integration timeline:

   - 1957 Treaty of Rome Established customs unions
   - 1970s Informal joint float of several European currencies versus dollar, which called the "snake"
   - 1979 European Monetary System Formal network of mutually pegged exchange rates (France, Germany, Italy, Denmark, Ireland, Luxemburg, Netherlands)
   - 1986 The Single European Act ("Europe 1992") Enabled eventual completion of the internal market; remove internal barriers to trade, capital, and labour
   - 1991 Maastricht Treaty meeting Envisioned economic and monetary union (EMU) to begin
   - 1991 Specified convergence criteria for EMU admission; call for harmonization of social policy "stage 2" to begin1/94
   - 1989–1992 EMS developments Spain ('89), Britain ('90), Portugal ('92) added; Italy and Britain leave after 9/92 crisis harmonization of the value-added tax (VAT); the internal market is realized
   - 1997 Stability and growth pact Specifies medium-term budgetary objectives for EMU

- 1998 EMU members decided Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain
- 1999 Euro launched single monetary policy for all EMU, set by ECB; all monetary policy actions and most large-denomination private payments conducted in euros; national currencies "irrevocably fixed", continue to circulate for 3-year transition period
- 2001 Expansion of EMU Greece joins (1/01); possible next-round entrants identified
- 2002 Euro circulates national currencies removed from circulation

2. *The Legislation in the EU banking and financial sectors summarized in the following timeline of European banking directives* (Pantos and Saidi, 2005):

- 1977 First Banking Directive, removed obstacles to the provision of services and establishment of branches across the borders of EU member states, harmonized rules for bank licensing, established EU-wide supervisory arrangements
- 1988 Basle Capital Adequacy Regulation (Basle I), minimum capital adequacy requirements for banks (8 % ratio), capital definitions, Tier 1 (equity), Tier 2 (near-equity), risk-weightings based on credit risk for bank business
- 1988 Directive on Liberalization of Capital Flows, free cross-border capital flows, with safeguards for countries with balance of payments problems
- 1989 Second Banking Directive, single EU banking license, principles of home country control (home regulators have ultimate supervisory authority for the foreign activity of their banks) and mutual recognition (EU bank regulators recognize equivalence of their regulations), passed in conjunction with the Own Funds and Solvency Directives, incorporating capital adequacy requirements similar to Basle I into EU law
- 1992 Large Exposures Directive, banks should not commit more than 25 % of their own funds to a single investment, total resources allocated to a single investment should not exceed 800 % of own funds
- 1993 Investment Services Directive, legislative framework for investment firms and securities markets, providing for a single passport for investment services
- 1994 Directive on Deposit Guarantee Schemes, minimum guaranteed investor protection in the event of bank failure
- 1999 Financial Services Action Plan (FSAP), legislative framework for the Single Market in financial services
- 2000 Consolidated Banking Directive, consolidation of previous banking regulation
- 2000 Directive on e-money, access by non-credit institutions to the business of e-money issuance, harmonized rules/standards relating to payments by mobile telephone, transport cards, and Basle payment facilities
- 2001 Directive on the Reorganization and Winding-Up of Credit Institutions, recognition throughout EU of reorganization measures/winding-up proceedings by the home state of an EU credit institution

- 2001 Regulation on the European Company Statute, standard rules for company formation throughout the EU
- 2002 Financial Conglomerates Directive, supervision framework for a group of financial entities engaged in cross-sectoral activities (banking, insurance, securities)
- 2004 New EU Takeover Directive, common framework for cross-border takeover bids
- 2005–2010 White paper on Financial Services Policy, plan to implement outstanding FSAP measures, consolidation/convergence of financial services regulation and supervision
- 2006–2008 Capital Requirements Directive, updates Basle I and incorporates the measures suggest in the International Convergence of Capital Measurement and Capital Standards (Basle II), improved consistency of international capital regulations, improved risk-sensitivity of regulatory capital, promotion of improved risk-management practices among international banks.

3. *The financial figures of the European banking industry as presented in* Table 1. Some crucial observations from Table 1 which may be of great interest are:

- A serious expansion in assets of the European banking sector during the time is observed.
- In the period 2004–2008 a considerable expansion (figures have more than doubled) especially in the bank's assets of Spain (123 %), Greece (101 %) and Ireland (96 %) is also observed.
- For Greece, it should be noted that the increase in banks' assets is due mainly because of their expansion in Eastern Europe, Asia and Africa and for this reason the private debt remains significantly low.
- The number of Banks as well as the number of Branches has remained considerable stable.
- The total number of employees in the European banking sector has remained stable denoting a remarkable increase in productivity.

## 3 Corporate Financial Reporting (CFR)

Globally the Corporate Financial Reporting (CFR) is a widely used term for:

- Generally Accounting Accepted Principles (GAAP) as a term in practice of accounting, financial reporting, auditing, and business literature. In order to improve the legitimacy of accounting information and ensure its reliability and relevancy, accountants use a body of literature and/or a set of practices and "pronouncements with substantial authoritative support" which is called GAAP (Kieso and Weygandt 2001). GAAP, varies from country to country, often allows for alternative methods for treating the same set of transactions and is not static but change dynamically according to market conditions nationally or

**Table 1** Time line of main figures for the banking industry per (first 15) EU country (1985–2008)

| | Number of banks | | | | Assets (billion euro) | | | | | Number of branches | | | | Employees ('000s) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | 1985 | 1995 | 2004 | 2008 | 1985 | 1995 | 2004 | 2008 | Δ% | 1985 | 1995 | 2004 | 2008 | 1985 | 1995 | 2004 | 2008 |
| *EMU countries* | | | | | | | | | | | | | | | | | |
| Austria | 1406 | 1041 | 796 | 803 | – | – | 635 | 1068 | 68 % | – | – | 4360 | 4243 | – | – | 73 | 79 |
| Belgium | 120 | 143 | 104 | 105 | 286 | 589 | 914 | 1272 | 39 % | 8207 | 7668 | 4837 | 4316 | 71 | 77 | 71 | 65 |
| Denmark | 259 | 202 | 202 | 171 | 96 | 126 | 607 | 1092 | 80 % | 3411 | 2215 | 2021 | 2192 | 52 | 47 | 44 | 53 |
| Finland | 498 | 381 | 364 | 357 | – | – | 212 | 384 | 81 % | – | 1612 | 1585 | 1672 | – | 31 | 25 | 26 |
| France | 1952 | 1469 | 897 | 728 | 1349 | 2514 | 4415 | 7225 | 64 % | 25,782 | 26,606 | 26,370 | 39,634 | 449 | 408 | 425 | 492 |
| Germany | 4739 | 3785 | 2148 | 1989 | 1495 | 3584 | 6584 | 7875 | 20 % | 39,925 | 44,012 | 45,505 | 39,531 | 591 | 724 | 712 | 686 |
| Greece | 41 | 53 | 62 | 66 | 69 | 94 | 230 | 462 | 101 % | 1815 | 2417 | 3403 | 4095 | 27 | 54 | 59 | 66 |
| Ireland | 42 | 56 | 80 | 501 | 21 | 46 | 722 | 1412 | 96 % | – | 808 | 909 | 895 | – | – | 36 | 41 |
| Italy | 1101 | 970 | 801 | 818 | 547 | 1070 | 2276 | 3628 | 59 % | 13,033 | 20,839 | 30,946 | 34,139 | 319 | 337 | 337 | 340 |
| Luxembourg | 177 | 220 | 169 | 152 | 170 | 445 | 695 | 932 | 34 % | 120 | 224 | 253 | 229 | 10 | 19 | 23 | 27 |
| Netherlands | 178 | 102 | 461 | 302 | 227 | 650 | 1678 | 2235 | 33 % | 6868 | 6729 | 3649 | 3421 | 92 | 111 | 115 | 116 |
| Portugal | 226 | 233 | 200 | 175 | 38 | 116 | 345 | 482 | 40 % | 1494 | 3401 | 5408 | 6391 | 59 | 60 | 53 | 62 |
| Spain | 364 | 506 | 346 | 362 | 311 | 696 | 1717 | 3831 | 123 % | 32,503 | 36,405 | 40,621 | 46,065 | 244 | 249 | 246 | 276 |
| *Other EU countries* | | | | | | | | | | | | | | | | | |
| Sweden | 598 | 249 | 222 | 182 | – | – | 583 | 900 | 54 % | – | – | 2018 | 2025 | – | – | 39 | 50 |
| UK | 772 | 564 | 413 | 391 | 1294 | 2000 | 6970 | 8840 | 27 % | 2,224 | 17,522 | 13,386 | 12,514 | 350 | 383 | 511 | 496 |

Sources: Central Bank Reports (various), ECB Structural indicators for the EU banking sector January 2010, Authors' Calculations

globally. Other terms alternatives to GAAP are known as Other Comprehensive Basis of Accounting (OCBOA) and Statutory Accounting Principles (STAT/SSAP).

- Generally Accepted Auditing Standards (GAAS) that is parallel to GAAP in the accounting discipline.
- In the U.S. and U.K., IAS and GAAP and generally fundamental accounting concepts includes: historical cost, conservatism (prudence), consistency, matching (accruals), materiality (substance over form), dual aspect (double entry), recognition, and others (FASB 2003; IASB 2003).
- *The Statements of Financial Accounting Concepts* (*SFAC*) is the conceptual basis for U.S. GAAP whereas IAS-1, *Presentation of Financial Statements*, contains the IAS concepts. The statements also define and explain the elements of financial statements, characteristics of useful financial information (relevant and reliable), users of financial statements (internal and external) and identify the fundamental accounting concepts (FASB 2003; IASB 2001). In addition the conceptual frameworks define assets, liabilities, equity, revenues and expenses, realized gains, and realized losses, profits, losses as well as the relevance and reliability of financial information.

GAAP often comes in the form of *statements of financial accounting standards* (*SFAS*), *statement of financial accounting interpretation* (*SFIN*), *accounting opinions*, *statement of positions* (*SOP*), *accounting research bulletin* (*ARB*), *financial reporting standards* (*FRS*), *standard statement of accounting practice* (*SSAP*), or *simply international accounting statements*, depending on the country, jurisdiction, or body issuing the GAAP. GAAP varies from country to country in terms of its sources, level of authority, allowable alternatives, and the appropriate body issuing it. For example, a distinction is made between U.S. GAAP, U.K. GAAP, International GAAP (IAS), German GAAP, Chinese GAAP, Canadian GAAP, and Mexican GAAP.

The responsible authorities for setting GAAP are generally:

- The International Accounting Standards Board, (IASB)
- The Financial Accounting Standards Board in the U.S. (FASB)
- The Accounting Standards Board in the U.S. (ASB)
- Other professional accounting bodies like the American Institute of Certified Public Accountants (AICPA)
- The Consultative Committee of Accountancy Bodies (CCAB) in the U.K.
- The International Federation of Accountants (IFAC)
- The Australian Society of Certified Public Accountants (ASCPA) with the Australian Institute of Chartered Accountants in Australia (ICAA).

In addition there are other jurisdictional bodies or national accounting authorities which also contribute to setting accounting standards. The mainly accounting standards are:

- *IAS w*ith representatives from over 91 countries. The IASB sets Global GAAP/IASs. The IASB is made up of trustees, the board, interpretations committees,

and advisory committees. As of today a total of 41 IAS statements have been issued. Underlying the IAS statements there are the fundamental accounting concepts and conventions enshrined in the IAS-1, *Presentation of Financial Statements*.

- *U.S. GAAP* currently the FASB is the primary body responsible for issuing U.S.' GAAP in the form of statements of financial accounting standards, FASB Interpretations (FIN), Staff Positions (FSP), AICPA statements of positions and interpretations, accounting research bulletins, and others.

Research by Street et al. (2000) found that the impact of accounting differences between IASs and US GAAP is narrowing suggesting that the SEC should consider accepting IASB standards without condition. The exact content of IASs may not be the same as U.S. GAAP, but in many ways the approach and the degree of detail are similar. IAS and U.S. GAAP are more similar than dissimilar and the movement toward harmonization is bringing them closer and closer.

Among the recommendations to attain the goals of international accounting harmonization according to a study contacted by Ampofo and Sellani (2005) is as follows:

- There should be collaborations and common project based initiatives by the major institutional forces to advance the goals set for the IASB. A good example is the FASB and IASB projects.
- IAS should be multi-lingual standards (not just English). This should allow researchers from other languages such as German, Dutch, French, and Russian to join the forces of harmonization.
- IAS must be given legal backing through national parliaments, and/or global agreements through say the Organization for Economic Cooperation and Development (OECD).
- Global accounting education should place a greater emphasis on producing global accountants and increase their mobility across the world of business.
- The idea of internationalization should allow for some national differences although these differences should be transparent and easily reconciled.
- The political economy perspective should be considered in the formation of standards as accounting reflects both social and transactional relationships. In this way, accounting standards may provide a means to overcome social and economic inequities.

For the framework of this study which considers banks it is important saying that:

1. *The European Union has already passed a law for publicly traded companies in member states to publish their financial statements using International Financial Reporting standards (IFRs) since January 2005*.
2. The establishment of the Public Company Accounting Oversight Board (PCAOB) proposed by the Sarbanes Oxley Act (2002) in the U.S. and its strategic accounting alliances with the U.S. Financial Accounting Standards Board and the International Accounting Standards Board toward convergence

of accounting standards, has given more teeth to the reality of harmonization and internationalization of accounting standards in the next decade.

For the banking industry the most common financial ratios arising from bank's financial statements, are:

1. *Size of firm-bank*. Total assets of the bank and sometimes the total amount of the bearing assets of a bank.
2. *Financial accounting variables of the bank*. Equity to total assets, Loan-loss reserves to total assets, Loans past-due 90 days to total assets, Nonaccrual loans to total assets, Loan-loss provisions to total assets, Charge-offs to total asset, Annual return-on-assets, Annual return-on-equity, Liquid assets to total assets, deposits to total assets, loan to deposits, spread or margin.

*As a separate conclusion for this component, CFR is that the exact content of IASs may not be the same as U.S. GAAP, but in many ways the approach and degree of detail are similar. IAS and U.S. GAAP are more similar than dissimilar and the movement toward harmonization is bringing them closer and closer.*

## 4 Risk Management Procedures (RMP)

The present section is based on studies contacted by Lastra (2004), Garside and Bech (2003), Bruggink and Buck (2002), Wilson (2004), Koutoupis and Tsamis (2009), and in the comment of Jaime Caruana, Governor of the Banco de Espania (2003).

The banking industry is a highly-regulated business for the following reasons:

- The monetary nature of bank liabilities
- The role of banks as payment intermediaries and providers of credit to the economy
- The information deficiencies that surround the business of banking as historical cost accounting, bank secrecy and confidentiality.

The structure of the bank's balance sheet is characterized by three features:

- Low cash to assets-fractional reserve banking
- Low capital to assets-high leverage
- Maturity mismatches, a combination of short-term liquid liabilities able to withdraw on demand on a first-come-first served basis and longer-term highly illiquid assets.

These three features which define the banking business are also the source of financial fragility and the cause of regulatory concern. Capital regulation has become the principal regulatory response to deal with the problems of the bank's balance sheet structure. The capital requirements is the widely spread regulatory tool but no panacea. According to the CAMEL procedure, which is used for supervisory purposes in the U.S., there are five crucial elements:

C: Capital
A: Asset quality
M: Management
E: Earnings
L: Liquidity

All these elements are also important that bank managers and their regulators need to take into account in order to preserve safe and sound banking. In recent years Risk-based capital requirements have become the only true internationally accepted standards of bank soundness. Capital adequacy is not only a core part of modern banking regulation. It has become one to which they devote an increasing amount of time and effort:

- Capital provides a fund against which to charge unexpected or temporary losses.
- Capital is considered by competitors, customers and rating agencies as a proxy for soundness. It has become an indication of shareholders' value.
- Capital is costly. Pressures to increase or maintain return on equity and profitability are always an important consideration for bank managers. More capital means less return on equity for banks. Leverage has an important competitive effect. More highly-leveraged institutions can charge lower prices through less of a required spread and earn the same return on capital as less highly-leveraged institutions. The right capital level is a fundamental strategic decision. Excess capital would not be good either, since there is a danger that capital would be under-utilized.
- 'Regulatory incentives' are provided to well-capitalized banks. There is a trend to link the intensity of supervision to the level of capitalization, with better capitalized banks receiving less attention and undercapitalized banks subject to increased supervision and the possibility of 'Structured Early Intervention and Resolution' (SEIR). These proposals known as Prompt Corrective Action (PCA) rules have become law in the U.S., through the enactment of the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in 1991 and are likely to be implemented in Europe in the near future. It is important to point out that the academic debate in the U.S., has linked capital adequacy and deposit insurance, capital acts as a buffer for the insurance fund and reduces moral hazard incentives. This linkage, however, is not as strong in Europe, where banks typically enjoy 'minimalist' deposit insurance.
- Capital adequacy mirrors market and institutional developments. Increased risk sensitivity, use of internal models, reliance on market discipline is among some of the recent trends in finance which have influenced capital rules.

Basel I can be traced back to the aftermath of the debt crisis following Mexico's suspension of payments in 1982. In its 1988 Accord, the Basel Committee chose a capital to asset ratio, instead of a debt to equity ratio as a way of measuring capital. It also chose a risk-based capital ratio, taking into account credit risk, rather than a simple leverage ratio. The Accord, however has not considered other risks, such as market risk, interest rate risk, operational risk and liquidity risk. Basel I has been

amended five times the last amendment issued in January 1996 and it is published as 'Amendment to the Capital Accord to Incorporate Market Risks'.

Basel I is a ratio of capital to risk-weighted assets.

1. Capital, the numerator of the Basel formula is divided into:
   (a) Tier 1, equity capital plus disclosed reserves minus goodwill. Tier 1 capital ought to constitute at least 50 % of the total capital base.
   (b) Tier 2, asset revaluation reserves, undisclosed reserves, general loan loss reserves, hybrid capital instrument and subordinated term debt. Subordinated debt, with a minimum fixed term to maturity of 5 years, available in the event of liquidation but not available to participate in the losses of a bank which continues trading is limited to a maximum of 50 % of Tier 1.
2. Risk-adjusted assets plus off-balance sheet items adjusted to risk. There are five credit risk weights: 0 %, 10 %, 20 %, 50 % and 100 % and equivalent credit conversion factors for off-balance sheet items. Some of the risk weights are rather 'arbitrary', 0 % for Organization for Economic Cooperation and Development (OECD) government or central bank claims, 20 % for OECD interbank claims, 50 % for residential mortgages, 100 % for all commercial and consumer loans.
3. A ratio 8 % of capital (Tier 1 plus Tier 2) to risk adjusted assets plus off-balance sheet items began a regulation restriction for the Banking Industry following the median in existing good practice at the time (US/UK 1986 Accord).

In June 1999, the Basel Committee on Banking Supervision issued a proposal for a new capital adequacy accord, a first consultative paper. A second consultative paper providing detailed proposals was issued in January 2001 and a third and 'final' consultative paper was issued in April 2003. On 11th May, 2004, the Basel Committee announced that consensus had been reached on the New Basel Capital Accord – commonly referred to as Basel II – and that it expects to publish the text of the new framework at the end of June, with a view to implement the standardized and foundation approaches by 2006 and the advanced approach by the end of 2007. The Basel II 'package' comprises by three parts. Detailed proposals and supporting documents providing information and technical details. The proposals are very extensive, prescriptive and complex. The new Accord is to encourage the use of internal systems for measuring risks and allocating capital.

The new Accord also wishes to align regulatory capital more closely with economic capital. Banks may hold significant amounts of economic capital for a variety of strategic and reputational reasons, such as to finance mergers and acquisitions or future business expansions, or to satisfy rating agencies prior to expanding into other markets and to allow flexibility in decision making.

The new capital framework, Basel II, consists of three pillars:

*Pillar I* – Minimum capital requirements, sets minimum acceptable Capital level to cover:

(a) Credit risk. Enhanced approach for credit risk as public ratings, internal ratings, mitigation.
(b) Market risk Market risk framework, capital definition/ratios are unchanged.
(c) Operational risk. Explicit treatment of Operational Risk.

Basel II provides three approaches, of increasing sophistication, to calculate credit risk-based capital:

1. Standardized approach, which relies on external ratings. The standardized approach refines the risk categories of the Basel I formula. For instance, risk weights for corporate credits, 100 % under Basel I will range from 20 % to 150 % depending on their external rating. Sovereign debt risk weights will no longer be dependent upon whether a country is a member or not of the OECD, but rather on the external rating identified for the country.
2. Foundation, internal ratings-based approach, which allows banks to calculate their credit risk based capital on the basis of their internal assessment of the probability that the counterparty will default.
3. Advanced and most sophisticated approach, internal ratings-based (IRB) approach which allows banks to use their own internal assessment not only of the probability of default, but also the percentage loss suffered if the counterparty defaults and the quantification of the exposure to the counterparty.

The internal ratings-based approach, both foundation and advanced extends the use of internal models that was adopted in 1996 with regard to market risk to credit risk. The Committee sets out the criteria that institutions need to meet to be eligible to use the IRB approach and specifies the elements that ought to be taken into account in the models. There are four key inputs that are needed under the IRB approach, both foundation and advanced:

1. PD: Probability of Default of a borrower
2. LGD: Loss Given Default, the estimate of loss severity
3. EAD: Exposure At Default, the amount at risk in the event of default
4. M: The facility's remaining Maturity.

*Pillar II* – Supervisory review process of capital adequacy in order to ensure banks to have good monitoring and management of the risk processes. Pillar II deals with supervisory review, given that not even complex rules can capture the risk profile and business strategy that determine the soundness of a particular banking institution. The inclusion of Pillar II is that a capital charge does not address the most important element of a bank's balance sheet as the quality of the asset portfolio. The problem with Pillar II is that it will probably lead to a differential implementation across countries. Also, while in some countries there is a fluid dialogue between supervisors and bank managers, in other countries such a communication is less fluid.

*Pillar III* – Market discipline and disclosure. Requirements that allow capital adequacy to be compared across institutions Pillar III focuses on market discipline via disclosure. Market discipline can also, however, be fostered via other

mechanisms. Calomiris and other members of the U.S., Shadow Financial Regulatory Committee has advocated supplementing the Basel capital standards with an additional subordinated debt requirement to promote greater market discipline. This is because subordinated debt holders have an incentive to monitor the risks incurred by a bank, since they have a fixed income claim and are not entitled to share in upside gains by the bank in contrary to equity holders.

European Commission has proposed a new capital directive, known as CAD III, whose contents are expected to be aligned with Basel II. There are, however, two fundamental differences between Basel and Brussels:

- Differential impact: 'Hard law' versus 'soft law'. The Basel proposals are 'soft law'. EC law is hard law and imposes a legal obligation on member states to modify their national legal systems. The Community timetables are important considerations for all EC countries. Thus, while a country may be reasonably relaxed with the Basel rules, regulatory convergence becomes a matter of critical importance at the EC level. Enforcement is the key element to distinguish between 'hard law' and 'soft law'. The work of the Basel Committee reflects a trend in banking and finance to develop international financial standards or codes of good practice.
- Scope of application: EC capital rules are designed to apply to credit institutions and investment firms, while the Basel rules target internationally active banks on a consolidated basis. The current EU rules on capital adequacy are the Own Funds and Solvency Ratio Directives, now incorporated into the Consolidated Banking Directive, CAD I and CAD II. In 1993, market risk was introduced in the first Capital Adequacy Directive (CAD I) but was later amended in 1998 (CAD II) to allow for the use of VAR models, which had been proposed in the Basel rules for market risk, the 1996 Amendment to the Basel Accord. This is an interesting example of what happens when the process in Basel and in Brussels do not go in parallel. Given the informal role of the Basel Committee as international bank regulator, any new EC Directive on capital needs to be aligned with the Basel proposals. Therefore, in terms of timetable for CAD III there will be no new Directive until Basel II is adopted. However there is a strong probability, in the light of the U.S., Congressional and regulatory debate on the subject that Basel II will be delayed again. Another issue to be considered in the EU is the possible adoption of the Lamfalussy process for CAD III so as to speed up the time it takes for the legislative proposal to be agreed. According to this so-called Lamfalussy process, framework principles are adopted via Directives while technical rules are adopted by Committee/Committees.

The appropriate indexes for RMP could be summarized from the above analysis at the following indexes:

1. Economic Capital to total assets
2. Regulatory Capital to total assets
3. Regulatory Capital to total Risk Weighted Assets
4. Risk Adjusted Return On Capital (RORAC) which is the Return On Capital index

5. Furthermore, consistent risk-adjusted performance measures based on RAROC or value added targets may subsequently play a role in the compensation process.

*As a separate conclusion for this component, RMP, is that the Basel I and II as well as CAD I, II and III are attempts to finalize a framework of regulation and supervision for the global banking system to be used as a managerial tool of risk for the Banking Industry.*

## 5 Corporate Governance

Corporate governance is defined by the Public Oversight Board (POB 1993) as "those oversight activities undertaken by the board of directors and audit committees to ensure the integrity of the financial reporting process". One of the most important functions of corporate governance is to ensure the quality of the financial reporting process. The issue of corporate governance has become more important due to the highly publicized financial reporting frauds at Enron.

According to the works of Jiang et al. (2008) and Thalassinos et al. (2006) academic research has found an association between poor corporate governance and greater earnings management, implying lower quality. Prior studies have also found an association between poor corporate governance and weaker financial controls and higher levels of financial statement fraud (Ashbaugh-Skaife et al. 2006).

Overall, empirical research has documented a direct link between governance mechanisms and the reliability of financial reporting. The quality of corporate governance is represented by the level of a Gov-Index. These Indexes incorporates answers for the following questions which are referred to several governance positions of a Bank. These measures are:

Audit comprises measures such as:

- Does the audit committee consist solely of independent outside directors?
- Were auditors' ratified at the most recent annual general meeting?
- Are consulting fees paid to auditors less than audit fees?
- Does company have a formal policy on auditor rotation?

Board of directors comprises measures among others includes:

- The size of the board
- Is the CEO and chairman the same or are duties separated?
- Is shareholders' approval required to change the board size?
- Is the board controlled by more than 50 % outside directors?
- Is the compensation committee comprised solely of independent outside directors?

Charter/by laws comprise measures, among others includes:

- Is a simple or supermajority vote required to approve a merger?
- Are shareholders allowed to call special meetings?

- Can board amend bylaws without shareholder approval?

Director education:

- Has at least one member of the board participated in an ISS accredited director education program?

Executive and director compensation among others includes:

- Were stock incentive plans adopted with shareholder approval?
- Is option re-pricing prohibited?
- Do directors receive all or a portion of their compensation in stock?

Ownership among others includes:

- Do directors with more than 1 year of service own stock?
- Are executives/directors subject to stock ownership guidelines?
- Extent of officers' and directors' ownership of stock (over 30 %)?

Progressive practices among others include:

- Does mandatory retirement age for directors exist?
- Is performance on board reviewed regularly?
- Is a board-approved CEO succession in place?
- Do director term limits exist?

State of incorporation among others includes:

- Is company incorporated in a state without any anti-takeover provisions?

Each of 51 factors is coded 1 if the firm's governance is considered to be minimally acceptable or 0 otherwise. Gov-Score is computed as the sum of the firm's binary variables as stated in the work by Jiang et al. (2008). Thus, higher values indicate stronger corporate governance. The proposed model uses Gov-Score over alternative measures of governance such as G-index (Gompers et al. 2003) or entrenchment index (Bebchuk et al. 2005) because Gov-Score is broader in scope with respect to measuring governance, covers more firms, is more dynamic and is more reflective of recent changes in the corporate governance environment.

The appropriate indexes for CG could be summarized from the above analysis at the following indexes:

- Experience of the management indexes
- Experience of internal audit indexes
- Historical indexes for anti- fraud policies
- Total quality indexes for corporate governance
- Gov-Score, G-index.

*As a separate conclusion for this component, CG, is the quality of management that could be represented by indexes which are highly correlated with profitability in the banking industry.*

## 6 Corporate Social Responsibility (CSR) and Sustainable Development (SD)

Corporate social responsibility (CSR) is a multi-faceted concept with many definitions and varied practice (D'Amato and Roome 2009; Prado et al. 2009; Markus 2008).

- First, CR in terms of the philanthropic activities for the community and public affairs. These activities can take place with no substantive impact on the core activities, technologies or business model of the company.
- Secondly, CR constitutes a set of practices developed in direct response to demands placed on society and the activities of the company by dynamic forces in the economy, society and environment. Probably the most strategic form of CR arises when companies set out to reorient the ways they create value because of the demands for less environmentally or socially damaging activities or more sustainable approaches to development.
- Thirdly, Sustainable Development (SD) is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are made consistent with future as well as present needs. SD is viewed as a societal project involving a lot of factors in the society as well as in the economy in the process of change (Christofakis et al. 2009).
- Finally, CR can be regarded as the set of ideas and practices by which business contributes to the societal project termed sustainable development. In this way CR involves a company in the co-creation of organizational and social change along with other actors.

According to the work of Aries Widiarto Sutantoputra (2009), CSR is represented in the financial statements with social disclosures and a budget from corporate or banking expenditure for any actions affecting the society, the community and the environment. Nowadays CSR is used by organizations to gain a competitive advantage because it portrays the company as behaving contrary to the common practices of business which tend to raid natural resources and exploit the societies, i.e. treating them as "externalities".

In line with the voluntary disclosure theory we have:

- An environmental disclosure rating based on a comprehensive CSR reporting framework, Global Reporting Initiatives (GRI) 2002 Guidelines, was developed by Clarkson et al. (2006) in which they argued that firms with good environmental performance would be more forthcoming with their identity as "Green Companies", thus, they would disclose information that were hard to be imitated by the bad environmental performers. The GRI 2002 Guidelines has shown its global acceptance as a standard for reporting CSR practices given the fact that it helps companies to decide on what to report and how to report the CSR information.
- Another leading standard for CSR reporting, AA1000, focuses on the process of reporting on how businesses must link the principles of accountability and

sustainability. It can be used to design a proper reporting mechanism since firms are guided to identify their goals and target, to monitor progress against targets, to audit and report the performance (Gobbels and Jonker 2003). However, firms may develop a vast range of goals/targets by themselves that lead to a vast range of measures of CSR practices which, in many cases, have caused the measurement and comparison of CSR practices across companies difficult if not impossible. Firms that are using AA1000 have the freedom to decide on issues that they want to include (Gobbels and Jonker 2003).

- The European Commission (2004) has issued CSR guidelines – ABC of the Main Instruments of Corporate Social Responsibility, European Communities, Luxembourg.

The social disclosure rating based on GRI 2002 Guidelines covers a wide range of firms' social impacts measures (Isaksson and Steimle 2009) and it can accommodate the users of firms' CSR reports to assess firms' social performance.

- *Hard disclosure items (max score is 67), Map to GRI.*
  - (A1) Governance structure and management systems (max score is 6).
    1. Existence of a department or management positions for addressing firm's social impacts (0–1) 3.1
    2. Existence of a social and/or a public issues committee in the board (0–1) 3.1, 3.6
    3. Existence of terms and conditions applicable to employees and customers regarding firms' social practices (0–1)
    4. Stakeholder involvement in setting corporate social policies (0–1) 1.1, 3.10
    5. Implementation of ILO standards and UN declaration of human rights (0–1) 3.14, 3.20
    6. Executive compensation is linked to social performance (0–1) 3.5
  - (A2) Credibility (max score is 10).
    1. Firm acknowledges the use of GRI sustainability reporting guidelines (0–1) 3.14
    2. Independent verification/assurance about social information disclosed in the sustainability report (0–1)
    3. Periodic independent verifications/audits on social performance and/or systems (0–1) 3.19, 2.20,21
    4. Certification of social (labour) programs by independent agencies (0–1) 3.2
    5. Product certification with respect to product safety (0–1) 3.16
    6. External labour performance awards (0–1)
    7. Stakeholder involvement in the Social disclosure process (0–1) 1.1, 3.10
    8. Participation in voluntary social initiatives endorsed by ILO or Department of Employment and Industrial Relations in respective country (0–1) 3.15
    9. Participation in industry specific associations/initiatives to improve labour management practices (0–1) 3.15

10. Participation in other labour organizations/assoc. to improve labour practices (if not awarded under 8 or 9 above) (0–1) 3.15

– (A3) Social Performance Indicators (SPI) (max score is 48) a Labour practices and decent work.

1. SPI on employment information (type, numbers of employees by region/country, employment creation and average turnover) (0–3) LA 1, 2
2. SPI on labour/management relations (the presence of independent trade unions and companies' policies and procedures) (0–3) LA 3, 4
3. SPI on health and safety (policies on occupational accidents and diseases, standard injury, lost day, and absentee rates and number of work-related fatalities) (0–3) LA 5, 6, 7, 8
4. SPI on training and education (Average hours per year per employee by category of employee) (0–3) LA 9
5. SPI on diversity and opportunity (description of equal opportunity policies, monitoring systems) (0–3) LA 10, 11
6. Human rights SPI on strategy and management (description of firms policies related to the universal declaration and the fundamental human rights conventions of (ILO) (0–3) HR 1, 2, 3.)
7. SPI on non-discrimination (policies/program/procedures preventing all forms of discriminations in firms' operations) (0–3) HR 4
8. SPI on freedom of association and collective bargaining (firms' policies on acknowledging freedom of association and collective bargaining) (0–3) HR 5
9. SPI on child labour (policies to exclude the use of child labour directly from firms' internal operations and indirectly from firms' suppliers) (0–3) HR 6
10. SPI on forced and compulsory labour (policies addressing forced and compulsory labour) (0–3) HR 7
11. Society SPI on community (policies to manage impacts on community in areas affected by firms' operations) (0–3) SO 1
12. SPI on bribery and corruption (policies and mechanism for organization and employees in addressing bribery and corruptions) (0–3) SO 2
13. SPI on political contributions (policies, management system and compliance mechanism for managing political lobbying and contributions) (0–3) SO 3
14. Product responsibility SPI on customer health and safety (policy protecting customer health and safety during the use of firms' product and services) (0–3) PR1
15. SPI on products and services (policy, management systems and compliance mechanism for product information and labeling) (0–3) PR2
16. Compliance mechanism for consumer privacy (0–3) PR3

– (A4) Social spending (max score is 3).

1. Summary of dollar savings arising from social initiatives to the company (0–1)

2. Amount spent on community, political contributions to enhance social performance (0–1) SO 1, 3
3. Amount spent on fines related to social litigation/issues (0–1) SO 2, PR 1, HR 4, 5, 6, 7

- *Soft disclosure items (max score is 16).*
  - (A5) Vision and strategy claims (max score is 6).
    1. CEO statement on social performance in letter to shareholders and/or stakeholders (0–1)
    2. A statement of corporate social policy, values and principles, codes of conduct (0–1) 1.1, 1.2, 3.7
    3. A statement about formal management systems regarding social risk and performance (0–1) 3.19
    4. A statement that the firm undertakes periodic reviews and evaluations of its social performance (0–1) 3.19
    5. A statement of measurable goals in terms of future social performance (0–1) 1.1
    6. A statement about specific social innovations and improvements (0–1) 1.1
  - (A6) Social profile (max score is 4).
    1. A statement about the firm's compliance (or lack thereof) with specific social standards (0–1) 1.2
    2. An overview of social impact of the industry (0–1) 1.2
    3. An overview of how the business operations and/or products and services impact the society, employees and customers. (0–1) 1.2, 3.17
    4. An overview of corporate social performance relative to industry peers (0–1) 1.2
  - (A7) Social initiatives (max score is 6).
    1. A substantive description of employee training in social management and operations (0–1) 3.19
    2. Existence of response plans in case of social incidents (0–1)
    3. Internal social (labour, employees and customers) awards (0–1)
    4. Internal social (labour, employees and customers) audits (0–1) 3.20
    5. Internal certification of employees programs (0–1) 3.19
    6. Community involvement and/or donations related to society (0–1).

Especially for the part of environmental corporation policies, which nowadays have major significance, there are the following councils that examines which are the suitable corporate policies for the environment.

1. CEP, Council on Economic Priorities Corporate Environmental Data Clearing House Reports
2. EPA, Environmental Protection Agency Online Databases
3. FEC, Federal Election Commission

4. IRRC, Investor Responsibility Research Center Corporate Environmental Pro®les.

The appropriate indexes for CSR and SD could be summarized from the above analysis at the following indexes:

- Indexes arising from corporate disclosures in Annual Reports
- Social rating indexes according to RDI as the index which mentioned above
- Social rating indexes according to AA1000
- Other indexes.

*As a separate conclusion for this component, CSR and SD, are the* activities *of the company that implies in the economy, the society and the environment while the social responsibility and the actions for sustainable development of a company depends on the corporate management.*

## 7 Stockholders' Value Creation (SVC)

In general Value Based Management models is a range of calculative techniques such as EVA, CVA, Cash Flow Return on Investment (CFRI), Liapis (2010), Total Business Return and Economic Value Management, which purport to enable decisions in companies to influence shareholders value, Thalassinos and Curtis (2005). These methods are advanced by major management consultancy firms, practitioners and academics. An application of VBM method, would create shareholders value, identify the value drivers, connect performance measurement, target setting and rewards to value creation or value drivers, connect decision making and action planning, both strategic and operational to value creation or value drivers while everyone expects all these features to appear in organizations claiming to use VBM. The most famous VBM system is the EVA® method created by Stewart (1991).

The accounting and finance sciences have created a large range of methods and models for performance measurement. Generally these models could be classified into three sets. The first set is based on income with representative ratios P/E (price per earnings), EPS (earning per share), and ROE (return on equity). The second set is based on discounted cash flows which are called and DCF methods with representative methods NPV (net present value), IRR (internal rate of return) and ARR (accounting rate of return). The third set is based on value added with famous models EVA, CVA, RI, and FCF.

*The Residual Income Models (RIM) seems to be the most suitable model for this study*. Especially for the banks the most famous profitability ratio is the Return on Risk Average Capital (RORAC) or from an equivalent way the Return on risk weighted assets of the bank which is applied in residual income models for banks. The residual income model according to the residual method is equivalent with historical profitability metric which is defined as the movements of equity accounts arising from operational activities.

- Residual Income = Equity Closing balance − Equity Opening balance ± Share capital increase, decrease or
- *Residual Income (RI) = Retain Earnings ± increases, decreases equity reserves.*

The appropriate indexes which are proposed for SVC interpretation based on the analysis above are:

- Residual Income Indexes – Income model – Historical Movements of equity capital
- Residual Income Indexes – Spread model
- EVA
- RI or EVA using RORAC
- Other indexes.

*As a separate conclusion for the SVC component, besides the fact that SVC retains* main instruments for *corporate management with a traditional way, nowadays the indexes of SVC could be transposed with elements to manage totally risk and total performance of a Bank.*

## 8 The Global Rating System and the Rating Agents

The financial health of a bank is represented by rating agencies in several financial strength levels. One practical issue is how to choose between the various ratings assigned to the same counterparty by different rating agencies. Table 2 represents rating degrees of each of the rating agencies with a common score index per level with the necessary definitions and grade positions.

In general according to the rating agencies definitions the above levels represents the financial health for the banking industry:

1. Banks with exceptional financial strength. Typically, they will be major institutions with highly valuable and defensible business franchises, strong financial fundamentals, and a very attractive and stable operating environment.
2. Intermediate rating level.
3. Banks with strong intrinsic financial strength. Typically, they will be important institutions with valuable and defensible business franchises, good financial fundamentals, and an attractive and stable operating environment.
4. Intermediate rating level.
5. Banks with good financial strength. Typically, they will be institutions with valuable and defensible business franchises. These banks will demonstrate either acceptable financial fundamentals within a stable operating environment or better than average financial fundamentals with an unstable operating environment.
6. Intermediate rating level.
7. Banks that possess adequate financial strength, but may be limited by one or more of the following factors. A vulnerable or developing business franchise, weak financial fundamentals, or an unstable operating environment.

**Table 2** Rating agencies – rating rank, grade and definitions

| Index-score – rank | Moody's | Long term ratings – definitions | S&P's – FITCH | Long term ratings – definitions | Grade |
|---|---|---|---|---|---|
| 1 | Aaa | Exceptional credit quality | AAA | Highest credit quality | Investment grade |
| 2 | Aa1 | Excellent credit quality | AA+ | High credit quality. Very strong capacity to meet financial commitments | |
| 3 | Aa2 | | AA | | |
| 4 | Aa3 | | AA− | | |
| 5 | A1 | Good credit quality | A+ | Good credit quality. Strong capacity to meet financial commitments | |
| 6 | A2 | | A | | |
| 7 | A3 | | A− | | |
| 8 | Baa1 | Adequate credit quality | BBB+ | Weakened capacity to meet financial commitments | |
| 9 | Baa2 | | BBB | | |
| 10 | Baa3 | | BBB− | | |
| 11 | Ba1 | Questionable credit quality | BB+ | Inadequate capacity to meet financial commitments | Non-investment grade or |
| 12 | Ba2 | | BB | | Speculative grade |
| 13 | Ba3 | | BB− | | |
| 14 | B1 | Generally poor credit quality | B+ | Limited capacity to meet financial commitments | |
| 15 | B2 | | B | | |
| 16 | B3 | | B− | | |
| 17 | Caa1 | Extremely poor credit quality | CCC+ | Vulnerability to nonpayment | |
| 18 | Caa2 | | CCC− | | |
| 19 | Caa3 | | CC | High vulnerability to nonpayment | |
| 20 | Ca | In default | C | Bankruptcy or similar action | |
| 21 | C | In default, low recovery value | SD/D | Debt in selective default/default | |

8. Intermediate rating level
9. Banks with very weak intrinsic financial strength, requiring periodic outside support or suggesting an eventual need for outside assistance. Such institutions may be limited by one or more of the following factors. A business franchise of questionable value, financial fundamentals that are seriously deficient in one or more respects or a highly unstable operating environment.
10. Intermediate rating level

Levels below 10 represent junk situations or non – investments or speculative areas. On the other hand the credit ratings of Moody's, Standard and Poor's, and Fitch play a key role in pricing of credit risk and in the delineation of investment strategies. *The future role of these rating agencies seems to be further expanded with and after implementation of Basle II but nowadays there is, especially from the side of Europe, a critical position against these agencies for non transparency in methodologies that they use (nobody knows the rating method) and for not consistent rating which they give before and after a financial crisis*.

This problematic situation easily arises in case of Greece. Table 3 represents the timeline of rating levels for the four biggest Greek banks. Table 4 presents the timeline of rating levels for the Greek economy as a whole per rating agency before and after the financial and the Government debt crisis. The correlation between the levels of Greek Bank's ratings and the country's rating is obvious.

## 9 Macroeconomic Environment, Monetary Environment and the Rating System

The banking industry is strongly affected and strongly affects the external economic environment. Generally, the main characteristics of the banking industry are:

1. Banks have dominant position in the economic financial system of a country and they are the most important engines of economic growth.
2. Banks are typically the most important source of finance for the firms in a country and with this way affect the macroeconomic figures.
3. Banks are usually the main depository for the economy's savings.
4. Economies have recently liberalized their banking systems through privatization/disinvestments and reducing the role of economic regulation.

According to the work of Goddard et al. (2007) in recent years and in most countries, monetary policy has replaced fiscal policy as the principal tool of macroeconomic policy for the stabilization of output and inflation. However, precise identification of the ways in which monetary policy influences the economy has proven to be a difficult task. The monetary policy operates on the 'external finance premium', the difference between the cost of raising finance externally through equity or debt, or internally through retained profits. This premium exists due to information asymmetries in credit markets, giving rise to adverse selection and moral hazard effects raising evaluation and monitoring costs for lenders. A tightening of monetary policy raises the external finance premium and may affect bank lending through either a demand-side (balance sheet channel) or a supply-side (bank lending channel) effect. On the demand side, borrowers' interest expenses are increased and the value of their collateral is reduced, making external finance more costly. On the supply side, as liquidity is drained from the banking system through open market operations by the central bank, banks are forced to reduce their lending because they are starved of funds.

**Table 3** Biggest Greek banks' ratings

| Moody's | | S&P's | | FITCH | |
|---|---|---|---|---|---|
| **NBG** | | **NBG** | | **NBG** | |
| 15 June '10 | από Baa2 (on review)/P − 2 σε Ba1 (Stable)/NP | – | – | – | – |
| 30 Apr. '10 | Downgraded to Baa2 (on review) from A3 (on review) | 27 April '10 | Downgraded by three notches from BBB + (Neg.)/A − 2 to BB+ (Neg.)/B | 9 Apr. '10 | Downgrade to BBB− (Rating Watch Negative) from BBB(Neg.) |
| 23 Apr. '10: | Downgraded to A3 (on review) from A2 (Neg.) | 16 Mar.'10 | Removes Credit Watch Negative – Affirms Negative Outlook | 23 Feb. '10 | BBB (Neg.) |
| 31 Mar. '10: | Downgraded to A2 (Neg.) from A1 (Neg.) | Dec.'09 | Credit Watch Negative | Dec '09 | BBB+ (St.), following downgrade of Greek Sovereign Rating |
| 3 Mar. '10 | On review for possible downgrade | May '09 | BBB+ (Negative) | March '09 | A− (Negative) |
| Dec. '09 | A1 (Negative) | Dec.'08 | BBB+ (Stable) | | |
| Dec.'08 | Aa3 (Negative) | | | | |
| June '03 | A2 (Stable) | | | | |
| **ALPHA** | | **ALPHA** | | **ALPHA** | |
| 15 June '10 | από Baa3 (on review)/P − 3 σε Ba1 (Stable)/NP | – | – | – | – |
| 30 Apr. '10 | Downgraded to Baa3 (on review) from A3 (on review) | 27 April '10 | Downgraded by three notches from BBB (Neg.)/A − 2 to BB (Neg.)/B | 9 Apr. '10 | Downgrade to BBB− (Rating Watch Negative) from BBB (Neg.) |
| 23 Apr. '10: | On review for possible downgrade | 16 Mar.'10 | Removes Credit Watch Negative – Affirms Negative Outlook | 23 Feb. '10 | BBB (Neg.) |
| 31 Mar. '10 | Downgraded to A3 (Neg.) from A2 (Neg.) | Dec.'09 | Downgrade to BBB with Credit Watch Negative | Dec '09 | BBB+ (Negative), following downgrade of Greek Sovereign Rating |
| 3 Mar. '10 | On review for possible downgrade | May '09 | BBB+ (Negative) | March '09 | A− (Negative) |
| Feb. '09 | A2 (Negative) | Dec.'08 | BBB+ (Stable) | | |
| Dec.'08 | A1 (Negative) | | | | |
| April '07 | A1 (Stable) | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **EFG EUROBANK** | | **EFG EUROBANK** | | **EFG EUROBANK** | |
| 15 June ’10 | από Baa3 (on review)/P – 3 σε Ba1 (Stable)/NP | – | – | – | – |
| 30 Apr. ’10 | Downgraded to Baa3(on review) from A3 (on review) | 27 April ’10 | Downgraded by three notches from BBB (Neg.)/A – 2 to BB (Neg.)/B | 9 Apr. ’10 | Downgrade to BBB – (Rating Watch Negative) from BBB (Neg.) |
| 23 Apr. ’10: | On review for possible downgrade | 16 Mar.’10 | Removes Credit Watch Negative – Affirms Negative Outlook | 23 Feb. ’10 | BBB (Neg.) |
| 31 Mar. ’10 | Downgraded to A3 (Neg.) from A2 (Neg.) | Dec.’09 | Downgrade to BBB with Credit Watch Negative | Dec ’09 | BBB+ (Negative), following downgrade of Greek Sovereign Rating |
| 3 Mar. ’10 | On review for possible downgrade | May ’09 | BBB+ (Negative) | March ’09 | A– (Negative) |
| Feb. ’09 | A1 (Negative) | Dec. ’08 | A– (Negative) | | |
| **PIRAEUS BANK** | | **PIRAEUS BANK** | | **PIRAEUS BANK** | |
| 15 June ’10 | από Ba1 (on review)/NP σε Ba1 (Negative)/NP | – | – | – | – |
| 30 Apr. ’10 | Downgrade to Ba1 (on review)/ST: NP/SenD: Ba1/SubD: Ba2 | 27 Apr. ’10 | Downgraded by three notches from BBB (Neg.)/A – 2 to BB (Neg.)/B | 9 Apr. ’10 | LT: BBB– (RWN)/ST: F3 (RWN)/ Senior debt: BBB–/Sub Debt: BB+ |
| 23 Apr. ’10 | Baa1 on review for possible downgrade | 16 Mar. ’10 | Removal of CW Negative – Ratings Affirmation – Negative Outlook | 23 Feb. ’10 | LT: BBB (Neg.)/ST: F3/Senior debt: BBB/Sub Debt: BBB– |
| 31 Mar. ’10 | Baa1 (Neg.) from A2 (Neg.)/ST: P – 2/SenD:Baa1/SubD: Baa2 | Dec. ’09 | LT: BBB/ST:A – 2/Senior debt: BBB/ Sub Debt: BBB – (CW-Neg.) | | |
| 3 Mar. ’10: | On Review for possible downgrade | May ’09 | BBB (Stable) | Dec ’09 | BBB+ (Negative), following downgrade of Greek Sovereign Rating |
| Jan. ’10 | LT: A2/ST: P – 1/Senior debt: A2/Sub Debt: A3 | Dec. ’08 | BBB+ (Negative) | March ’09 | A– (Negative) |
| Feb ’09 | A2 (Negative) | Oct. ’08 | BBB+ (Stable) | July ’07 | A– (Positive) |
| Dec.’08 | A1 (Negative) | Feb. ’08 | BBB+ (Positive) | Aug. ’06 | BBB+ (Positive) |
| April ’07 | A1 (Stable) | Oct. ’06 | BBB+ (Stable) | Dec. ’03 | BBB+ (Stable) |
| June ’04 | Baa1 (Stable) | | | | |

**Table 4** Greece rating

| Moody's | | S&P's | | FITCH | |
|---|---|---|---|---|---|
| **GREECE** | | **GREECE** | | **GREECE** | |
| 14 Jun '10 | Ba1 Not Prime (Stable) | 27 April '10 | Downgraded by three notches from BBB + (Neg.) to BB + (Neg.) | 9 Apr. '10 | Downgrade to BBB− (Negative) from BBB + (Neg.) |
| 22 Apr. '10: | Downgraded to A3 (on review) from A2 (Neg.) | 16 Mar.'10 | Removes Credit Watch Negative − Affirms Negative Outlook | 19 Dec '09 | BBB+ (Negative) |
| 22 Dec. '09 | Downgraded to A2 (Neg.) | Dec. '09 | BBB + (Credit Watch − Negative) | Dec '09 | BBB+ (Negative) |
| Oct.'09 | A1 (on review for downgrade) | Dec. '09 | A− (Credit Watch − Negative) | Oct '09 | A− (Negative) |
| Febr.'09 | A1 (Stable) | Jan.'09 | A− (Stable) | May '09 | A (Negative) |
| Jan. '07 | A1 (Positive) | | | | |

Although the importance of the supply-side (bank lending channel) effect may have diminished over time due to developments such as deregulation and financial innovation, which have reduced banks' dependence on deposits as a source of finance, quantification of the relative importance of the balance sheet channel and the bank lending channel is a difficult empirical task. So it is a direct measurement of the external finance premium. Even the progress of the general process of EU economic integration affects the individual sectors like the banking sector and also, the present spatial and economic inequalities between the member-states should not be ignored. The perfect spatial economic integration is the perfect incorporation into a dynamic development area (Papadaskalopoulos et al. 2005).

Following the literature Dinger and von Hagen (2009) the present study measures the size of the banking industry as:

1. The aggregate volume of bank assets in the country relative to gross domestic product (GDP).
2. The ratio of deposits to GDP, which measures the deposit-gathering function of banks.
3. The ratio of domestic bank credit to GDP, which measures the loan supply function of the banking sector.

The indicators for financial structure of a country which may have influence in bank's rating system generally are:

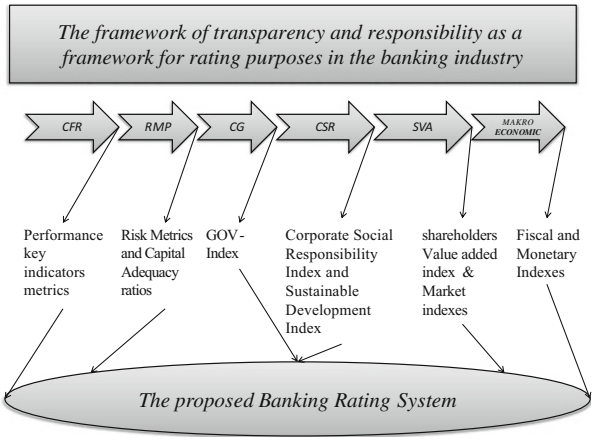
1. Equities as % of GDP.
2. Government bonds or Government Debt as % of GDP.
3. Private bonds as % of GDP.
4. Private bonds plus banking loans and credit allowances as % of GDP or Private Debt.
5. Bank assets as % of GDP.
6. Total (the sum of Equities, Government bonds, Privet bonds and Bank Assets) as % of GDP.
7. Rating of Country or Governance.
8. Financial and Capital Market indexes.

*As a separate conclusion for this component, macroeconomic environment and monetary environment remain as ma*in means for *the rating of the Banking Industry. This is because the banking industry influence directly the macroeconomic environment while at the same time is influenced by it.*

## 10 The Proposed Rating Framework for the Banking Industry

The proposed rating framework requests to take into account all the components which have been mentioned above, CFR, RMP, CSR&SD, SVA and, MACRO-ECONOMIC by using the appropriate ratios into a holistic model. Table 5 represents the structure of the model.

**Table 5** The framework of transparency and responsibility as a framework for rating purposes in the banking industry




## 11 The Empirical Evidence

A model for measuring banks financial health have to fulfill the European Central Bank's (2006) Acceptance criteria for third-party rating tools within the Euro system, Credit Assessment Framework and the proposed banking rating system. The study constructs a model using all the above mentioned components using data from the Greek banking industry. In fact 11 biggest Greek banks for the period 2005–2009 have been used. Besides the fact that there are limitations regarding sufficient ratios and data for all factors as they are described above, such as CAD ratio, social rating indexes, CG indexes, alternative ratios are used in order to solve partially the problem.

The dependent variable which is used is:

*$SCORE_{jt}$: rating of financial strength;*

- Taking values from 1 (very good strength) to 21 (bad strength), according to Table 2.
- For j = 1. . .m: for m = 11 Greek Banks and
- For t = 2005S1 . . . 2009S2 (semi-annual), 10 time series data per bank.
- The source of data is the demonstrated Rating Agencies Reports and in the case that different rating agencies give different rating level the proposed model takes the arithmetic mean.

**Table 6** The model factors, variables, definitions, anticipated sign and sources

| Factors independent variables | Ratio – factors description | Ratio and independent variables definitions | Anticipated sign per variable | Sources of using data |
|---|---|---|---|---|
| CFR – Leverage | Leverage - deposits to total assets | $\frac{Deposits}{Total\ Assets}$ | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength | Published Banks Financial Statements |
| *Variable LEV* | | Deposits = Sight, saving, time deposits or due to customers<br>LEV = DEP/AS | | Authors Calculations |
| CFR – Liquidity | Liquidity metric | $\frac{Liquid\ assets}{Total\ Assets}$ | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength | Published Banks Financial Statements |
| *Variable LM* | | Liquid assets = (Cash and balances with central banks + treasury bills and other eligible bills + loans and advances to credit institutions + trading securities + financial instruments at fair value through profit or loss + derivative assets)− (Due to credit institutions – derivative liabilities)<br>LM = LIQ/AS | | Authors Calculations |
| CFR – Published Banks Financial Statements | Profitability | Current profitability metric | $\frac{Profit\ after\ taxes}{Total\ Assets}$ | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength |
| *Variable CPMR* | A time- lack at the annual data is more suitable for the estimation purposes<br>CPMR = CPM/AS | | Authors Calculations | |

(continued)

**Table 6** (continued)

| Factors independent variables | Ratio – factors description | Ratio and independent variables definitions | Anticipated sign per variable | Sources of using data |
|---|---|---|---|---|
| CFR – Size | Asset turnover metric | Natural logarithm of total assets of the bank | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength | Published Banks Financial Statements |
| *Variable ASLN* | | ASLN = Log(AS) | | Authors Calculations |
| CG | Historical CG-Index | Historical Indexes for anti-fraud policies and governance quality. Index that is calculated from corporate disclosure in bank annual report and take prices from a rage 1 high CG to 15 low CG | (+)Positive relationship between score and ratio, decreases bank's financial strength | Published Banks Ann. Report and Fin. St. |
| *Variable CG* | | | | Authors Calculations |
| CSR & SD | Index CSR & SD | Index that is calculated from corporate disclosure in bank annual reports and take prices from a rage 1 high CSR & SD to 15 low CSR & SD | (+)Positive relationship between score and ratio, decreases bank's financial strength | Published Banks Ann. Report and Fin. St. |
| *Variable CSR* | | | | Authors Calculations |
| Macro – Capital Markets<br>*Variable ASE* | Capital Market index | The Athens stock exchange index (ASE) | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength | Athens Stock Exchange |
| Macro – CR | Country rating | Country rating of Greece | (+)Positive relationship between score and ratio, decreases bank's financial strength | Rating. Agencies Reports |
| *Variable CR* | | | | Authors Collection and Calculation |
| Macro – GD<br>*Variable GDI* | Government -debt | GDI = Government Debt GD/GDP<br>GDI = GD/GDP | (+)Positive relationship between score and ratio, decreases bank's financial strength | Eurostat and Central Bank of Europe |
| Macro –Financial Market<br>*Variable TASLN* | Total assets of the banking industry | Total assets of banking sector in Greece<br>TASLN = Log(AS) | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength | Central Bank of Greece |

| | | | | |
|---|---|---|---|---|
| RMP – CAD | Solvency metric | Capital adequacy ratio according to Central Bank Instructions | (−)Negative relationship between score and ratio, has as impact stronger bank's financial strength | Central Bank of Greece |
| *Variable SM* | | | | Authors Calculation |
| SVA – Stock Value | Capital market variable | $\frac{BV}{P} = \frac{book\,Value}{Capital\,Market\,Value}$ | (+)Positive relationship between score and ratio, decreases bank's financial strength | Published Banks Financial Statements |
| *Variable BVP* | | BVP = EQ/CV | | Athens Stock Exchange |
| SVA – Published Banks Financial Statements | profitability | Historical profitability metric | $\frac{Residual\,Income}{Total\,Assets}$ | (+)Positive relationship between score and ratio, decreases bank's financial strength |
| *Variable HPMR* | Residual income = Equity closing balance – Equity opening balance ± Share capital increase / decrease<br>HPMR = HPM/AS | | Authors Calculations | |

The independent variables are presented in Table 6.

Thus, the proposed model is represented by the following equation:

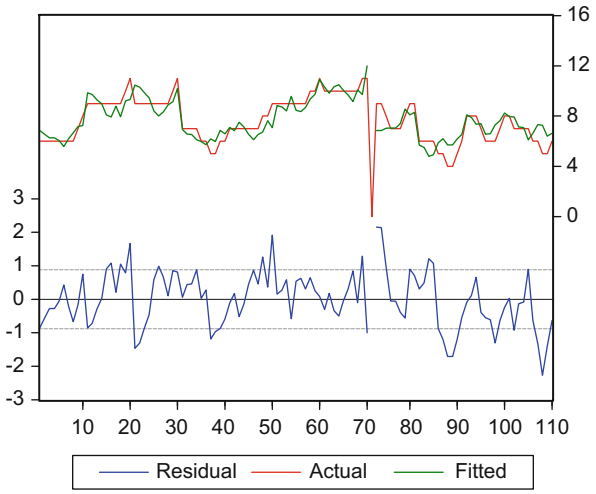
$$SCORE_{jt} = b_0 + b_1 LEV_{jt} + b_2 LM_{jt} + b_3 CPMR_{jt} + b_4 ASLN_{jt} + b_5 CG_{jt} + b_6 CSR_{jt} + b_7 ASE_t + b_8 CR_t + b_9 GDI_t + b_{10} TASLN_t + b_{11} SM_{jt} + b_{12} BVP_{jt} + b_{13} HPMR_{jt} + u_t$$

Where all variables as defined in the text and u the stochastic term.

Because of cross sectional data the most suitable estimation method is the Panel Least Squares. Also because of multicolinearity among the independent variables GDP has been selected as a proxy variable for ASE, CR, GDI and TASLN variables.

Dependent Variable: SCORE
Method: Panel Least Squares
Date: 06/27/10 Time: 18:22
Sample: 2005S1 2009S2
Cross-sections included: 11
Total panel (unbalanced) observations: 109

| Variable | Coefficient | Std. error | t-statistic | Prob. |
|---|---|---|---|---|
| C | 25.03542 | 2.631235 | 9.514701 | 0.0000 |
| LEV | −2.436842 | 0.862338 | −2.825855 | 0.0057 |
| LM | 1.209894 | 0.796271 | 1.519449 | 0.1319 |
| CPMR | −77.74614 | 18.47378 | −4.208458 | 0.0001 |
| ASLN | −0.555242 | 0.124110 | −4.473774 | 0.0000 |
| CG | 0.328670 | 0.112096 | 2.932049 | 0.0042 |
| CSR | −0.137698 | 0.076179 | −1.807566 | 0.0737 |
| SM | −35.60282 | 4.900772 | −7.264738 | 0.0000 |
| BVP | 0.556057 | 0.222915 | 2.494477 | 0.0143 |
| HPMR | 15.99010 | 5.865622 | 2.726070 | 0.0076 |
| GDP | −1.84E-05 | 6.95E-06 | −2.645714 | 0.0095 |
| R-squared | 0.763872 | Mean dependent var | | 7.724771 |
| Adjusted R-squared | 0.739777 | S.D. dependent var | | 1.726008 |
| S.E. of regression | 0.880471 | Akaike info criterion | | 2.678736 |
| Sum squared resid | 75.97251 | Schwarz criterion | | 2.950340 |
| Log likelihood | −134.9911 | F-statistic | | 31.70294 |
| Durbin-Watson stat | 0.703800 | Prob (F-statistic) | | 0.000000 |




We estimate also the following model which provide more accurate estimations (without significant multicolinearity problem)

Panel Data Fixed effects, 88 observations
Including 11 stratified units
Lag Length = 8
Dependant Variable: SCORE
Reliable (HAC) Standard Error

| | Coefficient | Standard error | t-ratio | p-value | |
|---|---|---|---|---|---|
| const | −14,7227 | 6,71705 | −2,1918 | 0,03172 | ** |
| CSR | 0,356063 | 0,0996625 | 3,5727 | 0,00064 | *** |
| lev | 0,989345 | 0,174116 | 5,6821 | <0,00001 | *** |
| CG | 0,117763 | 0,0194581 | 6,0521 | <0,00001 | *** |
| bvp | 0,252887 | 0,139125 | 1,8177 | 0,07339 | * |
| cpmr | −23,2225 | 9,28487 | −2,5011 | 0,01472 | ** |
| asln | 1,75659 | 0,891498 | 1,9704 | 0,05275 | * |
| SCORE_1 | 0,713692 | 0,063261 | 11,2817 | <0,00001 | *** |

| | | | |
|---|---|---|---|
| Dependent variable mean | 7,693182 | Standard deviation dependent variable | 1,809032 |
| Residuals sum of squares | 11,98737 | Standard error of regression | 0,413821 |
| R-square | 0,957897 | Adjusted R-sq. | 0,947672 |
| F statistic(17, 70) | 93,68191 | P-value (F statistic) | 3,28e-41 |
| Log likelihood | −37,15334 | Akaike criterion | 110,3067 |
| Schwarz criterion | 154,8987 | Hannan-Quinn | 128,2717 |
| Rho | −0,228360 | Durbin-Watson | 2,107735 |

Test for different constant per group
Null hypothesis: The groups have a common intercept
Statistical test: F(10, 70) = 3,69132
p-value = P(F(10, 70) > 3,69132) = 0,000531824
Based on the results CSR, Lev, CG and Score t-statistic indicates the coefficient are strongly significant for 0.01 % level of significance (***). Cpmr variable and the constant term t-statistic suggest that the coefficients are significant for 95 % confidence interval (**). Bvp and asln coefficient are significant but for lower confidence interval of 90 % (*)

## 12 Summary, Conclusions and Recommendations

A holistic framework for measuring a bank's financial health by classifying its main responsibilities between conformance and performance has been proposed using well known measures related to European legislation of the banking sector such as corporate financial reporting (CFR), risk management procedures (RMP), corporate governance (CG), corporate social responsibility and sustainable development (CSR and SD), stockholders' value creation (SVC) and macroeconomic environment.

The main conclusions for each of the above components have been summarized as follows:

For the CFR component: It remains important especially for the financial ratios, categories and amounts. The framework in which these ratios are produced, in fact, the exact content of IASs may not be the same as U.S., GAAP, but in many ways the approach and the degree of detail are similar. IAS and U.S. GAAP are more similar than dissimilar, especially for the quality of financial ratios which are used in the proposed model. Many movements toward harmonization have already occurred, bringing them closer and closer.

For the RMP component: It is clear that this component is required in a rating model. Quantitative approaches like CAMEL, Basel I and II as well as CAD I, II and III are serious attempts to finalize the framework of regulation and supervision for the global banking system to be used as a managerial tool of risk in the banking industry and thus a financial health model has to take these ratios into account.

For the CG component: The quality of management could be represented by quantitative indexes, which are highly correlated with profitability and financial health in the banking industry. For these reasons the proposed model of banks' financial health has to take into account CG indexes.

For the CSR and the SD components: through these procedures a company can affect the economy, the society and the environment. Corporate social responsibility and actions for sustainable development depend on management's initiatives. Quantitative indexes which describe CSR and SD in a bank rating model of financial health, have to be intergraded especially those according to Global Reporting Initiatives (GRI) 2002 or to AA1000.

For the SVC component: Besides the fact that SVC retains main instruments for corporate management with a traditional way the indexes of SVC could be transposed with elements to manage totally risk and total performance of a bank and for this reason it has been included in the proposed framework of the model.

For the macroeconomic environment component: this remains a main feature of the rating system of the banking industry. This is because the banking industry has a direct influence on the macroeconomic environment, while at the same time it is influenced by it.

According to this survey a holistic framework for measuring a bank's financial health have to incorporate all the above mentioned factors. The future role of rating agencies seems to be further expanded with and after the implementation of Basle II. Nowadays

there is, especially from the side of Europe, a critical position against these agencies mainly because lack of transparency in methodologies (nobody knows the rating method) and for not consistent ratings, especially before and after a financial crisis or a debt crisis with no any forecasting ability.

With respect to the empirical evidence and with the use of data from the Greek banking sector for the period 2005–2009, it is concluded that the financial rating scores as proposed by the rating houses are of limited reliability since they fail to support funding with real market data.

There is no visibility in the variables used and there is no comparison among them. On the contrary the proposed model takes into account not only financial variables but also the macroeconomic environment of the country where the bank operates as well as the monetary environment. The existing rating system has arrived in a clear conclusion. Rates proposed by rating companies need improvement. The proposed model takes ten independent variables and by using the Panel Least Squared method it has calculated the coefficients of the model with quite good results.

In the future the use of all the components mentioned above will permit more accurate estimations and an opportunity to construct a holistic way for global banks' rating.

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# Part II
# European Policies and Integration

# The Tax Regimes of the EU Countries: Trends, Similarities and Differences

**Konstantinos Liapis, Antonios Rovolis, and Christos Galanos**

**Abstract** The tax burden on wages, profits, property, goods and services has a serious impact on cross-country competiveness, something that in turn impinges strongly on the actual economy of common markets such as the European Union (EU). While the mobility of productive factors is directly related with country tax-regime differences, government budget funding from tax revenues and rates are the main fiscal policy tools.

This article analyzes the trends between the tax regimes of different countries for the period from1995 to 2009 and uses multivariate cluster analysis to identify similarities between cross-country tax regimes in the EU. The data are mainly collected from the OECD database and tax revenue departments at country level.

We argue that there are significant differences among the tax regimes of EU countries and that no policy has been implemented to ensure taxhomogeneity across the EU, nor is there any likelihood of such. Budget deficits have an impact on taxation and countries, invariably, manage the recent debt crisis by selecting different taxes as fiscal policy tools.

This article shows that the level of economic growth affects the structure of taxes at work and alters the performance of different types of taxes; it also wishes to explain the factors that differentiate tax regimes by using multi dimensional criteria, and thus, contribute to the debate for a common tax regime between EU countries.

**Keywords** Taxation • EU • Public economics • Tax regime structure

**JEL Classification Codes** H20 • H60 • O10

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## 1 Introduction

The tax system applied in a country has a serious impact on competiveness, which in turn, affects the actual economy (Peeters 2009, 2010, 2012; Schwarz 2007; Smith and Webb 2001; Munin 2011 and Navez 2012). The end result is that differences among tax regimes diversify the homogeneity of common markets such as the European Union (EU). On the other hand, the mobility of factors of production is directly related to country tax-regime differences.

There are significant differences among the tax regimes of European Union (EU) countries, that no policy has been implemented to ensure tax homogeneity across the EU, nor is there any likelihood of such. These differences pose an obstacle to European Integration (Dankó 2012). Budget deficits have an impact on taxation and countries manage the recent debt crisis by selecting different taxes as fiscal policy tools.

This article shows that the type and level of economic growth affect the structure of taxes at work and alter the performance of different types of taxes. It also tries to explain the factors that differentiate tax regimes by using multi-dimensional criteria and thus contributing to the debate for a common tax regime between EU countries. Moreover, it presents the groups of EU countries with similar tax regimes and analyzes the characteristics of structure of applied tax regimes. Thus, it contributes to the debate about which type of tax regime is more suitable as a common tax regime.

According to Stuckler et al. (2010), taxing the rich is a policy based on tax increase against the recent financial crisis and carries a considerable populist appeal (as many consider responsible for the crisis those involved with the bank system and believe they should pay the price, though this has happened only in the case of Ireland and not in other PIIGS countries).

A key problem with the current debt crisis is that public spending has increased to a less extent than the tax revenue has decreased. However, some commentators (Wilkes 2009a, b) argue that taxing bonuses and high incomes may stifle incentives for entrepreneurship and innovation. Enforcing a more progressive tax system is politically challenging in the light of the lobbying strength of the wealthy, but it may directly address the current debt crisis. While more progressive taxation is a less viable option in countries with already highly progressive systems, like Sweden, there is scope for raising revenues in the UK, Greece and other EU countries. In fact, the current governments of EU countries have adopted a quite different approach, increasing VAT – a regressive indirect tax whose burden falls disproportionately on the poor.

There are some simple, albeit politically difficult, changes that would bring the corporate taxation in line with other countries to yield very large sums for continued government spending. In many countries, like Ireland, the economic development policy is based on a low corporate tax; thus, it is difficult for this tax to be at the same level in all EU countries. Increasing taxes on alcohol, tobacco and sugary drinks could represent viable revenue-generating options, benefiting both health

and the economy. In the short run, these options may disproportionately affect the poor (although there are disputes about the net effect on their overall welfare), and Keynesian economists worry that such taxes will diminish aggregate demand and slow down recovery. In Roosevelt's New Deal, prohibition on alcohol was lifted not only because drinking was popular, but mainly because it would reinvigorate consumer spending and increase tax revenues. The health costs of this aspect of New Deal policy were never assessed. Further limitations include the scope for tax evasion due to imports from other EU countries, as well as smuggling of goods such as cigarettes, an activity in which the tobacco industry has been complicit. Another option is the proposed Tobin Tax, which would take a very small percentage of capital flows. This could generate significant revenue, but would require agreement and implementation by all major countries to be effective. Finally, the excessive use of tax increases in order to reduce public deficits has caused social dissatisfaction. In the case of Greece, there is no consensus of whether this policy is suitable and can bring the desired effects.

In this article, the tax regimes of EU countries are analyzed in order to present the current situation and to examine the structure, trends and similarities among the applied tax regimes. It also examines the implementation of fair and unfair taxes and the adequacy of each country's tax system and legislation.

## 2 Tax Regimes of EU Countries

This section analyzes the trends, similarities and differences between the tax regimes of EU countries for the period 1995 till 2009. The EU countries are presented on Table 1.

### *2.1 Categories of Taxes*

The general categories of taxes are separated in three "classes". In the first class the volume of total taxes is divided into two "subclasses", including or excluding Social Security Charges (SSC). In the second class, the volume of total taxes without SSC are analyzed in the indirect and direct taxes, and in the lower level, the Value Added Tax (VAT) and the taxes on Personal and Corporate income are presented. In the third category, the volume of total taxes with SSC is presented according to the tax bases in which they are applied. The tax bases are divided into Labour, Consumption, and Other. In the other tax bases, taxes on gains, capital taxes, property taxes, environmental taxes, energy taxes and taxes on customs or rights are included. Table 2 illustrates all the above classifications and tax levels.

**Table 1** Countries

| ID | Country code | Country | ID | Country code | Country |
|---|---|---|---|---|---|
| 1 | BE | Belgium | 15 | LU | Luxembourg |
| 2 | BG | Bulgaria | 16 | HU | Hungary |
| 3 | CZ | Czech | 17 | MT | Malta |
| 4 | DK | Denmark | 18 | NL | Nederland |
| 5 | DE | Germany | 19 | AT | Austria |
| 6 | EE | Estonia | 20 | PL | Poland |
| 7 | IE | Ireland | 21 | PT | Portugal |
| 8 | EL | Greece | 22 | RO | Romania |
| 9 | ES | Spain | 23 | SI | Slovenia |
| 10 | FR | France | 24 | SK | Slovakia |
| 11 | IT | Italy | 25 | FI | Finland |
| 12 | CY | Cyprus | 26 | SE | Sweden |
| 13 | LV | Latvia | 27 | UK | United Kingdom |
| 14 | LT | Lithuania | | | |

**Table 2** Taxes

| Taxes | | |
|---|---|---|
| Total taxes (excluding SSC) | Indirect taxes | Indirect taxes – VAT |
| | Direct taxes | Direct taxes – personal income taxes |
| | | Direct taxes – corporate income tax |
| Total taxes (including SSC) | | |
| Taxes per tax bases | Taxes on labour | |
| [Total taxes (including SSC)] | Taxes on consumption | |
| | Taxes on other bases | |

## 2.2 Data and Methodologies

The methodologies employed here include descriptive statistics, time series analysis (analyzing the trends), and multivariate cluster analysis (analyzing differences and similarities).

Our data are mainly collected from the OECD and EUROSTAT database, and tax revenue departments at country level. The databases used are provided at the references part.

The aim of our study is to present similarities between EU counties, thus we gathered a collection of samples for tax variables in order to group the samples into homogeneous tax regimes groups of EU countries. The most suitable method for our analysis is the Multi sample case of Cluster analysis (Mardia et al. 1979). In our analysis, we used the Multi sample problem of Cluster analysis for tax variables which are analyzed as follows:

Let, $x_{ij}$, $i = 1, \ldots,$ $n_j$, be the observation in the jth samples for the tax variables, $j = 1,2,\ldots,m$. The aim of cluster analysis is to group the $m$ samples into $g$ homogeneous classes where g is unknown, $g \leq m$. The clustering methods are

optimization partitioning techniques since the clusters are formed by optimizing a clustering criterion. According to these hierarchical methods, once an object is allocated to a group, cannot be reallocated as g decreases (unlike the optimization techniques). The end product of these techniques is a tree diagram (Dendrogram). In our study, we used the max similarities within groups and min similarities between groups as hierarchal methods. These techniques operate on a matrix of distances $D = (d_{ij})$ between the points $x_1, \ldots, x_n$ rather than the points themselves. The distant matrix is the Euclidian distance:

$$d_{ij}^2 = \sum_{k=1}^{p} (x_{ik} - x_{jk})^2 = |x_i - x_j|^2 \quad (1)$$

Where: X be an (n × p) data matrix

In the Data Matrix the EU countries of Table 1 are included, and thus, we have Cases j = 27. The variables which are used for the production of similarities between countries are presented in Table 2, expressed as percentage of Gross Domestic Product (GDP), as percentage of Public Revenues from Total Taxation, and as high rate or implicit rate of each tax category. For the estimation purposes we merely use rates and percentages in order to avoid influencing our analysis of the original sizes of variables.

## *2.3 Tax Regimes Structure and Tax Performance*

In this part the different types of taxes are analyzed.

### 2.3.1 Total Tax

In Table 3, the total public revenues from taxes for each country of the sample as a percentage of GDP (with and without social security charges) are analyzed for the period 1995–2009.

The most suitable diagram to analyze similarities is the "Radar" diagram. When the line of the diagram looks like a cycle, we have a common structure of tax volumes between countries; if we have a stereogram that looks like a "mountain", then there is a decrease of Total tax. Figure 1 shows the volumes and trends of Total taxation including SSC per country .

Figure 2 shows the volumes and trends of total tax excluding SSC per country. In Denmark especially, the SSC direct is included in the taxation structure, and for this reason, there is no significant difference between total tax including or excluding SSC.

The similarities of the total tax burden between countries are produced by the use of a hierarchical cluster analysis. Figure 3 presents similarities between countries according to the volume of total tax without SSC. According to Fig. 3,

**Table 3** Total tax

| | Total tax with SSC as % of GDP | | | | Total tax without SSC as % of GDP | | | | SSC as % of GDP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country/years | 1995 | 2000 | 2005 | 2009 | 1995 | 2000 | 2005 | 2009 | 1995 | 2000 | 2005 | 2009 |
| Belgium | 43.94 | 45.20 | 44.89 | 43.47 | 29.54 | 31.23 | 31.17 | 28.96 | 14.40 | 13.97 | 13.72 | 14.51 |
| Bulgaria | 30.84 | 31.53 | 31.26 | 28.88 | 21.23 | 20.70 | 21.54 | 21.19 | 9.61 | 10.83 | 9.72 | 7.69 |
| Czech | 36.19 | 33.82 | 37.13 | 34.46 | 21.85 | 19.64 | 21.01 | 19.07 | 14.34 | 14.18 | 16.11 | 15.39 |
| Denmark | 48.79 | 49.36 | 50.83 | 48.09 | 47.72 | 47.57 | 49.72 | 47.10 | 1.07 | 1.79 | 1.11 | 0.99 |
| Germany | 39.79 | 41.86 | 38.77 | 39.72 | 22.94 | 24.95 | 22.48 | 23.97 | 16.85 | 16.91 | 16.29 | 15.74 |
| Estonia | 34.76 | 31.00 | 30.64 | 35.85 | 22.99 | 20.07 | 20.38 | 22.73 | 11.77 | 10.93 | 10.26 | 13.13 |
| Ireland | 33.10 | 31.53 | 30.72 | 28.22 | 28.15 | 27.13 | 26.02 | 22.39 | 4.95 | 4.40 | 4.70 | 5.84 |
| Greece | 29.12 | 34.62 | 31.92 | 30.34 | 19.77 | 24.13 | 20.68 | 19.98 | 9.35 | 10.49 | 11.24 | 10.36 |
| Spain | 32.71 | 33.91 | 35.61 | 30.44 | 20.92 | 21.88 | 23.50 | 18.03 | 11.79 | 12.03 | 12.11 | 12.40 |
| France | 42.71 | 44.12 | 43.63 | 41.58 | 24.15 | 28.04 | 27.34 | 25.02 | 18.56 | 16.09 | 16.29 | 16.56 |
| Italy | 40.07 | 41.77 | 40.41 | 43.14 | 27.44 | 29.71 | 27.86 | 29.31 | 12.63 | 12.06 | 12.55 | 13.84 |
| Cyprus | 26.71 | 29.98 | 35.51 | 35.14 | 20.21 | 23.44 | 27.26 | 26.50 | 6.50 | 6.54 | 8.25 | 8.64 |
| Latvia | 33.16 | 29.50 | 29.01 | 26.64 | 21.19 | 19.61 | 20.62 | 18.11 | 11.97 | 9.90 | 8.39 | 8.52 |
| Lithuania | 27.52 | 30.11 | 28.49 | 29.34 | 20.35 | 20.74 | 20.35 | 17.69 | 7.17 | 9.37 | 8.14 | 11.65 |
| Luxembourg | 37.09 | 39.15 | 37.56 | 37.06 | 27.26 | 29.07 | 27.12 | 25.93 | 9.83 | 10.08 | 10.44 | 11.13 |
| Hungary | 40.84 | 38.96 | 37.51 | 39.46 | 26.10 | 25.97 | 24.96 | 26.46 | 14.75 | 13.00 | 12.55 | 13.00 |
| Malta | 26.75 | 28.17 | 33.68 | 34.21 | 20.65 | 21.79 | 27.32 | 28.18 | 6.11 | 6.38 | 6.36 | 6.03 |
| Nederland | 40.19 | 39.93 | 37.58 | 38.18 | 24.32 | 24.50 | 24.63 | 24.38 | 15.87 | 15.42 | 12.95 | 13.80 |
| Austria | 41.41 | 43.24 | 42.34 | 42.67 | 26.50 | 28.45 | 27.72 | 27.74 | 14.91 | 14.79 | 14.62 | 14.94 |
| Poland | 37.11 | 32.57 | 32.79 | 31.80 | 25.79 | 19.63 | 20.48 | 20.45 | 11.32 | 12.94 | 12.31 | 11.35 |
| Portugal | 29.53 | 31.14 | 31.51 | 31.00 | 21.77 | 23.14 | 23.08 | 22.00 | 7.77 | 8.00 | 8.44 | 9.00 |
| Romania | 27.47 | 30.21 | 27.78 | 26.95 | 19.85 | 19.13 | 18.21 | 17.53 | 7.62 | 11.08 | 9.56 | 9.43 |
| Slovenia | 39.21 | 37.46 | 38.64 | 37.61 | 22.36 | 23.20 | 24.41 | 22.66 | 16.85 | 14.27 | 14.23 | 14.95 |
| Slovakia | 40.30 | 34.08 | 31.30 | 28.76 | 25.29 | 19.94 | 18.65 | 16.13 | 15.02 | 14.14 | 12.65 | 12.63 |
| Finland | 45.69 | 47.25 | 43.94 | 43.13 | 31.60 | 35.32 | 31.93 | 30.28 | 14.08 | 11.93 | 12.01 | 12.85 |
| Sweden | 47.94 | 51.51 | 48.91 | 46.88 | 35.69 | 39.01 | 38.61 | 38.66 | 12.25 | 12.49 | 10.30 | 8.22 |
| United Kingdom | 34.65 | 36.71 | 36.02 | 34.88 | 28.60 | 30.54 | 29.28 | 28.09 | 6.05 | 6.17 | 6.73 | 6.78 |
| Average | 36.58 | 36.99 | 36.61 | 35.85 | 25.34 | 25.87 | 25.79 | 24.76 | 11.24 | 11.12 | 10.82 | 11.09 |

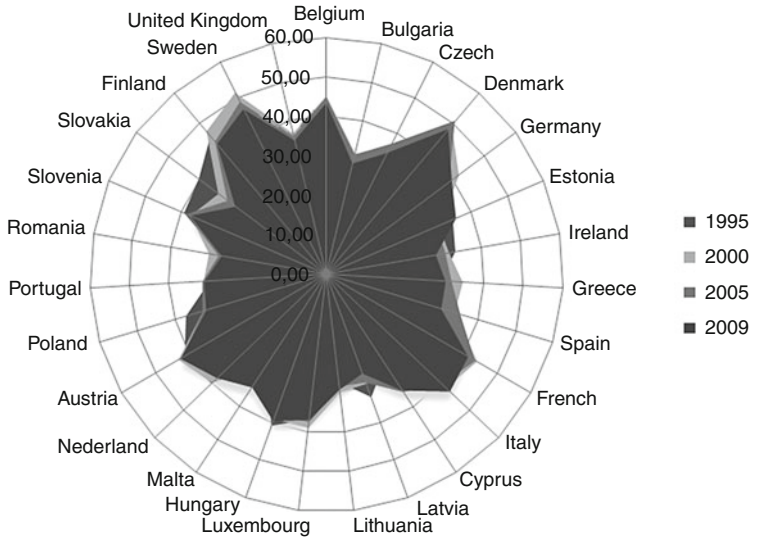


**Fig. 1** Total tax with SSC as % GDP

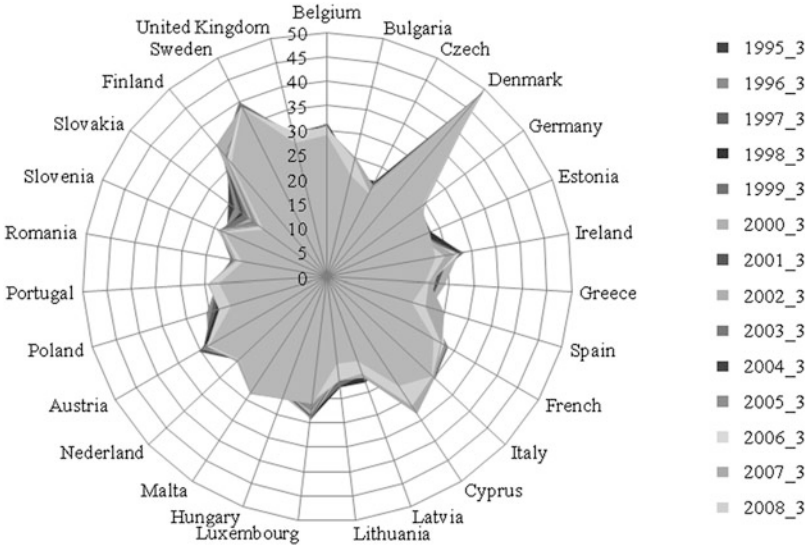


**Fig. 2** Total tax per without SSC as % of GDP

there are three distinct groups; three countries, that is Finland, Denmark and Sweden, stand alone in the highest level of tax burden.

Table 4 (Direct and Indirect Taxes) shows the volumes of Direct and Indirect Taxes as % of GDP. According to the percentages on total revenues from taxes, significant differences exist in the tax structure (direct and indirect taxation)

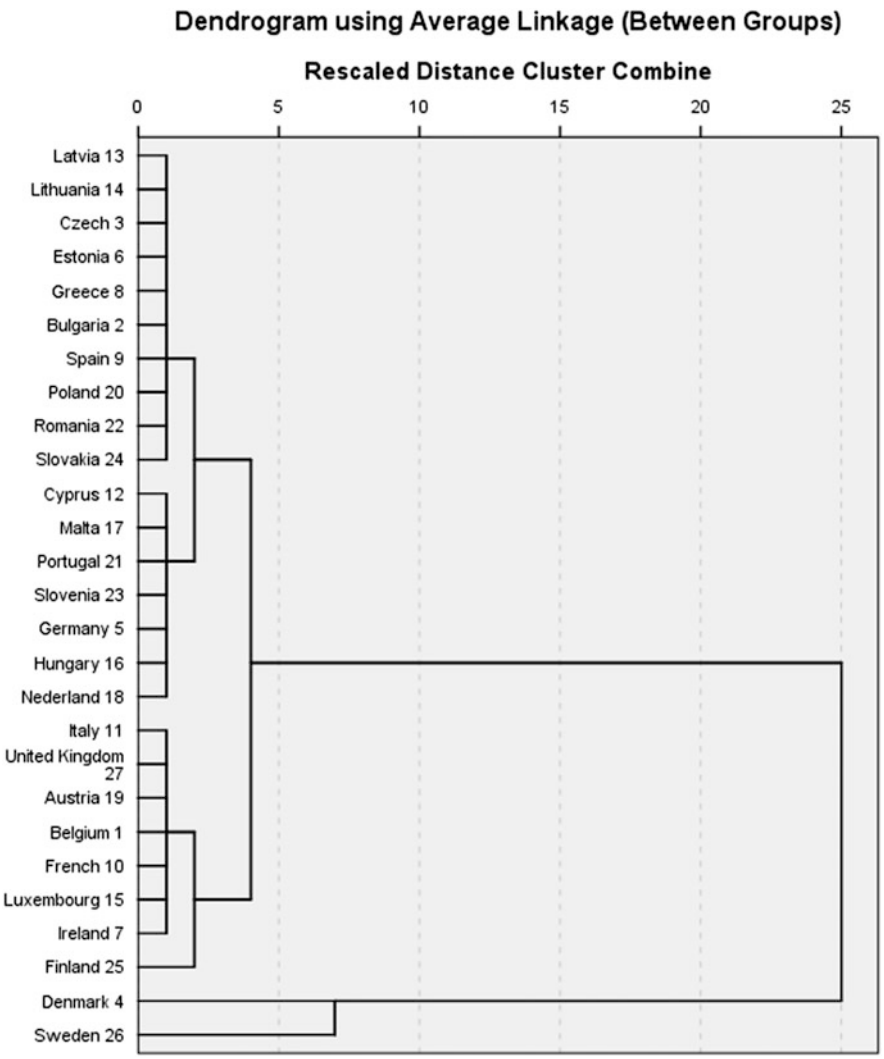


**Fig. 3** Similarities between countries according to volume of total tax without SSC

between EU countries. Direct taxes remain at a lower level against indirect taxes in many countries and at an average in the EU market, which denotes an unfair tax regime according to taxation theory.

Table 5 (Tax Bases) presents the breakdown of total tax including SSC, in tax on labour, consumption and on other tax bases. According to the percentages on total revenues from taxes, significant differences exist in the tax structure (Labour, Consumption and Other tax) between EU countries. The taxes on labour remain at a higher level against taxes on consumption and taxes on other tax bases in many countries and as average in EU market; thus the countries are focused on Labour for the collection of public revenues.

**Table 4** Direct and indirect taxes

| | Total tax without SSC as % of GDP | | Indirect taxes % GDP | | Direct Taxes % GDP | | 2009 volumes as % of total tax | |
|---|---|---|---|---|---|---|---|---|
| Country/years | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | Indirect (%) | Direct (%) |
| Belgium | 31.23 | 28.96 | 13.7 | 13.0 | 17.6 | 15.9 | 45 | 55 |
| Bulgaria | 20.70 | 21.19 | 13.8 | 15.4 | 6.9 | 5.8 | 72 | 28 |
| Czech | 19.64 | 19.07 | 11.3 | 11.7 | 8.3 | 7.4 | 61 | 39 |
| Denmark | 47.57 | 47.10 | 17.2 | 17.0 | 30.5 | 30.2 | 36 | 64 |
| Germany | 24.95 | 23.97 | 12.5 | 12.9 | 12.5 | 11.0 | 54 | 46 |
| Estonia | 20.07 | 22.73 | 12.3 | 15.2 | 7.7 | 7.5 | 67 | 33 |
| Ireland | 27.13 | 22.39 | 13.6 | 11.5 | 13.5 | 10.9 | 51 | 49 |
| Greece | 24.13 | 19.98 | 14.2 | 11.5 | 10.0 | 8.5 | 57 | 43 |
| Spain | 21.88 | 18.03 | 11.9 | 9.0 | 10.5 | 10.0 | 50 | 55 |
| France | 28.04 | 25.02 | 15.8 | 15.1 | 12.5 | 10.2 | 60 | 41 |
| Italy | 29.71 | 29.31 | 15.2 | 13.9 | 14.5 | 15.4 | 47 | 53 |
| Cyprus | 23.44 | 26.50 | 12.4 | 15.3 | 11.0 | 11.2 | 58 | 42 |
| Latvia | 19.61 | 18.11 | 12.3 | 10.9 | 7.3 | 7.2 | 60 | 40 |
| Lithuania | 20.74 | 17.69 | 12.6 | 11.8 | 8.4 | 6.0 | 67 | 34 |
| Luxembourg | 29.07 | 25.93 | 14.0 | 11.9 | 15.0 | 14.0 | 46 | 54 |
| Hungary | 25.97 | 26.46 | 16.3 | 16.6 | 9.7 | 9.8 | 63 | 37 |
| Malta | 21.79 | 28.18 | 12.6 | 14.3 | 9.2 | 13.9 | 51 | 49 |
| Nederland | 24.50 | 24.38 | 12.5 | 12.2 | 12.0 | 12.1 | 50 | 50 |
| Austria | 28.45 | 27.74 | 15.3 | 15.0 | 13.2 | 12.8 | 54 | 46 |
| Poland | 19.63 | 20.45 | 12.6 | 13.1 | 7.2 | 7.5 | 64 | 37 |
| Portugal | 23.14 | 22.00 | 13.5 | 12.9 | 9.6 | 9.1 | 59 | 41 |
| Romania | 19.13 | 17.53 | 12.2 | 11.0 | 7.0 | 6.5 | 63 | 37 |
| Slovenia | 23.20 | 22.66 | 15.8 | 14.4 | 7.4 | 8.4 | 64 | 37 |
| Slovakia | 19.94 | 16.13 | 12.5 | 10.6 | 7.4 | 5.5 | 66 | 34 |
| Finland | 35.32 | 30.28 | 13.9 | 13.8 | 21.4 | 16.5 | 45 | 55 |
| Sweden | 39.01 | 38.66 | 16.4 | 19.0 | 22.6 | 19.7 | 49 | 51 |
| United Kingdom | 30.54 | 28.09 | 13.9 | 12.0 | 16.7 | 16.1 | 43 | 57 |
| Average | 25.87 | 24.76 | 13.7 | 13.4 | 12.2 | 11.5 | 54 | 46 |

### 2.3.2 Indirect Taxes and Value Added Tax (VAT)

Table 6 (Indirect Taxes and VAT) illustrates the VAT high rates, the VAT as % GDP, the VAT as % of total public revenues from taxes, and the VAT as % of Indirect Taxes.

Figure 4 (Indirect taxes as % of GDP per country) shows the trends and the similarities of indirect taxation between EU countries for the years 1995 till 2009.

Figure 5 (Value Added Tax as % of GDP per country) shows the high tax ratio and the volume of VAT as percentage of GDP between EU countries for the year 2009.

Nowadays a debate exists if there is positive correlation between VAT tax rates with volume of VAT as percentage of GDP. According to Musgrave and Musgrave (1973) and Vyncke (2009), it is obvious that the tax rate affects directly

**Table 5** Tax bases

| | Total tax with SSC % GDP | | Tax on labour % gdp | | Tax on consumption % GDP | | Tax on other bases % GDP | | 2009 volumes as % of total tax with SSC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Country/year | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | Labour (%) | Consumption (%) | Other (%) |
| Belgium | 45.2 | 43.5 | 24.2 | 23.7 | 11.3 | 10.6 | 9.7 | 9.1 | 55 | 24 | 21 |
| Bulgaria | 31.5 | 28.9 | 14.2 | 9.9 | 13.2 | 14.7 | 4.2 | 4.3 | 34 | 51 | 15 |
| Czech | 33.8 | 34.5 | 17.1 | 17.5 | 10.6 | 11.2 | 6.2 | 5.8 | 51 | 32 | 17 |
| Denmark | 49.4 | 48.1 | 26.6 | 27.1 | 15.7 | 15.2 | 7.1 | 5.8 | 56 | 32 | 12 |
| Germany | 41.9 | 39.7 | 24.5 | 22.7 | 10.5 | 11.1 | 6.8 | 5.9 | 57 | 28 | 15 |
| Estonia | 31.0 | 35.9 | 17.5 | 18.7 | 11.7 | 14.6 | 1.8 | 2.6 | 52 | 41 | 7 |
| Ireland | 31.5 | 28.2 | 11.4 | 11.8 | 12.1 | 10.0 | 8.0 | 6.5 | 42 | 35 | 23 |
| Greece | 34.6 | 30.3 | 12.4 | 12.5 | 12.4 | 10.8 | 9.8 | 7.1 | 41 | 35 | 23 |
| Spain | 33.9 | 30.4 | 15.8 | 16.7 | 9.9 | 7.2 | 8.2 | 6.5 | 55 | 24 | 21 |
| France | 44.1 | 41.6 | 22.9 | 22.8 | 11.6 | 10.6 | 9.6 | 8.1 | 55 | 26 | 20 |
| Italy | 41.8 | 43.1 | 19.9 | 22.1 | 10.9 | 9.8 | 10.9 | 11.2 | 51 | 23 | 26 |
| Cyprus | 30.0 | 35.1 | 9.4 | 12.2 | 10.6 | 13.4 | 9.9 | 9.5 | 35 | 38 | 27 |
| Latvia | 29.5 | 26.6 | 15.2 | 13.8 | 11.3 | 10.2 | 2.9 | 2.6 | 52 | 38 | 10 |
| Lithuania | 30.1 | 29.3 | 16.3 | 15.1 | 11.8 | 11.2 | 2.1 | 3.1 | 51 | 38 | 10 |
| Luxembourg | 39.1 | 37.1 | 15.3 | 16.4 | 10.7 | 10.2 | 13.1 | 10.5 | 44 | 27 | 28 |
| Hungary | 39.0 | 39.5 | 19.0 | 19.7 | 15.5 | 15.0 | 4.5 | 4.7 | 50 | 38 | 12 |
| Malta | 28.2 | 34.2 | 9.7 | 9.8 | 12.1 | 13.5 | 6.3 | 10.9 | 29 | 39 | 32 |
| Nederland | 39.9 | 38.2 | 20.4 | 20.9 | 11.7 | 11.8 | 7.8 | 5.5 | 55 | 31 | 14 |
| Austria | 43.2 | 42.7 | 24.0 | 24.2 | 12.4 | 12.0 | 6.8 | 6.4 | 57 | 28 | 15 |
| Poland | 32.6 | 31.8 | 14.2 | 12.1 | 11.3 | 11.5 | 7.0 | 8.1 | 38 | 36 | 26 |
| Portugal | 31.1 | 31.0 | 11.6 | 13.0 | 11.8 | 10.9 | 7.8 | 7.1 | 42 | 35 | 23 |
| Romania | 30.2 | 27.0 | 13.2 | 11.9 | 11.5 | 10.3 | 5.5 | 4.8 | 44 | 38 | 18 |
| Slovenia | 37.5 | 37.6 | 20.7 | 19.6 | 13.9 | 14.0 | 2.9 | 4.0 | 52 | 37 | 11 |
| Slovakia | 34.1 | 28.8 | 15.0 | 12.5 | 12.2 | 10.3 | 6.9 | 5.9 | 43 | 36 | 21 |
| Finland | 47.2 | 43.1 | 23.7 | 23.8 | 13.6 | 13.4 | 9.9 | 5.9 | 55 | 31 | 14 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sweden | 51.5 | 46.9 | 30.8 | 27.4 | 12.3 | 13.3 | 8.4 | 6.1 | 58 | 28 | 13 |
| United Kingdom | 36.7 | 34.9 | 14.1 | 14.0 | 11.8 | 10.4 | 10.8 | 10.4 | 40 | 30 | 30 |
| Average | 37.0 | 35.8 | 17.8 | 17.5 | 12.0 | 11.7 | 7.2 | 6.6 | 49 | 33 | 18 |

**Table 6** Indirect taxes and VAT

| | VAT high ratios | | | | VAT % GDP | | VAT % T.TAX. | | VAT % IND.T |
|---|---|---|---|---|---|---|---|---|---|
| Country/year | 2000 | 2009 | 2011 | dif00–11 | 2000 | 2009 | 2000 | 2009 | 2009 (%) |
| Belgium | 21.0 | 21.0 | 21.0 | 0.0 | 7.2 | 7.0 | 15.9 | 16.0 | 53 |
| Bulgaria | 20.0 | 20.0 | 20.0 | 0.0 | 8.3 | 9.0 | 26.4 | 31.2 | 59 |
| Czech | 22.0 | 19.0 | 20.0 | −2.0 | 6.5 | 7.1 | 19.1 | 20.7 | 61 |
| Denmark | 25.0 | 25.0 | 25.0 | 0.0 | 9.6 | 10.1 | 19.4 | 21.0 | 59 |
| Germany | 16.0 | 19.0 | 19.0 | 3.0 | 6.8 | 7.4 | 16.2 | 18.7 | 57 |
| Estonia | 18.0 | 20.0 | 20.0 | 2.0 | 8.4 | 9.1 | 27.2 | 25.2 | 60 |
| Ireland | 21.0 | 21.5 | 21.0 | 0.0 | 7.3 | 6.4 | 23.1 | 22.7 | 56 |
| Greece | 18.0 | 19.0 | 23.0 | 5.0 | 7.2 | 6.4 | 20.8 | 21.1 | 56 |
| Spain | 16.0 | 16.0 | 18.0 | 2.0 | 6.1 | 4.1 | 18.0 | 13.5 | 46 |
| France | 19.6 | 19.6 | 19.6 | 0.0 | 7.3 | 6.8 | 16.6 | 16.3 | 45 |
| Italy | 20.0 | 20.0 | 20.0 | 0.0 | 6.5 | 5.7 | 15.6 | 13.2 | 41 |
| Cyprus | 10.0 | 15.0 | 15.0 | 5.0 | 5.8 | 9.1 | 19.3 | 26.0 | 60 |
| Latvia | 18.0 | 21.0 | 22.0 | 4.0 | 7.0 | 6.0 | 23.9 | 22.5 | 55 |
| Lithuania | 18.0 | 19.0 | 21.0 | 3.0 | 7.6 | 7.4 | 25.2 | 25.2 | 63 |
| Luxembourg | 15.0 | 15.0 | 15.0 | 0.0 | 5.6 | 6.2 | 14.3 | 16.7 | 52 |
| Hungary | 25.0 | 25.0 | 25.0 | 0.0 | 8.7 | 8.4 | 22.3 | 21.3 | 51 |
| Malta | 15.0 | 18.0 | 18.0 | 3.0 | 6.0 | 7.8 | 21.4 | 22.9 | 55 |
| Nederland | 17.5 | 19.0 | 19.0 | 1.5 | 6.9 | 7.0 | 17.3 | 18.4 | 57 |
| Austria | 20.0 | 20.0 | 20.0 | 0.0 | 8.1 | 8.1 | 18.8 | 18.9 | 54 |
| Poland | 22.0 | 22.0 | 23.0 | 1.0 | 6.9 | 7.4 | 21.3 | 23.4 | 57 |
| Portugal | 17.0 | 20.0 | 23.0 | 6.0 | 7.7 | 7.1 | 24.6 | 23.0 | 55 |
| Romania | 19.0 | 19.0 | 24.0 | 5.0 | 6.5 | 6.7 | 21.4 | 24.8 | 61 |
| Slovenia | 19.0 | 20.0 | 20.0 | 1.0 | 8.7 | 8.4 | 23.1 | 22.4 | 59 |
| Slovakia | 23.0 | 19.0 | 20.0 | −3.0 | 7.0 | 6.7 | 20.4 | 23.3 | 63 |
| Finland | 22.0 | 22.0 | 23.0 | 1.0 | 8.2 | 8.8 | 17.4 | 20.3 | 64 |
| Sweden | 25.0 | 25.0 | 25.0 | 0.0 | 8.6 | 9.7 | 16.7 | 20.7 | 51 |
| United Kingdom | 17.5 | 15.0 | 20.0 | 2.5 | 6.6 | 5.8 | 17.9 | 16.6 | 48 |
| Average | 19.2 | 19.8 | 20.7 | 1.5 | 7.3 | 7.4 | 20.1 | 21.0 | 56 |

the amount of tax revenue. Deviations from this rule or instability in performance among countries indicates the existence of tax legislation, tax-free amounts, tax deductible amounts, tax exempt amounts, and differences in tax rates per incremental level of tax basis, or the existence of tax evasion or failure of tax authorities in collecting taxes. Figure 6 (VAT tax rate and volume) shows that there exists positive correlation between tax ratio and volume for VAT but also volatility, according to the scatter diagram and the price of R squared. This volatility shows that there exists significant difference between EU countries in the performance of VAT collection, especially in the low level of tax rate. The cross section data are used for the year 2009.

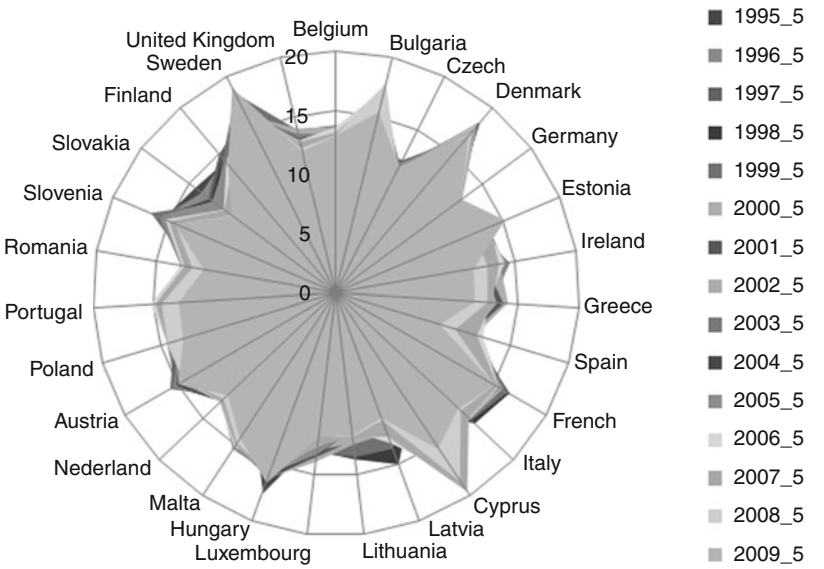


**Fig. 4** Indirect taxes as % of GDP per country

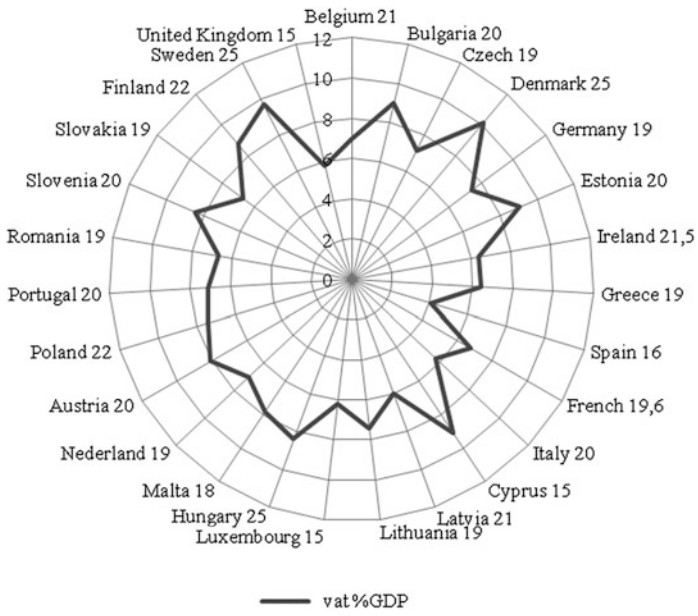


**Fig. 5** Value Added Tax as % of GDP per country

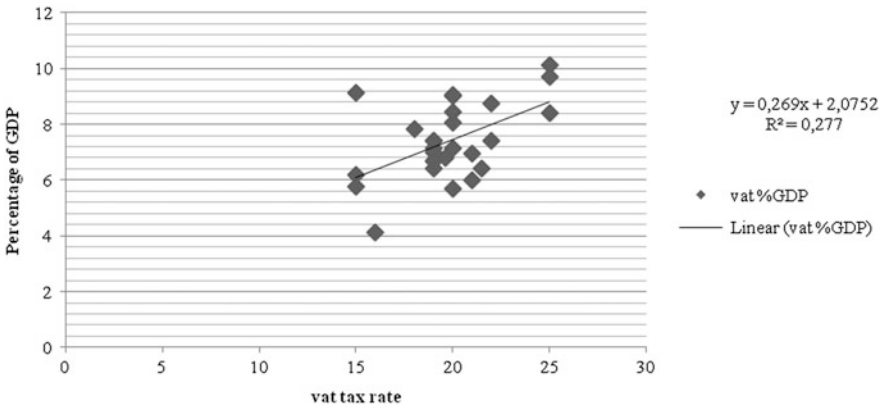


**Fig. 6** VAT tax rate and volume

### 2.3.3 Direct Taxes and Tax on Personal and Corporate Income

Table 7 (Direct Taxes on Personal, Corporate and Other Income) presents the breakdown of Direct taxes into Personal, Corporate and Other Income for EU countries. According to this breakdown, significant differences exist in the tax structure on income (Personal, Corporate and Other) between EU countries. The corporate and other income taxes remain at a lower level against Personal income taxes in many countries and as average in EU market, which denotes that personal income remains the main income basis for direct taxation.

Figure 7 (Direct taxes as % of GDP per country) shows the trends and similarities of direct taxation between EU countries for the years 1995 till 2009.

Table 8 (Tax Rates on Personal and Corporate Income) presents the tax rates for the years 2000, 2009 and 2011, and the differences of tax rates from 2000 to 2011. There is significant reduction in the tax rates of direct taxes for all EU countries. The decreases of tax rates on corporate income remain at a higher level from tax rates on personal income.

Figure 8 (Tax on Personal Income as % of GDP per country) shows the high tax ratio and the volume of tax as percentage of GDP between EU countries for the year 2009. According to the diagram, low homogeneity exists for the volumes of personal income between EU countries.

Figure 9 (Tax on Personal Income) shows that there is positive correlation between the tax ratio and the volume of personal income tax, as well as volatility according to the scatter diagram and the price of R squared. This volatility shows that there is significant difference in performance between EU countries when it comes to the collection of taxes on personal income – especially at the high level of tax rate. The cross section data are used for 2009.

Figure 10 (Tax on Corporate Income as % of GDP per country) shows the high tax ratio and the volume of tax as percentage of GDP between EU countries for the year 2009. According to the diagram, low homogeneity exists for the volumes of corporate income between EU countries. Cyprus, Malta and Luxembourg as

**Table 7** Direct taxes on personal, corporate and other income

| | Tax on personal income % GDP | | Tax on personal income % of total taxation | | Tax on corporate income % GDP | | Tax on corporate income % of total taxation | | Tax on income % direct taxes for 2009 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Country/year | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | Personal (%) | Corporate (%) | Other income (%) |
| Belgium | 13.3 | 12.2 | 29.4 | 28.0 | 3.2 | 2.5 | 7.1 | 5.8 | 76 | 16 | 8 |
| Bulgaria | 4.0 | 2.9 | 12.7 | 10.2 | 2.7 | 2.5 | 8.6 | 8.8 | 50 | 44 | 6 |
| Czech | 4.6 | 3.6 | 13.5 | 10.5 | 3.5 | 3.6 | 10.3 | 10.5 | 49 | 49 | 2 |
| Denmark | 25.6 | 26.5 | 51.9 | 55.1 | 3.3 | 2.5 | 6.6 | 5.1 | 88 | 8 | 4 |
| Germany | 10.2 | 9.7 | 24.4 | 24.4 | 1.7 | 0.7 | 4.0 | 1.7 | 88 | 6 | 6 |
| Estonia | 6.8 | 5.7 | 22.1 | 15.9 | 0.9 | 1.8 | 2.9 | 5.2 | 75 | 25 | 0 |
| Ireland | 9.2 | 7.9 | 29.3 | 27.8 | 3.8 | 2.5 | 12.0 | 8.8 | 72 | 23 | 5 |
| Greece | 5.0 | 5.1 | 14.4 | 16.9 | 4.1 | 2.4 | 12.0 | 8.0 | 60 | 29 | 11 |
| Spain | 6.6 | 7.0 | 19.5 | 23.1 | 3.1 | 2.3 | 9.2 | 7.6 | 71 | 23 | 6 |
| France | 8.4 | 7.5 | 18.9 | 18.0 | 2.8 | 1.3 | 6.3 | 3.0 | 74 | 12 | 14 |
| Italy | 11.5 | 11.7 | 27.5 | 27.1 | 2.4 | 2.4 | 5.9 | 5.6 | 76 | 16 | 8 |
| Cyprus | 3.6 | 3.9 | 12.0 | 11.2 | 6.2 | 6.5 | 20.6 | 18.4 | 35 | 58 | 7 |
| Latvia | 5.6 | 5.4 | 18.8 | 20.4 | 1.6 | 1.6 | 5.3 | 5.9 | 76 | 22 | 3 |
| Lithuania | 7.7 | 4.1 | 25.6 | 14.1 | 0.7 | 1.8 | 2.3 | 6.3 | 69 | 31 | 1 |
| Luxembourg | 7.2 | 7.7 | 18.3 | 20.8 | 7.0 | 5.5 | 17.8 | 14.7 | 55 | 39 | 6 |
| Hungary | 7.2 | 7.3 | 18.5 | 18.5 | 2.2 | 2.1 | 5.6 | 5.4 | 74 | 22 | 4 |
| Malta | 5.6 | 6.3 | 19.8 | 18.3 | 2.9 | 6.7 | 10.3 | 19.6 | 45 | 48 | 7 |
| Nederland | 6.0 | 8.6 | 15.0 | 22.5 | 4.3 | 2.1 | 10.9 | 5.6 | 71 | 18 | 12 |
| Austria | 10.1 | 10.0 | 23.3 | 23.4 | 2.2 | 1.9 | 5.0 | 4.4 | 78 | 15 | 8 |
| Poland | 4.4 | 4.6 | 13.5 | 14.6 | 2.4 | 2.3 | 7.5 | 7.2 | 62 | 31 | 7 |
| Portugal | 5.3 | 5.7 | 17.1 | 18.5 | 3.7 | 2.9 | 12.0 | 9.3 | 63 | 32 | 5 |
| Romania | 3.5 | 3.5 | 11.4 | 13.1 | 3.0 | 2.6 | 9.8 | 9.7 | 54 | 40 | 6 |
| Slovenia | 5.6 | 5.9 | 15.0 | 15.7 | 1.2 | 1.8 | 3.1 | 4.9 | 70 | 22 | 8 |
| Slovakia | 3.4 | 2.4 | 9.9 | 8.4 | 2.6 | 2.5 | 7.7 | 8.7 | 44 | 45 | 11 |
| Finland | 14.5 | 13.4 | 30.6 | 31.2 | 5.9 | 2.0 | 12.5 | 4.7 | 81 | 12 | 6 |
| Sweden | 18.1 | 16.4 | 35.2 | 35.0 | 3.8 | 3.0 | 7.3 | 6.4 | 83 | 15 | 1 |
| United Kingdom | 10.8 | 10.4 | 29.4 | 29.9 | 3.5 | 2.8 | 9.7 | 8.0 | 65 | 17 | 18 |
| Average | 8.3 | 8.0 | 21.4 | 21.2 | 3.1 | 2.7 | 8.6 | 7.8 | 70 | 24 | 7 |

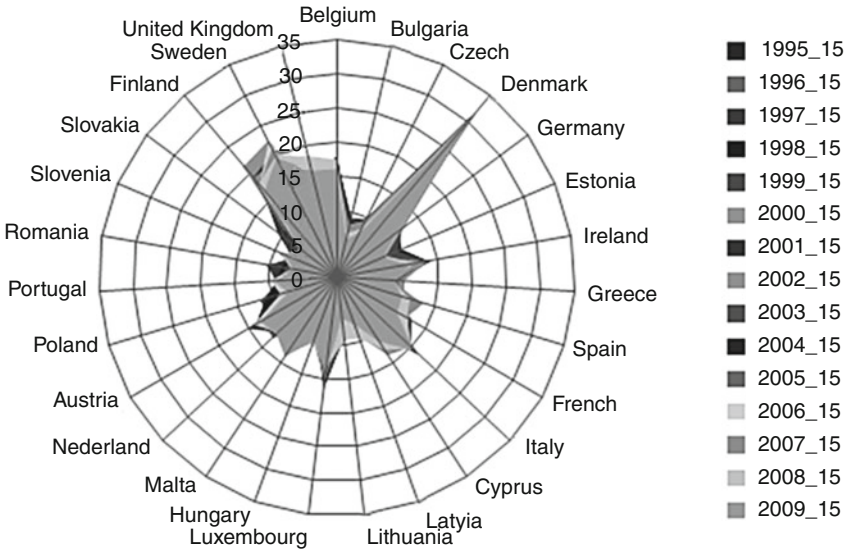


**Fig. 7** Direct taxes as % of GDP per country

international corporate centers have high level of volumes and on the other hand, Germany has the lowest volume as % of GDP from all other countries.

Figure 11 (Tax on Corporate Income) shows that there is no correlation between the tax ratio and the volume of corporate income tax, according to the scatter diagram and the price of R squared. This volatility shows that high or low levels of tax rates have same volumes of tax as a percentage of GDP. The general rule (strongly positive correlation between tax rate and tax revenue) is not followed by all countries, indicating significant differences in tax legislation and problems in tax collection among countries. The cross section data are used for the year 2009.

### 2.3.4 Taxes on Labour, Consumption and Other

Table 9 (Implicit Taxes Rates on Labour, Consumption and Other Bases) provides a breakdown of Public revenues from taxation for EU countries from another point of view. According to this breakdown, there are no significant differences during the time for implicit tax rates for labour and consumption (decrease of implicit tax rate for labour and stabile for consumption).

Figure 12 (Taxes on Labour Bases) can show us if there is positive correlation between labour implicit tax rates with the volume of tax as a percentage of GDP. It indicates that there is strong positive correlation between implicit tax ratio and volume of tax on labour according to the scatter diagram and the price of R squared. The cross section data are used for the year 2009.

Figure 13 (Taxes on Consumption Bases) can show us if there is positive correlation between consumption implicit tax rates with volume of tax as

**Table 8** Tax rates on personal and corporate income

| | Tax high ratio on personal income | | | Difference | Tax high ratio on corporate income | | | Difference |
|---|---|---|---|---|---|---|---|---|
| Country/year | 2000 | 2009 | 2011 | 00–11 | 2000 | 2009 | 2011 | 00–11 |
| Belgium | 60.6 | 53.7 | 53.7 | −6.9 | 40.2 | 34.0 | 34.0 | −6.2 |
| Bulgaria | 40.0 | 10.0 | 10.0 | −30.0 | 32.5 | 10.0 | 10.0 | −22.5 |
| Czech | 32.0 | 15.0 | 15.0 | −17.0 | 31.0 | 19.0 | 19.0 | −12.0 |
| Denmark | 59.7 | 51.5 | 51.5 | −8.2 | 32.0 | 25.0 | 25.0 | −7.0 |
| Germany | 53.8 | 47.5 | 47.5 | −6.3 | 51.6 | 29.8 | 29.8 | −21.8 |
| Estonia | 26.0 | 21.0 | 21.0 | −5.0 | 26.0 | 21.0 | 21.0 | −5.0 |
| Ireland | 44.0 | 41.0 | 41.0 | −3.0 | 24.0 | 12.5 | 12.5 | −11.5 |
| Greece | 45.0 | 45.0 | 45.0 | 0.0 | 40.0 | 24.0 | 23.0 | −17.0 |
| Spain | 48.0 | 43.0 | 45.0 | −3.0 | 35.0 | 30.0 | 30.0 | −5.0 |
| France | 59.0 | 45.8 | 46.7 | −12.3 | 37.8 | 34.4 | 34.4 | −3.4 |
| Italy | 45.9 | 45.2 | 45.6 | −0.3 | 41.3 | 31.4 | 31.4 | −9.9 |
| Cyprus | 40.0 | 30.0 | 30.0 | −10.0 | 29.0 | 10.0 | 10.0 | −19.0 |
| Latvia | 25.0 | 26.0 | 25.0 | 0.0 | 25.0 | 15.0 | 15.0 | −10.0 |
| Lithuania | 33.0 | 15.0 | 15.0 | −18.0 | 24.0 | 15.0 | 15.0 | −9.0 |
| Luxembourg | 47.2 | 39.0 | 42.1 | −5.1 | 37.5 | 28.6 | 28.8 | −8.7 |
| Hungary | 44.0 | 40.6 | 20.3 | −23.7 | 19.6 | 20.6 | 20.6 | 1.0 |
| Malta | 35.0 | 35.0 | 35.0 | 0.0 | 35.0 | 35.0 | 35.0 | 0.0 |
| Nederland | 60.0 | 52.0 | 52.0 | −8.0 | 35.0 | 25.5 | 25.0 | −10.0 |
| Austria | 50.0 | 50.0 | 50.0 | 0.0 | 34.0 | 25.0 | 25.0 | −9.0 |
| Poland | 40.0 | 32.0 | 32.0 | −8.0 | 30.0 | 19.0 | 19.0 | −11.0 |
| Portugal | 40.0 | 45.9 | 46.5 | 6.5 | 35.2 | 29.0 | 29.0 | −6.2 |
| Romania | 40.0 | 16.0 | 16.0 | −24.0 | 25.0 | 16.0 | 16.0 | −9.0 |
| Slovenia | 50.0 | 41.0 | 41.0 | −9.0 | 25.0 | 20.0 | 20.0 | −5.0 |
| Slovakia | 42.0 | 19.0 | 19.0 | −23.0 | 29.0 | 19.0 | 19.0 | −10.0 |
| Finland | 54.0 | 49.0 | 49.2 | −4.8 | 29.0 | 26.0 | 26.0 | −3.0 |
| Sweden | 51.5 | 56.4 | 56.4 | 4.9 | 28.0 | 26.3 | 26.3 | −1.7 |
| United Kingdom | 40.0 | 50.0 | 50.0 | 10.0 | 30.0 | 28.0 | 27.0 | −3.0 |
| Average | 44.7 | 37.6 | 37.1 | −7.6 | 31.9 | 23.3 | 23.2 | −8.7 |

percentage of GDP. It indicates positive correlation between implicit tax ratio and volume of tax on consumption, as well as volatility according to the scatter diagram and the price of R squared. Today, EU authorities suggest substituting tax revenues from labour with tax revenues from consumption, though this is yet to be implemented. The cross section data are used for the year 2009.

All other tax volumes as % of GDP from other tax bases include taxes such as capital gains and property taxes, and are illustrated for the year 2009 in Fig. 14.

## *2.4 Tax Similarities Between EU Countries*

Using Euclidian Distance and average linkage between groups, the cluster of similarities between countries is produced using criteria from the above mentioned fields of taxation. These similarities are presented in Fig. 15.

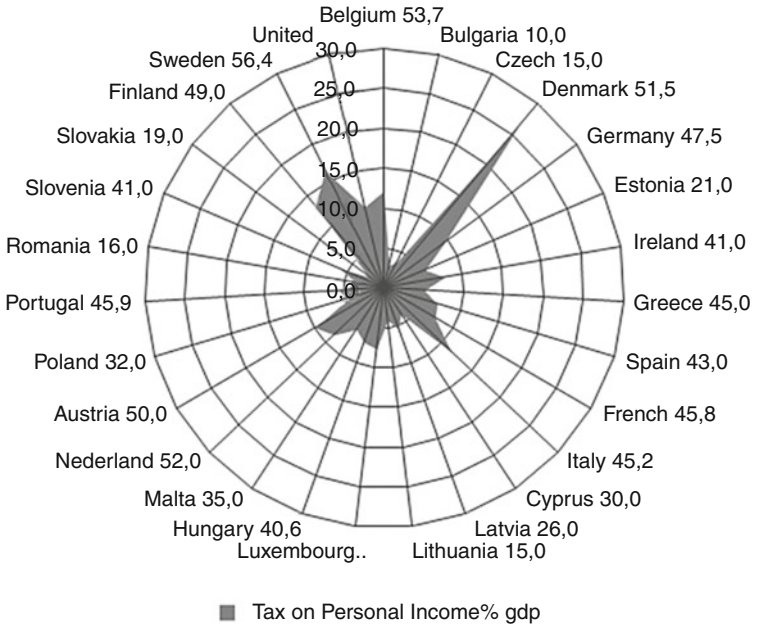


**Fig. 8** Tax on personal income as % of GDP per country

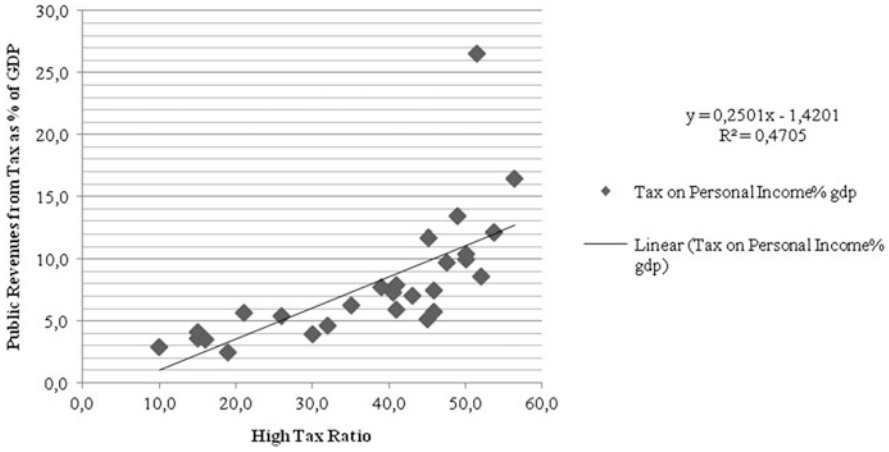


**Fig. 9** Tax on personal income

According to our estimations, EU countries are grouped in three main separate groups, with an obvious evidence that there exists a spatial character in the classification.

The first large group consists of three subgroups; the first subgroup comprises Greece, Portugal and Spain, which are old members of the EU in Southern Europe

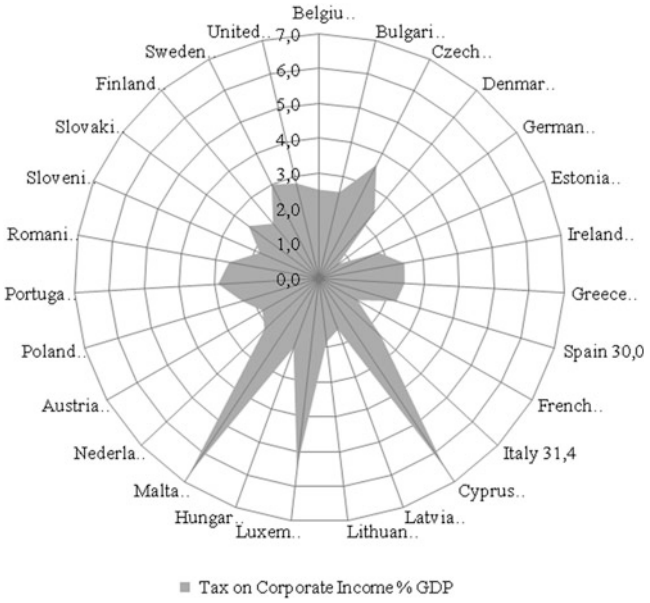


**Fig. 10** Tax on corporate income as % of GDP per country

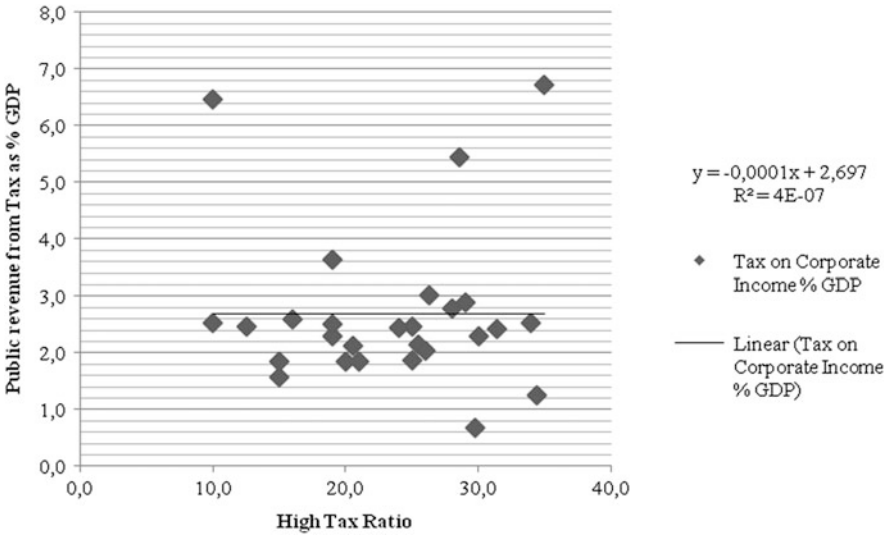


**Fig. 11** Tax on corporate income

characterized by problems in tax performance. The second subgroup consists of Luxembourg, United Kingdom, and Ireland, old EU members, with a developed financial sector . The third subgroup consists of Cyprus and Malta, newer members of the EU having International corporate sector.

**Table 9** Implicit tax rates on labour and consumption and other bases

| | Implicit tax rate labour | | Implicit tax rate consumption | | Labour % GDP | | Consumption % GDP | | Other % GDP | |
|---|---|---|---|---|---|---|---|---|---|---|
| Country/year | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 | 2000 | 2009 |
| Belgium | 43.6 | 41.5 | 21.8 | 20.9 | 24.2 | 23.7 | 11.3 | 10.6 | 9.7 | 9.1 |
| Bulgaria | 38.1 | 25.5 | 18.5 | 21.4 | 14.2 | 9.9 | 13.2 | 14.7 | 4.2 | 4.3 |
| Czech | 40.7 | 36.4 | 19.4 | 21.6 | 17.1 | 17.5 | 10.6 | 11.2 | 6.2 | 5.8 |
| Denmark | 41.0 | 35.0 | 33.4 | 31.5 | 26.6 | 27.1 | 15.7 | 15.2 | 7.1 | 5.8 |
| Germany | 40.7 | 38.8 | 18.9 | 19.8 | 24.5 | 22.7 | 10.5 | 11.1 | 6.8 | 5.9 |
| Estonia | 37.8 | 35.0 | 19.5 | 27.6 | 17.5 | 18.7 | 11.7 | 14.6 | 1.8 | 2.6 |
| Ireland | 28.5 | 25.5 | 25.5 | 21.6 | 11.4 | 11.8 | 12.1 | 10.0 | 8.0 | 6.5 |
| Greece | 34.5 | 29.7 | 16.5 | 14.0 | 12.4 | 12.5 | 12.4 | 10.8 | 9.8 | 7.1 |
| Spain | 30.5 | 31.8 | 15.7 | 12.3 | 15.8 | 16.7 | 9.9 | 7.2 | 8.2 | 6.5 |
| France | 42.0 | 41.1 | 20.9 | 18.5 | 22.9 | 22.8 | 11.6 | 10.6 | 9.6 | 8.1 |
| Italy | 42.2 | 42.6 | 17.9 | 16.3 | 19.9 | 22.1 | 10.9 | 9.8 | 10.9 | 11.2 |
| Cyprus | 21.5 | 26.1 | 12.7 | 17.9 | 9.4 | 12.2 | 10.6 | 13.4 | 9.9 | 9.5 |
| Latvia | 36.6 | 28.7 | 18.7 | 16.9 | 15.2 | 13.8 | 11.3 | 10.2 | 2.9 | 2.6 |
| Lithuania | 41.2 | 33.1 | 17.9 | 16.5 | 16.3 | 15.1 | 11.8 | 11.2 | 2.1 | 3.1 |
| Luxembourg | 29.9 | 31.7 | 23.0 | 27.3 | 15.3 | 16.4 | 10.7 | 10.2 | 13.1 | 10.5 |
| Hungary | 41.4 | 41.0 | 27.5 | 28.2 | 19.0 | 19.7 | 15.5 | 15.0 | 4.5 | 4.7 |
| Malta | 20.6 | 20.2 | 15.9 | 19.5 | 9.7 | 9.8 | 12.1 | 13.5 | 6.3 | 10.9 |
| Nederland | 34.5 | 35.5 | 23.8 | 26.2 | 20.4 | 20.9 | 11.7 | 11.8 | 7.8 | 5.5 |
| Austria | 40.1 | 40.3 | 22.1 | 21.7 | 24.0 | 24.2 | 12.4 | 12.0 | 6.8 | 6.4 |
| Poland | 33.5 | 30.7 | 17.8 | 19.0 | 14.2 | 12.1 | 11.3 | 11.5 | 7.0 | 8.1 |
| Portugal | 22.3 | 23.1 | 18.2 | 16.2 | 11.6 | 13.0 | 11.8 | 10.9 | 7.8 | 7.1 |
| Romania | 33.5 | 24.3 | 17.0 | 16.9 | 13.2 | 11.9 | 11.5 | 10.3 | 5.5 | 4.8 |
| Slovenia | 37.7 | 34.9 | 23.5 | 24.2 | 20.7 | 19.6 | 13.9 | 14.0 | 2.9 | 4.0 |
| Slovakia | 36.3 | 31.2 | 21.7 | 17.3 | 15.0 | 12.5 | 12.2 | 10.3 | 6.9 | 5.9 |
| Finland | 44.0 | 40.4 | 28.5 | 25.7 | 23.7 | 23.8 | 13.6 | 13.4 | 9.9 | 5.9 |
| Sweden | 46.8 | 39.4 | 26.3 | 27.6 | 30.8 | 27.4 | 12.3 | 13.3 | 8.4 | 6.1 |
| United Kingdom | 25.6 | 25.1 | 18.9 | 16.8 | 14.1 | 14.0 | 11.8 | 10.4 | 10.8 | 10.4 |
| Average | 35.7 | 32.9 | 20.8 | 20.9 | 17.8 | 17.5 | 12.0 | 11.7 | 7.2 | 6.6 |

The second large group consists of Eastern European countries, new members of the EU, characterized by problems or instability in tax performance and is divided in two subgroups; the first subgroup includes Latvia, Lithuania and Estonia; the second subgroup consists of Poland, Slovakia, Romania, and Bulgaria.

The third large group is that of Central European countries, older members of the EU, characterized by stable, balanced or high tax performance. Three subgroups can be identified; the first subgroup includes Finland and Sweden, Northern European countries; the second subgroup is consisted by Belgium and Italy; the third subgroup consists of France, Austria, Nederland, Germany, central and more developed EU countries. Denmark, which has a different tax regime, is classified alone.

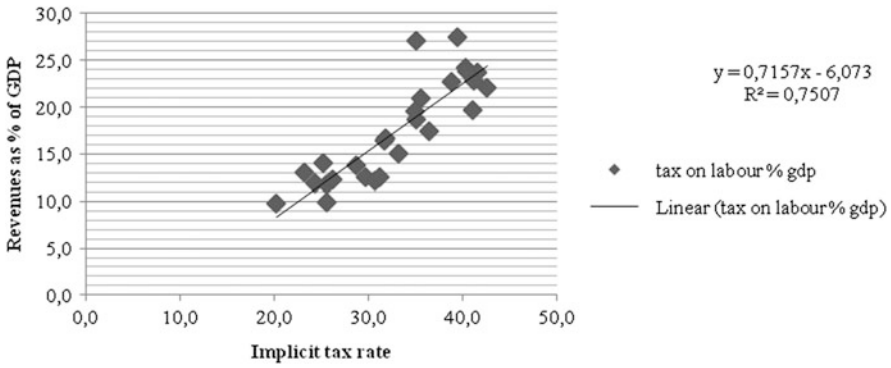


**Fig. 12** Taxes on labour bases

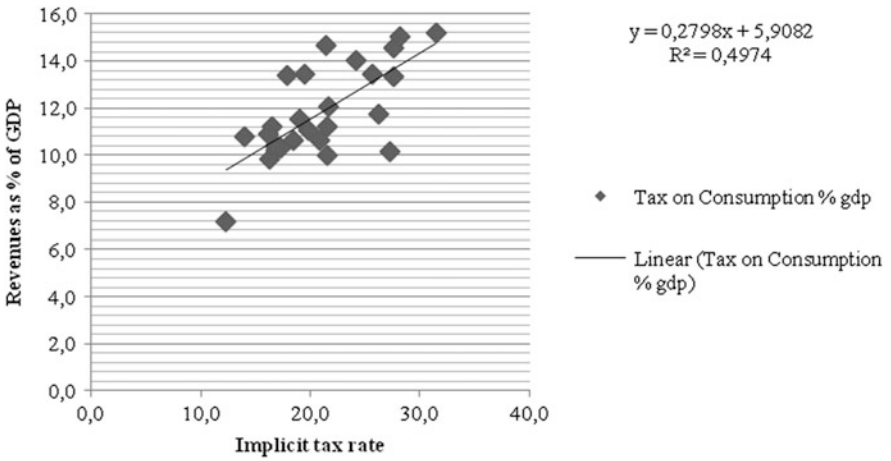


**Fig. 13** Taxes on consumption bases

The differences and imbalances between EU countries reflect different tax regime structures. This problem seems to have also a spatial character and it will pose a serious regional problem for the EU, and especially EMU countries which already have a common currency and monetary policy.

## *2.5 Tax Performance, Gross Domestic Product, Balance of Payment and Government Debt*

Table 10 (Percentage Movements from 2000 to 2009 of Total Tax, GDP, Government Debt and Balance of Payment) shows the trends of the above mentioned variables.

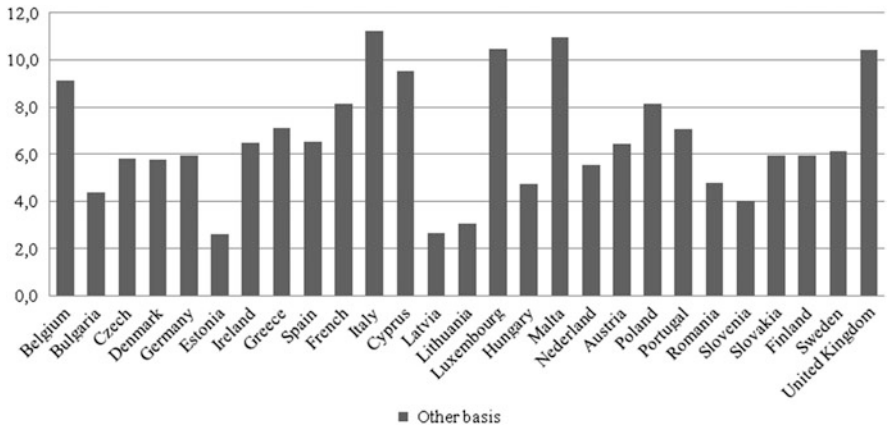


**Fig. 14** Taxes from other tax bases

The movements are calculated from original volumes using the equation:

$$(\text{V\_2000} - \text{V\_2009})/\text{V\_2000} = \text{Mov.}$$

Our work, by using the above changes in fundamentals, provides useful conclusions regarding the adequacy and effectiveness of the applied tax regime over time in relation to the economic situation faced by each country. If an increase in the collection of taxes is not proportional to the GDP growth (i.e. the increase of the revenue is smaller than the increase of the GDP), then this country has an inadequate and inefficient tax system. From another point of view, this country will have a serious problem in repaying its debt.

According to Fig. 16, there are great discrepancies between countries in relation to the movements of tax revenues.

The empirical findings are presented in Table 10 and Fig. 16. The biggest percentage changes (movements) in terms of Gross Percentage Product were experienced in countries across Central and Eastern Europe. Romania has experienced the biggest increase of GDP (190,76 %), followed by Slovakia, Bulgaria, Estonia, and the Czech Republic (185 %, 149 %, 125 %, and 122 % movement respectively). Western European countries have seen smaller changes (increases, with the exception of the United Kingdom which had a small decrease) probably due to the fact that their initial absolute GDP figures were considerably higher than those of Central and Eastern European Countries.

The picture for national debt movement is somewhat similar. Central and Eastern European Countries, such as Latvia, Czech Republic and Romania, saw their national debt change radically (i.e. increases); very high movements of debt were also experienced in some Western and South European countries such as Luxemburg, Ireland, and Greece, whereas Denmark, Sweden and Bulgaria had debt reduction.

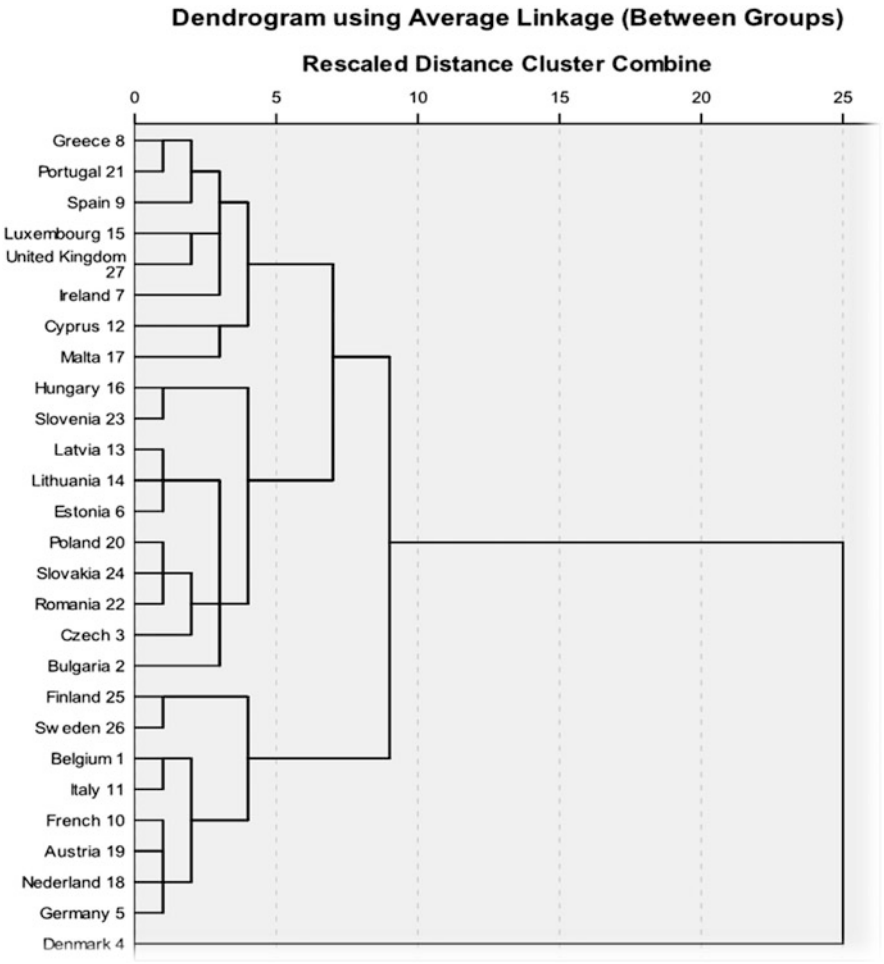


**Fig. 15** Similarities between countries tax regimes of EU

The Balance of Payments' movement shows that there is a "polarization" within the European Union. A number of Western and Central European countries (most notably Austria, Germany, the Baltic countries, France and Belgium) have experienced significant positive increases of their Balance of Payments, i.e. trade surpluses. On the other hand, peripheral countries such as Ireland, Italy, Bulgaria, Cyprus or Romania, experienced significant negative movements.

The movements of Tax Performance reflect, more or less, changes in GDP terms. Thus, countries from Central and Eastern Europe, like the Baltic countries, Romania, Slovakia, Bulgaria, the Czech Republic, and Cyprus, have the highest movements of Tax Performance. European countries with more "advanced" economies have had smaller movements of their Tax Performance.

**Table 10** Total tax, GDP, government debt and balance of payment: percentage movements 2000–2009

| Country | Mov. tax (%) | Mov. GDP (%) | Mov. debt (%) | Mov.bop (%) |
|---|---|---|---|---|
| Belgium | 29.61 | 34.79 | 10.58 | 152.27 |
| Bulgaria | 127.97 | 148.90 | −43.62 | −308.39 |
| Czech | 126.07 | 121.86 | 258.33 | −15.77 |
| Denmark | 25.70 | 29.03 | −23.68 | −200.37 |
| Germany | 10.03 | 15.97 | 36.35 | 496.40 |
| Estonia | 159.84 | 124.68 | 127.78 | 254.98 |
| Ireland | 35.78 | 51.71 | 166.00 | −1139.31 |
| Greece | 47.16 | 67.94 | 92.70 | −143.12 |
| Spain | 49.29 | 66.35 | 51.39 | −102.58 |
| France | 23.67 | 31.23 | 43.40 | 235.87 |
| Italy | 31.00 | 26.82 | 25.12 | −374.01 |
| Cyprus | 98.57 | 69.40 | | −237.94 |
| Latvia | 98.27 | 119.61 | 499.46 | 487.86 |
| Lithuania | 108.37 | 113.83 | 127.73 | 260.16 |
| Luxembourg | 60.89 | 69.96 | 444.70 | 16.53 |
| Hungary | 83.89 | 81.59 | 79.74 | 97.43 |
| Malta | 64.48 | 35.42 | 50.21 | 9.38 |
| Nederland | 30.67 | 36.65 | 49.78 | −174.46 |
| Austria | 30.10 | 31.82 | 20.54 | 589.67 |
| Poland | 63.30 | 67.28 | 94.89 | −7.78 |
| Portugal | 31.75 | 32.35 | 73.88 | −39.76 |
| Romania | 159.40 | 190.76 | 178.04 | −234.78 |
| Slovenia | 64.62 | 63.98 | 95.81 | 21.42 |
| Slovakia | 140.36 | 184.83 | 88.94 | −116.36 |
| Finland | 19.13 | 30.50 | 5.22 | 70.28 |
| Sweden | −0.76 | 9.03 | −10.73 | −84.43 |
| United Kingdom | −7.21 | −2.33 | 74.31 | 45.63 |

## 3 Conclusion

There are significant differences among the tax regimes of EU countries; no policy has been implemented to ensure tax homogeneity across the EU, nor is there any likelihood of such. Budget deficits have an impact on taxation and countries, invariably, manage the recent debt crisis by selecting different taxes as fiscal policy tools.

The total average tax revenues as a percentage of GDP decreased into the EU market from 2000 to 2009. Into the market, other countries remained stable while several decreased their tax revenues as % of GDP. Significant differences exist in the tax structure (direct and indirect taxation) between EU countries. Direct taxes remain at a lower level against indirect taxes in many countries and as average in the EU market, something which denotes an unfair tax regime according to taxation theory. Significant differences exist in the tax structure (Labour, Consumption and

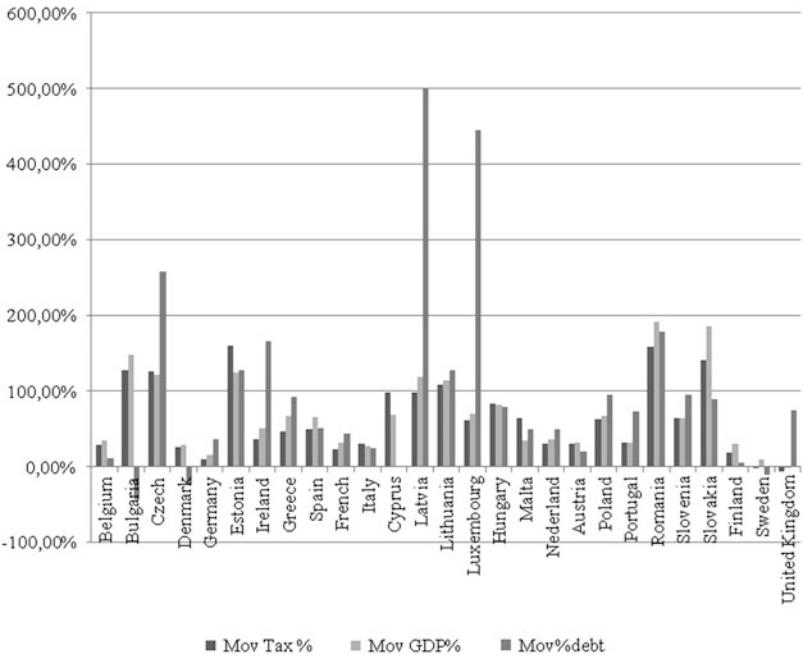


**Fig. 16** Movements of tax revenues, GDP and government debt

Other tax) between EU countries. The taxes on labour remain at a higher level against taxes on consumption and taxes on other tax bases in many countries, and as average in the EU market; thus, the countries are focused on Labour for public revenues collection.

A positive correlation exists between tax ratio and volume for VAT but there is also volatility. Deviations from the rule of proportional change between tax rate and volume of tax revenues show instability in tax performance among countries and they indicate the existence of problematic tax legislation (tax Free amounts, tax deductible amounts, tax exempt amounts, and differences in tax rates per incremental level of tax base). They also show that there is tax evasion or failure of tax authorities in collecting taxes or in replacing taxable amounts with tax exempt income or with income classified to other tax base with lower tax rate. This volatility shows that there is insignificant difference in performance between the EU countries regarding the collection of VAT, especially in the low level of tax rate.

There are significant differences in the tax structure on income (Personal, Corporate and Other) between EU countries. The corporate and other income taxes remain at a lower level against Personal income taxes in many countries and as average in EU market, which denotes that personal income remains as the main income base for the direct taxation. Significant decreases can be found in the tax rates of direct taxes for all EU countries. The decreases of tax rates on corporate

income remain at a higher level against tax rates on personal income. Low homogeneity exists for the volumes of personal income between EU countries, also, there exists positive correlation between tax ratio and the volume of personal income tax, but also there exists volatility. This volatility shows that there is significant difference in performance between EU countries insofar as the collection of taxes on personal income is concerned, especially in the high level of tax rate. Low homogeneity exists for the volumes of corporate income between EU countries. Cyprus, Malta and Luxembourg as international corporate centers have high level of volumes and, on the other hand, Germany has the lowest volume as % of GDP from all the other countries. Tax ratio and volume are not correlated for corporate income tax. This high volatility shows that high or low level of tax rate have same volumes of tax as percentage of GDP. The general rule (strongly positive correlation between tax rate and tax revenue) is not followed by the countries indicating significant differences in tax legislations and problems in collecting taxes from companies.

There are no significant differences during the time for implicit tax rates on labour and consumption (decrease of implicit tax rate for labour and stabile for consumption). There is strong positive correlation between implicit tax ratio and volume of tax on labour; similarly, there is positive correlation between implicit tax ratio and volume of tax on consumption, there is, also, volatility. Nowadays, the EU authorities suggested to substitute tax revenues from labour with tax revenues from consumption, but this still does not seem to happen. All other tax volumes as % of GDP from other tax bases include taxes such as capital gains and property taxes varied widely between countries (from 2 % to 11 %).

The tax regimes of EU countries are grouped in three main separate groups. The differences and the imbalances between EU countries reflect different tax regimes structures and this problem seems to have also a spatial character and will pose a serious regional problem for the EU, and especially EMU countries, which already have a common currency and monetary policy. Movements of Tax Revenues, GDP and Government Debt and Balance of payment for the years 2000–2009 shows great anarchy among countries based on the movements of their fundamentals in relation to the movements of their tax revenues.

The contribution of this article is, in addition to presenting the current situation, to identify and cluster the differences and discrepancies between the tax regimes so that policies towards the standardization of the tax regimes of EU countries may be targeted and become feasible.

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# Economic Policies of FYROM Towards the EU—Are They Efficient?

**Abdylmenaf Bexheti and Luan Eshtrefi**

**Abstract** This paper makes the claim that, instead of economic policymaking based on economic cycles, the current and previous Governments of the Former Yugoslav Republic of Macedonia (FYROM) have made policymaking based on political cycles to suit the needs of individual elites while not focusing on the priority of eventual EU integration, leading to a decade long failure of creating priorities for eventual EU accession. The correlation of economic policy based on political consequences is presently threatening FYROM's attempt to create institutional reforms needed to transform its economy into an efficient market economy. This "populistic" approach of the national political elites gives Brussels additional reasons to offer FYROM the cold shoulder, since national EU harmonization in economic issues have been frozen. Through a comparative and benchmark analysis, the paper will examine the present economic situation in FYROM and what is needed to intensify the process of economic policy harmonization to EU standards. It finds that the lack of sufficient economic policy outcomes from Skopje may lead the EU to regard this as a retreat from its obligations. The current economic national strategy of reforms by moving one step forward and two steps back will leave FYROM out of the EU enlargement agenda.

**Keywords** EU integration • FYROM • Economic/political cycle

**JEL Classification Codes** H11 • H21 • O11

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## 1 Introduction

One of the key debates among political scientists and economists is based on the relationship of policymaking (governance as it relates to politics) and policy outcome (economic performance as it relates to economics). To oversimplify—both sides work in parallel: politics cannot function without economics nor can economics function without politics.

However, politics and economics can be seen as a trade-off—a government should drive the national economy based on economic cycles. Accordingly, this necessarily means that a Government should execute the State budget based on what is good for the State, and not what is good for the political party leading the government.

We do not, however, live in ideal conditions. Studies show that, more often than not, governments do add political gain to economic policymaking, creating opportunistic politicians (Alesina and Perotti 1995b). Such examples include allocating revenue among rents to suit political elites and their future potential to continue in office (Persson and Tabellini 2000).

Moreover, game theory studies have proven that political institutions make economic policy suit the needs of political elites (Persson 2002). Some go even further to claim that, despite the need to create policy based on economic needs, political groups create policy based on the political business cycle, both temporarily and long-term policymaking, via "partisan political cycles" (Alesina and Roubini 1992) without completely rejecting "opportunistic political cycles".

This type of expansionary policymaking does not support the ideal notion of trade-offs mentioned above. Moreover, policymaking based on political cycles instead of economic cycles cannot be avoided in transition countries, including those in the South East Europe (SEE). For the SEE countries, one of the most important policymaking goals is aligning and harmonizing EU policy to the candidate country or potential candidate country by convergence. However, this process may be deceiving after a closer examination.

Instead of creating political cycles, the SEE countries have to closely measure the costs of heterogeneity in converging to EU norms and practices, as mentioned by the Czech President, Vaclav Klaus.[1] Klaus (2012) even notes that new EU member states are becoming agents and the EU has taken on the role of the agent. This new principal-agent relationship illustrates the need for the transition economies to align economic policy based on EU economic policy, not on *de jure* political cycles.

This paper makes the claim that, instead of economic policymaking based on economic cycles, the current and previous Governments of the Former Yugoslav Republic of Macedonia (FYROM) have made policymaking based on political cycles tailored to the needs of individual elites, and not focusing on the priority

[1] In his book, "Europe: The Shattering of Illusions," Klaus asserts that Governments need to examine the costs of convergence.

of eventual EU integration. The correlation of economic policy based on political consequences is presently threatening FYROM's attempt to create institutional reforms needed to transform its economy into an efficient market economy. This "populistic" approach of the national political elites gives Brussels additional reasons to push FYROM further away, since national EU harmonization in economic issues have been frozen.

In short, the paper is divided into two parts: (1) a historical and comparative economic analysis of FYROM is presented to show the road already travelled; and (2) by illustrating the current FYROM economic model and highlighting *restrictive* monetary policy and *populistic* fiscal policy the paper shows specific cases in which economic policy has been a function of political cycles.

## 2 A Historical Overview of FYROM's Economic Policies: The Road Already Travelled

Usually, economic phenomena are non-linear and contain fluctuations that are known as business cycles. Economic fluctuations correspond to the changes in business environment and conditions. When GDP increases and when growth is sustained, the national economy expands and contrary to this, when GDP declines in at least two consecutive quarters, a national economy is considered to be in recession. Moreover, recessions can be both frequent, such as the United States economy in 1980 and 1982, and few and far between, such as the U.S. economy during the 1990s.

In geographical aspects, business cycles could be regionally related and in other cases globally related, such as the cases of South East Asia and Russia in 1997 and the global crisis in 2007 respectively.[2] Today, in such a global era, all national economies are very frequently related and interdependent. The most recent case that proves this notion is the global economic crisis, in which many national economies were impacted by financial crises with various intensity depending on the openness and economic structure of each national economy towards the much more developed part of world. As the Nobel Prize Laureate for Economics Joseph Stieglitz has stated, the crisis was exported from the United States to the whole world.[3]

During and especially after negative economic cycles, researchers of the field examine the causes and the reasons of such cycles. They attempt to define the measures taken in both the short-term and long-term reactions in order to stabilize economic cycles.

Specifically, Auerbach and Gale (2009) discuss the impact of recent tumultuous economic events and policy intervention on the federal fiscal picture for the

[2] For more, see Soros (2002).

[3] Hugh and Kochan (2008).

immediate future and for the longer run.[4] Auerbach and Gale (2009) have developed their arguments based on their previous research in this field.[5]

Moreover, Farrokh Langdana (Langdana 2011) analyzed debt burdens and found avenues to escape these traps and find that, "budget deficits, both in the U.S. and in Europe, are poised to get larger very fast. This is not only because of rapid increases in spending, but due to the impending sharp drop in the tax base".[6] In the case of FYROM's economy, twin deficits exist during the entire transition period, however, from 1997 there has been relatively high monetary discipline which as consequence, has generated more fiscal expansion during the last 7 years.

More relevant research was carried out by Alesina and Perotini (1995a), on the question: why are some countries more inclined than others to have budget deficits and why are budget deficit reductions so difficult to manage? Based on Alesina and Perotini (1995a) the answer to these questions is: we have concluded that it is difficult to explain these large differences in deficit levels among countries only through economic arguments. They argue that institutional and political factors are crucial to partially understand budget deficits and fiscal policy in general. While the OECD country economies are relatively similar, their institutions, such as: electoral laws, party structures, budgetary laws, central banks, the degree of centralization, political stability and social polarization, are quite different.[7] Moreover, in a another similar study they have found that coalition governments, are almost always unsuccessful in adapting efforts, being unable to maintain a strong fiscal position due to conflicts between members of the coalition.

In the beginning of 2008, Western Europe and above all Great Britain seriously started to "reshape" its current economic policy and the same was followed by many other countries from SEE. How did the governments in SEE countries react? In October 2008, the Government of the Republic of Serbia made revised estimations for 2009, *inter alia* concerning the projected GDP growth from 6.5 %, on the basis of which projection planned its fiscal policy (budget). However, in less than 1 month—in November, the Serbian Government realized that the crisis would have a full swing in their economy, and therefore changed the growth rate to 3.5 % and proportionally the projected fiscal policy – Budget for 2009.[8] Other

[4] Alan J. Auerbach and William G. Gale, The Economic Crisis and Fiscal Crisis: 2009 and Beyond, February 2009.

[5] See more: Aurebach and Gale (1999, 2001), Auerbach et al. (2003), Auerbach, Furman and Gale (2007, 2008).

[6] Farrokh Langdana, has also analyzed the twin deficits phenomena $G - T = (I - S) - (I - Ex)$ and he notes: budget deficits are $G - T > 0$. Here, T is tax revenues, given by $T = tY$, where "t" is the tax rate, and Y is national income. If national income (Y) falls here and in Europe as the mature economies sink into a slowdown or another recession, the tax revenues (T) will fall fast, and as unemployment benefits (G) increase, the deficits will shoot up rapidly. See more: Manuscripta No. 69, January 2010-BERG series.

[7] See more: Alesina A., and R. Perotti (1995a), Fiscal Expansions and Adjustments in OECD Countries, Economic Policy, n.21, 207–247.

[8] See: Memorandum of Budget and Economical Fiscal Policy for 2009 with Projections for 2010, 2011.

**Table 1** Revised growth rates of the world and regional economies 2007–2009 (as % of Δ in GDP)

| | Realization 2007 | Estimation 2008 | Projection 2009 |
|---|---|---|---|
| World economy | 5.0 | 3.7 | 2.2 |
| Developed countries | 2.6 | 1.4 | −0.3 |
| USA | 2.0 | 1.4 | −0.7 |
| EU | 3.1 | 1.5 | −0.2 |
| Japan | 2.1 | 0.5 | −0.2 |
| Countries in development | 8.0 | 6.6 | 5.1 |
| China | 11.9 | 9.7 | 8.5 |
| Russia | 8.1 | 6.8 | 3.5 |
| Central and Eastern Europe | 5.7 | 4.2 | 2.5 |
| Serbia | 7.1 | 6.0 | 3.5 |
| Croatia | 5.6 | 3.5 | 3.0 |
| Bulgaria | 6.2 | 6.5 | 4.5 |
| FYROM | 5.1 | 5.3 | 5.5 |

Source: IMF, World Econonic Outlook, November 2008

countries in the region had similar projections. The data in Table 1 illustrates the revised rates of growth of the world and regional economies[9]:

Policy makers in FYROM maintained irrational expectations for mere political reasons—parliamentary elections were very near (June 2008). Some policymakers even saw an opportunity for FYROM during the global economic crisis. The analysis of the first quarter of the following year (2009) shows a more significant decline in comparison to some optimistic economic projections. Namely, the analysis shows a decrease of world economic growth to 3.2 %, whereas projections of 2009 in its entirety show a decline in global economic activity from −0.5 % to −1 % whereas its revival was expected to be during 2010.[10]

The data in Table 1 illustrates that FYROM not only entered 2009 with its macroeconomic projections with "irrational enthusiasm", (Alan Greenspan) but continued to adhere to them whilst not wanting to recognize the reality of the impact of the global economic crisis that was evident by the "outward observers" of the states during the first quarter of the year.

In November 2008, the Macroeconomic Policy Department of the FYROM Ministry of Finance prepared and submitted information to the competent Commissions of Parliament on the effects of the global financial crisis to the FYROM financial system and on the real economy.[11] This information was necessary in order to undertake appropriate measures for over passing the eventual

[9] Data for Regional Economies, including FYROM taken from: Economic Commission – Economic Projections, November 2008, Brussels.

[10] NBRM (2009).

[11] Ministry of Finance (2009).

unfavourable states towards the FYROM economy in which the basic parameters for expansive fiscal planning in 2009 were posed without taking into account the real economic power of the country after the influence of the crisis on the real sector of the economy.

During November 2008, the Analysis of the Draft Budget for 2009 was completed and the presentation and debate was organized with all interested parties from the prism of the central budget where all "irrational expectations" of the budget projections were categorically and explicitly pointed out, by the incomes and expenditures, specifically in the coming election months of the year. Time quickly certified the analysis of experts against fiscal governmental "enthusiasts".[12] A round table debate was organised in the beginning of 2009 by the Memorial Centre Nikola Kljusev Foundation. The topic of the debate was "F.Y.R.O.M. and the World Economic Crisis" and on that debate the ambitious fiscal projections of the Government were shown, along with the high fiscal risk of the Government that would soon have consequences. A few months later the states were certified to a high extent of preciseness of the projections given by the experts (above €200 million higher projections, out of which €175 million were corrected at the first rebalance of the budget).[13]

Apart from domestic experts, public and other relevant institutions highlighted on time that the projections were too ambitious as stated also in the Country Report about the doubtfulness of these projections that could lead to delusion at the economic agents in the country.[14] The IMF and European Bank for Reconstruction and Development (EBRD) were even more sceptical in comparison to the stated report for the 2009 projections. In the regular IMF (2009a) Country Report, the risk of the "growing budget deficit" is implicitly highlighted, noting that it can generate "additional macroeconomic pressures" in the country.[15]

Furthermore, 2 years after developed countries had turned on their alarms for the coming of the biggest crisis after the Great Economic Depression of the 1930s, in FYROM, competent institutions wanted to show this situation as "a comparative advantage" and as a "chance" for attracting all investments that would run from developed markets and will be directed to the less developed and "unavailable" markets for crisis, including FYROM. Several months later it was seen that this naivety and illusion would not last, because the first consequences of the crisis were evident at the end of 2008. Certain authors interpret this tendency as a consequence of "the advantage of the economic backwardness" of the country.[16]

Besides this and apart from all suggestions that were given by numerous economic experts, competent institutions in light of their irrational optimism

[12] Bexheti (2008).

[13] Foundation – Memorial Center Nikola Kljusev (2009) pp. 38–42.

[14] Country Report Macedonia, Economic Intelligence Unit (2008) p. 7.

[15] IMF Country Report No. 09/XX, Former Yugoslav Republic of Macedonia: Selected Issues, p. 11 February 2009.

[16] See: Shukarov (2009).

"designed and brought" the Draft-Budget and Macroeconomic Projections. The intensity of the worsening of the state of the FYROM economy (and some other economies in the region) was very high and forced authorities to "recognize" the reality and to redraw "cocktail measures" with which they would oppose the crisis that seriously metastasized a great number of branches of FYROM economy. Hence, there was a great need and necessity for a deeper analysis of the current state and applied measures for the alleviation of the state and the commencement of the "economic revival."

The lesson of this retrospective suggests that there is a need for timely and real projections of the State—especially during the global crisis that was evident for more than a year. It is better to recognize the truth even though it is unfavourable, than to hope that it would not attack the economy. Ordinarily, global crises attack at the periphery of the strike where it is the strongest and it is difficult to conduct reparations.

The current problems in the Euro-zone and especially those in Greece led to an even more negative impact on FYROM's economy given that it is one of the main trade partners of the country (over 60 % of the export-import). Particularly, with the crisis in Greece, in 2009 FYROM attracted over $57 million and today this figure does not even reach $20 million. Simultaneously, in 2008, exports from FYROM to Greece reached $536 million and today this figure is less than half (since 2011 $215 million, and in 2012 even less).[17] This will directly impact the national economy considering that the country's largest bank (Stopanska bank) has 85 % of its capital by the NBG (National Bank of Greece) and that the ownership of the petroleum refinery is Greek (Hellenic Petroleum), which is the only manufacturer of Titan cement.

## 3 Economic Policies in Function of Political Cycles

### *3.1 Economic Policy and Cycles in FYROM—Underperformance from the Beginning of Transition Until Today*

Proportionally to economic cycles, appropriate anti-cyclical economic measures should be designed in such a way that they would influence the alleviation and shortening of the period of national economic decline on one side, and fastening and maintaining growth on the other. This is the fundamental objective of every national economy that can be accomplished with the optimal combination of different economic measures.

[17] NBRM Database sources (www.nbrm.mk.com—FDI and External Sector).

**Table 2** Growth rates in % of GDP of FYROM and Central and Eastern Europe

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011[a] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % of real GDP (FYROM) | 4.5 | −4.5 | 0.9 | 2.8 | 4.1 | 4.1 | 4.0 | 5.9 | 5.0 | −0.9 | 3.3 | 2.4 |
| Average (CEE) | – | – | – | – | – | 6.0 | 6.6 | 5.4 | 2.9 | −3.7[b] | 2.7[b] | – |

Source: Ministry of Finance of FYROM (2009) and IMF-World Economic Outlook (2009)
[a]Estimation-Presentation of the Governer of the NBRM-Graz, Austria
[b]Taken from IMF (April 2009, and October 2011)

In the last two decades, the FYROM economy notices typical cyclic development—with significant decreases in the initial years of transition (until 1995 with negative growth) and in 1996 a positive mild growth with the "record" of 4.6 % in 2000. In the following year, this percentage "melted" in the same corresponding negative growth rate (−4.5 % as a result of the conflict in 2001). The growth rates for the last decade of the FYROM economy and the countries of Central and Eastern Europe are shown in Table 2 with data provided by the FYROM Ministry of Finance (2009) and the IMF (2009c).

The average economic growth of the FYROM economy for two decades (1988–2007) is not significant (about 1.2 %; according to data, in 1985 GDP per capita in FYROM was $2,210 whereas in 2007 it was only $2,646 or increased by only 20 %[18]) and represents the lowest rate in the region after Kosovo, since Montenegro and Bosnia and Herzegovina were in a better position. Compared to the beginning of the transition period (1991), today, the level of GDP in FYROM is still about 15 % under the beginning level of transition. The reasons for this are complex and there is not enough space to elaborate them here. The aim is to focus on the cohesion of the economic measures against global economic crisis with special emphasis on their analysis in the case of the FYROM economy.

## *3.2 Insufficient Reforms—A Treatment of the Existing Economic Model and Searching for an Alternative*

Balcilar (2002) and De Mello (1999) noted that economic, political and institutional reforms varied widely across transition countries and this gave rise to transition patterns in terms of GDP and other economic and social outcomes.

The FYROM economy still experiences serious shortcomings related to the functioning of its real economic sector in circumstances of a deteriorated business climate as result of insufficient reforms such as: inefficient functioning market economy, judiciary system, public administration and other democratic pillars such as an independent media. Previous research sees these and other institutional

[18] Australian Macedonian Weekly: www.australianmacedonianweekly.com/edition (April 2012).

**Table 3** Cyclic regulated fiscal balance for FYROM

| Description | 2008 | 2009 |
|---|---|---|
| Actual GDP (billion denars) | 387.1 | 422.7 |
| Potential GDP (————————,————————) | 384.2 | 420.8 |
| Difference (gap) of GDP (the percentage cyclical regulated GDP) | 0.8 | 0.5 |
| Budget balance (% of GDP) | −1.5 | −3.0 |
| Cyclical regulated fiscal balance (% of GDP) | −1.8 | −3.2 |

Source: IMF (2009b) Country Report, IMF Officers, p. 12, 2009

weaknesses as reasons for a low level of competitiveness of the economy on the international market (Micevska et al. 2002). Moreover, the IMF (2009c) analysis highlights that the average real growth rate of FYROM is clearly below that of its peers in SEE. This weak performance is explained by very low investments and low productivity growth as shown in Table 3, including disturbing fiscal balances for 2009 in comparison with 2008, as noted by the IMF (2009b). FYROM continues to have the lowest share of investment in GDP (less than 17 % as a gross rate) while its unemployment rate is one of the highest in region (IMF 2009b).

In such circumstances, responsible policymaking institutions in FYROM, joined by economic chambers and associations continue to ask for a "specific model" of sustainable economic growth. Many current studies[19] confirmed previous findings that the "Macedonian model" is mainly based on total factor productivity (TFP), approximately 42 % of its contributions to GDP growth. The periodical data series from 1998 to 2008 shows that GDP growth was 3.1 % based on contributions as follows:

| | |
|---|---|
| Capital | 1.2 % (38.71 %) |
| Labor | 0.6 % (19.35 %) |
| TFP | 1.3 % (41.94 %) |
| **Total:** | **3.1 % (100.00 %)** |

The TFP sectors vary and are expressed with extreme fluctuations, such as the largest contributor of GDP growth in the FYROM economy, the agriculture sector (200 %), followed by the service sector (43.24 %) and industry sector (28.6 %).

Nevertheless, we consider the FYROM economic growth model not to be the main problem. The main issue according to our opinion is the inconsistency of policymaking based on short- term political cycles instead of objective analysis and research. The main arguments are in the analysis showing relevant research that inconsistent structural and reform measures result in poor outcomes such as in the agriculture sector. For instance, although the budget in the last 4 years has increased more than fivefold, the outcomes (GDP and employment) have decreased (Bexheti 2010) and the public consumption structure has had a negative impact on GDP (Bexheti 2009).

Moreover, uncoordinated monetary and fiscal policies during the financial crisis have caused a permanent increase of the basic interest rate, negatively impacting

[19] Rexhepi (2012) p. 133.

investment and consumption in the FYROM economy. In 2009, the main negative impact to contributions to GDP growth was private consumption; in 2010 gross investment was the key negative impact to GDP growth, followed by government consumption in 2011.[20] All these policy and economic measures have been taken for political reasons—every 2 years premature parliamentary elections have been organized, so that the same government could continue for a longer term.

### 3.3 *Restrictive Monetary Policy Versus Populistic and Unproductive Fiscal Policy*

We noted above that the ineffective fiscal expansion due to price stability has forced restrictive monetary policies which shifted interest rates to higher margins because of uncoordinated monetary policies. Besides, the cohabitation of political power with monetary policy has cost the real sector with a reduction of investment and private spending that "dehydrated" the real economy and has momentarily resulted in the most extreme non-liquidity.

During November 2008, the Analysis of the Draft Budget for 2009 was completed and the presentation and debate was organized with all interested parties from the prism of the central budget where all "irrational expectations" of the budget projections were categorically and explicitly highlighted by incomes and expenditures, specifically in the coming election months of the year. Time quickly certified the analysis of experts against fiscal governmental "enthusiasts."[21]

An increased deficit of the paid balance of the country forced the National Bank of FYROM (NBRM) to tighten monetary policy even more through the basic interest rate and increased the compulsory reserves of commercial banks. When the NBRM basic interest rate reached 7 %, commercial loans were placed with the average interest rates from 9 % to 9.5 %. With conditions of significantly decreased income in the central budget, the Ministry of Finance, on behalf of the Government of FYROM, announced the selling of State bonds on the "record" annual rate from 9 % forcing the NBRM to react with an increase of the basic interest rate of treasury bills from 7 % to 9.1 %. This "overrun" was "very strong" and forced the Government to stop with the "continuing competition" in this process but this enormously increased interest rates of the loan negotiations towards the economy (on average from 11 % to 13 %) and with higher dynamism of negotiations for consumer loans of citizens (on average from 13 % to 15 %). This led to a consumption decline (negative trend from −0.5 %) and a decline of investments (negative trend from −20.8 %) in the country in relation to the same period of the previous year, that

[20] Bogov (2012).

[21] Bexheti (2008).

apart from exports are the main factors that determine the economic growth of the FYROM economy.[22] The economic cycles of the FYROM economy need cyclic "regulatory fiscal equilibrium," where[23]:

$$FB^* = PI^* - PO \tag{1}$$

Where:

FB* = Cyclic regulated fiscal balance
PI* = Cyclic regulated public incomes and
PO* = Cyclic regulated public outcomes

Public incomes and public outcomes should be regulated (projected) proportionally on the basis of the ratio of potential GDP (potential economy) and factual (actual) GDP that are determined by their flexibility, so as:

$$PI^* = API \times (GDP^*/GDP)\alpha \text{ and } PI^* = APO \times (GDP^*/GDP)\beta \tag{2}$$

Where:

API = Actual public incomes,
APO = Actual public outcomes,
GDP * = Potential GDP
GDP = Actual GDP
$\alpha$ = Flexibility of public incomes
$\beta$ = Flexibility of public outcomes

On the basis of estimations provided by the IMF (2009b) (made on the basis of the "Hodrick-Prescott Time Series Filtering Method") for the 2009 cyclic regulated fiscal balance for FYROM is as follows:

According to the IMF (2009b) estimations, the cyclical behaviour of the fiscal balance of FYROM shows that *"a positive fiscal impulse represents one regulated cyclical contraction."*[24] Precisely, 2009 illustrates that fiscal impacts through automatic fiscal stabilizers had a negative reflection on the potential GDP, whereas forced discretionary fiscal policies did not succeed to reimburse that because they have crowded the business. According to the same methodology projections for 2010 on the basis of the effects of these policies are more optimistic because it is expected that the cyclical behaviour of the fiscal balance will generate a *minimal but positive effect* on the potential GDP (+0.7 % from discretionary fiscal policies and −0.3 % from automatic stabilizers), resulting in a 0.4 % increase.

[22] SIS State Statistical Office DZS National Account GDP-Publication Number 3.1.9.05.18 Sept 2009, Skopje, FYROM.
[23] Bexheti (2010).
[24] See: IMF (2009b).

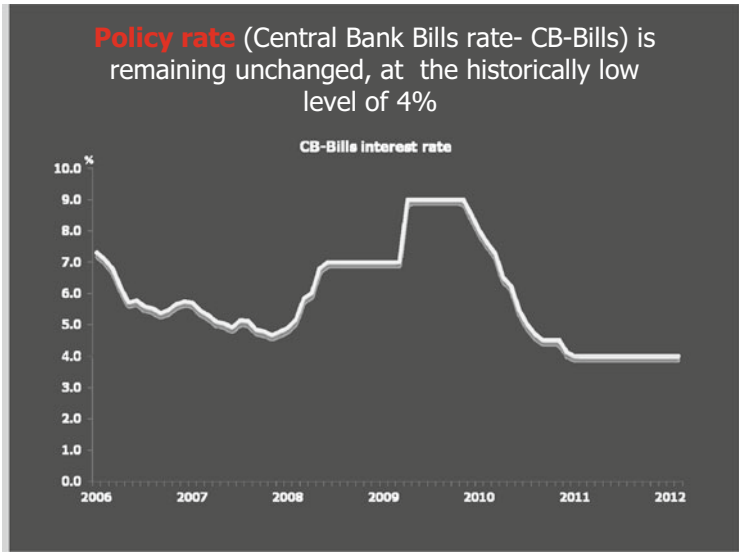


**Fig. 1** FYROM's policy interest rates (Source: NBRM)

Monetary policies have been much more focused on the macroeconomic stability than on economic growth. According to Soros (2002), even the IMF insists that emerging countries create "pro cycles" policy—"the IMF is turning countries in recession insisting to increase interest rates and decreasing public expenditures, which is contrary to policies done, for example, by the United States."[25] The case of FYROM will stay an issue for debate, since there is no dilemma about the needed macroeconomic policies and is strongly defined in the main responsibilities of the NBRM in law. Policy interest rates, especially during global financial crisis, were extremely high—maximum 9.1 % (2009–2010) as Fig. 1 illustrates:

Regarding FYROM's ability to fulfil the EU convergence criteria of price stability, we can say that the country has a relatively good performance and achieved considerable monetary stability.[26] Nevertheless, a permanent increase in growth rates cannot be achieved with monetary policy which exclusively focuses on defending a fixed exchange rate. The predominant and main objective of the NBRM is long-term price stability, while production stability is its second objective—which should be followed unless it is in conflict with the first objective.[27] Monetary sterilization took place during 2008 and 2009 in the case of FYROM as a "response" to the expansion of fiscal policy, causing very negative

[25] Soros (2002) pp 68.

[26] Commission of the European Communities, "The Former Yugoslav Republic of Macedonia 2009 Progress Report," {Comm 2009 553}, Brussels, 2009.

[27] For more detail see also Bexheti (2010) and NBRM (2008).

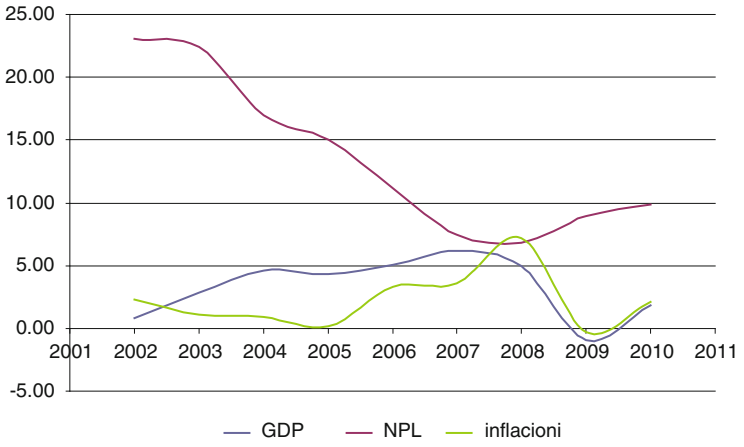


**Fig. 2** Relationship among FYROM's GDP, NPL, and inflation (Source: Author's calculations based on NBRM data)

effects to the real sector although contributing to price stability. However, price stability has to be the precondition to achieve the main aim-sustainable GDP growth, which was not the case. In these circumstances, the financial sector becomes more fragile. Figure 2 illustrates this better, especially the relationship between GDP decline and the increase of nonperforming loans.

## *3.4 Agriculture Policy—Economically Inefficient, Socially and Politically Acceptable*

FYROM has good climate and geographical conditions for the agricultural sector, at least to meet the needs with imported food products (such as milk and milk products, fruits and vegetables, and other related products). On average, there are approximately 270 days of sun in the country with a continental and Mediterranean climate and with average rainfall about 733 mm. Currently, 43 % of the population in FYROM is rural and 57 % is urban. Today the agriculture sector participates in less than 10 % of GDP, while a decade ago this figure was over 13.5 % of GDP. About 48% of total area of FYROM is designated as agricultural land (more than one million hectares) from which more than half considered arable land (520,000 ha).[28]

Agricultural Policy which supports the agricultural sector in FYROM pretends to follow the EU "model" and is oriented in two parallel types: (1) Direct payment measures and (2) policy to support rural development (National + Instrument for Pre-Accession for Rural Development [IPARD] + Rural Crediting Policy).

[28] FYROM Ministry of Agriculture, Forestry, and Water Works (2009).

Since 2005, fiscal policies have began to aggressively support the agriculture sector, from a mere €23 million in 2005 to €115 million in 2011 (a fivefold increase), with a forecast of €130 million in 2012. However, in terms of distribution, these policies have been inefficient and unfair in FYROM's territories. The relevant argument of the low efficiency and unfair agricultural policies is the low participation of agriculture in GDP, the decline of employability in this sector, and the increased imports and decreased exports in this sector.

On the other hand, the argument of unfair regional distribution of agriculture funds (based on a political—ethnic divide) include the records of budgets; for example, in 2010, Bitola received over €15 million, while Tetovo (with approximately equal proportions) received only €3.5 million. Another example is that, Kavadari received approximately €12 million in the same year, while Gostivar (with larger proportions) received less than €1.5 million.[29] Similar effects are found in rural development policy. In such circumstances, it turns out that the budget is used in a way that ineffectively redistributes economic, social, and political resources.

## 4 Conclusion

In the case of FYROM, political cycles have dominated the structure and content of policymaking. This paper has attempted to prove this by examining at least three cases: (1) Monetary policy, (2) Fiscal policy, and (3) Agriculture Policy.

As stated above, cyclical governance based on political preferences is not a new notion. Studies have proven that such policymaking does take place in many different countries, including advanced and transition countries. Nevertheless, transition countries that have EU convergence aims, such as the FYROM, cannot maintain a cyclical trend based on political preferences without considering one major tradeoff—EU approximation and eventual integration, at least in the medium term.

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[29] Halili (2011) pp 84–85.

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# Integration, Institutions and Export Specialization

**Karen Crabbé and Michel Beine**

**Abstract** This paper studies the impact of economic integration and institutional reforms on export specialization in Central and Eastern Europe. The integration and transition process in Central and Eastern Europe offer us a good empirical setting to examine this research question. The empirical analysis is set up for ten Central and Eastern European countries (CEEC) over the period 1996–2008. We find robust results that better protected property rights and a fair credit policy lead to more diversified exports. Trade integration, on the other hand, stimulates export specialization, but institutions seem to be more important in explaining export patterns

**Keywords** Export specialization • Tariffs • Herfindahl index • Institutions • Transition economies

**JEL Classification Codes** F14 • F15 • R12

## 1 Introduction

During the 1990s, Central and East European countries (CEEC) have transformed their economy from a plan economy to a competitive market economy. Their transition process has been enormous. During its communistic period, all production and exports in Central and Eastern Europe were centrally planned. Firms were stimulated to maximize output and employment instead of profits and (cost)

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efficiency. These incentives needed to be changed by institutional reforms such as liberalization and privatization. This transition process towards a market-economy started in 1989 and brought unexpected results as output falls, unemployment and inflation (Roland 2000). In terms of exports, the artificial trade relations with other Central and East European countries collapsed immediately at the start of the transition process and firms needed to reorient their trade towards Western Europe (Rodrik 1994; Walsh and Whelan 2001). Today, these countries are integrated in the Western market by engaging in several bilateral and multilateral free-trade agreements and by joining the European Union and the World Trade Organization.[1] The EU15 is now the dominant foreign market of the CEEC, with more than 60 % of CEE exports going to the EU15 (Damijan et al. 2008; Spies and Marques 2009).

This transition and integration process offers us a unique setting to study the impact on the export pattern of CEE countries. First, the integration process provides us an empirical setting to test traditional and new trade theories suggesting that trade liberalization results in increasing specialization, especially in sectors where a country has a comparative advantage (Amiti 1999; Venables 1999; De Bruyne 2004). Specialization has obviously advantages and disadvantages. According to the traditional trade theories, specialization should be encouraged since it is more efficient, lowers world prices and increases overall welfare. Others have studied the disadvantage of specialization, namely risk exposure. They suggest that specialization makes countries more dependent on a few industries and thus increases the risk of a sector-specific shock (Koren and Tenreyro 2003; Kalemli-Ozcan et al. 2001; Zervoyianni and Anastasiou 2009). Regardless of the disadvantages or advantages of specialization, we would like to examine the link between trade liberalization and export specialization. The empirical literature provides evidence of increasing specialization in Western Europe (Amiti 1999; Brulhart 1998) and Central and Eastern Europe (Traistaru et al. 2003; Hildebrandt and Wörz 2004). Traistaru et al. (2003) come to the conclusion that trade integration leads to higher regional specialization in five Eastern European countries[2] during the period 1990–1999. Similarly, the study by Hildebrandt and Wörz (2004) shows for eight Central and Eastern European countries[3] greater industrial specialization during the period 1993–2000. One drawback of these studies is that trade integration is captured merely by a time trend assuming that trade integration is a linear process. In contrast, Trefler (2004) and Beine and Coulombe (2007) measure trade integration by weighted tariffs. Trefler (2004) gives evidence that a free trade agreement (FTA) between the US and Canada leads to trade creation, increased labor productivity, but reduced employment for manufacturing workers in Canada. Beine and Coulombe (2007) suggest that trade liberalization between Canadian regions and the US resulted in more regional export specialization for Canada in the

[1] For a list of free-trade agreements see http://www.stabilitypact.org and http://www.wto.org and Damijan et al. (2009), Niebuhr and Schlitte (2009).

[2] Bulgaria, Romania, Hungary, Estonia and Slovenia.

[3] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia.

short-run, but less regional export specialization in the long-run. Benedictis et al. (2009) on the other hand find that countries worldwide diversify along their path of economic development.

Second, the transition process in Central and Eastern Europe also offers us the opportunity to analyze whether an institutional environment has an impact on export specialization. Acemoglu et al. (2005) provide theoretical and empirical evidence that well-functioning institutions stimulate investors and producers and thus create growth and larger trade flows. The effect of institutions, especially property rights and contract enforcement, on exports received recently more attention. Nunn (2007) and levchenko (2007) both show that countries with good contract enforcement specialize in exports of goods with higher added value or a more complex production process. Similar conclusions on the direct effects of institutions on sectoral export specialization were found by Ranjan and Lee (2007), Schuler (2003), Martincus and Gallo (2009) and Berkowitz et al. (2006). Jansen and Nordas (2004) find empirical evidence that countries with better institutions just trade more. Moreover, Francois and Manchin (2007) show that the infrastructure and institutional quality in a country matter more than decreasing tariffs in order to stimulate exports.[4]

This paper can bring both streams of literature together and study export specialization during a period of both integration and institutional reform. This will allow us to compare the impact of both factors at export specialization. We analyze this relation at the macro-level for ten CEEC[5] during the period 1996–2008. The increasing integration process between CEEC and the former EU15 is captured by the average weighted import tariff of the EU15. Our estimations find evidence that trade integration increases export specialization in these CEEC. Institutional changes are captured by different measures. The results confirm that the protection of property rights leads to more export diversification. Moreover, we also observe that a fair credit policy (enterprise reforms) stimulates export diversification.

The paper is organized as follows. Section 2 describes the data and some stylized facts. Section 3 discusses the empirical model and methodology. Sections 4 and 5 report the results and robustness checks. Finally, Sect. 6 summarizes the findings.

## 2 Data and Descriptive Statistics

The empirical analysis uses country-level data for ten transition countries: Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia and Slovenia during the period 1996–2008. The dependent variable is the degree of

[4] Francois and Manchin (2007) investigate world data with a special focus for the relations South-South, North–south and North-Least developed countries.

[5] Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia and Slovenia.

export specialization in these countries measured by the Herfindahl index. The Herfindahl index is a common measure in the literature and reveals to what extent a given country is more specialized or diversified, regardless of how the economic structures of other countries are evolving[6] for example as in Sapir (1996), Beine and Coulombe (2007). The index is computed for each country i and each year t as the sum of squared export shares over all industries k (NACE 2-digits) within one country.

$$\text{Export spec.}_{i,t} = \sum_{k=1}^{J} \left(s^{k}_{i,t}\right)^2 \tag{1}$$

Where $s^{k}_{i,t} = \text{exports}^{k}_{i,t} / \sum^{J}_{k=1} \text{exports}^{k}_{i,t}$. A higher index indicates that country i exports in a smaller range of sectors and hence is more specialized in its exports. The export shares in the Herfindahl index are based on yearly export data from the ten transition countries to the EU15 which were collected from Eurostat Comext trade database.[7] Our first independent variable of interest is the integration process of the ten transition countries in the EU15. This process is captured by tariffs set by the EU15. Decreasing tariffs of the EU15 implies that exporting to the EU15 becomes cheaper and more accessible. The tariffs are historical applied tariffs and weighted using import shares from CEEC to the EU15 countries.[8] For each CEE country the weighted tariff is computed as follows

$$\text{wTariff}_{t} = \sum_{j,s}^{J} \left(\text{Tariff}_{j,s,t} * \text{Import shares}_{j,s,t}\right) \tag{2}$$

with j is an EU15 country, s is sector and t is yearly. As robustness check we will use also other measures of trade integration. A detailed list of variables and their description is included in Appendix. The average weighted tariff on EU15 imports decreased as expected over our entire sample period 1996–2008, as illustrated in Fig. 1.

The second independent variable of interest is the institutional environment of the countries, taken into account that these ten countries are in transition from a communist to a market-based economy and a EU-member during the sample period (Noev et al. 2009). Their progress in developing market-driven institutions and regulations will have without a doubt an impact at their exports as mentioned

[6] We investigate here the degree of the so-called absolute specialization, i.e. the extent to what a given country or region is specialized in a limited number of activities. This concept of specialization directly relates to the concept of risk exposure. This contrasts with relative specialization which measures to what extent the export or production structure differs from those of the other (contingent) countries or regions.

[7] The Eurostat comext trade statistics is a high quality database containing annual data on trade flows to and from European countries. The HS product level data were converted to the NACE 2-digit level using the concordance table from Eurostat (HS to NACE Rev. 1.1).

[8] Tariffs and imports were collected on product level and converted to the NACE 2-digit level using the concordance table from Eurostat (HS to NACE Rev. 1.1).

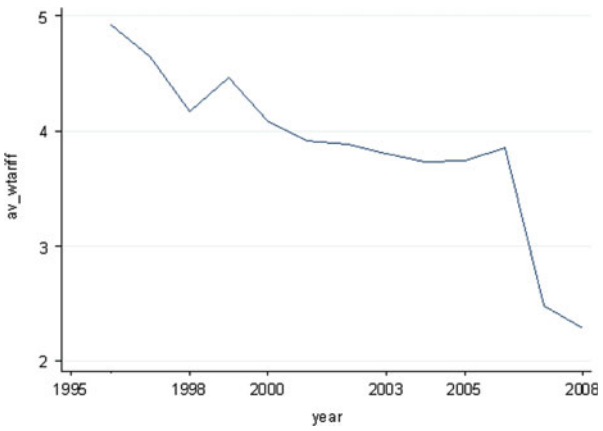


**Fig. 1** Average weighted tariffs (in %) in Central and Eastern Europe (Source: WTO and UN Comtrade)

above. One set of institutional variables is collected from the Heritage foundation and include business freedom, government size and property rights. Each index ranges from 0 to 100 reflecting the distribution of the underlying data. A low value means little freedom and a higher value means more freedom or a better quality of institutions. A second set of institutional variables come from the EBRD transition reports and include enterprise reform, competition policy, financial institutions and large scale privatization.[9] The EBRD indicators range from 0 to 4 reflecting the judgment of the Chief Economist of the EBRD's office about country-specific progress in the institutional reform. A higher value indicates more progress compared to last year. A description of all institutional indicators is reported in Appendix. Both Figs. 2 and 3 show that institutions have progressed towards more market-based institutions and less government interference (increase in the indicators).

## 3 Empirical Model and Methodology

The aim of this study is to analyze the impact of integration with the EU15 and institutional changes on export specialization. Hence, our estimation model is as follows

$$\text{Export spec.}_{i,t} = \alpha_i + \text{Tariffs}_{j,t} + \text{Institutions}_{i,t} + Z_{i,t} + \delta_t + \varepsilon_{i,t} \quad (3)$$

[9] Enterprise reform reflects a tight credit and subsidy policy, a good bankruptcy legislation and effective corporate control. Competition policy indicates that actions are taken to reduce abuse of market power. The financial institutions indicator reflects the emergence of investment funds, private insurance and pension funds and a regulatory framework.

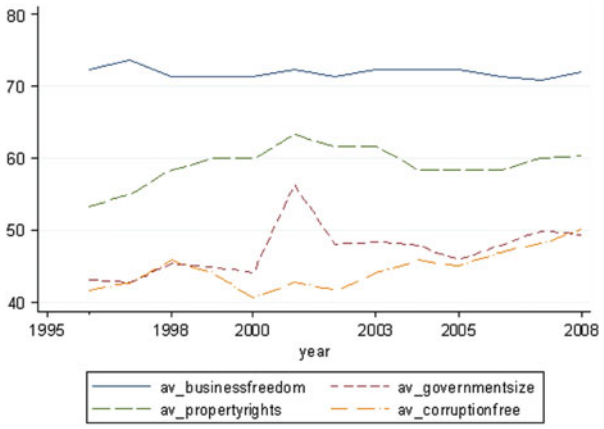


**Fig. 2** Average institutional environment in Central and Eastern Europe (Source: The Heritage Foundation)

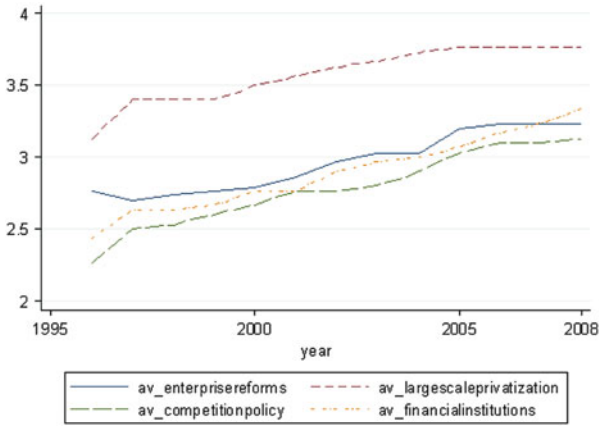


**Fig. 3** Average institutional environment in Central and Eastern Europe (Source: EBRD Transition report 2009)

where the dependent variable is the degree of export specialization of a country i in year t measured by the Herfindahl index. On the right hand side, we include country specific effects $\alpha_i$, weighted tariffs between the EU15 and the CEEC, institutional reforms in CEEC and a set of control variables such as the business cycle to take into account the fluctuations in the economy, the labor cost to control for export platforms,[10] the stock of foreign direct investments (FDI) since the presence of foreign subsidiaries can stimulate export (Damijan et al. 2008) and time dummies $\delta_t$. To allow for dynamics in the model, we will apply GMM (Arellano-Bond estimation techniques). This approach first-differences our equation to eliminate fixed effects for unobserved country-specific effects and includes a lagged dependent variable (export $spec_{i,t-1}$) since the level of export specialization can be persistent. The GMM model is as follows

[10] CEEC are often used as export platforms because these countries are a cheaper location (a.o. labor costs, corporate tax) and have good market access to Western Europe (Sinn 2006; Ekholm et al. 2007; Bloningen et al. 2007)

**Table 1** Estimation results

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $\text{Log(Herfindahl)}_{i,t-1}$ | – | – | 0.43*** | 0.36*** |
| | – | – | (0.07) | (0.13) |
| $\text{Log(wTariffs)}_{i,t}$ | −1.33 | −0.16 | −0.33*** | 1.69 |
| | (5.21) | (1.59) | (0.15) | (2.13) |
| $\text{Business cycles}_{i,t}$ | −0.002 | −0.004 | 0.002 | −0.004 |
| | (0.002) | (0.004) | (0.003) | (0.003) |
| $\text{Labor cost}_{i,t}$ | 0.001 | −0.001 | −0.002* | −0.0001 |
| | (0.001) | (0.002) | (0.001) | (0.002) |
| $\text{Gov size}_{i,t}$ | −0.01* | −0.008 | −0.01 | −0.002 |
| | (0.004) | (0.01) | (0.01) | (0.005) |
| $\text{Property rights}_{i,t}$ | −0.01*** | −0.01 | −0.01*** | −0.02** |
| | (0.005) | (0.01) | (0.01) | (0.01) |
| $\text{FDI}_{i,t}$ | −0.00005*** | 0.00002 | – | 0.00001 |
| | (0.00001) | (0.00002) | – | (0.00001) |
| $\text{Constant}_{i,t}$ | −0.23 | – | −1.66 | – |
| | (8.13) | – | (1.44) | – |
| Observations | 123 | 123 | 99 | 99 |
| $R^2$ adjusted | 0.16 | 0.28 | – | – |
| $\text{Chi}^2$ | – | – | 69.65 | 31.36 |
| Sargan-test | – | – | 0.46 | 0.28 |

Robust standard errors of estimates are in parentheses. All models include country fixed effects and year dummies

Note: ***, ** and * denote significance level of estimates at respectively 1 %, 5 % and 10 % levels

$$\Delta\text{export spec.}_{i,t} = \beta_1\,\Delta\text{export spec.}_{i,t-1} + \beta_2\,\Delta\text{Tariffs}_{ij,t} + \beta_3\,\Delta\text{Institutions}_{i,t} + \beta_4\,\Delta Z_{i,t} + \Delta\delta_t + \Delta\varepsilon_{i,t} \quad (4)$$

The lagged dependent variable is instrumented using the second lag of the level (export $\text{spec.}_{i,t-2}$) and the first difference of this second lag ($\Delta\text{export spec.}_{i,t-2}$). The disadvantage of this model is that it requires a large time series. We have data available for 12 years. Finally, we use robust standard errors to control for heteroscedasticity.

## 4 Results

Column (1) in Table 1 uses OLS and column (2) uses a panel fixed effects model to estimate (3), while columns (3) and (4) apply the Arellano-Bond (GMM) technique (as described above in (4)). Column (4) also lags all independent variables by 1 year to examine whether the effects on export specialization need some time. The results show that the degree of export specialization or diversification depends on the level of last year, trade integration and property rights. It seems that trade integration leads to export specialization and better protection of property rights stimulates

export diversification. If property rights are protected, business in general improves. More firms will do better. Since only the more productive firms are able to export, more firms in different sectors thus can export. As a consequence export diversification increases. Also securing property rights confidences to start a business because firms or persons are save from expropriation or theft. As a consequence, more firms are set up in different sectors and export can diversify. This result is in line with earlier research finding that more developed countries are more diversified in trade and production (Koren and Tenreyro 2003). The lagged model in column (4) shows less significant effects on export specialization.

## 5 Robustness Checks

In this section we provide a number of robustness checks for the obtained results. The estimations in Table 2 use different measures for the weighted tariff variable. First, an unweighted tariff of the EU15 countries is used in column (1). Second, alternative integration measures from the Heritage Foundation are used: trade[11] and investment freedom.[12] Third, from the EBRD reports three liberalization indicators are included: price,[13] trade[14] and banking liberalization.[15] These indicators range from 0 to 4 with higher values indicating that more progress in liberalization has been achieved by the Central and East European countries. The correlations between these alternatives and the weighted tariff variable are reported in the correlation matrix in the Appendix (Table 3). None of the alternative trade integration measures are significant. The variable for property rights remains, in all three columns, negatively and significantly related to export specialization.

Another robustness check is to explore other measures of institutional changes. For Central- and East European countries a good data source are the EBRD reports as mentioned in Sect. 2. We include all institutional variables in the model in column (4). We observe a positive significant coefficient for the EBRD indicator enterprise reform. Since the enterprise reform indicator measures progress in the credit and subsidy policy and bankruptcy legislation, this result suggests that legitimately distributing credits will lead to export specialization. We try to explain this result as follows. During communism, some firms received government credits to prevent them from bankruptcy and so to protect employment (Konings and

[11] Trade freedom reflects the openness of an economy to imports of goods and services and the ability of citizens to buy and sell at the international market.

[12] Investment freedom means no restrictions on foreign investment.

[13] Full price liberalization would mean that prices are left to the market and no price controls on housing or transport exist.

[14] Trade liberalization means the removal of all quantitative and administrative import and export restrictions.

[15] A well-functioning banking competition, effective supervision, liberalization of interest rates and credit allocation.

**Table 2** Robustness regression results

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| $Log(Herfindahl)_{i,t-1}$ | 0.32*** | 0.29*** | 0.3*** | 0.3*** | 0.3*** |
| | (0.09) | (0.08) | (0.07) | (0.08) | (0.1) |
| $Log(Tariffs)_{i,t}$ | −1.27 | – | – | – | – |
| | (1.45) | – | – | – | – |
| $Log(wTariffs)_{i,t}$ | | | | 1.15 | −1.11 |
| | | | | (1.27) | (1.27) |
| $Trade\ freedom_{i,t}$ | | −0.002 | | | |
| | | (0.01) | | | |
| $Investment\ freedom_{i,t}$ | | 0.005 | | | |
| | | (0.005) | | | |
| $Price\ liberalization_{i,t}$ | | | 0.07 | | |
| | | | (0.25) | | |
| $Trade\ liberalization_{i,t}$ | | | 0.29 | | |
| | | | (0.64) | | |
| $Banking\ liber._{i,t}$ | | | −0.23 | | |
| | | | (0.18) | | |
| $Business\ cycles_{i,t}$ | 0.0005 | 0.001 | −0.0001 | 0.001 | −0.0003 |
| | (0.002) | (0.002) | (0.002) | (0.001) | (0.001) |
| $Labor\ cost_{i,t}$ | −0.002** | −0.003 | −0.002** | −0.002* | −0.002** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| $Gov\ size_{i,t}$ | −0.01* | −0.01* | −0.01 | −0.01* | −0.01 |
| | (0.004) | (0.005) | (0.005) | (0.004) | (0.004) |
| $Property\ rights_{i,t}$ | −0.02*** | −0.02*** | −0.02*** | −0.03*** | −0.02*** |
| | (0.01) | (0.01) | (0.006) | (0.01) | (0.01) |
| $FDI_{i,t}$ | 0.00003 | 0.00003 | 0.00003 | 0.00003* | 0.00003 |
| | (0.00002) | (0.00002) | (0.00002) | (0.00002) | (0.00002) |
| $Enterprise\ reforms_{i,t}$ | | | | −0.5** | −0.44* |
| | | | | (0.24) | (0.28) |
| $Competition\ policy_{i,t}$ | | | | 0.18 | |
| | | | | (0.16) | |
| $Financial\ instit_{i,t}$ | | | | 0.1 | |
| | | | | (0.27) | |
| $Privatization_{i,t}$ | | | | −0.18 | |
| | | | | (0.18) | |
| Observations | 99 | 99 | 99 | 99 | 99 |
| $Chi^2$ | 2410.41 | 120.23 | 85.33 | 136.39 | 136.01 |
| Sargan-test | 0.46 | 0.4 | 0.37 | 0.61 | 0.49 |

Robust standard errors of estimates are in parentheses. All models include country fixed effects and year dummies

Note: ***, ** and * denote significance level of estimates at 1 %, 5 % and 10 %

**Table 3** Correlation matrix

| | Log (herf.) | Log (wTariff) | Business cycle | Labor cost | Gov. size | Property rights | FDI | Enterpr. reforms | Comp. policy | Fin. instit. | Privatization |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Log (wTariff) | −0.08 | 1 | | | | | | | | | |
| Business cycle | −0.03 | −0.33 | 1 | | | | | | | | |
| Labor cost | −0.02 | −0.63 | 0.28 | 1 | | | | | | | |
| Gov size | −0.03 | −0.1 | 0.32 | 0.26 | 1 | | | | | | |
| Property rights | 0.13 | 0.06 | −0.34 | −0.2 | −0.41 | 1 | | | | | |
| FDI | −0.17 | −0.38 | 0.33 | 0.39 | −0.11 | −0.06 | 1 | | | | |
| Enterprise reform | 0.02 | −0.34 | −0.1 | 0.11 | −0.37 | 0.64 | 0.27 | 1 | | | |
| Competition policy | 0.02 | −0.47 | 0.05 | 0.24 | 0.23 | 0.43 | 0.28 | 0.77 | 1 | | |
| Fin. instit | −0.03 | −0.4 | −0.01 | 0.17 | −0.34 | 0.64 | 0.4 | 0.8 | 0.71 | 1 | |
| Privatization | −0.14 | −0.3 | 0.18 | 0.29 | 0.12 | 0.37 | 0.22 | 0.55 | 0.62 | 0.46 | 1 |

Vandenbussche 2003). In a market-economy only productive firms receive credits and thus non-competitive firms exit the market. The productive firms are more likely to export and thus export might diversify. The protection of property rights also remains negative and significant, while the weighted tariffs are not significant anymore. A final robustness check uses instruments (lagged levels) for the weighted tariffs in order to control for potential endogeneity. The results are similar as in the previous column.

## 6 Conclusion

In this paper, we attempt to establish a link between two stylized facts, increasing integration, institutional reforms, and the export pattern of Central and East European countries. The integration process and institutional reforms in Central and Eastern Europe offer us a unique setting to study and compare the impact of both integration and institutions on export. The empirical analysis is carried out for 12 Central and Eastern European countries: Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovakia and Slovenia during the period 1996–2008. The estimation results show that in line with traditional trade theories, increased integration leads to more export specialization. Protected property rights and a fair credit allocation stimulate export diversification. We conclude that the institutional effect is more robust in our results. Thus a further institutional reform in the CEEC will lead to export diversification in these countries and will make them less sensitive to a sector-specific shock.

From a policy perspective, this paper is important because it reveals evidence for a region recently transformed to market economies, it enriches our knowledge over economic transition, and it highlights the role of institution building in export diversification and performance. Our results find evidence that securing property rights and a fair credit policy is necessary to stimulate export diversification in Central and Eastern Europe. This might also be of importance to future EU-members.

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## Appendix

Data description:

- Export specialization: Herfindahl index is the sum of all export shares over all industries within one country, source: Eurostat Comext trade database
- Weighted tariff: historical applied tariffs, source: WTO, UN comtrade database

- Business cycle: detrended GDP data with Hodrick-Prescott filter, source: Eurostat
- Labor cost index: is a Euro indicator which measures the cost of the production factor labor with base year =2000, source: Eurostat
- Government size: The burden of excessive government on a scale from 0 to 100, source: The Heritage Foundation
- Property rights: The ability to accumulate private property from 0 to 100, source: The Heritage Foundation
- FDI: Value of foreign direct investment stock, source: EBRD Transition report 2009
- Trade freedom: The openness of an economy to imports of goods and services and the ability of firms to export on a scale from 0 to 100, source: The Heritage Foundation
- Investment freedom: The absence of restrictions on foreign investments on a scale from 0 to 100, source: The Heritage Foundation
- Enterprise reform: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in credit policy reform, source: EBRD Transition report 2009
- Competition policy: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in competition policy, source: EBRD Transition report 2009
- Financial institutions: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in non-bank financial institutions, source: EBRD Transition report 2009
- Large scale privatization: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in private ownership of firms, source: EBRD Transition report 2009
- Price liberalization: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in market prices, source: EBRD Transition report 2009
- Trade liberalization: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in liberalization of import and export, source: EBRD Transition report 2009
- Banking liberalization: index ranging from 0 to 4 reflecting the judgment of the EBRD's Office of the Chief Economist about country-specific progress in the realization of interest rates and credit allocation, source: EBRD Transition report 2009

More information on the institutional reforms can be found at http://www.heritage.org/ and http://www.ebrd.com/.

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# Part III
# European and Regional Development in South-Eastern Europe

# Regional Integration in Western Balkans: A Case for Cross-Border Business Cooperation?

**Pantelis Sklias and Maria Tsampra**

**Abstract** Considering the regional trade pattern and business potential in the Western Balkans, we argue that despite the significant political, institutional and socio-economic advances of the individual countries during the last 20 years, regional integration and endogenous business development are still lagging. This is much the outcome of persistent state rigidities and trade distortions. On the one hand, regional integration has been adopted as the policy for enhancing the region's competitiveness in the context of EU accession and globalization. But this has been only manifested in Regional Trade Agreements with the EU. On the other hand, trade relations among the region's countries are weak. Many governments have maintained intra-regional trade barriers to secure customs revenues, while they have directed trade to EU markets. However, results have been poor: FDI and exports have risen only in textiles, metals and mining where competitiveness is based on cheap labor or natural resources; and very few local companies have been able to compete in EU markets as most are too weak financially to upgrade production to EU high value-added standards. Nevertheless, data supports that intra-regional trade is important for the countries and sectors in question. Trade with neighboring countries can be a realistic way to improve the potential of local businesses – struggling with obsolete equipment, high debts and low productivity. Restoring old trading relationships interrupted by war could considerably increase cross-border trade, and assure regional business viability. The barriers posed by the individual countries in the region to doing business especially across borders, indicate that regional integration in Western Balkans is very weak from the economic point of view. We argue however, that regional integration from a socio-cultural point of view – built on people's common historical background,

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shared goals and concerns for good neighborly relations – constitutes a solid base for cross-border business cooperation. We outline here an analytical approach, capturing the complexity of the war-torn Western Balkan area and its socio-cultural and political specificities, overlooked by mainstream economics. We argue that Western Balkan countries can accelerate their economic development by exploiting their potential for cross-border trading and entrepreneurship. This may offer a politically and economically realistic strategy for regional integration in the area. Economic development and regional cooperation could directly benefit stability and security as well. Cross-border business clusters, embedded in common socio-economic contexts, could act as development leverage. Existing obstacles need to be addressed and overcome; and this is more a question of political willingness than of corporate strategy.

**Keywords** Regional integration • Business clusters • Transition economies

**JEL Classification Codes** R11 • F59 • P25

## 1 Introduction

Despite the important political, institutional and socio-economic progress of the Western Balkan countries during the last 20 years, integration and endogenous business development in the region are still falling behind. The region today is even less integrated than it was in 1991, as many economic links forming path-dependent trade patterns in the past were dissolved during the political turbulence of the 1990s (Uvalic 2005). Regional integration is evidenced mainly in Regional Trade Agreements (RTAs) with the EU, while trade relations and business co-operations among the region's countries have almost no substance. Persistent state rigidities in the region have led to trade distortions, as governments maintain intra-regional trade barriers to secure customs revenues as a significant income. This has resulted to a poorly functioning intra-regional market and to a deficient production level (Kaminski and de la Rocha 2003). Moreover, on the inter-regional level, trade to EU markets has also poor results, because FDI and exports have only risen in sectors where competitiveness is based on cheap labor or natural resources (i.e. textiles, metals and mining) (Barrett 2002).

It can, therefore, be sustained that, regional integration on the economy level – as the policy to enhance the region's competitiveness and growth in the context of EU accession and globalization – has failed so far. Local business potential has not allowed for high value-added produce to compete in the EU market, as the majority of local enterprises are too weak financially to upgrade production to EU standards. In addition, the recent on-going crisis first hit the export-oriented companies and those which have borrowed in order to expand. We argue however that, regional integration on the society level – built on the people's common socio-cultural background, shared goals and concerns for good neighborly relations – constitutes

a substantial basis for development. This could nourish cross-border business cooperation without massive investment in production upgrade or marketing.

On this ground, we emphasize the complexity of the war-torn Western Balkan area and its socio-cultural and political specificities (Sklias 2011). The latter are overlooked by mainstream economic theories setting the prerequisites and variables for successful regional cooperation and business development. Our point is that the socio-cultural and political elements play a critical role in this process; therefore they should be extensively addressed. Despite the considerable contribution of EU trade and FDI to the economic growth of the region's newborn states, political adjustment is lagging and its inconsistencies and gaps impede intra-regional trade and business development. A robust small and medium-sized business sector could guarantee long-term prosperity in transitional economies; and this is the main problem to be solved. As evidenced in several cases, business people recognize the benefits of regional co-operation opportunities (Uvalic 2005). But political willingness and determination is still a prerequisite.

We argue that competitiveness and development of the Western Balkans can be accelerated if the region's countries capitalize their potential for cross-border trade and entrepreneurship. This might be a politically and economically realistic strategy for regional integration and development, as inter-state cooperation could directly benefit political stability and national security (Barrett 2002). We therefore conclude with recommendations towards the development of cross-border locally embedded business clusters that would act as development leverage. Local embeddedness encompasses geographical proximity, cultural coherence and production complementarity, as the already existing prerequisites to attain the desirable agglomeration externalities. But the political requirements for such an achievement are yet to be met. Endogenous market forces in the transitional economies seem to be less influential than policy-makers in fostering the process of regional integration. In other words, the strategic orientation towards overcoming existing obstacles is more a question of political than of corporate strategy.

## 2 Assessing Regional Integration

Regional integration and the effective use of regional resources, as mobility barriers for goods and factors are abolished, depend on the efficiency of regional markets and institutions (Grupe and Kušić 2005). Business development on the regional level is therefore important, as is the establishment of regional trade partnerships. Mainstream economics explain trade patterns among countries in the context of the international division of labor: national economies specialize in production where they capitalize their comparative advantages; and trade exchanges adjust respectively to the complementarities among countries. However, international data show that trade flows can emerge independently of comparative advantages. Trade flows among countries have been also explained by the 'gravity model', where trade

patterns are related to broader geopolitical trends (Johnston 1976; Schiff and Winters 2003; Bergstrand and Egger 2007). According to gravity model estimates, trade correlates positively with the size of the national economy and negatively with its distance from trade partners. In other words, large economies (of high GDP) export and import more; and proximity between countries means more trade. Still, this theoretical model suffers from certain shortcomings, as data often indicate low trade relations among neighboring countries of compatible economic characteristics.

The abolition of barriers – as a consequence of cross-national economic agreements – has been the major reason for the astonishing increase of trade in the last decades. RTAs have substantially boosted trade within geopolitical blocks of countries, such as the EU, the EFTA, or the CEFTA states (Bayoumi and Eichengreen 1997). However, RTAs have also led to trade distortion (Frankel et al. 1997). Notably, trade flows within the EU (intra-block trade) have considerably increased during 1980–1996, while at the same period extra-block (i.e. with the rest of the world) trade flows decreased (Soloaga and Winters 2001). As more apparent in the case of developing regions, trade liberalization agreements have advanced their integration in the world economy, while regional integration is limited due to low intra-regional trade. Namely, the impact of RTAs is differentiated by industrial location, specialization and consequently, inequality among partner-countries. According to the explanatory framework suggested by Venables (2003), integration between low-income countries tends to lead to divergence. Thus, less developed countries are likely to benefit from economic agreements with developed countries ('north-south' rather, than 'south-south' trade).

Nonetheless, the 'north-south' integration of the lagging South and Eastern Europe (SEE) economies in the EU has not resulted to income convergence. And although income data of the developed EU countries document the benefits of 'north-north' integration (Ben-David 1998), it has been also evidenced (Carmignani 2007) that convergence is not necessarily a privilege of 'north-north' integration. A lack of convergence, or even divergence in such integration processes has been often indicated, as well (Karras 1997). The important conclusion is that 'south-south' integration does not necessarily imply widening intra-regional disparities. The success of Regional Integration Agreements (RIAs) strongly depends on the socio-cultural, political and institutional characteristics of both investing and host countries. Membership in a RIA – e.g. the EU, cannot attract FDI and motivate endogenous growth if certain territory-specific elements are missing. These include economic factors such as: regional specialization, accumulated knowledge, labor skills, and business milieu among others (Balasubramanyam et al. 2002). But also, political willingness and determination to replace past barriers with institutions promoting cooperation, are crucial factors to the integration process.

The impact of politics and culture on economic growth, business practices and development dynamics is illustrated in Fig. 1 as the interface between economic and political variables. Accordingly, the regional integration process of the Western

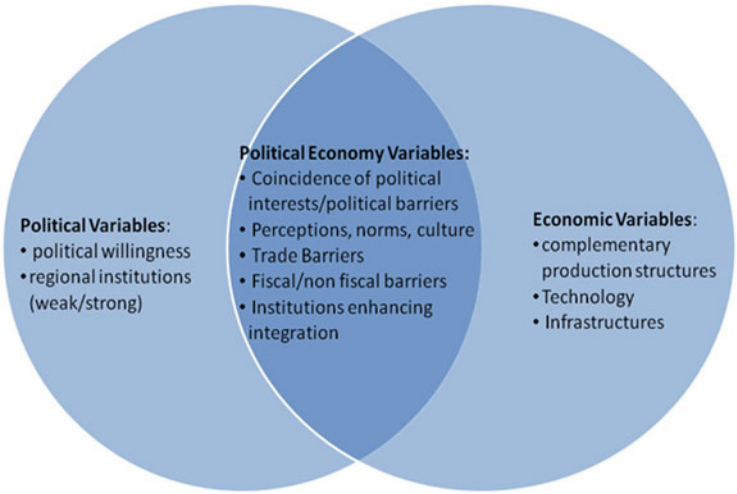


**Fig. 1** Regional integration variables (Source: Sklias, 2011)

Balkans will be here assessed within a framework which comprises the interaction and interdependence of economic, cultural and political factors in order to capture the complex situation in the examined war-torn region (Sklias and Tsampra 2013).

## 3 Regional Integration Pattern in Western Balkans

According to World Bank data (Kathuria 2008), Western Balkan exports are low, but growing in services; while declining exports in manufactured goods have resulted to increasing unemployment. In overall, export levels in SEE still fall short of potential and needs: Albania, Bosnia and Herzegovina, Serbia and Montenegro are lagging in almost all fields; Bulgaria and Croatia are strong performers; while Romania, the largest country by far, has lower export intensity than Bulgaria and Croatia, although faster growing than either of them (Kathuria 2008). Regional trade in the area, as previously argued, has been severely influenced by exogenous forces such as: (i) the intense trade relations among the states of the former SFRY – with the exception of Serbia and Croatia; (ii) the Stabilization and Association Agreements (SAAs) enhancing trade between SEE and EU countries; and (iii) the Stability Pact-induced Free Trade Agreements (FTAs), which concluded in the CEFTA (in 2006), encouraging trade within SEE (Kathuria 2008).

The bilateral RTAs have differentiated the trade relations of the individual countries with the EU; the status and 'distance' of each state from the EU varies along with the level of democratization and economic recovery. Moreover, preferential arrangements and contractual agreements have further fragmented trade

**Table 1** FYROM export and import of goods by country (million Euros)

| | Exports | | | | | | | | Imports | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1991 | | 2000 | | 2005 | | 2010 | | 1991 | | 2000 | | 2005 | | 2010 | |
| Country | Value | % | Value | % | Value | % | Value | % | Value | % | Value | % | Value | % | Value | % |
| Germany | 225.0 | 20.5 | 257.0 | 19.4 | 364.0 | 17.8 | 692.0 | 21.0 | 243.0 | 19.1 | 253.0 | 12.1 | 336.0 | 10.4 | 610.0 | 11.2 |
| Albania | 5.0 | 0.5 | 12.0 | 0.9 | 27.0 | 1.3 | 72.0 | 2.2 | 5.1 | 0.4 | 3.0 | 0.1 | 9.0 | 0.3 | 22.8 | 0.4 |
| Serbia | | | | | | | 271.0 | 8.2 | | | | | | | 418.0 | 7.7 |
| Bulgaria | 48.0 | 4.4 | 27.0 | 2.0 | 76.0 | 3.7 | 294.0 | 8.9 | 68.0 | 5.3 | 97.0 | 4.6 | 234.0 | 7.2 | 301.0 | 5.5 |
| Romania | 9.0 | 0.8 | 1.0 | 0.1 | 4.0 | 0.2 | 54.0 | 1.6 | 10.6 | 0.8 | 14.0 | 0.7 | 64.3 | 2.0 | 126.2 | 2.3 |
| Montenegro | | | | | | | 27.0 | 0.8 | | | | | | | 1.4 | 0.0 |
| Greece | 62.0 | 5.7 | 84.0 | 6.4 | 313.0 | 15.3 | 245.0 | 7.4 | 85.0 | 6.7 | 200.0 | 9.6 | 297.0 | 9.2 | 448.0 | 8.2 |
| S&M | 69.0 | 6.3 | 335.0 | 25.3 | 459.0 | 22.5 | | | | | 190.0 | 9.1 | 264.0 | 8.2 | | |
| B&H | 55.0 | 5.0 | 23.0 | 1.7 | 50.0 | 2.4 | 184.0 | 5.6 | 2.0 | 0.2 | 5.3 | 0.3 | 23.5 | 0.7 | 49.1 | 0.9 |
| Turkey | 18.0 | 1.6 | 10.0 | 0.8 | 45.0 | 2.2 | 50.0 | 1.5 | 28.0 | 2.2 | 52.0 | 2.5 | 113.0 | 3.5 | 260.0 | 4.8 |
| Russia | 255.0 | 23.3 | 10.0 | 0.8 | 21.0 | 1.0 | 26.0 | 0.8 | 339.0 | 26.6 | 191.0 | 9.1 | 425.0 | 13.1 | 552.0 | 10.1 |
| Total | 1095.0 | 100 | 1322.0 | 100 | 2042.0 | 100 | 3301.0 | 100 | 1274.0 | 100 | 2093.0 | 100 | 3232.0 | 100 | 5450.0 | 100 |

Source: National Bank of FYROM

**Table 2** Kosovo export and import of goods by country (thousands Euros)

| | Exports | | | | Imports | | | |
|---|---|---|---|---|---|---|---|---|
| | 2009 February | | 2010 February | | 2009 February | | 2010 February | |
| Country | Value | % | Value | % | Value | % | Value | % |
| Romania | 4.0 | 0.0 | 564.0 | 2.2 | 995.0 | 0.8 | 2080.0 | 1.4 |
| Bulgaria | 342.0 | 2.2 | 79.0 | 0.3 | 1590.0 | 1.2 | 2240.0 | 1.5 |
| EU 27 | 9194.0 | 58.6 | 16835.0 | 65.5 | 50381.0 | 39.5 | 57366.0 | 38.5 |
| Albania | 1568.0 | 10.0 | 2300.0 | 8.9 | 2696.0 | 2.1 | 3334.0 | 2.2 |
| FYROM | 1498.0 | 9.6 | 2365.0 | 9.2 | 16218.0 | 12.7 | 19303.0 | 13.0 |
| Montenegro | 147.0 | 0.9 | 337.0 | 1.3 | 332.0 | 0.3 | 300.0 | 0.2 |
| Serbia | 272.0 | 1.7 | 518.0 | 2.0 | 15129.0 | 11.9 | 19152.0 | 12.9 |
| Turkey | 447.0 | 2.9 | 291.0 | 1.1 | 8001.0 | 6.3 | 9232.0 | 6.2 |
| B&H | 241.0 | 1.5 | 10.0 | 0.0 | 3.4 | 0.0 | 3398.0 | 2.3 |
| Total | 15681.0 | 100 | 25714.0 | 100 | 127493.0 | 100 | 148993.0 | 100 |

Source: Kosovo Agency of Statistics (2011)

relations within the region (Bartlett 2009). While the deterioration of inter-ethnic relations and the absence of multicultural policies, have obstructed regional stability and prosperity (Petričušić 2005). In this context, Western Balkan regional trade is illustrated by data of imports and exports among countries in the following Tables 1, 2, 3, 4, and 5. As evidenced by the presented data:

- EU and Serbia have the largest share in the trade volume of FYROM. Compared to other Western Balkan countries, FYROM has more balanced trade relations as a result of respective institutional reforms. However, the strong Albanian minority has not sustained trade with Albania, despite traditional economic links and complementarities;
- EU share in Kosovo's trade is increasing; but the largest shares are these of Albania and FYROM, both in terms of imports and exports. This can be justified by neighboring and the strong political, social and religious ties among these countries. The considerable share of Serbia in imports can be attributed to the strong Serbian minority in Kosovo;
- Albania's trade with the rest of the world maintained its previous geographical pattern. Imports mainly originate from EU countries – mostly Italy, followed by Greece – although declining since 2008. Imports originating from outside the EU – China and Turkey having the largest shares – fell as well in 2009. As exports to Italy decline, the country's overall EU exports have narrowed. Exports to countries outside the EU have declined as well. Albania's exports to other Balkan countries also dropped substantially in 2009;
- Montenegro's main export trade partners are Serbia, Greece and Italy. The country's main import trade partners are Serbia, Bosnia and Herzegovina and Germany. Trade exchange is bigger with the CEFTA and the EU countries.

In sum, regional trade in Western Balkans increases between individual states and their partner-countries in free trade agreements, namely the EU member-states and the CEFTA countries. Trade with Russia remains significant mainly due to oil

**Table 3** Albania import of goods by country (thousands Euros)

| Country | 2005 | 2006 | 2007 | 2008 | 2009 | 2009/2008 (%) |
|---|---|---|---|---|---|---|
| EU Countries: | 1,401 | 1,580 | 1,820 | 2,168 | 2,088 | −3.7 |
| Italy | 611 | 677 | 826 | 946 | 850 | −10.1 |
| Greece | 346 | 381 | 444 | 524 | 505 | −3.6 |
| Germany | 113 | 136 | 167 | 216 | 209 | −3.2 |
| Bulgaria | 59 | 66 | 54 | 69 | 61 | −11.6 |
| Non EU countries: | 683 | 831 | 1,244 | 1,402 | 1,161 | −17.2 |
| China | 140 | 145 | 203 | 266 | 236 | −11.3 |
| Turkey | 140 | 145 | 203 | 266 | 236 | −1.9 |
| FYROM | 26 | 39 | 59 | 79 | 60 | −24.1 |
| Russia | 85 | 99 | 125 | 157 | 87 | −44.6 |
| Total | 2,084 | 2,411 | 3,045 | 3,570 | 3,249 | −9 |

Source: Bank of Albania (2011)

and natural gas imports. But intra-regional trade among the Western Balkan states is limited in scope and volume. From the neoclassical point of view, low trade in the region is the result of overlapping comparative advantages among its countries. This has led to similar trade structures with little complementarities, given the small size of the regional market (Grupe and Kušić 2005).

As depicted in Table 6, the prevailing industrial specialization in raw-material- and low-skilled-labor-intensive products reflects production structures typical for developing countries in their exchanges with developed ones. The resulting trade pattern is unfavourable for regional development and competitiveness, as capital-intensive products account for more than 30 % of regional imports (von Hagen and Traistaru 2003). Western Balkans exports are low, and buyer-driven trade prevails over slowly emerging producer-driven trade (with the exception of Romania). The region's state-economies compete in the same external markets and are characterized by withdrawal of cross-border trade and excessive trade-dependence on the EU. This brings forth the issue of preferential 'north-south' integration, at the expense of 'south-south' integration. The outcome is lower increase in exports, larger deficits, lower productivity and weaker economic systems compared to the Central European transition countries; as well as increased vulnerability to low-wage competition from Asia and other regions (Jackson and Petrakos 2000).

The recent economic slowdown in Europe since 2008 has further pointed out the need for alternative development strategies in the area: competitive production structures require turning away from low-cost production, moving-up skills and technology and developing products for customers in the increasing SEE market. It is also important to stress that any increase evidenced in intra-regional trade is identified among certain neighboring states of shared historical path, and strong ethnic and cultural ties. These are the cases of trade relations between Kosovo and Albania, Kosovo and FYROM, Serbia and Montenegro, Serbia and B&H, Serbia and FYROM. This observation supports our argument for the importance of culture and politics – along with economic variables – in the regional integration process.

**Table 4** Montenegro export and import of goods by country (thousands Euros)

| Exports | 2006 | | 2007 | | 2008 | | 2009 | | Imports | 2006 | | 2007 | | 2008 | | 2009 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serbia | 172.016 | 14% | 106.726 | 11% | 107.811 | 13% | 79.606 | 14% | BiH | 40.937 | 3% | 117.166 | 7% | 164.810 | 8% | 1.149.882 | 32% |
| Slovakia | 63.277 | 5% | 46.847 | 5% | 62.135 | 7% | 60.877 | 11% | Slovenia | 52.841 | 4% | 149.019 | 8% | 161.297 | 8% | 1.148.161 | 32% |
| Italy | 239.231 | 19% | 145.286 | 15% | 130.563 | 15% | 34.218 | 6% | Serbia | 402.153 | 33% | 705.041 | 40% | 839.179 | 43% | 599.232 | 17% |
| Slovenia | 23.046 | 2% | 28.556 | 3% | 37.355 | 4% | 24.095 | 4% | Slovakia | 201.899 | 16% | 166.449 | 9% | 24.835 | 1% | 191.998 | 5% |
| BiH | 28.548 | 2% | 26.022 | 3% | 22.089 | 3% | 18.882 | 3% | Croatia | 60.408 | 5% | 133.610 | 8% | 169.665 | 9% | 126.477 | 4% |
| Belarus | 12.299 | 1% | 8.019 | 0.8% | 17.462 | 2% | 16.811 | 3% | Italy | 141.088 | 11% | 163.687 | 9% | 193.195 | 10% | 108.577 | 3% |
| Hungary | 44.245 | 4% | 63.338 | 7% | 9.248 | 1% | 11.683 | 2% | Germany | 154.495 | 13% | 95.987 | 5% | 136.849 | 7% | 63.215 | 2% |
| Croatia | 8.797 | 0.7% | 10.987 | 1% | 6.620 | 0.8% | 9.829 | 2% | Switzerland | 51.430 | 4% | 110.801 | 6% | 120.519 | 6% | 56.742 | 2% |
| Lithuania | 4.797 | 0.4% | 8.930 | 0.9% | 8.091 | 0.9% | 7.733 | 1% | Hungary | 16.490 | 1% | 48.578 | 3% | 54.710 | 3% | 31.433 | 0.9% |
| Germany | 5.682 | 0.5% | 9.188 | 1% | 16.218 | 2% | 6.792 | 1% | FYROM | 15.596 | 1% | 22.342 | 1% | 29.878 | 2% | 21.347 | 0.6% |
| Latvia | 3.248 | 0.3% | 5.562 | 0.6% | 5.589 | 0.6% | 3.938 | 0.7% | Czech Rep. | 21.754 | 2% | 30.131 | 2% | 29.800 | 2% | 14.532 | 0.4% |
| Estonia | 2.630 | 0.2% | 1.040 | 0.1% | 2.339 | 0.3% | 1.912 | 0.3% | Romania | 27.207 | 2% | 15.311 | 0.9% | 21.191 | 1% | 12.560 | 0.4% |
| Russia | 869 | 0.1% | 585 | 0.1% | 1.041 | 0.1% | 1.513 | 0.3% | Russia | 38.300 | 3% | 9.836 | 0.6% | 3.042 | 0.2% | 10.158 | 0.3% |
| FYROM | 2.036 | 0.2% | 794 | 0.1% | 902 | 0.1% | 1.439 | 0.3% | Bulgaria | 6.262 | 0.5% | 10.238 | 0.6% | 11.915 | 0.6% | 8.694 | 0.2% |
| Czech Rep. | 1.476 | 0.1% | 2.836 | 0.3% | 4.425 | 0.5% | 1.058 | 0.2% | | | | | | | | | |
| Romania | 1.337 | 0.1% | 119 | 0.01% | 995 | 0.1% | 689 | 0.1% | | | | | | | | | |
| Bulgaria | 66 | 0.01% | 434 | 0.05% | 122 | 0.01% | 130 | 0.02% | | | | | | | | | |
| EU | 617.492 | 50% | 483.175 | 51% | 428.980 | 50% | 276.611 | 50% | | | | | | | | | |

Source: Statistical Office of Montenegro (2011)

**Table 5** Serbia import and export of goods by Country (USD millions)

| | Exports | | | | Imports | | | |
|---|---|---|---|---|---|---|---|---|
| Country | 2010 | | 2011 | | 2010 | | 2011 | |
| Total | 2,030 | 100.0 | 2,683 | 100.0 | 3,812 | 100.0 | 4,627 | 100.0 |
| Europe | 1,951 | 96.1 | 2,594 | 96.7 | 3,149 | 82.6 | 3,803 | 82.2 |
| Russia | 96.6 | 4.8 | 157.7 | 5.9 | 525.5 | 13.8 | 674.8 | 14.6 |
| Germany | 229.6 | 11.3 | 306 | 11.4 | 394 | 10.3 | 424 | 9.2 |
| Italy | 249.8 | 12.3 | 349 | 13 | 338 | 8.9 | 368 | 8 |
| Romania | 103 | 5.1 | 222 | 8.3 | 131 | 3.4 | 239 | 5.2 |
| B&H | 220 | 10.9 | 235 | 8.8 | 115 | 3 | 145 | 3.1 |
| Montenegro | 181 | 7.5 | 170 | 6.3 | 53 | 1.4 | 46 | 1 |
| FYROM | 100 | 5 | 118 | 4.4 | 44.8 | 1.2 | 55.7 | 1.2 |
| Greece | 37.2 | 1.8 | 50 | 1.9 | 53 | 1.4 | 66 | 1.4 |

Source: Statistical Office of the Republic of Serbia (2011)

**Table 6** Revealed competitive advantages across Western Balkan countries

| Industrial sectors | Albania | B&H | Croatia | FYROM |
|---|---|---|---|---|
| Basic manufactures | 0.76 | 3.38 | 1.24 | 3.67 |
| Transport equipment | | 0.06 | 1.12 | 0.14 |
| Clothing | 11.08 | 3.85 | 3 | 8.81 |
| Leather products | 24.03 | 8.35 | 2.8 | 2.46 |
| Wood products | 1.03 | 4.59 | 2.12 | 0.34 |
| Non-electronic machinery | 0.17 | 0.46 | 0.55 | |
| Miscellaneous manufacturing | 0.36 | 1.31 | 0.82 | 0.17 |
| Fresh food | 1.75 | 1.06 | 0.79 | 1.92 |
| Minerals | 0.28 | 0.64 | 0.93 | 0.2 |
| Processed Food | 0.24 | 0.79 | 2.07 | 2.55 |
| Textiles | | 0.58 | 0.64 | 1.24 |
| Electronic components | | 0.12 | 0.68 | 0.47 |
| Chemicals | | 0.13 | 0.91 | 0.5 |
| IT and consumer electronics | | | 0.24 | |

Source: Calculations of Grupe and Kušić (2005), based on Comtrade of UNSD, ITC 2002

## 4 Regional Business and Cross-Border Cooperation

The analysis of the political, cultural, institutional and economic variables denoting regional integration prospects in Western Balkans has so far indicated a low level of accomplishment across all states (Sklias 2011), which is reflected in the regional trade patterns. The specific socio-cultural contexts of certain norms and perceptions define also the prospects of regional business development, based on joint efforts for competitiveness and growth (Grupe and Kušić 2005). Regional business development is defined by the business milieu (formed by business regulations, economic environment, and business policy) as well as the awareness and competency of entrepreneurs to operate in a changing business environment and benefit from the challenges of cross-border cooperation. The political and cultural specificities of

individual border-regions also affect the opportunities and constraints for enterprises and their cross-border activities (Bartlett and Bukvic 2002, Venesaar and Pihlak 2008).

According to Petrakos and Totev (2001), the more peripheral the location of a developing or transitional economy, the more important is cross-border trade for maintaining variety and sectoral differentiation in the production system. Regional business could benefit from the exchange of knowledge, practices and skills in countries sharing a similar background and facing common problems. In Western Balkans however, cross-border trade has been hindered by political circumstances as a result of the region's disintegration during the 1990s. But the regional integration process of the last decade has initiated the re-establishment of inter-state connections, often despite political impediments. Kosovo is an example, where trade between Serbia and Albania is booming, although the political dialogue between Serbs and Albanians remains stalled. As local entrepreneurs gradually understand the gains from regional integration, they cooperate to revive old distribution channels within the region. Emerging trade in the region suggests that companies exploit opportunities once costs are reduced. Countries in bilateral free-trade agreements with their neighbors enjoy higher trading levels than those which continue to impose heavy import duties.

Local initiatives for intra-regional trade relations need to be further promoted and supported by economic policy; the establishment of trust and confidence relations is required in the business community, as well as collaboration between economic actors and the state across all Western Balkan countries. Exporting to the EU must remain a key long-term goal for regional companies, but it is not necessarily the best starting point for them – as previously evidenced by the presented data. Joining the EU, or bilateral trade agreements with EU member-states, resulted in changes of foreign trade regimes for the Western Balkan countries, with differentiated effects. In the case of Bulgaria's EU accession, trade was relocated from more efficient non-EU countries to less efficient EU member states (Delevic 2007, Venesaar and Pihlak 2008):

> Before Bulgaria Membership in EU, the beef meat was imported mainly from South America. Since 2007, however, the high custom-tariffs for the meat imported in EU have made this source unprofitable to use. On the other hand, the production of beef meat in Bulgaria (approximately 10,000 tons per annum) is extremely insufficient for the need of the meat processing industry. This forces Bulgarian meat processing enterprises to purchase the necessary raw materials from the EU countries, where the price is higher (about 2 levs per kilo more expensive).

The results of a study on member-states of the recent EU accessions suggested that the economic integration process increases competition and decreases demand for domestic firms. The adoption of the *acquis communautaire* ensures the improvement of domestic business environment; but it also implies significant investment by domestic firms – especially heavy for the smaller ones – in order to meet standards concerning emissions, waste management, product safety, working conditions etc. In addition, foreign investment – in the form of subsidiaries or manufacturing plants – represent important clients for small local suppliers and

sub-contractors, that contribute to technology transfer and management skills. From a different aspect however, foreign companies are usually more competitive and may crowd out local SMEs (Smallbone and Xheneti 2008).

At the same time, many business opportunities at the regional level could be exploited without massive investment in upgrades or marketing, as trade can benefit from brand recognition across regional markets – e.g. products in the new states of the former Yugoslavia (Barrett 2002). Local companies could also benefit from joint ventures, offering local knowledge in exchange for capital. Under the circumstances in areas like the Western Balkans, trade with neighboring countries would be a more realistic strategy, as those provide a favorable market of: (i) similar consumer preferences (formed by shared history and culture), that require less effort and cost for products promotion; and (ii) territorial proximity, that reduces transport costs. Thus, business cooperation in border-areas should be a strategic priority for regional integration.

In Western Balkans, border areas are characterized by low economic development, high unemployment, and absence of investments; also by common transition experiences, cohabiting ethnic populations, shared culture, and political tensions between countries. These elements form an environment of low local demand and thriving informal entrepreneurial activity (IEA) which boomed in early 1990s with the collapse of communism. Large differences in prices and the variety of goods in border regions attracted many households to engage in IEAs (petty trade of clothes, foodstuffs, fuel, alcohol, or illegal work) as a way of escaping unemployment or generating income (Welter and Smallbone 2011). The evidence however, shows that few of these activities can compensate for the hardship associated to peripherality.

Cluster initiatives have therefore emerged in recent years, as a policy with positive results – mainly practiced and evidenced in CE countries: Slovenia, Slovakia, Poland, Hungary and Czech Republic. In all such cases, various policy tools and initiatives have been used to foster cluster development directly or indirectly. In Western Balkans, poor know-how and marketing inadequacies prevailing in the region's national economies could be surpassed through business cooperation of mutual benefits. Such cooperation should exceed market overlapping and boost intra-regional trade, on the basis of product improved quality and international competitiveness. In order to counteract the region's marginalization and deficiencies, we propose the establishment of cross-border business clusters which fulfill the following preconditions:

(a) Geographical proximity, meaning neighboring areas of different Balkan states;
(b) Shared cultural and historical background, e.g. common religion, or language;
(c) EU membership of one cluster partner-state: i.e. Greece, Romania or Bulgaria.

The proposed clustering is depicted in Fig. 2, for the case of a three nation-states partnership:

The designated RBC area is the location which satisfies the preconditions forming the necessary cultural, political and economic background for local business development. Border-regions are defined by economic (production specialization,

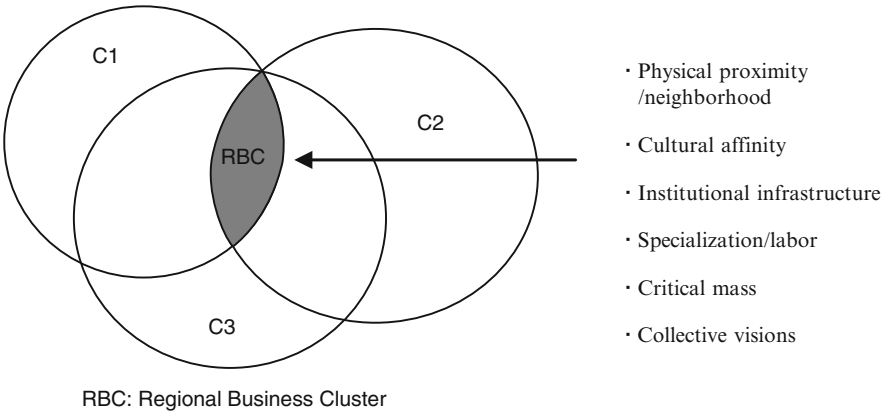


**Fig. 2** Cross-border business cluster among C1, C2 & C3 countries

labour, critical mass) and non-economic aspects (prevailing socio-cultural conditions related to ethnic, religious, linguistic and geographic parameters) that favour cross-border business activity. Under this perspective, border-regions are examined as social constructions where the role of norms, collective identities and shared memories is important for interaction (Keating et al. 2003). Our proposal implies the necessary political willingness and financial support to overcome existing impediments and boost competitive advantages in regional business. In this framework, a series of policy initiatives and measures can be proposed for the specific RBCs, targeting at:

- Joint business projects, joint efforts for product development, shared supplies, production and marketing;
- Joint action for an extrovert business orientation, e.g. international fairs and expositions, for a common marketing and sales platform, e.g. promoting the comparative advantages of the cluster;
- Know-how exchange and historically developed competence in the certain fields of activities;
- Sharing of expertise and skills, e.g. language skills and competences, cultural acquaintance, human resources, training, learning from good practices and diffusing innovation;
- Building institutional and administrative capacity, sustaining entrepreneurship across the regions involved;
- Developing infrastructure and technology projects, enhancing accessibility and mobility of production actors across the regions involved.

RBCs defined by the cultural particularities, the political interests and the economic objectives of private and public stakeholders in the countries involved, can counteract stagnation and boost local and regional development.

## 5 Conclusions

The analytical framework adopted in this paper encompasses the specificities of socio-cultural, institutional and economic contexts in order to assess regional integration in the Western Balkans. Our objective is to comprehend why despite the economic progress of individual states, endogenous growth is still weak in the region. Foreign investment might be the engine of economies in transition, but long-term regional prosperity requires the development of the domestic business sector. The evidence points to the limited scope of intra-regional trade and regional business cooperation. Endogenous business development is a central issue that requires cross-border cooperation, specific measures enhancing intra-regional trade and political determination to pursue regional integration. Achieving regional integration beyond trade liberalization requires practices that reduce the market-segmentation caused by domestic policies. The benefits of integration lie in the creation of a single economic space and include greater contestability, a larger market, greater economies of scale – all evidenced in intra-regional supply chains, higher FDI, increased efficiency of backbone sectors and increased intra-regional trade (Kathuria 2008).

The emergence of the EU as the most important trading partner for the SEE countries in the 1990s, led the shift from traditional intra-regional (inter-state) trade links to new extra-regional (primarily with the EU) trade relations. As the disintegration of the SFR of Yugoslavia and the SEE transition during that period proceeded with war conflicts, embargoes and the implementation of various restrictions, new economic barriers were formed and led to overall trade reduction (Uvalic 2005). Thus, the already weak economic links between the SEE states – comprising the sub-region of the former Yugoslavia states and the states of Albania, Bulgaria, and Romania – became even weaker. Since 2000, evidence on the re-integration of the SEE-5 countries – forming now the Western Balkan region – confirms that prospects are strongly determined by path-dependencies, state policies and institutional structures (Sklias and Tsampra 2013). Historical links and inherited trade patterns prove to be more important than many economic elements. The regional integration pattern has been heavily influenced by political factors in the past – i.e. before 1989 and throughout the 1990s – and this is still the case. On this ground, we suggest the political, institutional and financial support of intra-regional business especially in cross-border areas, where clusters can capitalize on geographic proximity, shared historical background and culture.

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# A Statistical-Based Approach to Assessing Comparatively the Performance of Non-Banking Financial Institutions in Romania

**Adrian Costea**

**Abstract** In this paper we construct a framework that enables us to make class predictions about the performance of non-banking financial institutions (NFIs) in Romania. Our objective is to create a classification model in the form of a logistic regression function that can be used to assess the performance of NFIs based on different performance dimensions, such as capital adequacy, assets' quality and profitability. Our methodology consists of two phases: a clustering phase, in which we obtain several clusters that contain similar data-vectors in terms of Euclidean distances, and a classification phase, in which we construct a class predictive model in order to place the new row data within the clusters obtained in the first phase as they become available. Our goal is two-fold: to validate the dimensionalities of the map used to represent the performance clusters and the quantisation error associated with it and to use the obtained model to analyze the movements of three largest NFIs during the period 2007–2010. Using our validation procedure that is based on a bootstrap technique, we are now able to find the proper map architecture and training–testing dataset combination for a particular problem. At the same time, using the visualization techniques employed in the study, we understand how different financial factors can and do contribute to the companies' movements from one group/cluster to another. Furthermore, the classification model is validated based on high training and testing accuracy rates.

**Keywords** Non-banking financial institutions • Performance evaluation • Logistic regression • Class prediction

**JEL Classification Codes** C38 • C81 • G23

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## 1 Introduction

The aim of this paper is to analyze comparatively the financial performance of a number of non-banking financial institutions (NFIs) in Romania by the means of Data Mining techniques. This type of analysis could support the Supervision Department of the National Bank of Romania in its current activity: the supervision authority can identify those institutions that present a lower than average level of financial stability, thus concentrating its scarce resources (time and personnel) on these particular entities. At the same time, an analysis of the biggest NFIs in terms of total assets would be of interest for judging the stability of the entire sector. Other stakeholders (decision-makers, creditors, investors) can benefit from this type of analysis. Decision-makers in the companies involved in the analysis can understand the causes of their business problems by learning from others' achievements/mistakes. Creditors can obtain a general picture about the financial situation of different companies that would help them manage their credit exposure. Using our models, investors would be able to weigh the different investment opportunities.

Currently, in Romania, NFIs performance evaluation is done manually by consulting their prudential reporting. Periodic financial statements (PFSs) contain a number of raw indicators for NFIs' performance which are analyzed manually by inspectors. Until now it is not possible to perform a comparative analysis of several NFIs or a dynamic analysis of one of these entities based on the indicators of the PFSs, except by considerable effort from the inspectors of the Supervision Department. This is due to the complexity of the problem involving dynamic analysis (for a considerable number of quarters) of all NFIs included in the Special Register (about 65) in terms of a set of 10–15 performance indicators. However, unlike the NFIs' performance evaluation (rating) models (which are non-existent), the Supervision Department developed the Uniform Assessment System – CAAMPL (Cerna et al. 2008) for evaluating the credit institutions (banks). CAAMPL system assesses the performance of credit institutions based on six dimensions: capital adequacy (C), shareholders' quality (A), assets' quality (A), management (M), profitability (P) and liquidity (L). Each performance dimension is evaluated based on a number of indicators and a composite rating is calculated. Except from being inapplicable for assessing the performance of NFIs, the CAAMPL rating system presents some disadvantages, such as:

- It uses simple linear techniques for discriminating the multidimensional space represented by the independent variables (financial performance ratios). In fact, the discrimination model is not a multivariate discrimination model (i.e.: a model that takes into consideration more than one discriminating variable at a time), but a sequential combination of univariate models;
- The selection of independent variables (performance criteria) that determine a rating (a specific class of performance) is not based on scientific rigour, but on the practical experience of the members of the supervision authority;
- As a result of this heuristic selection it is difficult to substantiate the various limits for the independent variables that determine the performance indicator

(rating), which leads to a significant increase in the analyst's subjective involvement in establishing it;
- CAAMPL evaluation system by which the performance of the credit institutions is assessed (the ratings are established) is based mainly "*on rules*" as emphasized by the IMF in IMF (2010) and does not involve quantitative methods for assessing the performance.

While still in place and useful, the CAAMPL system need to be challenged. This challenge is provided by Computational-Intelligence (CI) methods which come from different fields: *machine learning*, *artificial intelligence, evolutionary computation* and *fuzzy logic*. The Knowledge Discovery in Databases (KDD) process (Fayyad et al. 1996) and its engine—Data Mining (DM)—represent the umbrella under which the CI methods operate. In a previous paper (Costea 2011) we formalized the process of NFIs' financial benchmarking by considering this real-world application as a knowledge discovery problem and by following the formal steps of the KDD process. Each business problem (real-world application) can be matched by many data-mining tasks depending on how we approach the problem. We match our real-world application (assessing comparatively the performance of NFIs) with both DM clustering and classification tasks. We use clustering methods in order to find patterns (models) that describe the financial situation of NFIs and classification methods for financial (class) predictions.

Here we analyze only those NFIs registered in the Special Register that have as main activity financial leasing and have been active since the introduction of the regulatory framework for these institutions in Romania. The algorithms used to perform DM tasks mentioned above are numerous and they come from different research fields. In this paper, we use an heuristic method (neural networks with unsupervised learning algorithm known as Self-Organizing Map algorithm) for the DM clustering task, and a statistical approach (multinomial logistic regression) for performing the DM classification task.

The scientific literature in applying DM techniques for financial performance benchmarking is relatively rich. In the next section we engage in a thorough literature review regarding the application of CI methods in assessing comparatively companies' financial performance. Then, we present our methodology and data. Finally, we perform an experiment by analysing the movements of three largest NFIs in terms of total assets during the period 2007–2010 and present our concluding remarks.

## 2 Literature Review

We found several models for evaluating the performance of financial entities, applicable mainly to the credit institutions. In Collier et al. (2003) the authors described the characteristics of the off-site monitoring instrument of the FDIC (Federal Deposit Insurance Corporation) and the data used in its development.

Doumpos and Zopounidis (2009) proposed a new classification system for the credit institutions as a support-tool for the analysts from the National Bank of Greece. The system provides a rich set of assessment, visualization and reporting options. Swicegood and Clark (2001) compare three models (based on discriminant analysis, neural networks and professional human judgment) used to predict underperformance of commercial banks. Neural networks based model showed better predictive capacity than the other two models.

Boyacioglu et al. (2009) proposed several methods for classifying credit institutions based on 20 performance indicators grouped into six dimensions (CAMELS). They used four sets of financial data, the results showing that among the clustering and classification techniques tested, the best in terms of accuracy rates were neural networks.

Ravi Kumar and Ravi (2007) makes a literature review for research conducted during 1968–2005 on the application of statistical and computational intelligence methods in banks' or firm's bankruptcy prediction. For each source of data, the authors show the indicators used, the country of origin and the period of data collection. Şerban et al. (2011) apply computational intelligence methods (e.g. clustering techniques) to classify the shares from Bucharest Stock Exchange which had profit during the last 2 years, in order to find similarities and differences between these shares and build a diversified portfolio.

The SOM algorithm was used extensively in assessing comparatively companies' financial performance. There are two pioneer works applying the SOM to companies' financial performance assessment. One is Martín-del-Brío and Serrano Cinca (1993) followed by Serrano Cinca (1996, 1998a, b). Martín-del-Brío and Serrano Cinca (1993) propose SOM as a tool for financial analysis. The sample dataset contains 66 Spanish banks, of which 29 went bankrupt. Martín-del-Brío and Serrano Cinca (1993) use 9 financial ratios, among which there are 3 liquidity ratios: current assets/total assets, (current assets – cash and banks)/total assets, current assets/loans, 3 profitability ratios: net income/total assets, net income/total equity capital, net income/loans, and 3 other ratios: reserves/loans, cost of sales/sales, and cash flows/loans. A solvency map is constructed, and different regions of low liquidity, high liquidity, low profitability, high cost of sales, etc. are highlighted on the map. Serrano Cinca (1996) extends the applicability of SOM to bankruptcy prediction. The data contain five financial ratios taken from Moody's Industrial Manual from 1975 to 1985 for a total of 129 firms, of which 65 are bankrupt and the rest are solvent. After a preliminary statistical analysis, the last ratio (sales/total assets) is eliminated because of its poor ability to discriminate between solvent and bankrupt firms. Again, a solvency map is constructed and, using a procedure to automatically extract the clusters, different regions of low liquidity, high debt, low market values, high profitability, etc. are revealed. Serrano Cinca (1998a, b) extends the scope of the Decision Support System proposed in the earlier studies by addressing, in addition to corporate failure prediction, problems such as: bond rating, the strategy followed by the company in relation to the sector in which it operates based on its published accounting

information, and comparison of the financial and economic indicators of various countries.

The other major SOM financial application is Back et al. (1998), which is an extended version of Back et al. (1996). Back et al. (1998) analyse and compare more than 120 pulp-and-paper companies between 1985 and 1989 based on their annual financial statements. The authors used 9 ratios, of which 4 are profitability ratios (operating margin, profit after financial items/total sales, return on total assets, return on equity), 1 is an indebtedness ratio (total liabilities/total sales), 1 denotes the capital structure (solidity), 1 is a liquidity ratios (current ratio), and 2 are cash flow ratios (funds from operations/total sales, investments/total sales). The maps are constructed separately for each year and feature planes are used to interpret them. An analysis over time of the companies is conducted by studying the position each company has in every map.

One of the pioneer works in applying *discriminant analysis* (DA) to assessing comparatively companies' financial performance is Altman (1968). Altman calculated discriminant scores based on financial statement ratios such as working capital/total assets; retained earnings/total assets; earnings before interest and taxes/total assets; market capitalisation/total debt; sales/total assets. Ohlson (1980) is one of the first studies to apply *logistic regression* (LR) to predicting the likelihood of companies' bankruptcy. Since it is less restrictive than other statistical techniques (e.g. DA) LR has been used intensively in financial analysis. De Andres (2001, p. 163) provides a comprehensive list of papers that used LR for models of companies' financial distress.

## 3 Methodology and Data

Our methodology consists of two phases: a clustering phase, in which we obtain several clusters that contain similar data-vectors in terms of Euclidean distances, and a classification phase, in which we construct a class predictive model in order to place the new row data within the clusters obtained in the first phase as they become available.

In the first phase, we employ unsupervised neural networks in terms of Kohonen' Self-Organizing Maps (SOM) algorithm, in order to build clusters that include NFIs with similar performance (in terms of financial ratios). Based on the SOM, we construct a two-dimensional unified-distance matrix map (a two-dimensional representation technique for the distance between neurons). Then, we characterize each cluster as containing NFIs with good, average or poor performance by looking at the feature planes for each individual input variable. Based on this characterization, we build the "class performance" variable by attaching to each data row a class label depending onto which cluster it belongs.

In the second phase, we employ a statistical technique, namely multinomial logistic regression, in order to build a classification model that links the newly constructed "class performance" variable to the input variables (financial

performance ratios). We build this classification model in order to avoid the problems associated with adding new data to an existing SOM cluster model. Inserting new data into an existing SOM model becomes a problem when the data have been standardized, for example, within an interval like [0,1]. Also, the retraining of maps requires considerable time and expertise.

We applied our methodology on NFIs' performance dataset. The data were collected annually from 2007 to 2010 for the NFIs registered in the Special Register that have as main activity financial leasing.

## *3.1 The SOM*

The SOM (Self-Organising Map) algorithm is a well-known unsupervised-learning algorithm developed by Kohonen in the early 80's and is based on a two-layer neural network (Kohonen 1997). The algorithm creates a two-dimensional map from *n*-dimensional input data. After training, each neuron (unit) of the map contains input vectors with similar characteristics, e.g. NFIs with similar financial performance. The result of SOM training is a matrix that contains the codebook vectors (weight vectors). The SOM can be visualised using the *U-matrix* method proposed by Ultsch (1993). The unified distance matrix or U-matrix method computes all distances between neighbouring weights vectors. The borders between neurons are then constructed on the basis of these distances: dark borders correspond to large distances between two neurons involved, while light borders correspond to small distances. In this way, we can visually group the neurons ("raw" clusters) that are close to each other to form supra-clusters or "real" clusters (Fig. 1a).

In addition to the U-matrix map, a *component plane* or *feature plane* can be constructed for each individual input variable. In the feature planes light/"warm" colours for the neurons correspond to high values, while dark/"cold" colours correspond to low values (Fig. 1b). The component plane representation can be considered a "sliced" version of the SOM, where each plane shows the distribution of one weight vector component (Alhoniemi et al. 1999, p. 6). Also, *operating points* and *trajectories* (Alhoniemi et al. 1999, p. 6 and Fig. 1a gray line) are used to find how different points (observations) move around on the map (e.g. how the countries evolved over time with respect to their economic performance).

Many researchers have focused on applying SOM to perform the DM clustering task in general, and economic/financial performance benchmarking in particular. Oja et al. (2003) cites 5384 scientific papers – published between 1981 and 2002 – that use the SOM algorithms, have benefited from them, or contain analyses of them. However, relatively few of them (73) have applied SOM to business-related issues (Oja et al. 2003).

There are two main differences between our study and those referred to in terms of using the SOM as a performance-benchmarking tool. One difference comes from the limitation that techniques such as the SOM have: in essence they constitute

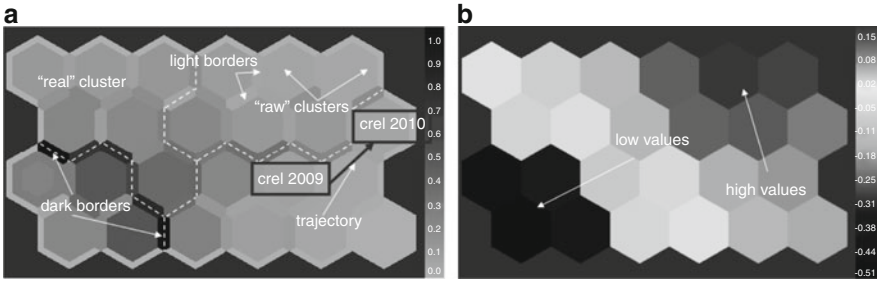


**Fig. 1** (**a**) The U-matrix representation with Nenet v1.1a software program and (**b**) some variable component plane

descriptive data analysis techniques and aim at summarising the data by transforming it into a two-dimensional space and preserving the dissimilarities between observations. Employing the SOM does not imply that the use of other well-known techniques is renounced; rather, it is very productive to complement it with other tools (Serrano Cinca 1998a). Consequently, in this study, we go one step further and use the output of the SOM as the input for the classification models. Moreover, another distinction with the other studies is that, in our research, we answer some technical questions related to the practical implementation of the SOM as a performance-benchmarking tool. We have addressed two technical SOM problems: the validation of map topology and quantisation error.

## *3.2 Multinomial Logistic Regression*

Multinomial Logistic Regression (MLR) classifies cases by calculating the likelihood of each observation belonging to each class. The regression functions have a logistic form and return the likelihood (the odds) that one observation ($x$) belongs to a class ($C$):

$$odds(x \in C) = \frac{1}{1 + e^{-logit}} = \frac{1}{1 + e^{-(w_0 + w_1 v_1 + \ldots + w_p v_p)}} \tag{1}$$

where $v_1, \ldots v_p$ are the input variables, and $w_0, \ldots, w_p$ are the regression coefficients (weights).

MLR calculates the estimates ( $\hat{w}_i$, $i = 0, \ldots, p$ ) for the coefficients of all regression equations using the maximum likelihood estimation (MLE) procedure. If there are $c$ classes, MLR builds $c$-1 regression equations. One class, usually the last one, is the reference class.

MLR calculates the standard errors for the regression coefficients, which show the potential numerical problems that we might encounter. Standard errors larger than 2 can be caused by multicolinearity between variables (not directly handled by

SPSS or other statistical packages) or dependent variable values that have no cases, etc. (Hosmer and Lemeshow 2000).

Next, MLR calculates the *Wald* statistic, which tests whether the coefficients are statistically significant in each of the $c$-1 regression equations. In other words, it tests the null hypothesis that the logit coefficient is zero. The Wald statistic is the ratio of the unstandardised logit coefficient to its standard error (Garson 2005).

Next, MLR shows the degree of freedom for the Wald statistic. If "sig." values are less than the 1 – confidence level (e.g. 5 %) then the coefficient differs significantly from zero. The signs of the regression coefficients show the direction of the relationship between each independent variable and the class variable. Positive coefficients show that the variable in question influences positively the likelihood of attaching the specific class to the observations.

Values greater than 1 for $e^{\hat{w}_i}$ show that the increase in the variable in question would lead to a greater likelihood of attaching the specific class to the observations. For example, if $e^{\hat{w}_1} = 3$ for class $c_1$ and variable $v_1$, we can interpret this value as follows: for each unit increase in $v_1$ the likelihood that the observations will be classified in class $c_1$ increases by approximately three times.

Finally, MLR shows the lower and upper limits of the confidence intervals for the $e^{\hat{w}_i}$ values at the 95 % confidence level.

Statistical techniques were deployed first to tackle the classification task: univariate statistics for prediction of failures introduced by Beaver (1966), linear discriminant analysis (LDA) introduced by Fisher (1936), who first applied it to Anderson's iris dataset (Anderson 1935), multivariate discriminant analysis (MDA) – Altman (1968), Edmister (1972), Jones (1987), and probit and logit (logistic) models – Ohlson (1980), Hamer (1983), Zavgren (1985), Rudolfer et al. (1999).

## *3.3 The Dataset*

In this paper we assess comparatively the performance of different NFIs. We base our variables choice on the existing Uniform Evaluation Systems – CAAMPL (Cerna et al. 2008) applicable in the case of credit institutions or banks. The CAAMPL system uses the financial reports of credit institutions and evaluates six components that reflect in a consistent and comprehensive manner the performance of banks in concordance with the banking laws and regulations in force: capital adequacy (C), quality of ownership (A), assets' quality (A), management (M), profitability (P), liquidity (L). In this application we have restricted the number of the performance dimensions to three quantitative dimensions, namely: capital adequacy (C), assets' quality (A) and profitability (P). The other quantitative dimension used in evaluating the credit institutions (liquidity dimension) is not applicable to NFIs, since they do not attract retail deposits. We have also eliminated the qualitative dimensions from our experiment (quality of ownership and

management) because they involve a distinct approach and it was not the scope of this study to take them into account.

After choosing the performance dimensions, we select different indicators for each dimension based on the analysis of the periodic financial statements of the NFIs: Equity ratio (Leverage) = own capital/total assets (net value) for the "capital adequacy" dimension, Loans granted to clients (net value)/total assets (net value) for the "assets' quality" dimension and Return on assets (ROA) = net income/total assets (net value) for the "profitability" dimension. The data were collected with the help of the members of the NFIs' Supervision Unit within the Supervision Department of the National Bank of Romania. The data were collected annually from 2007 to 2010 for the NFIs registered in the Special Register that have as main activity financial leasing and have been active since the introduction of the regulatory framework for these institutions in Romania. In total there were 11 NFIs that met the above criteria and 44 observations (11 NFIs $\times$ 4 Years = 44 observations). In the following table we present some descriptive statistics related to the financial ratios used to evaluate the NFIs' performance.

As it can be seen from Table 1, the NFIs with a negative own capital have substantially influenced the mean of Leverage financial ratio which takes a negative value. In average 69.5 % of total assets are used for loans issued by the specific NFIs during the period 2007–2010. The highest variance is encountered for Leverage, and the second highest for the assets' quality indicator. The financial ratio that is closest to the normal distribution is ROA (Kurtosis = 1.72, Skewness = $-1.23$). Minimum and maximum values for the financial ratios show that the dataset contains companies that are highly indebted (high negative values for the Leverage), have issued a lot of loans (value close to 1 for the Loans/Assets ratio), and have high profitability (maximum value for ROA – 9.5 %).

## 4 Experiment

We applied our methodology to the NFIs' financial performance dataset. We tried to validate the SOM dimensionalities according to empirical measures presented in DeBodt et al. (2002). For each map dimensionality ($4 \times 4$, $5 \times 5$, $6 \times 6$, $7 \times 7$, $8 \times 8$, $9 \times 9$) we used 100 bootstrap datasets to train the SOM. We expected the variation coefficients of the quantisation error vectors to increase with the map dimensionality. However, we obtained very small variation coefficients (approx. 2 %) for all architectures, which did not allow us to reject any architecture. Therefore, a final $6 \times 4$ SOM map was chosen based on the ease-of-readability criterion. For this SOM architecture we tested three quantisation errors: one obtained when all the data are used for training and testing the SOM ("100-100" case), another when 90 % of data are used for both training and testing ("90-90" case), and the other when 90 % is used for training, and the remaining 10 % for testing ("90-10" case). Again, for each training–testing dataset combination we extracted 100 bootstrap datasets from the original data and obtained a quantisation error vector for each combination.

**Table 1** Descriptive statistics for the financial performance ratios

| | Leverage | Loans/assets | ROA |
|---|---|---|---|
| Mean | −0.01467 | 0.695108 | −0.02986 |
| Standard error | 0.032453 | 0.021073 | 0.012139 |
| Median | 0.035598 | 0.718977 | −0.01319 |
| Standard deviation | 0.215268 | 0.139781 | 0.08052 |
| Sample variance | 0.04634 | 0.019539 | 0.006483 |
| Kurtosis | 8.925482 | −0.84266 | 1.717818 |
| Skewness | −2.82907 | −0.45214 | −1.22532 |
| Range | 1.122737 | 0.482275 | 0.353689 |
| Minimum | −0.90823 | 0.420091 | −0.25866 |
| Maximum | 0.214509 | 0.902366 | 0.095032 |
| Sum | −0.6454 | 30.58474 | −1.31378 |
| Count | 44 | 44 | 44 |

Then, we used *t*-tests to compare the means of the three vectors. The *t* statistic is obtained by dividing the mean difference (of the two vectors) by its standard error. The significance of the *t* statistic (p-values $< 0.05$) tells us that the difference in quantisation error is not due to chance variation, and can be attributed to the way we select the training and testing sets. Even though we found some differences between the quantisation error vectors, the confidence in the results was rather poor (p-value for "100-100" – "90-90" pair was 0.051). Finally, we followed the "100-100" case using the entire dataset to train and test the $6 \times 4$ SOM. Even if in this particular case they were not of much help, these empirical validation procedures allow us to choose more rigorously the SOM parameters. Finally, the SOM parameters chosen were: $X = 6$, $Y = 4$, training length $1 - rlen_1 = 1{,}000$, learning rate $1 - \alpha_1(0) = 0.05$, radius $1 - N_1(0) = 6$, training length $2 - rlen_2 = 10{,}000$, learning rate $1 - \alpha_2(0) = 0.02$, radius $2 - N_2(0) = 2$.

The final $6 \times 4$ SOM map with the identified "real" clusters (dotted lines) (shown in Fig. 2) was the best in terms of quantization error (0.074522).

We used U-matrix method to group the "raw" clusters into "real clusters". This is done by looking at the borders between neurons in the map, by analysing the component plane for each input variable and the observations that belong to each cluster. In this way we have identified four "real" clusters (clusters A, B, C, and D in Fig. 2) which are described as follows (see Table 2):

Cluster A includes the NFIs with the highest values for the input variables measuring capital adequacy and profitability and second highest values registered for the variable measuring the assets' quality. This "real" cluster contains eight observations. It is the only cluster with positive average profitability ratios. Cluster B is the largest cluster containing half of the total observations (22 observations). It includes NFIs with medium capital adequacy and profitability and highest value for the variable measuring assets' quality. All ratios in cluster C have average values. However, this cluster contains NFIs with a lower performance than those in cluster B. Both cluster B and C contain NFIs that in average have negative profitability

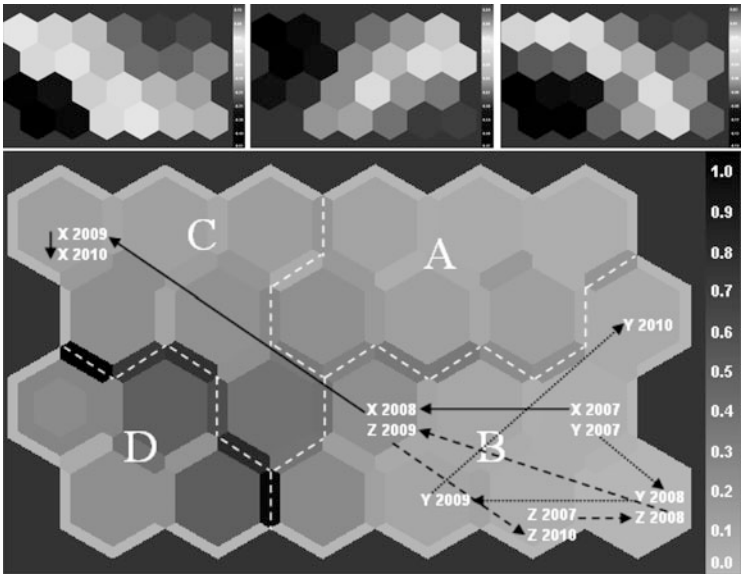


**Fig. 2** The final 6 × 4 map with identified "real" clusters and the component planes for the three variables: Equity ratio (Leverage), Loans granted to clients (net value)/total assets (net value) and Return on assets (*ROA*). The trajectories (*black arrows*) between 2007 and 2010 for the largest three NFIs ("*solid-line*" *arrows* for company X, "*dotted-line*" *arrows* for company Y, and "*dashed-line*" *arrows* for company Z)

**Table 2** The characterization of the clusters obtained by applying SOM algorithm

| Cluster | # of obs. | Leverage | Loans/assets | ROA |
|---|---|---|---|---|
| A | 8 | 0.147659 | 0.63482 | 0.008182 |
| B | 22 | 0.029809 | 0.811298 | −0.02236 |
| C | 9 | 0.013916 | 0.532348 | −0.02504 |
| D | 5 | −0.52154 | 0.573298 | −0.13241 |

ratios. Cluster D contains the worst performers. All performance ratios show low values. Again, the profitability ratios are negative in average.

The SOM trajectories can be used to check the financial performance of the different NFIs over time. The trajectories in Fig. 2 show the movements of the three largest NFIs (in terms of average total assets for 4 years – 2007–2010): the largest denoted with X (solid-line), the second largest denoted with Y (dotted-line) and the third largest denoted with Z (dashed-line) between 2007 and 2010.

For example, company X started in cluster B in 2007 and 2008, but dropped to cluster C the following year and remained there in 2010. This was partially due to a greater decrease in own capital as compared to a smaller increase in total assets. At the same time, in 2009 the loans granted by company X have decreased dramatically as compared to 2008, reaching almost a 50 % decrease.

Once we had constructed the "real" clusters, we built the class variable, assigning a class value (1–4) to each observation within a cluster. Next, we applied

MLR to build the classification models by following the methodological steps (Costea 2005). We used SPSS to perform the classification. We used our dataset without preprocessing the data given the values of the ratios are already standardised in a [−1; 1] interval. We validated our models based on the training data by using proportional by-chance and maximum by-chance accuracy rates. Both criteria require the classification accuracy to be 25 % better than the *proportional by-chance accuracy rate* and *maximum by-chance accuracy rate* respectively (Hair et al. 1987, pp. 89–90). The proportional by-chance accuracy rate is calculated by summing the squared proportion of each group in the sample: the square proportion of cases in class 1 + . . . + the square proportion of cases in class *n*. The maximum by-chance accuracy rate is the proportion of cases in the largest group. For example, the training accuracy rate (100 %) satisfied both proportional by-chance criterion (100 % > 1.25 * 33.78 % = 42.23 %) and maximum by-chance criterion (100 % > 1.25 * 50 = 62.50 %). The significance of the Chi-Square statistic ($p < 0.0001$) and the determination coefficient (Nagelkerke's $R^2 = 100.00$ %) show a very strong relationship between class variable and the input variables.

We interpret the results of MLR by looking at the SPSS output tables. According to "Likelihood Ratio" test, all variables are statistically significant (sig. < 0.05) which gives the evidence that all three independent variables contribute significantly to explaining differences in classification. Some coefficients in the regression equations are not statistically significant (Wald test). Some values in "Std. Error" column are greater than 2, which indicate a multicolinearity problem for our NFIs' performance dataset. Variable "ROA" has a value of 1.21 in column "Exp (B)" for the 2nd regression equation, which means that for each unit increase in this variable the likelihood that the observations will be classified in class B increases by approximately 1.20 times. Next, we validate our models based on the test data using the general procedure described in Sect. 5.2 from Costea (2005). The results are presented in Table 3.

The results of MLR classification technique are rather poor for this experiment. First of all, there are many regression coefficients that are statistically insignificant, due to high standard errors obtained for most of them. Secondly, the MLR models tend to over fit the training data. We obtained 100 % accuracy rates for all three training sessions: one with the entire dataset as training set, the second with half of the observations considered for training (split = 0) and the third with the other half of the observations considered as training instances (split = 1). In these two last cases we used the other half of the instances as test sample. There are major discrepancies between the training and test accuracy rates. More robustness in collecting and preprocessing the data is necessary in order for the classification model to be accurate and useful. In the future work we will handle the multicolinearity problem by adding new training data and more input variables. Also, we will check different preprocessing methods once we have the updated dataset.

**Table 3** Accuracy rate validations for the financial MLR classification models. The validation is done according to Sect. 5.2 in Costea (2005)

| | Main dataset | Part1 (split = 0) | Part2 (split = 1) |
|---|---|---|---|
| Learning sample | 100.00 % | 100.00 % | 100.00 % |
| Test sample | No test sample | 77.27 % | 81.81 % |

## 5 Conclusions

In this paper we presented how Data Mining techniques, namely Self-Organizing Map (SOM) algorithm and Multinomial Logistic Regression (MLR) can be used in performing financial performance benchmarking of different non-banking financial institutions in Romania. We selected only those NFIs that are registered in the Special register, have as main activity financial leasing and have been active since the introduction of the regulatory framework for these institutions in Romania.

We trained several SOMs and selected the best one in terms of quantisation error and ease-of-readability. We validated the map dimensionalities and quantisation error using different training and testing datasets and bootstrap technique. We could not reject any SOM architecture for a given significance level and we chose the dimensionalities of the map with the smallest quatisation error. Although we did not find significant differences for the quatisation errors, based on our empirical procedure we are now able to find the optimal training–testing dataset combination for a particular problem. The final map was used to analyze over time the largest three companies in terms of total assets by studying the cluster where each company was positioned for each period. As a main pattern, we can see that for the analyzed companies there was a sharp drop in their performance in 2009 as compared to 2008. This coincides with the effect of the global financial crisis that materialized in Romania during year 2009 and hardly hit the auto sales industry which in turn affected negatively the performance of the NFIs that engaged in financing this sector.

We obtained a perfect classification in terms of training accuracy rates for all three training sessions, but rather high differences between training and testing accuracy rates. This might be due to the small number of training observations and a possible problem of multicolinearity among input variables. New experiments using other methods to preprocessing the data and adding new observations/input variables to the NFIs' financial performance dataset might yield better results.

This type of analysis can benefit the NFIs involved, Supervision Department from the National Bank of Romania in its monitoring process, business players such as international companies that want to expand their business and individual investors. Using our models, investors would be able to weigh the different investment opportunities by performing the comparisons themselves.

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# Market and Economic Development in Bulgaria

**Eleni Zafeiriou, Christos Karelakis, Chrisovalantis Malesios, and Theodoros Koutroumanidis**

**Abstract** The present paper tests empirically the existence of a causal relationship between the economic growth and the development in the banking and stock market in ex transition economies, recently member states of the EU and especially the case of Bulgaria. The Johansen cointegration test indicated a sole relationship between the banking sector, the stock market and the economic growth, while the application of the Granger causality/block exogeneity test indicated a bilateral relationship between the economic growth and the development in the stock market, as well as between the economic growth and the development in banking sector. Finally, no casual relationship was confirmed between the development in credit and stock market.

**Keywords** Cointegration • Granger causality • Stock market • Credit market • Economic growth

**JEL Classification Codes** P34 • G21 • C58 • C33

## 1 Introduction

In transition economies the issue of economic growth has been of great interest during the last two decades. The subject of economic growth, according to Schumpeter (1912), is related to the development of a country's financial sector. Bulgaria is a recurrent transition economy that its economic reform took place in the middle of 1990. This reform preceded a peaceful transition to a pluralistic

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democracy during the time period 1989–1991, while a political crisis and a period of hyperinflation followed for the time period 1996–1997 (Wyzan 1996). The economic performance of Bulgaria is characterized by great conflicts. To be more specific, a significant reduction in the Gross Domestic Product (GDP) was observed within the time period 1990–1991, a moderate increase was then recorded, while a significant decrease was apparent in the time period 1996–1997 (Jamal et al. 2006). One of the features often observed in transition economies is the rapid credit growth of the private sector (IMF 2004).

Credit growth may imply not only advantages but also disadvantages for the economy since it may lead to increased growth and efficiency but also to a macroeconomic and financial crisis (Arestis et al. 2001; Boyd and Smith 1996; Levine 1997, 1999, 2002). This may cause a dilemma for the policy makers, given that they have to minimize the risks of financial crisis while simultaneously they have to extend bank lending to households and to corporations in order higher growth and efficiency to be achieved (Levine and Zervos 1993, 1998; Boyd et al. 2001). The credit growth of Bulgaria is extremely high since it belongs to the top ten transition economies having as a criterion the development of the credit market. What must be mentioned is that in the year 2002 the average credit growth is above 5 % of GDP whereas the level of credit is still low (below 36 %). Regarding the banking system of Bulgaria, we can say that it is relatively small despite the large number of banks and the rapid asset growth at the beginning of the last decade. To be more specific, the banking system of this country consists of 29 banks and 6 branches of foreign banks while its total assets reach 46 % of GDP. The majority of the banks in Bulgaria are private while the state – ownership banks are limited to two. Furthermore, through the privatization process, large European banks acquired most of the assets that were owned by the banking system.

Regarding the institutional framework of the financial sector, we can say that it is adequate, whereas a strengthening in supervision on consolidated basis is needed as well as the training of the bank supervisors in the issue of international accounting standards. The economic instability on the other hand has caused dollarization and despite the fact that the confidence to the economic system was restored, the share of foreign currency – denominated deposits is still large. Additionally, aiming at exchange rate stability the frameworks of monetary policy have encouraged demand for foreign currency – denominated loans. These frameworks involve the operation of a currency board arrangement. This framework has three key features;

- A fixed exchange rate peg to the Euro.
- Automatic convertibility.
- A prohibition on domestic credit creation by the Bulgarian National Bank (BNB).

The only monetary instrument that remained to the government is to reserve requirements on commercial bank liabilities, as well as to impose quarterly ceilings on bank credit growth with punitive marginal reserve requirements if those are exceeded (Duenwald et al. 2005). The main impact of this financial boom in the case of Bulgaria is the expansion of the trade and of the current account deficits.

The policies that had to be adapted in order to offset and moderate the rapid credit growth are limited due to the currency board arrangement. The tightening of the fiscal policy and the restrain on expenditures were the two main measures adapted. As far as the monetary measures are concerned, the most important are the quantitative restrictions on credit, the limitation on reserve requirements and prudential supervision. The tightening of reserve requirements does not seem to reduce the credit growth. On the other hand, the impact of the limits on credit cannot be assessed yet given that initially took effect on April, 1, 2005.

Regarding the stock market we could say that a great inflow of foreign capitals was recorded since the economic environment was appropriate for the investors to make profitable investments, while numerous of foreign direct investments were recorded due to the accession of Bulgaria in the EU. Additionally, there are regulations regarding the controls on the capital account. Finally, regarding the prudential indicators they are relatively strong in terms of capital adequacy, provisioning profitability, and nonperforming loans (NPLs). The structure of the total product may be represented by the added gross value. As it can be seen in the following table there is a decrease in the percentage of the industrial product while there is a significant increase in the sector of services (Table 1).

Within this time period no significant change has taken place implying that the normality in every sector of the economy has been restored. Additionally, the changes in the agricultural sector had a negative impact on the contribution to the gross added value, while, it should not be neglected the expansion of the businesses of the private services. Regarding the financial sector, we can conclude that the development in the particular sector is moderate. Given the economic environment as described above, the present study will examine the existence of a relationship between economic growth and development in the financial sector (including the banking and the stock market).

## 2 Literature Review

The role of stock and credit market in the economic development has been an important subject of economic analysis. The main question is whether the stock or the credit market either follows or precedes economic development (Dritsaki and Dritsaki Bargiota 2006). The particular subject was initially studied by Schumpeter (1912), who considers that the development of the financial sector of a country affects not only the level but also the rate of economic growth.

Other important studies are those of Lewis (1955) and Jung (1986). Lewis (1955) confirmed the existence of a bilateral relationship between the financial development and the real growth while Jung (1986) found a unilateral relationship with direction from financial development to economic growth for the LDCs (Less Development Countries) and the validity of the reverse causal direction for the DCs (Developed Countries). According to Levine and Zervos (1993), the stock market development is strongly correlated to the growth rate of real GDP per capita,

**Table 1** The structure of the gross added value

| Activity groupings | 1996 | 2000 | 2006 | 2011[a] |
|---|---|---|---|---|
| Agriculture, forestry and fishing | 63.9 | 89.3 | 99.5 | 98.9 |
| Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities | 24.2 | 112.0 | 107.1 | 109.1 |
| Construction | 36.0 | 100.8 | 114.5 | 98.9 |
| Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities | 58.2 | 106.8 | 107.6 | 98.9 |
| Information and communication | 157.4 | 120.2 | 108.6 | 101.9 |
| Financial and insurance activities | 235.9 | 131.2 | 112.0 | 99.9 |
| Real estate activities | 234.0 | 101.3 | 106.5 | 99.4 |
| Professional, scientific and technical activities; administrative and support service activities | 217.2 | 101.8 | 117.8 | 108.1 |
| Public administration and defence; compulsory social security; education; human health and social work activities | 63.1 | 108.3 | 99.0 | 99.0 |
| Arts, entertainment and recreation, repair of household goods and other services | 72.9 | 110.6 | 115.4 | 91.9 |
| Total Economic | 90.4 | 105.1 | 106.7 | 101.8 |
| Adjustments (taxes less subsidies on products) | 95.4 | 110.7 | 105.5 | 100.8 |
| Gross Domestic Product | 91.0 | 105.7 | 106.5 | 101.7 |

Source: NSI (National Statistical Institution)
[a] denotes an estimated value

while they confirmed that the stock market liquidity and the banking development may predict the future growth rate of the economy.

Granger causality test was used as an empirical method of this subject by other studies, more important of which are those conducted by Luintel and Kahn (1999), Kar and Pantecost (2000), Shan and Morris (2002), and Dritsaki and Dritsaki-Bargiota (2006). To be more specific, Luintel and Kahn (1999), found a bi – directional causality between the financial development and economic growth through the empirical investigation of the long – run relationship in ten sample countries. Furthermore, Kar and Pantecost (2000) used data from Turkey and found that economic growth leads to financial development. The most significant finding though, is that the direction of causality between financial development and economic growth in the case of Turkey is related to the choice of measurement for financial development.

The findings of Shan and Morris (2002) contradict those of Kar and Pentecost (2000). The application of the Granger causality test confirmed that there is no causal relationship between financial development and economic growth in most countries of the sample used. Finally, Dritsaki and Dritsaki-Bargiota (2006), studying the case of Greece, found a bilateral causal relationship between the banking sector development and economic growth and a unidirectional relationship between economic growth and stock market.

The objective of the present paper is to investigate the causal relationship between the stock market, the credit market and their role in economic growth of

a transition economy, Bulgaria. Its importance stands on the particularities of the function of the sub – markets in a transition economy. The access of Bulgaria in the EU as well as the adaption of the euro as national currency of the economy played also an important role in the formation of the economic environment.

Furthermore, the openness of the economy, the inflow of the foreign capitals to the domestic economy and the high rates of inflation may affect the linkage between the credit market, the stock market and the economic growth; To be more specific Boyd et al. (2001), have shown that for countries with low – to moderate inflation, (Bulgaria is a moderate inflated country within the last decade) there is a strongly negative relationship of the inflation and the development in the banking sector as well as with the stock market development. Additionally, higher long run inflation rates may lead to slower economic growth. For the reasons mentioned above, the inflation should be tested as exogenous variable. Furthermore, the Granger causality test may confirm, the existence of a unilateral or bilateral relationship among the economic growth, the development in the banking sector and the development in the stock market. Thus, the present paper studies the validity of the theories suggesting that the financial development plays an important role in the process of the economic growth.

## 3 Theoretical Framework

In the analysis of economic growth as a function of the financial and credit growth the following relationship was used;

$$EG = f(FG,\ CG) \tag{1}$$

where;

EG: Economic Growth
FG: Functions of Stock Market
CG: Development of Credit Market.

The present paper intends to investigate the existence of this relationship that is in line to the theory as expressed initially by Schumpeter (1912), while the proxies used for describing each sector are described in the following paragraph.

## 4 Data: Methodology

As a proxy for the financial development the index of capitalization (CI) was employed, while the long term liabilities (LTL) was used as proxy for the credit market given that it describes adequately the situation in the bank sector. Finally, in order to describe the economic growth we employed the Industrial Production

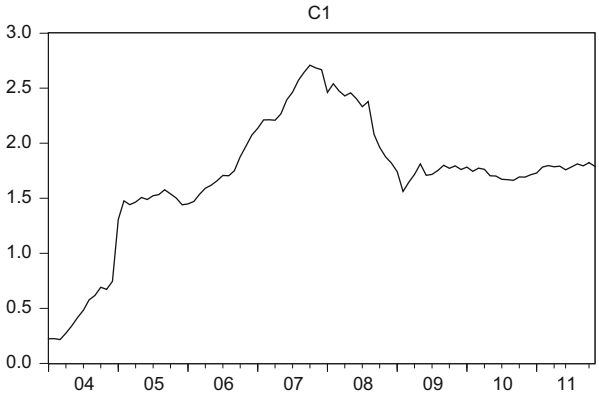


**Fig. 1** The evolution of the capitalization index in logarithmic form

Index (IPI). The data were derived from the data base of Eurostat. The period span extends from 01.2004 to 11.2011. All the data used are in logarithmic form. There had been a seasonal adjustment before we applied the unit root and the Johansen cointegration test. The time series data were modified to eliminate the effect of seasonal variations. Actually, the seasonal adjustment refers to the process of removing the aforementioned cyclical seasonal movements from a series and extracting the underlying trend component of the series.

To be more specific the data used are denoted as follows;

$$\mathrm{ci} = \ln(\mathrm{CI}) \tag{2}$$

$$\mathrm{ipi} = \ln(\mathrm{IPI}) \tag{3}$$

$$\mathrm{ltl} = \ln(\mathrm{LTL}) \tag{4}$$

The capitalization index presents a great volatility since it started with a value less than unity and reached the value of 16.37 in December 2007, while a decrease and a stabilization period followed until today. Regarding the long term liabilities, the volatility is limited while the increase is gradual, giving an upward trend to the graph. Finally, the industrial production index is characterized by a volatility with an upward trend until the year 2008 and a sharp decrease at the beginning of 2008, and volatility with an upward trend after the middle of 2009 (Figs. 1, 2, and 3).

The study of this relationship has been achieved with the implementation of cointegration test. The cointegration test was preceded by unit root tests (ADF and DF-GLS test). In particular, in the case of Bulgaria, a multivariate autoregressive VAR model was used while the exchange rates and the inflation was used as exogenous variables. Weak exogeneity of the exchange rates and the inflation were confirmed. Furthermore, Granger causality among the variables was tested with the assistance of a Vector Error Correction Model, through which we may define the direction among the three variables employed in the present study i.e. the

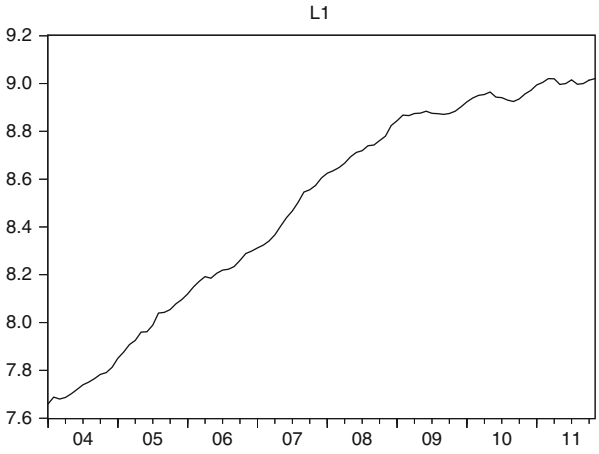


**Fig. 2** The evolution of the long – term liabilities in logarithmic form

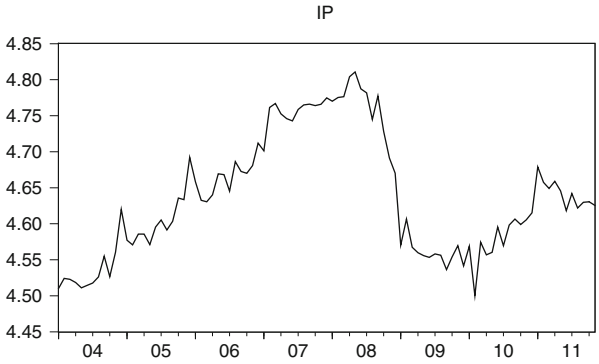


**Fig. 3** The evolution of the industrial production index in logarithmic form

banking sector development (long term liabilities), economic growth (IPI) and stock market development (capitalization index).

In addition, the estimation of the VEC is necessary, given the fact that the variables under preview in logarithmic form are cointegrated, while the statistical significance of the coefficients provides an indication for the existence of a relationship in the longer term.

## 5 Unit Root Test

In order to apply the cointegration technique as mentioned above, we examine the stationarity of the time series studied. A precondition for the implementation of a multi – Var contegration technique is the unit root test. The unit root test employed in our data is the Augmented Dickey Fuller (ADF) test (1979). The ADF (1979) test

has been widely used for testing the existence of a unit root in the time series studied, and is based on the following auxiliary regression of the general form;

$$\Delta p_t = \gamma_0 + \gamma_1 t + \gamma_2 p_{t-1} + \Xi(L)\Delta p_{t-1} + e_t \tag{5}$$

where;

$$\Xi(L) : p - th\ order\ polynomial\ in\ the\ lag\ operator\ L$$
$$e_t \sim N(0, \sigma^2)$$

The particular test aims at testing the null hypothesis that $\gamma_2 = 0$ which is tantamount for a single unit root in the data – generating process for $p_t$. In order to determine the ADF form, the significance of the constant was examined as well as the significance of the coefficient of the trend. Following these steps, we ended up to the final form of the regression that includes no constant and no time trend.

Given the low power of the ADF test we additionally applied a unit root test with greater power introduced by Elliot et al. (1992), known as DF-GLS test. The DF-GLS test is shown to be approximately uniformly most power invariant (UMPI), while no strictly UMPI test exists. Monte Carlo results indicated that the power improvement from using the modified Dickey-Fuller test can be large. The DF-GLS test is also known as ERS test. The particular test analyses the sequence of Neyman-Pearson tests of the unit-root null hypothesis ($a = 1$) against the local alternative of $\tilde{a} = 1 + \tilde{c}/T$ in the Gaussian AR(p + 1) model, for which T is the sample size and $\tilde{c}$ is some constant. Based on asymptotic power calculation, it is shown that a modified Dickey-Fuller test, called the DF-GLS test, can achieve a substantial gain in power over conventional unit root tests.

Let $\{y_t\}$ be the data process under examination. The DF-GLS test that allows for a linear time trend, is conducted based on the following regression:

$$(1 - L)y_t^{\tau} = a_0 y_{t-1}^{\tau} + \sum\nolimits_j^p a_j (1 - L)y_{t-j}^{\tau} + u_t \tag{6}$$

where L is the lag operator; $u_t$ is a white noise error term; and $y_t^T$, the locally detrended data process under the local alternative of $\tilde{a}$, is given by;

$$y_t^T = y_t - z_t\tilde{\beta} \tag{7}$$

with $z_t = (1, t)$ and $\tilde{\beta}$ being the regression coefficient of $y_t$ on $z_t$, for which;

$$\tilde{y}_t = (y_1, \quad (1 - \tilde{a}L)y_2, ....., \quad (1 - \tilde{a}L)y_T)'$$

and

$$\tilde{z}_t = (z_1, \quad (1 - \tilde{a}L)z_2, ....., \quad (1 - \tilde{a}L)z_T)'.$$

The DF-GLS test statistic is given by the conventional statistic testing $\alpha_0 = 0$ against the alternative of $\alpha_0 < 0$ in regression (6). ERS (Elliott et al. 1992) recommend that the parameter $\tilde{c}$, which defines the local alternative through $\tilde{a} = 1 + \tilde{c}/T$ be set equal to $\tilde{c} = -13.5$. For the test without a time trend, it involves the same procedure as the DF-GLS with time trend test, except that y is replaced by the locally demeaned series $y_t$ and $z_t = 1$. In this case, the use of $\tilde{c} = -7.0$ is recommended. The DF-GLS test when time trend is included, shares the same limiting distribution as the usual ADF test in the no-deterministic case.

## 6 Cointegration with the Johansen Technique

The cointegration analysis was based on Johansen's multivariate cointegration methodology. Additionally, the estimation of the cointegration vectors was applied with the treatment of the Johansen's maximum likelihood approach. According to Johansen (1988), any p – dimensional vector autoregression can be written in the following "error correction" representation.

$$\Delta X_t = \sum_{i=1}^{k} \Gamma_i \Delta X_{t-i} + \Pi X_{t-k} + \mu + \varepsilon_t \tag{8}$$

where;

$X_t$: p – dimensional vector of I(1) processes,
$\mu$: a constant
$\varepsilon_t$: a p – dimensional vector with zero mean ($\Pi$ is the variance – covariance matrix)

The $\Pi$ matrix has a rank that is limited in the (0,r) and can be decomposed into:

$$\Pi = \alpha\beta' \tag{9}$$

where;

$\alpha$, $\beta$: p $\times$ r matrices
r: distinct cointegrating vectors.

The procedure of Johansen provides the maximum likelihood estimates of $\alpha$, $\beta$, while $\Pi$ and the two likelihood ratio test statistics determine the dimension of the cointegration space. The trace and the maximum eigenvalue statistics are used to determine the rank of $\Pi$ and to reach a conclusion on the number of cointegrating equations, r, in our multivariate VAR system. The economic time series studied are I(1) as provided by unit root tests, while under the condition their combination is I(0), validates the existence of a sole relationship involving the three variables.

## 7 Vector Error Correction Model

According to the Granger representation theorem, if a cointegrating relationship exists among a set of I(1) series, a dynamic error-correction(EC) representation of the data also exists.

Thus, in the second stage we estimated the Vector Error Correction Model in order to examine the direction of the causality between the variables employed. The direction of the causality is determined by the statistical significance of the cointegrating equation coefficient. Additionally, the error correction model captures not only the long-term but also the short-term dynamics of the model.

Loading coefficients – even though they may be considered as arbitrary to some extend due to the fact that they are determined by normalization of cointegrating vectors, their t-ratios may be interpreted in the usual way as being conditional on the estimated co-integration coefficients (Lütkhepohl and Krätzig 2004; Lütkhepohl and Krätzig 2005). The statistical significance though implies that the co-integration relation resulting from normalization of cointegrating vector enters significantly.

## 8 Granger Causality Test

The last step of the process included the realization of the Granger causality tests regarding the three variables employed. The criterion used for this test is the Granger causality/Block exogeneity Wald process. The above statistic aims at testing the null hypothesis that the coefficients of the lagged values of each variable in the block of equations explaining the variable(s) are zero. In addition, the results of the joint test provide a confirmation for the exogeneirty of the variables under survey.

## 9 Results

Initially, we employed the ADF test in order to examine whether the time series used are stationary. The time series tested for stationarity are the capitalization index, the interest rates as well as the industrial production index. The analytical results are given in Table 2.

According to the results given above, all the time series studied are stationary in first differences but not in levels, thus all the time series are I(1). The only exceptions in our survey are the time series of the inflation rate and the effective exchange rates which are I(0) and I(2) respectively. This result shows that we can use Johansen technique to test whether a combination of these variables is stationary. The variables studied in this case are cointegrated and thus there is a long run relationship between them. The order of VAR was determined by the

**Table 2** Results of ADF tests

| ADF test | | |
|---|---|---|
| Variable | τ | k |
| Ci | −2.841 | 0 |
| Ll | −2.491 | 0 |
| Ipi | −1.576 | 11 |
| P | −7.8334 | 1 |
| efex | −0.8334 | 1 |
| Δci | −6.914 | 1 |
| Δll | −6.428 | 0 |
| Δipi | −12.85216 | 11 |
| Δp | – | – |
| efex | −7.1841 | 2 |
| DF-GLS test | | |
| Variable | τ | k |
| Ci | −0.345 | 1 |
| Ll | 0.405 | 3 |
| Ipi | −1.06 | 3 |
| P | −2.223 | 2 |
| efex | −0.043 | 6 |
| Δci | −6.845 | 0 |
| Δll | −2.623 | 2 |
| Δipi | −3.777 | 2 |
| Δp | – | – |
| Δefex | −1.116 | 11 |

Notes: The critical values for the ADF test when no trend and no constant are included for 1 %, 5 % and 10 % are −2.64, −1.95 and −1.61 respectively. K denotes the numbers of lags
Notes: The critical values for the ADF test when no trend and no constant are included for 1 %, 5 % and 10 % are −3.501445, −2.892536, −2.583371 respectively. K denotes the numbers of lags

Schwarz – Bayesian (Schwartz 1978) criterion and the Akaike criterion, while with the application of LR test it was found equal to zero (Mills and Prasad 1992).

In Table 3, the results of Johansen and Juselious cointegration test (1990, 1992) are given, regarding the variables ci, ir, ipi, while the number of lags in VAR = 3.

As it is obvious, according to the results given in the aforementioned Table 3, there is a sole relationship among the variables employed in the particular test with both methods of the maximum eigenvalue statistic and with the trace statistic. The cointegrating vector that was suggested by the software is the following;

$$\text{ip} = 0.078\text{ci} - 1.497\text{ltl} \tag{10}$$

From the cointegration vector it can be concluded that the industrial production index (Economic Growth) is negatively related to the long term liabilities

**Table 3** Johansen and Juselious cointegration test for the variables ci, ir, ipi, while lags in VAR = 3

| Null | Eigenvalue | Trace statistic | 0.05 critical value |
|---|---|---|---|
| r = 0 | 0.200871 | 32.35535 | 29.68 |
| r ≤ 1 | 0.117412 | 11.72590 | 15.41 |
| r ≤ 2 | 0.002555 | 0.235341 | 3.76 |
| Null | Eigenvalue | Max – eigen statistic | 0.05 critical value |
| r =0 | 0.200871 | 21.62945 | 20.97 |
| r ≤ 1 | 0.117412 | 11.49055 | 14.07 |
| r ≤ 2 | 0.002555 | 0.235341 | 3.76 |

(Development in the Banking Sector) and positively to the capitalization index (Development in the Stock Market). Additionally, the coefficients of the vector represent elasticities and thus, it is evident that the functions of Stock Market are inelastic, whereas the functions of the banking sector are elastic. As it has already been mentioned the capitalization index represents the stock market, the long term liabilities represent the banking sector, while the industrial production index represents the economic growth of Bulgaria. The aforementioned relationship indicates the integration in the market as well as the interdependence of the different sectors of the economy. Finally, the signs of the cointegration vector allow us to use the above relationship as an Error Correction Mechanism in a VAR Model, since they are based on the economic theory.

The next step was to estimate the error correction models in order to survey the Granger causality. The estimated error correction models based on the Johansen cointegration technique are the following (Table 4);

Regarding the short term parameters, we may argue that the first lag of the endogenous variables is statistical significant for all the aforementioned equations, a result implying the existence of Granger causality for every endogenous variable participating in the cointegrating equation.

An analytical presentation of Granger causality and block exogeneity with the criterion of Granger causality/Block exogeneity Wald process is provided in the following Table 5;

The GCBEW test suggests that the three variables – IP, CI and LLI are not exogenous because the P-values of the joint test for each equation of those variables are 0.0451, 0.0315, 0.0470, respectively, for 5 % level of significance. The test also provides evidence that we can reject the null hypothesis of excluding almost all variables with a few exceptions for 5 % level of significance. Actually, we fail to reject the null hypothesis of excluding LI from the CI equation at a 0.0100 significance level, due to the fact that chi-sq = 1.888178 and the P-value = 1.0101. It suggests that LI does not Granger cause CI and the opposite is not valid. Consequently, this test provides some reason to believe that there are no bidirectional causalities between LI and CI for 5 % level of significance, while bidirectional causalities can be confirmed for the following variables; IP and CI for 5 % level of significance and among IP and LI for 10 % level of significance. The only unidirectional causality is of CI on LI. Tentatively, it looks as if LI

**Table 4** Error correction models

| Error correction | D(C1) | D(IP) | D(L1) |
|---|---|---|---|
| CointEq1 | −0.027568 | −0.008744 | 0.004722 |
| | (0.01067) | (0.00321) | (0.00154) |
| | [−2.64604] | [−2.72308] | [3.06818] |
| D(C1(−1)) | 0.181160 | −0.028134 | 0.002110 |
| | (0.11024) | (0.03317) | (0.01590) |
| | [1.64335] | [−0.84828] | [0.13272] |
| D(C1(−2)) | −0.065891 | 0.069368 | 0.000886 |
| | (0.10711) | (0.03222) | (0.01545) |
| | [−0.61515] | [2.15263] | [0.05738] |
| D(IP(−1)) | 1.038104 | −0.405695 | −0.008079 |
| | (0.34429) | (0.10358) | (0.04965) |
| | [3.01517] | [−3.91668] | [−0.16271] |
| D(L1(−1)) | 0.951256 | −0.506196 | 0.284611 |
| | (0.33156) | (0.22009) | (0.10550) |
| | [3.30032] | [−3.39123] | [2.74992] |
| D(L1(−2)) | −0.416173 | 0.044472 | −0.015624 |
| | (0.73527) | (0.22121) | (0.10603) |
| | [−0.56601] | [0.20104] | [−0.14735] |
| C | 1.075586 | 0.465520 | −0.169459 |
| | (0.51290) | (0.15431) | (0.07396) |
| | [2.09706] | [3.01683] | [−2.29108] |
| EFFEXCR | −0.009400 | −0.004103 | 0.001592 |
| | (0.00455) | (0.00137) | (0.00066) |
| | [−2.06454] | [−2.99504] | [2.42515] |
| INFL | −0.005792 | 0.011034 | 0.001578 |
| | (0.01553) | (0.00467) | (0.00224) |
| | [−0.37298] | [2.36198] | [0.70480] |
| R-squared | 0.309156 | 0.292559 | 0.355701 |
| Adj. R-squared | 0.233332 | 0.214913 | 0.284985 |

**Table 5** Granger causality/ Block Exogeneity Wald test

| Excluded | Chi-sq | df | Prob. |
|---|---|---|---|
| Dependent variable: D(IP) | | | |
| D(C1) | 15.601088 | 2 | 0.0002 |
| D(L1) | 9.003738 | 2 | 0.0672 |
| All | 18.830166 | 4 | 0.0451 |
| Dependent variable: D(C1) | | | |
| D(IP) | 4.740969 | 2 | 0.0187 |
| D(L1) | 1.888178 | 2 | 1.0101 |
| All | 16.59773 | 4 | 0.0315 |
| Dependent variable: D(L1) | | | |
| D(IP) | 11.119381 | 2 | 0.0614 |
| D(C1) | 10.044497 | 2 | 0.0180 |
| All | 18.25837 | 4 | 0.0470 |

(development in the bank sector) shows weaker signs of causal impact on IP (economic growth) than other causal relations.

## 10 Conclusions

The present paper by employing monthly data in the case of Bulgaria examined the relationship between the development in the stock and credit market and economic growth. Furthermore, the impact of the inflation and effective exchange rates on economic growth was examined. In order to test this relationship, we used a multivariate autoregressive VAR model for the case of Bulgaria, while the period studied was 01.2004–05.2011. The cointegration technique was employed aiming at the testing of relationships between the time series used, while the VEM (Vector Error Correction) provided a way of combining the dynamics of the short run (changes) and the long run (levels) adjustment processes simultaneously (Dritsaki and Dritsaki-Bargiota 2006).

The application of the ADF test and the DF-GLS test has indicated that all the individual time series are I(1), while the Johansen cointegration technique indicated the existence of a sole relationship among the variables used. This result validates the interdependence among the functions of stock market, credit market and economic development in the case of a transition economy like Bulgaria. The estimated residual of the cointegration appears as the error correction term in the dynamic VEC model of the relationship among the variables of the model.

As far as the results of the causality analysis are concerned, we employed a Granger causality/Block Exogeneity Wald test, through which we found a bilateral relationship between the development in the stock market and the economic growth, as well as between the economic growth and the development in the banking sector. Finally, no causality relationship can be confirmed between the development in the banking sector and the development in the stock market. The alteration of the Bulgarian economy from a centralized to a market economy, the fact that it has become a member state of the European Monetary Union and the inflow of foreign investors due to the emersion of the transition economy may account for the results found. Additionally, the inflation in the case of Bulgaria was one of the most important problems that Bulgarian governments confronted by tightening the fiscal policy, a measure that had immediate results. This economic environment influenced the function of the financial market which in turn affected the economic growth of the economy under preview. According to Boyd et al. (2000), the sustained inflation affects the financial development in a negative way, despite the fact that high rates of inflation are past experience for Bulgaria. Regarding the policy that has to be followed in terms of fiscal and monetary policy, it has to shelter the macroeconomic stability in order to preserve the financial development as well as the economic growth of the economy under preview.

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# The Role of Agriculture in Economic Growth in Greece

**Dimitrios Kyrkilis, Simeon Semasis, and Constantinos Styliaras**

**Abstract** This paper aims at analyzing the contribution of agriculture to economic growth in postwar Greece, especially after 1970 by exploring the relationship of agriculture with the main non-agricultural economic sectors. The development model proclaimed and followed in postwar Greece neglected agriculture and emphasized industrialization. However, the implementation of the model did not lead to a strong industrial sector, but it destroyed agriculture and over inflated services. In the paper, the use of proper econometric and statistical techniques utilizing time series data collected for the period 1970 up to date establishes that agriculture followed a path not affecting the other economic sectors and at the same time not being affected by them.

**Keywords** Agriculture • Economic growth

**JEL Classification Codes** Q1 • Q10 • R1

## 1 Introduction

Early economic development theory advocated industrialization as the prime development strategy through a massive investment flow stream either intersectorally balanced or focused on some leading sectors characterized by strong

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inter-sectoral linkages.[1] Agriculture should either be neglected or, as it was suggested by the dual economy argument, assist industrialization providing surplus capital and labor to industry.[2] Agricultural labor productivity is low in underdeveloped economies, and labor could easily be transferred to industry without lowering agricultural output. On the contrary, the migration of surplus labor would increase productivity in the sector managing to maintain production of food at sufficient levels and at low cost, and hence at low prices. Transfer of labor and capital from agriculture to the industrial sector of the economy could be realized by taxing agriculture much heavier than industry and by influencing the terms of trade between industry and agriculture in favor of the former. Both policies would maintain agriculture income at low levels relatively to the income generated in the industrial sector. Rural workers would be forced to internally migrate to the non-agriculture sectors, and the extracted agricultural surplus to industrial investments. The dual economy argument suggests that the economy consists of two sectors, i.e. an advanced capital intensive industrial sector that is able to achieve fast productivity increases and economies of scale, and to enlarge the domestic market size; and a backward agriculture sector that, although it has a role to play in assisting industrial development,[3] its only chance for growth is through spillovers from industry. In fact, it is an industry led economic growth policy.

Many developing countries in the 60s and 70s adopted strategies conforming to the dual economy development strategy[4] but with poor results.[5] Inter-sectoral linkages between agricultural and non- agricultural sectors have been underestimated. Agriculture supplies inputs to a number of manufacturing sectors such as food and beverages, textiles – clothing – footwear, wood products, etc. which are important at the initial development stages because they require standardized technologies and relatively low capital. At the same time, agriculture requires industrial and services inputs. Increased agriculture production, therefore, benefits industry through both forward and backward inter-sectoral linkages. In addition, agricultural income is spent on manufacturing goods and services, therefore, income increases in agriculture may benefit non-agricultural industries providing consumption goods.[6] Also, the role of agriculture in both reducing poverty[7] and avoiding a Malthusian type poverty trap has been underestimated.

[1] See, Rosenstein – Rodan (1943); Hirschman (1958); Nurkse (1953).

[2] See, initially Lewis (1954); Jorgenson (1961); Fei and Ranis (1964); and later Gardner (2000); Hwa (1988).

[3] In addition to the provision of surplus labour and capital agriculture it may also provide markets for industrial products, substitute for food imports saving that way foreign exchange, and generate export revenues both contributing to the financing of both industrial investment and intermediate input imports. See Johnston and Mellor (1961).

[4] India is a very good case in point. See Kanwar (2000).

[5] See World Bank (1982) and Kanwar (2000).

[6] See Thirtle et al. (2003).

[7] See Timmer (1995).

Income and productivity increases in agriculture are necessary in order to balance population growth, and to achieve an increase in the living standards,[8] thus creating externalities and raising consumption capabilities. In this context agriculture influences domestic market size, the enlargement of which is crucial in allowing industry to realize economies of scale, which in turn permits production cost to become lower and, consequently, it guarantees the industrial sector's viability, hence growth. Therefore, productivity increases in agriculture could lead to increasing production, in turn to rising import substitution and exporting of agricultural products, thus, to foreign exchange revenues and higher incomes and savings, all together creating domestic markets and financing investments for industrial expansion. However, increasing productivity in agriculture requires investments in both infrastructure and technological improvements undermining both the agriculture neglect hypothesis and the industry-led growth. In fact, the argument may be reversed to agriculture-led growth.

Empirical research, although extensive, has not resolved the theoretical issue of the causality between agriculture and industry growth. Econometric models have been tested either through cross-country data sets or through one country time series data sets. The relationship between agriculture, industry, and economic growth is dynamic in nature, and econometric studies using the OLS technique on cross-country data samples face technical limitations pertained to misspecifications of the correlations between industrial and agricultural growth, and they fail to capture structural changes occurring through time. Economic growth leads to changes at the composition of GDP increasing the share of industry at the expense of agriculture, due to the fact that productivity in industry rises faster than that in agriculture, thanks to differential rates of technological change.[9]

Tiffin and Irz (2006) used an 85 country panel data set on which they applied bivariate Granger causality tests. They established that in developing countries there is a definite causal relationship running from agriculture to economic growth, but in the developed countries evidence were inconclusive. In five developed countries, i.e. Australia, Canada, the Netherlands, the UK, and the US, the causality run from agriculture value added to GDP growth, while in the remaining developed countries the opposite occurred. The authors attributed the results for the five countries to their highly competitive agriculture considering them as exceptions, and they interpreted the developed country case as one where agriculture does not cause economic growth. Awokuse (2009) estimated an autoregressive distributed lag econometric model for 15 developing countries in Africa, Asia, and Latin America, and concluded that agriculture causes economic growth. Matahir (2012) employed Granger and Toda-Yamamoto causality tests on co-integrated annual value added time series data of both agriculture and industry in Malaysia for the period 1970–2009, and established a one-way causal relationship running from industrial growth to agriculture both in the short and long run. This result is

[8] For a short but thorough presentation see Tiffin and Irz (2006).

[9] See Awokuse (2009) and Tsakok and Gardner (2007).

consistent with the findings of Gemmell et al. (2000) who concluded that although manufacturing growth reduces agriculture's output in the short run, it stimulates the latter's expansion in the long run, while services' growth have adverse effects on agriculture both in the short and long run periods. Hye (2009) in an econometric study employing an autoregressive distributed lag model for Pakistan for the 1971–2007 period established that agriculture and industry have a bidirectional causality in the short run, while there is a one way causal relationship from industry to agriculture in the long run. Subramanian and Reed (2009) studied the relationship between agriculture and non-agricultural sectors in Romania and Poland. They concluded that, in the long run, sectors outside agriculture have positive effects on the latter, but in the short run industry harms agriculture. Agriculture seems to affect positively the industrial sector in the West African States according to Seka (2009), who has run Granger type causality tests. Kanwar (2000) using a Vector Autoregressive Regression Model and running Granger type causality tests in a multi sector time series framework for India concluded that agriculture along infrastructure and services cause growth in both industry and construction as opposed to industry that does not cause growth in agriculture. On the contrary, Paul (2010) found that industry and services cause growth in agriculture for India, while Chaudhuri and Rao (2004) concluded that there is a bidirectional causality between agriculture and industry in the same country.

It is evident from the above cited, though non exhaustive list of more recent empirical research employing the state of the art econometric techniques that there is no firm conclusion on the causal relationship between industrial and agricultural growth. The aim of the current paper is to contribute to the empirical discussion of the issue by investigating the case of Greece. Greece adopted a development strategy focused on industrialization in the early 1950s, and it managed to transform its economy from an agrarian to industrialized one by the 1970s creating new industries, changing the composition of industrial output in favor of intermediate and capital goods sectors, and shifting the gravity of its exports away from agriculture and in favor of manufacturing. However, the dynamics of industrialization reached a stalemate in the 1970s under the presence of the first and the second oil shocks and the emergence of new sources of international competition on the part of the then called newly industrialized economies of South-East Asia, which triggered a course of de-industrialization and returned the emphasis to traditional consumer goods industries, such as textiles, food, etc., forming the main share of industrial output and coupled with a considerable rise of services in terms of both GDP contribution and employment.[10] Greek agriculture reduced its GDP share from 29 % in 1951 to just above 12 % in 1970 and to 3.4 % in 2007, but rural employment maintained a considerable 15 % share of total employment in 2007 compared with 55.7 % in 1970, and almost 60 % in 1951. Greece recorded structural transformations becoming a developed country, member of the European Union since 1981, and member of the Euro zone since 2002. These structural transformations in addition to the development course followed by Greece in the

[10] See Kyrkilis (2005).

post war period may constitute Greece as an interesting case different from other recently investigated cases, which are developing economies. The paper aspires to investigate the contribution of agriculture to Greek economic growth using a VAR econometric model for running an Error Correction Model aiming at establishing causal relationships within a multi-sectoral framework, i.e. agriculture, industry, construction, wholesale and retail, financial intermediation, and other services for the period 1970–2007.

## 2 Data and Hypothesis

The data set consists of 38 annual observations, which represent the Gross Value Added (GVA) of six aggregate sectors of the economy; i.e. agriculture, industry, construction, wholesale, financial intermediation, and other services for the period 1970–2007. The data are adopted from OECD database (http://stats.oecd.org). Figure 1 shows the intertemporal evolution of sectoral GVAs. It is obvious that all the non-agricultural sectors show similar evolution (i.e. increasing), whereas agriculture shows a severe decline after the year 2000.

Agriculture's value added in 2007 was €5,526 millions at constant 2000 prices (3.5 % of the total value added), lower than its level in 1970, i.e. €6,164 millions at constant 2000 prices or 12.1 % of the total value added of the economy. In the same period, all other economic sectors increased their value added at constant prices, but only trade achieved a substantial increase from almost 20 % to almost 35 % of total value added with both construction and other services reducing their shares from 12.5 % to 8.0 % and from 23.7 % to 21.6 % respectively, while financial intermediation managed a moderate increase from 14.4 % to 17.3 %, and industry maintained a share of approximately 13.5 %. Industry reached its highest share at the end of the 70's, i.e. just about 16 % in 1979 and stagnated thereafter.[11]

The application of the European Common Agricultural Policy restructured agricultural production in favor of subsidized crops such as cotton, cereals and few others reducing production of high value added products such as vegetables, olive and olive oil; aromatic and pharmaceutical herbs, etc. The reduction of agriculture production became more potent after the disconnection of subsidies from output levels during 2005. Agriculture gross value added declined to levels below their equivalent in 1970. There are indications that agriculture may have some significant forward linkages with manufacturing. According to Nikolaidis (2010), the majority of its output, i.e. 72.6 % supplies intermediate domestic demand while only 19.1 % supplies the domestic final demand, 7.1 % is directed to exports and only 1.2 % to gross fixed capital formation. These figures show that agriculture is a main material supplier of other domestic economic sectors. At the same time, according to 2003 data, the intermediate consumption of agriculture as percentage of final output is low, i.e. 24.1 % compared with 48.3 % average for the EU-15.

[11] Data are adopted by OECD, www.stats.oecd.org.

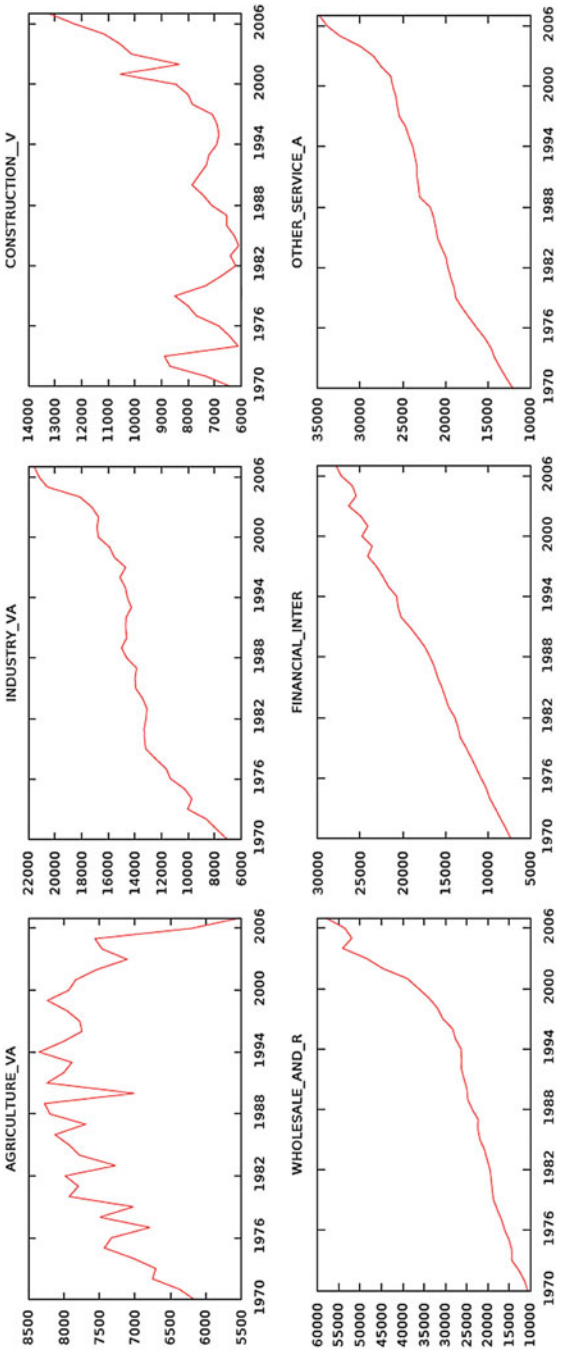


**Fig. 1** GVA evolution of aggregate sectors in Greek economy from 1970 to 2007

This is true for almost all categories of intermediate consumption such as fertilizers, pesticides, feed, equipment, building, maintenance, expenditure on services, with the exception of energy. Although low share of inputs to output means higher value added, it also indicates low backward linkages with non-agricultural sectors; low yields, low quality of products, and finally low competitiveness. Agriculture fails to incorporate technological advances remaining a labor intensive activity.

The emerging picture gives rise to the hypothesis that agriculture cannot be an engine of growth due to low backward linkages. At the same time, the probability that agriculture growth is driven by the growth of other sectors, especially manufacturing is low given its diminishing value added and its increasing focus on a limited number of products. Despite that, some forward linkages with other economic sectors do exist.

## 3 Methodology

Following the main strand of relevant research, the paper adopts the methodology developed by Johansen and Juselius (1992); i.e., a multivariate co-integration analysis is conducted using a vector auto regression (VAR) model. This analysis is based on the estimation of a VAR model by maximum likelihood. The reason for the selection of this methodology is that it is characterized by independency of the choices of the endogenous variables. Furthermore, the existence of more than one co-integrating vectors in the multivariate system can be scanned through the application of the Johansen and Juselius's methodology.

For the co-integration analysis, the aggregate division of sectors of the economy is adopted. These sectors are agriculture, industry, construction, wholesale trade, financial intermediation, and other services. In order to estimate the contribution of each sector to the economy, sectoral gross value added data is utilized. The analysis of the correlation matrix provides some indication on the relationship of these sectors. These hinds are further analyzed through the co-integration analysis. Detailed descriptions of this method are found for example in Engle and Granger (1987), Hamilton (1994), Johansen (1995), or Banerjee et al. (1993).

In time series regressions the data need to be stationary. This requires that the means, variances and co-variances of the data series cannot depend on the time period in which they are observed. For the specific test, the methodologies of Perron (1989) and Zivot and Andrews (1992) were utilized. It was ascertained that the existence of a possible structural break did not alter the statistical characteristics of the series under examination; therefore, they should be used in the econometric analysis as non stationary.

The relevant terms for stationarity of a stochastic process, as well as the test methods for the level of integration can be found in Tambakis (1999), Johansen et al. (2000), Juselius (2006). To test for stationarity, the Augmented Dickey-Fuller (ADF) test via Ordinary Least Square (OLS) was applied. The ADF test estimates the following equation:

$$y_t - y_{t-1} = \Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \varepsilon_t,$$

The null hypothesis of the ADF test is that the time series has a unit root and is not stationary, which means that $\alpha_1 = 0$. Rejecting this hypothesis concludes that the series is stationary. Accepting the null means that the level is not stationary.

A Vector Error Correction Model (VECM) is a form of vector auto regression or VAR, applicable where the variables of the model are individually integrated of order 1 (that is, are random walks, with or without drift), but exhibit co-integration.

The Johansen and Juselious estimation method presupposes the estimation of the following relationship:

$$\Delta Y_t = \mu + \gamma_1 \Delta Y_{t-1} + \gamma_2 \Delta Y_{t-2} + \ldots\ldots + \gamma_{p-1} \Delta Y_{t-p+1} + \Pi Y_{t-p} + ut,$$

The model above was used in order to examine the Granger causal relationships between the variables under examination. As a testing criterion the F statistic was used. With the F statistic the hypothesis of statistical significance of specific groups of explanatory variables was tested for each separate function.

## 4 Empirical Application and Results

The time series plot (Fig. 1) reveals potential problems with the gross value added data related to non-stationarity. Since the actual values indicate some level of non-stationarity, the logarithmic transformation is used for reducing variability of the variables. The graphical representation of the logarithms of the variables (Fig. 2) suggests stationarity. The first step is to test the series stationarity and to determine the order of integration of the examined variables.

With the exception of agriculture, all other variables appear to be slightly quadratic in time. Hence, we choose an ADF test that includes a constant and a time trend. The results of the test, using the Gretl software, are shown in Table 1.

In this respect none of the data series is non-stationary when the test refers to the logarithms of variables, (i.e. fail to reject the unit root hypothesis). According to these results, the logarithms of the variables, when transformed to first differences, become stationary and, consequently, the relevant variables could be described as integrated of order one I(1). Table 2 presents the summary statistics of the data, i.e. time series.

The correlation matrix of the variables (logarithms and first differences of logarithms of GVA) is presented in Table 3 and it provides some interesting insights, even before conducting the co-integration analysis. According to the correlation indices, agriculture shows minimum correlation with the rest of the sectors, whereas industry, wholesale trade, and financial intermediation exhibits quite high correlation indices. These findings suggest that there is a weak relation of agriculture with the rest economic sectors, which is translated to a differentiated growth path.

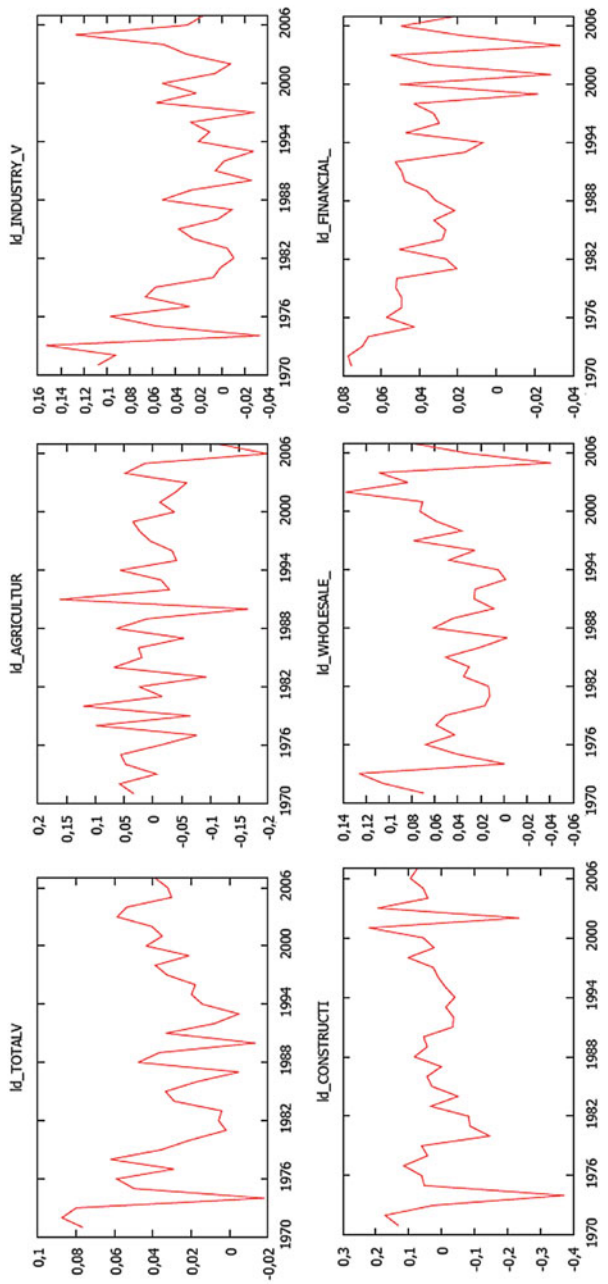


**Fig. 2** Logarithmic depiction of the GVA of the aggregate sectors of the Greek economy

**Table 1** Augmented Dickey – Fuller (ADF) test for unit roots (lag 1)

| Variables | Test values |
|---|---|
| *Logarithms* | |
| Agriculture | −1.97151 |
| Industry | −2.79543 |
| Construction | −0.745465 |
| Wholesale | −0.0354297 |
| Financial intermediation | −3.42533 |
| Other services | −0.647655 |
| *First differences* | |
| Agriculture | −7.29704 |
| Industry | −4.97359 |
| Construction | −6.45665 |
| Wholesale | −4.50284 |
| Financial intermediation | −5.28263 |
| Other services | −4.19505 |

Critical value at 1 %: −4.431, at 5 %: −3.5348, at 10 %: −3.322

**Table 2** Summary statistics

| | Average | St.D. |
|---|---|---|
| l_AGRICULTURE | 8.91656 | 0.0948415 |
| l_INDUSTRY_VA | 9.52981 | 0.246541 |
| l_CONSTRUCTION | 8.95336 | 0.196156 |
| l_WHOLESALE_A | 10.1072 | 0.444743 |
| l_FINANCIAL_I | 9.71322 | 0.384561 |
| l_OTHER_SERVICES | 9.97302 | 0.264011 |
| d_l_AGRICULTURE | −0.00295155 | 0.0726899 |
| d_l_INDUSTRY_ | 0.0301827 | 0.0436051 |
| d_l_CONSTRUCTION | 0.0195159 | 0.109494 |
| d_l_WHOLESALE | 0.0457949 | 0.0378858 |
| d_l_FINANCIAL | 0.0360502 | 0.0254476 |
| d_l_OTHER_SERVICES | 0.0286326 | 0.0200336 |

In order to assess these suggestions and to test for causality, a VAR econometric model is applied. Since it has been determined that the variables under examination are integrated order I(1), we then proceed by defining the number of co-integrating vectors between the variables, using the Johansen (1988) maximum likelihood procedure. Results are shown in Table 4.

In this respect, we proceed with the Vector Error Correction Model (VECM), in order to estimate relationships both in the short and long-run and determine their direction. The vector error correction model contains the co-integration relation built into the specification, so that it restricts the long-run behavior of the endogenous variables to converge to their co-integrating relationships while allowing for short-run adjustment dynamics.

**Table 3** Correlation matrix

| l_Agriculture | l_Industry_VA | l_Construction | l_Wholesale_A | l_Financial_I | l_Other_Services | |
|---|---|---|---|---|---|---|
| 1.0000 | 0.2341 | −0.4513 | 0.0954 | 0.2983 | 0.2070 | l_AGRICULTURE |
| | 1.0000 | 0.5732 | 0.9457 | 0.9429 | 0.9805 | l_INDUSTRY_VA |
| | | 1.0000 | 0.6847 | 0.4987 | 0.5751 | l_CONSTRUCTION |
| | | | 1.0000 | 0.9552 | 0.9746 | l_WHOLESALE_A |
| | | | | 1.0000 | 0.9811 | l_FINANCIAL_I |
| | | | | | 1.0000 | l_OTHER_SERVICES |
| d_l_Agriculture | d_l_Industry_VA | d_l_Construction | d_l_Wholesale | d_l_Financial_I | d_l_Other_Services | |
| 1.0000 | 0.1746 | −0.2412 | −0.0174 | −0.0692 | 0.0232 | d_l_AGRICULTURE |
| | 1.0000 | 0.4434 | 0.3304 | 0.2569 | 0.6656 | d_l_INDUSTRY_ |
| | | 1.0000 | 0.2521 | −0.0662 | 0.1839 | d_l_CONSTRUCTION |
| | | | 1.0000 | 0.0733 | 0.3019 | d_l_WHOLESALE |
| | | | | 1.0000 | 0.2331 | d_l_FINANCIAL |
| | | | | | 1.0000 | d_l_OTHER_SERVICES |

**Table 4** Co-integration tests, ignoring exogenous variables

| Rank | Eigenvlaue | Trace test p-value | Lmax test p-value |
|---|---|---|---|
| 0 | 0.96194 | 139.43 [0.0000] | 120.94 [0.0000] |
| 1 | 0.39330 | 18.490 [0.0000] | 18.490 [0.0000] |

**Table 5** Results of the VECM model (1 lag)

| | Beta |
|---|---|
| l_AGRICULTURE | 1.0000 |
| | (0.00000) |
| l_INDUSTRY_VA | 5.5934 |
| | (0.42141) |
| l_CONSTRUCTION | 1.7224 |
| | (0.17709) |
| l_WHOLESALE_A | 10.149 |
| | (0.47110) |
| l_FINANCIAL_I | 2.1645 |
| | (0.31352) |
| l_OTHER_SERVICES | 7.3518 |
| | (0.88417) |
| Const | 76.050 |
| | (4.1492) |

Results are shown in Table 5. The number of significant co-integration vectors is equal to four. The presence of those vectors indicates that there is a differentiation in the long-run and short-run growth mechanism in the Greek economy (Table 6).

The results show clearly that industry, construction, and wholesale trade are the sectors that drive the economic growth. On the contrary, agriculture, and financial intermediation show moderate impact on economic growth (in the short run). Furthermore, and in line with the insights gained by the correlation analysis, according to the Granger test, agriculture shows no impact on any other sector. The short run Granger causality test indicates that there are no causal relationships between agriculture and the rest economic sectors.

## 5 Conclusions

The present paper attempts to contribute to the empirical investigation of the causal relationship between agriculture and economic growth. In doing so it employs an error correction model using time series data of the value added of five broadly defined economic sectors, i.e. agriculture, industry, construction, wholesale and retail trade, financial intermediation, and other services. These time series sets are proven to be co-integrated at the first level. The model is applied in Greece for the period 1970–2007. Results show that the agricultural output neither causes nor it is caused by the evolution of the non-agricultural sector output. Our results suggest that although the other sectors have moved together through time, agriculture in

**Table 6** Error correction model estimations

| | Coef. | StD | t-value | p-value |
|---|---|---|---|---|
| d_l_AGRICULTURE | | | | |
| l_TOTALV | 0.562984 | 0.479089 | 1.1751 | 0.24811 |
| EC1 | −0.0184424 | 0.0156855 | −1.1758 | 0.24786 |
| d_l_INDUSTRY_VA | | | | |
| l_TOTALV | 1.38586 | 0.174293 | 7.9513 | <0.00001*** |
| EC1 | −0.045288 | 0.00570641 | −7.9363 | <0.00001 |
| d_l_CONSTRUCTION | | | | |
| l_TOTALV | 2.1932 | 0.632787 | 3.4659 | 0.00145*** |
| EC1 | −0.0717493 | 0.0207176 | −3.4632 | 0.00146*** |
| d_l_WHOLESALE_ | | | | |
| l_TOTALV | 1.14456 | 0.163194 | 7.0135 | <0.00001*** |
| EC1 | −0.0373426 | 0.00534303 | −6.9890 | <0.00001*** |
| d_l_FINANCIAL | | | | |
| l_TOTALV | 0.274316 | 0.168113 | 1.6317 | 0.11196 |
| EC1 | −0.00887926 | 0.00550407 | −1.6132 | 0.11594 |
| d_l_OTHER_SERVICES | | | | |
| l_TOTALV | 0.497971 | 0.105666 | 4.7127 | 0.00004*** |
| EC1 | −0.0162222 | 0.00345953 | −4.6891 | 0.00004*** |

***means statistical significance at 1%

Greece seems to have followed its own course quite independently from the rest of the economy without utilizing or building intersectoral linkages. Future research on exploring relationships between sectors will assist in explaining the overall growth path of the Greek economy.

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