Contributions to Finance and Accounting

Danuše Nerudová
Jan Pavel *Editors*

Profit Shifting and Tax Base Erosion

Case Studies of Post-Communist Countries

Springer

Contributions to Finance and Accounting

The book series 'Contributions to Finance and Accounting' features the latest research from research areas like financial management, investment, capital markets, financial institutions, FinTech and financial innovation, accounting methods and standards, reporting, and corporate governance, among others. Books published in this series are primarily monographs and edited volumes that present new research results, both theoretical and empirical, on a clearly defined topic. All books are published in print and digital formats and disseminated globally.

More information about this series at http://www.springer.com/series/16616

Danuše Nerudová • Jan Pavel
Editors

Profit Shifting and Tax Base Erosion

Case Studies of Post-Communist Countries

Springer

Editors
Danuše Nerudová
Faculty of Business and Economics
Mendel University in Brno
Brno, Czech Republic

Jan Pavel
Faculty of Finance and Accounting
Prague University of Economics and Business
Prague, Czech Republic

ISSN 2730-6038 ISSN 2730-6046 (electronic)
Contributions to Finance and Accounting
ISBN 978-3-030-74961-3 ISBN 978-3-030-74962-0 (eBook)
https://doi.org/10.1007/978-3-030-74962-0

Contents

List of Contributors

Marian Dobranschi Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic

Marek Litzman Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic

Danuše Nerudová Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic

Jan Pavel Faculty of Finance and Accounting, Prague University of Economics and Business, Prague, Czech Republic

Veronika Solilová Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic

Jana Tepperová Faculty of Finance and Accounting, Prague University of Economics and Business, Prague, Czech Republic

Leoš Vítek Faculty of Finance and Accounting, Prague University of Economics and Business, Prague, Czech Republic

List of Abbreviations

AC	administrative cost
AEOI	the Standard for Automatic Exchange of Information
AETR	average effective tax rate
ATAD	the Anti-Tax Avoidance Directive
ATP	aggressive tax planning
ATPS	aggressive tax planning structures
BEA	the Bureau of Economic Analysis
BEPS	base erosion and profit shifting
BG	Bulgaria
CbC MCAA	the Multilateral Competent Authority Agreement on the Exchange of CbC reports
CbCR	Country-by-country reporting
CC	compliance costs
C(C)CTB	a common (consolidated) corporate tax base
CEE EU	the Central and Eastern European countries
CFC	Controlled foreign companies
CFC rules	Controlled Foreign Companies legislation
CIT	corporate income tax
CMAA	the Multilateral Convention on Mutual Administrative Assistance in Tax Matters
CPI	corruption perception index
CRS	the Common Reporting Standard
CRS MCAA	the Multilateral Competent Authority Agreement on the Common Reporting Standard
CTS	a common transmission system
CZ	Czech Republic
DAC	the Administrative Cooperation Directive
DTT	the Double Tax Treaties
EATR	effective average corporate tax rate
EBIT	earnings before interest and taxation

EBITDA	earnings before interest, taxation, depreciation and amortisation
ECJ	the European Court of Justice
Ecofin	the Economic and Financial Affairs Council
EE	Estonia
EEC	the European Economic Community
EOIR	the Standard for Exchange of Information on Request
FATCA	the American Foreign Account Tax Compliance Act
FDI	foreign direct investment
FHTP	the Forum on Harmful Tax Practices
FSI	the Financial Secrecy Index
GAARs	General Anti-Avoidance Rules
GDP	Gross domestic product
GloBE	Global Anti-Base Erosion
GUO	ultimate global owner
HR	Croatia
HTV	hard-to-value intangibles
HU	Hungary
IFM	the International Monetary Fund
IP	intellectual property
ITR	implicit tax rate
LOB	a limitation on benefits
LT	Lithuania
LV	Latvia
MAP	Mutual Agreement Procedure
METR	marginal effective tax rate
MLI	Multilateral Instruments
MNE(s)	multinational enterprise(s)
NACE	the Nomenclature of Economic Activities classification
OECD	the Organisation for Economic Co-operation and Development
OECD TP Guidelines	the OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations
OFDI	outward foreign direct investment
OLI	ownership, location and internalisation
OLS	ordinary least squares
PBT	profit before tax
PL	Poland
PPP	purchasing power standards
PPT	the principal purpose test
RO	Romania
ROA	a return on assets
SAARs	Specific Anti-Avoidance Rules
SI	Slovenia

SK	Slovak Republic
SPE	special-purpose test
TIEA(s)	the Tax Information Exchange Agreement(s)
UBO	the Ultimate Beneficial Owner
UNCTAD	the United Nations Conference on Trade and Development
VAT	value added tax
ZEW	Leibniz-Zentrum für Europäische Wirtshaftsforschnung

List of Figures

Chapter 4

Chapter 5

Chapter 6

List of Tables

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Introduction

Veronika Solilová, Danuše Nerudová, and Marian Dobranschi

Abstract This chapter presents a brief overview of widespread phenomena that arose during the aftermath of certain financial crises, i.e., the problems of corporate tax base erosion and profit shifting. Governments (investing millions of EURs in the stabilization of financial systems) have started to care about whether corporations contribute a fair share to public budgets. Aggressive tax planning strategies used by corporations face strong criticism from governments and the public. Moreover, most profit shifting takes place within the framework of existing legal boundaries, which undermines the fairness and integrity of corporate tax systems. Due to these facts, the OECD initiated the Base Erosion and Profit Shifting (BEPS) action plan, which aims to equip governments with the domestic and international instruments needed to tackle base erosion and profit shifting. Based on a comprehensive analysis of current profit-shifting and tax base erosion techniques in the area of corporate taxation and on the results of empirical research, this work identifies profit shifting and base erosion in post-communist EU countries and presents estimations of losses in corporate tax revenues. However, taking into account the prominent roles of profit shifting and tax base erosion in the economy and related policy issues, this work also gives policy recommendations to achieve fair corporate taxation. This book is the result of a three-year project No. 18-14082S "Fair corporate taxation: Measurement of the impact of the corporate profit shifting on the budget of the Czech Republic" granted by the Czech Grant Agency.

This chapter presents a brief overview of widespread phenomena that arose during the aftermath of certain financial crises, i.e., the problems of corporate tax base erosion and profit shifting. Governments (investing millions of EURs in the stabilization of financial systems) have started to care about whether corporations contribute a fair share to public budgets. Aggressive tax planning strategies used by corporations face strong criticism from governments and the public. Moreover, most

V. Solilová (✉) · D. Nerudová · M. Dobranschi
Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic
e-mail: veronika.solilova@mendelu.cz; danuse.nerudova@mendelu.cz; marian.dobranschi@mendelu.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_1

profit shifting takes place within the framework of existing legal boundaries, which undermines the fairness and integrity of corporate tax systems. Due to these facts, the OECD initiated the Base Erosion and Profit Shifting (BEPS) action plan,[1] which aims to equip governments with the domestic and international instruments needed to tackle base erosion and profit shifting. Based on a comprehensive analysis of current profit-shifting and tax base erosion techniques in the area of corporate taxation and on the results of empirical research, this work identifies profit shifting and base erosion in post-communist EU countries[2] and presents estimations of losses in corporate tax revenues. However, taking into account the prominent roles of profit shifting and tax base erosion in the economy and related policy issues, this work also gives policy recommendations to achieve fair corporate taxation. This book is the result of a three-year project No. 18-14082S "Fair corporate taxation: Measurement of the impact of the corporate profit shifting on the budget of the Czech Republic" granted by the Czech Grant Agency.

Surveys conducted by the OECD (2013a), International Monetary Fund (hereinafter IMF) (2014, 2015) and European Commission (2015) have revealed that corporations are using aggressive tax planning strategies, mainly based on existing loopholes and mismatches between national corporate tax systems, to enable the shifting of profits into low- or no-tax jurisdictions. The OECD (2013a) underlines that tax base erosion poses a risk to tax revenue, tax sovereignty and tax fairness across OECD countries and non-OECD countries alike. Profit shifting plays an important role in base erosion. According to the OECD (2013a), the main factors that enhance profit shifting are international mismatches in entities such as hybrid arrangements and arbitrage; the abuse of tax treaties related to profits derived from transactions in the digital economy; preferential tax regimes related to debt financing and other intracompany transactions; transfer pricing and the artificial splitting of ownership of assets between legal entities; the low effectiveness of anti-avoidance measures such as GAARs; differential treatment of controlled foreign companies; thin capitalization rules; and the existence of preferential tax regimes.

The tax base erosion and profit shifting are seen by the OECD (2013a) as a result of active and aggressive tax planning and tax strategies aimed at avoiding taxation in high-tax countries and shifting profits to low- or no-tax countries. This practice not only affects the collection of state tax revenues (i.e., the integrity of corporate income tax revenues) but also undermines competition between companies. Profit shifting gives a competitive advantage to multinational enterprises (hereinafter MNEs) in comparison to domestic companies. Therefore, there are three parties that are harmed by profit shifting, namely, governments, individuals and businesses. Further, profit shifting, according to the OECD (2013a), also distorts investment decisions, as the allocation of resources does not seek the creation of added value but aims to shift investments to locations with low pre-tax returns and high after-tax

[1] Individual BEPS actions are available at: https://www.oecd.org/tax/beps/beps-actions/.

[2] These countries include Bulgaria, the Czech Republic, Estonia, Hungary, Croatia, Lithuania, Latvia, Poland, Romania, Slovak Republic and Slovenia.

returns. Finally, profit shifting could harm the overall voluntary tax compliance of all taxpayers if there is a broad perception that MNEs can legally avoid taxation. Under the BEPS project, the OECD (2013b) proposed a 15-step action plan to counter base erosion and profit shifting. The OECD (2013b) believes that a concerted action plan should be adopted through mutual cooperation between governments as a global solution to decrease base erosion and limit profit shifting.

The European Union also reacted. The European Commission (2015) developed an action plan for a fair and efficient corporate tax system in the European Union, covering five key areas for action.[3] First, the plan re-launches the project of creating a common consolidated corporate tax base (CCCTB). Second, the plan seeks to ensure effective taxation in the places where profits are generated. Third, the plan provides that additional measures should be introduced to create a better tax environment for businesses. Fourth, the plan seeks further progression in tax transparency. Fifth, the plan calls for EU tools to be used effectively for coordination. The first part of the European Commission's agenda on fairer, simpler and more effective taxation, in the form of the Anti-Tax Avoidance Package,[4] was introduced in January 2016. The core part of the package is the Anti-Tax Avoidance Directive,[5] introducing the tools to fight base erosion and profit shifting in the EU Member States, was adopted on 20th June 2016, only after 6 months of negotiations. This can be considered major proof of how important and large the problems of corporate base erosion and profit shifting are for the EU Member States. The full implementation of the directive by the member states should be completed by December 2023.[6]

[3]For more details, see the following: https://ec.europa.eu/taxation_customs/business/company-tax/action-plan-corporate-taxation_en.

[4]For more details, see the following: https://ec.europa.eu/taxation_customs/business/company-tax/anti-tax-avoidance-package_en.

[5]The ATAD contains five legally-binding anti-abuse measures (CFC rules, a switchover rule, exit taxation, interest limitations, and a general anti-abuse rule) that all EU Member States should implement and apply against common forms of aggressive tax planning. For more details, see the following: https://ec.europa.eu/taxation_customs/business/company-tax/anti-tax-avoidance-package/anti-tax-avoidance-directive_en. The direct link to Directive (EU) 2016/1164, which sets out rules against tax avoidance practices that directly affect the functioning of the internal market is as follows: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.193.01.0001.01.ENG&toc=OJ:L:2016:193:TOC.

[6]The rules must be transposed into domestic law by 31 December 2021 and be applicable by 1 January 2022. However, the CFC rules were required to have been transposed into domestic law by 31 December 2018 and to have been effective on 1 January 2019. (Almost all of the member states had implemented the ATAD's CFC rules as of 1 January 2019; however, Denmark, Germany, and Spain proposed amendments in their legislations). A similar effective date of 1 January 2019 was applicable for the interest deduction limitation rule and the GAARs. In addition, the EBITDA rules, which are as effective as the ATAD rules, can be used by member states until 1 January 2024. The hybrid rules and exit taxation rules were required to be transposed into domestic law by 31 December 2019. However, the member states must introduce a reverse hybrid rule by 31 December 2021, and by 31 December 2022 for the banking sector. Although the ATAD obliged the member states to apply the exit taxation rules as of 1 January 2020, there are member states that

Although research on base erosion and profit shifting is increasing, there are gaps with respect to country coverage and methodology. The first research in the field of tax avoidance and tax fraud through tax havens was performed by Oxfam (2000), who estimated that poor countries lose USD 50 billion yearly due to the existence of tax havens. Christian Aid (2009) studied the shifting of profits out of developing countries and estimated the yearly loss of tax revenue to be USD 121.8 billion. Consequently, the Tax Justice Network (2005) researched the volume of assets owned through tax havens and estimated that assets worth USD 11,000 billion are owned through tax havens.

The extensive and favourable tax treaty network of the EU Member States allows the practice of diverting FDIs using conduit countries, such as the Netherlands, Luxembourg, Ireland and Switzerland, and focuses on the macro perspective. Desai et al. (2004) determined that MNE can reinvest the income of its subsidiaries via the MNE's base company (i.e., a base company set up in a conduit country) and avoid the home country tax regime. Additionally, MNEs can use intermediate companies to mix dividends from low- and high-tax countries. This practice allows MNEs to offset taxes paid in different countries against each other when the dividends are paid back to the ultimate parent companies. This practice of offsetting would not be possible if the parent company controlled the subsidiary directly (and not through a conduit entity). The Netherlands is a preferred conduit country for diverting FDIs and thus avoiding high withholding taxes because the Netherlands has more than 100 investment treaties with low- and middle-income countries. According to Desai et al. (2004) and Weyzig (2013), MNEs have diverted close to USD 1600 billion, which represents 13% of the global inward FDI stock, through the Netherlands. Weyzig (2013) empirically analysed the impact of several potential determinants on diverting FDIs though the Netherlands as an intermediate country. The author found that FDI diversion strongly depends on the Netherlands' tax treaties, which tend to increase the diversion of foreign investments. Sutherland and Matthews (2009) researched the phenomenon of Chinese companies' strategic asset seeking of outward foreign direct investment (OFDI). The authors analysed the round-tripping of capital, defined as a practice in which companies send capital abroad only to bring it back under the pretext of "foreign" investment to enjoy special government benefits and lower taxation. The authors stressed that 47.5% of Chinese FDI comes from the Cayman Islands and British Virgin Islands, countries classified by the OECD as tax havens.

The research in this field from a micro-level perspective is usually based on the Fuest and Riedel (2012) methodology, i.e., employing firm-level data, and Janský and Kokeš (2015, 2016), with the construction of a set of financial indicators enabling the detailed tracking of organizational profit-shifting channels and the

applied the ATAD's exit taxation rules as of 2018 and 2019. Half of the member states have chosen to exempt temporary transfers of assets from the scope of the exit taxation rules. For more details about the BEPS plan's recommendations and its implementation in individuals member states, see Chapter "Tax Policy in Relation to Fair Corporate Taxation".

estimation of the effect of MNEs' links with tax havens on corporate tax revenues losses.

Five major studies can be found with respect to the estimates of corporate income tax revenue losses due to international tax avoidance. The UNCTAD (2015) estimated that the global revenue loss due to offshore tax havens in 2012 was 8% of corporate income tax, or USD 200 billion. The IMF (2014) estimated that the OECD countries' revenue losses amount to 5% of corporate income tax. The European Parliamentary Research Service (2015) quantified the loss of tax revenue as either EUR 50–70 billion or EUR 160–190 billion per annum, if other tax regime issues, inefficiencies in collection and other practices are taken into account. The OECD (2015) estimated that revenue losses range between 4% and 10%; and over 30% of U.S. corporate income tax revenues with respect to the USA as states Clausing (2016). Further, author adds that for the world as a whole revenue losses may be in excess of $280 billion. However, Crivelli et al. (2016) found that losses due to base erosion and profit shifting worldwide amounted to USD 650 billion annually.

With respect to the current base erosion and profit shifting taking place within the EU, with a focus on post-communist EU countries, we conducted detailed research on the current techniques of profit shifting and tax base erosion; based on that research, we estimate the volume of corporate tax revenue losses and provide policy recommendations to achieve fair corporate taxation.

This book is organized into seven chapters that provide a comprehensive analysis of the current techniques of profit shifting and tax base erosion in the area of corporate taxation and their measurement. The book analyses different approaches to their measurement in relation to macro and micro perspectives. The book identifies profit shifting and tax base erosion in post-communist countries that are currently EU Member States. Taking into account these widespread phenomena and their prominent roles in the economy, this book also gives policy recommendations to achieve fair corporate taxation. The book focuses on the presentation of the following topics:

- The first topic, discussed in chapter "Profit Shifting and Tax Base Erosion in the Twenty-First Century", aims to explain the relevance of these phenomena in the context of the twenty-first century, highlight the importance of tax havens in this area of issues, further explain the development of corporate taxation during the last century, and then identify which tools/actions were implemented and what progress has been made on these issues after the BEPS project. As a last, aggressive tax planning opportunities and tax base erosion were mentioned in respect of post-communist EU countries.
- The second topic focuses on methodology and aims to analyse and document the current profit-shifting and tax base erosion techniques. Chapter "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion" contains an overview of these techniques, which are distinguished based on their macro- and micro-level perspectives, followed by a detailed explanation of the techniques/methods applied to identify profit shifting and tax base erosion

and a final estimation of the corporate tax revenue losses in the post-communist EU countries.

- The third topic aims to identify and determine the extent of profit shifting and tax base erosion in the post-communist EU countries and to estimate their corporate tax revenue losses. Chapter "Economic Analysis from the Macro Perspective" contains an economic analysis from the macro perspective and chapter "Economic Analysis from the Micro-Perspective" from the micro perspective. The macro-level research will go beyond the current state of the phenomena. Based on the UNCTAD (2015), our methodology suggests going further by categorizing factors affecting tax base movements on objective and optimizing levels. This allows for better quantification of tax base leakages (i.e., profit shifting) in terms of reasons (better tax system abroad compared to an avoidance of taxation) and for establishing economic-policy recommendations. The research from a micro perspective allows for the determination of pre-tax income sensitivity to tax rate differentials and the identification of profit-shifting channels and corporate tax revenue losses based on the construction of a set of financial indicators and the fulfilment of conditions. The indicator system of suitability for various optimization strategies allows us to further categorize the various types of tax havens and to determine through what kinds of channels the tax bases predominantly leave post-communist EU countries.
- The fourth topic, discussed in chapter "Tax Policy in Relation to Fair Corporate Taxation", focuses on fair corporate taxation and related tax policy and, based on the research results, suggests approaches and makes policy recommendations for achieving fair corporate taxation not only at the EU level but also in the context of the post-communist EU countries.

Finally, chapter "Conclusion" offers conclusions regarding the general channels of profit shifting and base erosion with respect to the post-communist EU countries, the corresponding volumes of corporate tax revenue losses and the comparison of those losses under macro and micro perspectives, and, finally, the policy recommendations on how to achieve fairer corporate taxation. These results highlight the fact that reducing or eliminating profit shifting and base erosion can significantly affect fiscal policy, tax revenues and tax fairness across countries.

Acknowledgement This chapter is the result of GA ČR No. 18-14082S "Fair corporate taxation: Measurement of the impact of corporate profit shifting on the budget of the Czech Republic".

References

Christian Aid (2009) False profits: robbing the poor to keep the rich tax-free. 2009/3, vol 3. Christian Aid, London. https://www.christianaid.org.uk/sites/default/files/2017-08/false-profits-robbing-the-poor-to-keep-rich-tax-free-march-2009.pdf. Accessed 20 April 2020

Clausing KA (2016) The effect of profit shifting on the corporate tax base in the united states and beyond. Natl Tax J 69(4):905–934. https://doi.org/10.17310/ntj.2016.4.09

Crivelli E, De Mooij R, Keen M (2016) Base erosion, profit shifting and developing countries. FinanzArchiv: Public Finance Anal 72(3):268–301. https://doi.org/10.1628/001522116X14646834385460

Desai MA, Foley CF, Hines JR (2004) Foreign direct investment in a world of multiple taxes. J Public Econ 88(12):2727–2744. https://doi.org/10.1016/j.jpubeco.2003.08.004

European Commission (2015) Study on structures of aggressive tax planning and indicators. Final report. Taxation papers – working paper N. 61–2015. doi:https://doi.org/10.2778/59284

European Parliamentary Research Service (2015) Bringing transparency, coordination and convergence to corporate tax policies in the European Union, I - Assessment of the magnitude of aggressive corporate tax planning. Research paper by Dover R, Ferrett B, Gravino D, Jones E, Merler S. https://www.europarl.europa.eu/RegData/etudes/STUD/2015/558773/EPRS_STU%282015%29558773_EN.pdf. Accessed 10 July 2020

Fuest C, Riedel N (2012) Tax evasion and tax avoidance: the role of international profit shifting. In: Reuter P (ed) Draining development? Controlling flows of illicit funds from developing countries (pp 109–142). https://openknowledge.worldbank.org/handle/10986/2242. Accessed 5 May 2020

IMF (2014) Spillovers in international corporate taxation. IFM Policy Paper, International Monetary Fund

IMF (2015) IFM: developing countries' BEPS revenue losses exceed $200 billion. http://uncounted.org/2015/06/01/imf-developing-countries-beps-revenue-losses-exceed-200-billion. Accessed 1 May 2020

Janský P, Kokeš O (2015) Corporate tax base erosion and profit shifting out of the Czech Republic. Post-Communist Econ 27(4):537–546

Janský P, Kokeš O (2016) Profit-shifting from Czech multinational companies to European tax havens. Appl Econ Lett 23(16):1130–1133

OECD (2013a) Addressing base erosion and profit shifting. OECD, Paris

OECD (2013b) Action plan on base erosion and profit shifting. OECD, Paris

OECD (2015) OECD/G20 base erosion and profit shifting project 2015 final reports. OECD, Paris

Oxfam (2000) Tax havens: releasing the hidden billions for poverty eradication. Oxfam International, London, Briefing Paper, Oxford

Sutherland D, Matthews B (2009) Round tripping or capital augmenting OFDI? Chinese outward investment and the Caribbean tax havens. Paper prepared for Leverhulme Centre for Research on Globalisation and Economic Policy (GEP), University of Nottingham 14th and 15th January, 2009

Tax Justice Network (2005) The price of offshore. Tax Justice Network Briefing Paper, March, TJN, London. https://www.taxjustice.net/cms/upload/pdf/Briefing_Paper_-_The_Price_of_Offshore_14_MAR_2005.pdf. Accessed 10 July 2020

UNCTAD (2015) World investment report 2015: reforming international investment governance. United Nations Publications Customer Service, 253. New York and Geneva: UNCTAD NATIONS. https://doi.org/10.18356/293b1525-en. https://worldinvestmentreport.unctad.org/wir2015/wir2015-ch5-international-tax-and-investment-policy-coherence/. Accessed 10 Feb 2020

Weyzig (2013) Tax treaty shopping: structural determinants of foreign direct investment routed through the Netherlands. Int Tax Public Financ 20(6):910–937. https://doi.org/10.1007/s10797-012-9250-z

Profit Shifting and Tax Base Erosion in the Twenty-First Century

Veronika Solilová, Danuše Nerudová, and Marian Dobranschi

Contents

Abstract The aim of this chapter is to provide the background of profit shifting, explain the concept of profit shifting, the relevance of this phenomena in the context of the twenty-first century and the importance of tax havens in these areas. Furthermore, the development of corporate taxation during the last century was mentioned with a stress on its weaknesses and obstacles that have been faced or are currently being faced. Moreover, a brief summary of the fight against tax base erosion and aggressive tax planning was performed. Lastly, aggressive tax planning opportunities and tax base erosion, were mentioned with respect to post-communist countries.

1 The Concept of Profit Shifting

Profit shifting plays an important role in tax base erosion. Dyreng (2015) defines profit shifting as the strategic actions taken by multinational enterprises (hereinafter MNEs) to report less profit in high-tax countries and more income in low or no-tax

V. Solilová (✉) · D. Nerudová · M. Dobranschi
Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic
e-mail: veronika.solilova@mendelu.cz; danuse.nerudova@mendelu.cz; marian.dobranschi@mendelu.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_2

jurisdictions. The author considers that the most common practices to shift profit are transfer pricing, intra-company debt or the movement of a production plant to another country with comparable tax advantages. However, Dyreng (2015) argues that a narrow conceptualization of a profit shifting concept is needed. Thus, profit shifting represents those strategic actions to report profit in a jurisdiction different from where the economic value is created. The author considers that the main factors or drivers of profit shifting are the loopholes in tax laws from different countries accompanied by the great difficulty in establishing the true value of intellectual property. According to Dyreng (2015), another driver of profit shifting is represented by tax differentials among countries worldwide. MNEs are prone to shift profits as long as there are different corporate income tax rates in different jurisdictions. Moreover, there are cases where profits are shifted or entire companies relocated, because of political or social instability.

Markle (2015) describes profit shifting as the intentional movement of profits by the MNEs from high to low tax jurisdictions when the most common drivers of profit shifting are tax rate differentials and the increasing mobility of intangible assets—intellectual property. One important argument brought by Markle (2015) is the fact that profit shifting itself produces a range of costs that an MNE should take into account. In some cases, shifting profits can involuntarily break some tax rules or local laws. In this situation the MNE could face penalties and fines. Moreover, when a company uses shell companies or special purpose entities (hereinafter SPEs), or hybrid entities to shift profits into tax havens, there are legal costs associated with the creation and the maintenance of such entities. The author also highlighted that a bad reputation or an image loss is another cost that an MNE should consider if found trying to shift profits in order to avoid taxation.

Dharmapala (2014) notes that the existence of base erosion and profit shifting (hereinafter BEPS) appears mainly because of the loopholes and differences in tax laws among different countries. Since there are different tax policies regarding corporate income tax, this context creates opportunities for MNEs to exploit the inconsistencies among different jurisdictions in order to shift profits and avoid taxation.

The main factors that enhance profit shifting according to OECD (2013) are the following: international mismatches in entities such as hybrid arrangements and arbitrage; the abuse of tax treaties related to profits derived from transactions of digital economies; preferential tax regimes related to debt-financing and other intra-company transactions; transfer pricing and artificial splitting of ownership of assets between legal entities; the low effectiveness of anti-avoidance measures such as GAARS; different treatment of Controlled Foreign Companies; and thin capitalization rules and the existence of tax preferential regimes.

Tax base erosion and profit shifting is seen by the OECD (2013) as a result of active and aggressive tax planning and tax strategies aimed to avoid taxation in high-tax rate countries and shift profits towards low or no-tax countries. This practice is not only affecting tax revenues collected by the state (i.e., the integrity of corporate income tax revenues), but also undermines competition between companies as profit shifting gives a competitive advantage to MNEs in comparison to domestic

companies. Moreover, profit shifting, according to OECD (2013), is able to distort investment decisions where the resource allocation does not follow added value creation but aims to shift investment towards locations with low pre-tax return and high after-tax return. Finally, profit shifting could harm the overall voluntary tax compliance by all taxpayers if there is a broad perception that MNEs can legally avoid taxation.

2 The Role of Tax Havens in Profit Shifting

There is a large body of literature concerned with the issue of tax haven contribution to global profit shifting. OECD (1998) defines tax havens as those jurisdictions with low or no corporate income tax rates. Additionally, the concept of tax havens also includes countries that show lack of effective exchange of financial information, no transparency and do not impose rules regarding substantial economic activities for multinational companies. Moreover, OECD (1998) underlines that tax haven countries have granted preferential treatment to foreign companies and do not impose any administrative constraints. OECD (1998) argues that tax havens represent an attractive location to shift profits because their jurisdictions harbor passive investments as mere "money boxes", or serve as parking places for "paper profits". Tax havens also offer protection to MNEs because of a detailed control of tax agencies from other countries. OECD (1998) points out that tax havens are reluctant to adhere to international transfer pricing rules by adopting other more advantageous transfer pricing arrangements. Tax havens are also attractive to MNEs because they offer the following: the benefits of a territorial tax system, whereby foreign profits are exempt from taxation; secrecy provisions and granting a negotiated tax base; and providing access to a large network of tax treaties.

Dharmapala and Hines (2009) point out that tax havens are attractive to profit shifting mostly because of discretionary policy towards foreign companies and lack of transparency in addition to the low or no corporate income tax. This secrecy regarding foreign companies' presence in tax haven countries enhances profit shifting behavior even more.

However, the current literature tends to disagree regarding the appropriateness of the tax haven label. A study by GAO (2008) underlines that tax haven countries are often labeled as financial secrecy jurisdictions or offshore financial centers. Tobin and Walsh (2013) refer to tax haven countries as jurisdictions that offer advantageous tax conditions to MNEs. Cobham et al. (2015) underline that the label of tax haven is outdated and should be replaced by the term offshore financial centers. This label was defined by Zoromé (2007) as, countries that offer financial services to foreign investors and companies without any rules and limits regarding their size or real economic activities on tax haven soil. Murphy (2008) considers the secrecy jurisdictions label more appropriate than the tax haven one, especially for countries that offer a heightened level of secrecy to foreign investors which could not be easily controlled by other tax agencies. Gravelle (2015) uses the criteria proposed by

OECD (1998) and by Dharmapala and Hines (2009) to build a list of 50 world tax haven countries. In comparison, Cobham et al. (2015) use the criteria of financial secrecy and financial transparency of world countries to build a list of the top ten tax havens.

The contribution of tax havens to profit shifting, has also been extensively analyzed in the literature. GAO (2008) underlines that most of the top 100 US MNEs have subsidiaries in countries labeled as tax havens. The main objective of establishing and running a subsidiary in tax haven countries by US MNEs is to avoid the US tax system and gain other unfair competitive advantages associated with profit shifting. Slemrod and Wilson (2009) stress that tax havens have a negative impact on non-tax haven countries' tax revenues, mainly due to income shifted and avoided tax liability by the MNEs. This negative impact leads to less tax revenue collected, which affects the supply of public goods and reduces the overall welfare of countries involved. Also, profit shifting to tax havens enhances the tax competition between world countries which leads to a sub-optimal level of corporate income taxation.

Omar and Zolkaflil (2015) in analyzing the MNEs profit shifting from Malaysia to tax haven countries, found that foreign companies which have links to tax havens tend to report less profits than companies that do not have links with tax havens. The same behavior is identified in the research of Janský and Kokeš (2016). One particularity observed by Janský and Kokeš (2016) is that MNEs rely more on strategic use of intra-company debt to shift profits to tax haven countries. This finding stems from the fact that foreign owned subsidiaries, that have links to tax havens, tend to show a higher debt to asset ratio than companies which do not have links to tax havens. A similar study was done by Nerudová et al. (2018, 2019) that analyzed the contribution of tax havens to profit shifting behavior. The authors found that MNEs that have links to tax haven countries pay less tax per unit of profit than the companies that have no links to tax havens.

Gumpert et al. (2016) found that the increase of statutory corporate income tax rate by 1% increases the likelihood of establishing a subsidiary in tax haven countries by 2.3%. Richardson and Taylor (2015) observe that the use of transfer pricing, thin capitalization, and intellectual property rights to shift profits, tends to increase with tax haven usage by MNEs.

Henry (2012) highlights that a large share of global financial wealth, ranging from 21 to 32 trillion USD, have been hidden in tax haven countries and re-invested using the services provided by offshore secrecy jurisdictions. The author points out that profit shifting through offshore secrecy jurisdictions has a negative impact on overall tax compliances and tax revenues, where more than 3.7 trillion USD avoided taxation until 2010. According to Zucman (2014) almost 20% of US MNEs are booked in offshore financial centers. The role of tax havens in global profit shifting due to low or no tax rates, resulted in a significant corporate income tax rate decrease in the US, from a high level of 30% in 1980, down to 20% in 2010. Zucman (2014) underlines that in order to benefit from tax havens' services, the US MNEs tend to repatriate only 20% of foreign profits, and the rest of the 80% is held in tax havens, and is continuously re-invested.

Tørsløv et al. (2020) found that more than 40% of the profits obtained by MNEs are directed towards tax haven countries through different profit shifting techniques. This behavior tends to negatively affect corporate income tax revenues collected in European and worldwide developing countries. Alvarez-Martinez et al. (2018) analyzing the amount of profit shifting done by MNEs from the the European Union, Japan and the US, estimate that the EU loses more than 36 billion EUR in CIT tax revenues on a yearly basis, Japan loses 24 billion EUR and the US is losing more than 100 billion USD in terms of tax revenues because of profit shifting. As pointed out previously by Slemrod and Wilson (2009) and Alvarez-Martinez et al. (2018), they stress that the negative effect of profit shifting in the EU is leading to a necessary increase of consumption taxes to offset the loss of CIT revenues due to profit shifting. This offsetting measure leads to 0.2% GDP net loss in the EU and close to a half percent of GDP net loss in Japan and the US. Laffitte and Toubal (2018) adopted a different approach to estimate the contribution of tax havens to profit shifting behavior. The authors use the data regarding foreign trade and found that the US MNEs used foreign trade platforms established in tax havens where the amount of trade exceeded 82 billion USD.

There is also a large body of literature which is concerned with the issue of the contribution of tax havens to profit shifting worldwide. Other research studies worth mentioning that have been preoccupied with measuring the level of profit shifting to tax havens, are those of Dowd et al. (2017), Laffitte and Toubal (2018) and Nerudová et al. (2019). In terms of researching profit shifting in Central and Eastern European countries, there are the papers of Procházka (2019), Khouri et al. (2019), Krištofík et al. (2017), Janský (2018) and Nerudová et al. (2020) that should be mentioned. Procházka (2019) argues that Central and Eastern European (hereinafter CEE) countries show an active involvement in ratifying and adopting the Base Erosion and Profit Shifting Action Plan recommendations. Janský (2018), analysing the impact of profit shifting in Czechia and the associated corporate income tax revenue losses, estimates that profit shifting leads to an average 10% loss of corporate income tax revenue. Furthermore, the author stresses that current literature tends to overlook the issue of profit shifting in Central Europe. Khouri et al. (2019) proved more intensive and increasing profit shifting efforts in the Slovak Republic. Krištofík et al. (2017) stress the main motivations of Slovakian companies to establish offshore or onshore companies is a heightened level of secrecy, tax benefits and the flexible arrangement of ownership relations.

In terms of measuring the size of profit shifting, the latest estimations are done by the work of UNCTAD (2015). The authors analyze the difference between the share of inward FDI from tax havens and the correspondent return on total FDI stock. UNCTAD (2015) found that an average of 450 billion USD is shifted from developing countries to offshore investment centers which leads to a yearly tax revenue loss of 90 billion USD. Janský and Palanský (2019) estimate the size of profit shifting of countries worldwide using global FDI data. The authors estimate that the size of global profit shifted was over 650 billion USD in 2016 and the corresponding tax loss was 196 billion USD. This amount of income shifted represented 0.9% of world GDP, or almost 6% of total profits reported by companies

worldwide. A smaller amount of global profit shifting is estimated by the OECD (2015a), which ranges between 100 and 240 billion USD (i.e. annual losses from 4 to 10% of global corporate income tax revenues). Concerning the EU, the annual loss of tax revenue is estimated at approximately 1 trillion EUR, and in the case of corporate taxation approximately 50–70 billion EUR is lost.[1] Cobham and Janský (2018) adopt the model proposed by Crivelli et al. (2016) to re-estimate the global size of profit shifting using a new database. The authors found that the global amount of profit shifting done by MNEs is on average 500 billion USD. Concerning only US corporate income tax revenues, according to Clausing (2016), MNEs profit shifting inflicts a tax revenue loss of up to 111 billion USD on an annual basis.

3 The Development of Corporate Taxation During the Century

From a general point of view, taxation has a very long history, however, income taxation can be considered a "new tax" introduced at the end of the eighteenth century, and corporate income taxation as a separate tax on companies after the 1960s.[2] Regarding income taxation or corporate income taxation, the millstone for their establishment was the development of record keeping and accounting which enabled the ability to determine profit, record it and subsequently to tax it.[3] Moreover, usually their introductions were linked to war and an increased need for additional tax revenue. Other reasons were having the privilege of incorporation (they bore limited liability so they should pay for this privilege), equity (no whole company's retained earnings are distributed to shareholders, therefore corporate taxation should tax undistributed company profits) and lastly, as a good tool for extra revenue.[4] Although income tax was not received positively at first, its introduction has been stabilized in the tax system and is now an integral part of the general tax system.

At the time of the introduction of corporate income taxation and in the pre-globalized era, corporate income taxation did not give rise to such problems as we currently face today. At that time investments and capital were almost immobile, financial markets were not so integrated, and possibilities of how to minimize and avoid taxes were limited. Moreover, international tax rules, such as the arm's length

[1] For more details, see European Parliamentary Research Service (2015).

[2] Income tax was introduced for example in the UK in 1798, in the US in 1891, in Australia in 1915, and in Canada and France in 1917. Corporate taxation as a separate tax on companies was introduced in the UK in 1965 followed by others, for example in Ireland in 1976. For more details see Frecknall-Hughes (2015) and Grapperhaus (2009).

[3] For more details see Frecknall-Hughes (2015).

[4] For more details, see above.

principle,[5] taxation of business profit,[6] permanent establishment,[7] and the tax residency principle[8] were able to capture the main international tax issues related to cross-border activities between MNEs. However, in this time of globalization, dynamic business development, higher levels of cross-border activities and with the digital revolution, we can consider corporate income taxation outdated, not only at the national level, but also at the international level.[9] The first reason is that the common theoretical basis of taxation rights and allocating powers to impose tax, were derived from provisions more than 100 years old by the League of Nations, dated 1923, and then by the OECD. However, nowadays nexus rules[10] absolutely

[5]The arm's length principle can be considered a rule against the mispricing of any intra-group transaction between associated enterprises with an aim to manipulate the volume of the tax base, and has been used as an international tax rule since 1933. A similar rule is also used in the case of permanent establishment. The authoritative statement of this principle is mentioned in Article 9 (1) of the OECD Model Tax Convention on Income and Capital (hereinafter OECD Model Convention) known as primary adjustment:

"When conditions are made or imposed between two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly." For more details, see also OECD (2017a), Commentary on Article 9(2), MN 6, 2017 (available at: https://read.oecd-ilibrary.org/taxation/model-tax-convention-on-income-and-on-capital-condensed-version-2017_mtc_cond-2017-en#page1) and OECD (2017b), TP Guidelines, MN 4.35, 2017 (available at: https://read.oecd-ilibrary.org/taxation/oecd-transfer-pricing-guidelines-for-multinational-enterprises-and-tax-administrations-2017_tpg-2017-en#page1).

[6]The authoritative statement on taxation of business profit is mentioned in Article 7 of the OECD Model Convention, OECD (2017a) For more details, see also the OECD Commentary on Article 7.

[7]The definition of permanent establishment is mentioned in Article 5 of the OECD Model Convention, and taxation of business profit generated through permanent establishment is mentioned in Article 7 of the OECD Model Convention, OECD (2017a). For more details, see also OECD Commentary on these articles.

[8]Definition of tax residency is mentioned in Article 4 of the OECD Model Convention, OECD (2017a).

[9]For more details, see also Wilde and Wilson (2018), Schön (2019), Devereux and Vella (2014, 2017), OECD (2015a), Kofler et al. (2017) Avi-Yonah (2000), De Mooij and Devereux (2011), Stiglitz (2014), Merrill (2010).

[10]Nexus rule is based on the assumption that a state's jurisdiction has a right to tax foreign or non-resident persons/entity if they have fulfilled the relevant factors such as physical presence or economic activity, or a combination of both. Moreover, a source country has limited taxing rights instead of most taxing rights in the case of residual—home countries of resident persons/entity. However, due to the rapid nature of business digitalization and the development of the digital economy, business activities are very often performed without physical presence and avoid taxation in the source State under the current nexus rule. This issue is a subject of interest in the BEPS project, Action 1—Tax Challenges Arising from Digitalisation. For more details see OECD (2015b). For other results related to the nexus rule, and a new one, see Falcão and Michel (2014), Collin and Colin (2013), Hongler and Pistone (2015), López (2015), Deveraux and de la Feria (2014), Popa (2016), Hellerstein (2014), Olbert and Spengel (2017), de Wilde (2015), Pinto (2006) and Kemmeren (2006).

changed in connection with the digital economy and rapid globalization. Furthermore, the current tax and accounting legal framework failed to provide a clear definition of the concept of "value creation", "intangible property" and "economic activity".[11] Another reason is that companies are more global, usually without the need for a physical presence in the country of operation and all processes are more integrated compared to the previous traditional business models[12] where levying a corporate tax and its collection was easier. Moreover, financial markets and economies are more integrated so that MNEs can allocate capital and investments wherever they want, use to their advantage harmful tax competition, apply different opportunities, technics of aggressive tax planning (hereinafter ATP) and create aggressive tax planning structures (hereinafter ATPS) with the aim of minimizing and avoiding taxes.

From a European perspective, the European Economic Community (EEC)[13] was fully aware of problems arising from the interaction of different corporate tax systems across Member States and their effects on the main aim of European integration, i.e. a creation of the Internal Market. Therefore, there have been many attempts to coordinate and harmonize corporate taxation systems of Member States since the beginning of European integration, in the 1960s. At first it considered recommendations based on the Neumark Report[14] published in 1962, recommending harmonisation of indirect and direct taxes but not in the sense of a complete unification of tax systems of Member States. According to the Neumark Report, the committee recommended a special tax on companies in case of retained profits, specifically 50%, and a different tax rate on distributed profits (between 15 and 25%). It should be noted that in connection with current developments, the Neumark Report also recommended using a multilateral tax convention[15] which was considered more appropriate than the OECD Model Tax Convention for the purpose of the Internal Market and corporate tax reform. Unfortunately, it has never been fulfilled. Another attempt was performed in 1967 via the Program on Tax Harmonisation, and consequently in 1969 via the Program for the Harmonisation of Direct Taxation. Both programs suggested a lot of measures, and two proposals of directives[16] which are precursors to the Merger Directive and the Parent-Subsidiary Directive introduced 20 years later and successfully implemented by Member States. In 1970 another report was prepared by professor A.J. van den Tempel (1970), and

[11]For more details, see Olbert and Spengel (2017).

[12]For more details about business models see Nerudová and Solilová (2020).

[13]Established by the Treaty of Rome in 1957, signatories Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany. The EEC is considered a precursor to the EU, established by the Maastricht Treaty which came into force in 1 November 1993.

[14]Report of the Fiscal and Financial Committee, prof. Fritz Neumark, 1963.

[15]Using multilateral tax convention was also recommended by the Segrè Report (1966) for the purpose of developing a European capital market. For more details, see the EEC Commission (1966).

[16]Specifically, in 1969 Capital Duties Directive, Council Directive 69/335/EEC as a precursor to the Parent-Subsidiary Directive.

suggested implementation of a classical system[17] of corporate taxation among the Member States. Similarly, as previous reported, suggestions were not followed up on. Consequently, in 1975 the European Commission suggested a partial imputation system of corporate taxation[18] and tried to approximate the corporate tax rates within the range of 45–55% to both distributed and undistributed profits, when according to the partial imputation system, a tax credit on distributed dividends would be applied to the hands of shareholders. However, similarly as in previous cases, all proposals were rejected or withdrawn. As those harmonization efforts were ineffective, the European Commission decided to focus on measures to combat international tax evasion and avoidance[19] and support a tax coordination across Member States via the Mutual Assistance Directive[20] which was introduced to the Council in 1977. Moreover, the efforts also focused on harmonisation of only the provisions affecting the smooth functioning of the Internal Market, therefore, the harmonisation of indirect taxation is at an advanced stage compared to direct taxation, where only partial solutions were performed. However, according to results from the Ruding Report,[21] differences in corporate taxation (tax rates and tax bases), and methods of eliminating double taxation in cases of investments and withholding taxes used across Member States, are so significant that they cause distortions to the Internal Market. The Ruding Report suggested a lot of measures, namely, ensuring transparency of tax incentives for industry, eliminating obstacles to cross-border investments, the establishment of a minimum corporate tax rate and tax base, and others. The Commission agreed with some of them, such as the improvement of transfer pricing rules, thin capitalisation rules, the Merger Directive and the Parent-Subsidiary Directive, and the need for the elimination of double taxation on cross-border investments. However, harmonisation of the corporate tax rate was again rejected by the Council. Since 1997, when the EU introduced a tax package to tackle harmful tax competition,[22] the EU focused on the elimination of harmful tax competition between Member States following the work of the OECD (1998) on this issue. The package addressed three key areas: corporate taxation, savings

[17]In a classical system profits of corporations are taxed at the corporate level, and then if profits are distributed to shareholders it is again taxed as distributed profits via withholding tax.

[18]Proposal for a Council Directive concerning the harmonisation of systems of company taxation and of withholding taxes on dividends, COM(75) 392 final, 23 July 1975. Through a partial imputation system, a reimbursable tax credit is available to shareholders based on the taxation of distributed profits.

[19]See Council Resolution of 10 February 1975 on the measures to be taken by the Community in order to combat international tax evasion and avoidance, OJ C35, 14. 2. 1975.

[20]Council Directive 77/799/EEC of 19 December 1977 Concerning Mutual Assistance by the Competent Authorities of the Member States in the Field of Direct Taxation and Taxation of Insurance Premiums. This Directive was repealed by Council Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation known as DAC 1.

[21]See Report of the Committee of Independent Experts on Company Taxation, March 1992.

[22]See Toward Tax Co-ordination in the European Union, A Package to Tackle Harmful Tax Competition. Doc COM(97) 495 final, 1. October 1997.

taxation and interest and royalty payments. Although, the package was not positively adopted, a Code of Conduct on business taxation was agreed upon by the finance ministers of all the Member States, and proposals of both directives (i.e. the Savings Directive[23] and the Interest and Royalties Directive[24]) were submitted. Furthermore, the next work focused on the identification of harmful tax provisions in tax systems of Member States which can hamper cross-border economic activity and create distortions in the Internal Market. These results were presented in the Company Taxation Study[25] in 2001. To tackle identified obstacles, the European Commission suggested four long-term alternative proposals, specifically—the Home State Taxation System, as a tax simplification for small and medium-sized enterprises; a Common (Consolidated) Corporate Tax Base suggesting a new optional tax base; the European Union Company Income Tax suggesting both a new single tax base and a uniform tax rate; and a Compulsory Harmonized Corporate Tax Base suggesting both a mandatory new tax base together with consolidation and formulary apportionment.[26] After the discussion of all four models, the European Commission decided to focus on the second one (i.e. Common Consolidated Corporate Tax Base) with the belief that only it can overcome tax obstacles in a systematic way. In 2011, after more than 10 years, the Commission published the proposal of the CCCTB Directive;[27] it represents one of the most ambitious projects, however, it is still undergoing the process of approval. However, since 2001, the Commission has turned from tactics that switch away from hard law, in the form of directives,[28] to

[23]Council Directive 2003/48/EC of 3 June 2003 on Taxation of Savings Income in the Form of Interest Payments. No longer in force, date of end of validity: 31/12/2015 as it was superseded by parts of Directive 2014/107/EC of 9 December 2014, known as DAC 2.

[24]Council Directive 2003/49/EC of 3 June 2003 on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States. This act has been changed. Current consolidated version: 01/07/2013, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003L0049-20130701.

[25]See Company Taxation in the Internal Market, SEC(2001) 1681. The study presented detailed classification of obstacles, such as transfer pricing rules, double taxation, unavailability of cross-border loss reliefs and reliefs/deferrals in cases of cross-border reorganisations/mergers/acquisitions and others.

[26]For more details, see above.

[27]See COM(2011) 121/4, 2011/0058 (CNS), SEC(2011) 316 final. In October 2016, the Commission re-launched the CCCTB, however, not with the aim of harmonizing corporate taxation across Member States, but to make corporate taxation in the EU fairer, more competitive and more growth-friendly. The re-launched CCCTB will be implemented through a two-step approach and will be mandatory for the largest groups in the EU fulfilling the threshold of consolidated net turnover of at least 750 million EUR. Firstly, the common rules for tax base construction without the possibility of tax consolidation will be introduced as CCTB is newly understood as a tool for fair and efficient taxation within the EU eliminating base erosion and profit shifting. Secondly, the consolidation regime should be introduced in the second step.

[28]With regard to directives in the area of corporate taxation, only six Directives solving partial issues and one Convention were approved during this time. The Parent-Subsidiary Directive—Council Directive 2011/96/EU of 30 November 2011 on the common system of taxation applicable in the case of parent companies and subsidiaries of different Member States, previous version

soft law, as many Communications to the Council were published dealing with specific tax obstacles, such as anti-abuse measures, cross-border loss relief, exit taxation, coordination of Member States in taxation issues, double taxation, aggressive tax planning, good governments in the area of taxation and others. Until 2012, the EU performed several steps to address tax evasion and avoidance, such as expanding the automatic exchange of information widely within the EU, it proposed provisions to close loopholes in the Parent-Subsidiary Directive, it established a Platform on Tax Good Governance, it agreed on new instruments (reverse charge mechanism) to better fight VAT fraud, it launched the debate on Digital Taxation and others.[29] However, concerning EU corporate tax legislation, only six Directives solving partial tax issues were approved and implemented by Member States, and one further Convention was agreed upon by Member States.[30] The situation absolutely changed during the second decade of the twenty-first century.[31]

After the Millennium, one of the most important outcomes was the founding of the Global Forum on Transparency and Exchange of Information for Tax Purposes,[32] initiated by the OECD and the G20 countries. The main goal of the Forum is to establish and evaluate global/international standards for information exchange, specifically, the standard for Exchange of Information on Request (EOIR)[33] and the standard for Automatic Exchange of Information (AEOI[34]). These are in parallel with the American Foreign Account Tax Compliance Act[35] (FATCA 2010), followed by inter-governmental agreements on the mutual automatic exchange of information with the United States, which has generated

90/435/EEC of 23 July 1990, amended by 2003/123/EC of 22 December 2003, the Merger Directive—Council Directive 2009/133/EC of 19 October 2009 on the common system of taxation applicable to mergers, divisions, partial divisions, transfers of assets and exchanges of shares concerning companies of different Member States and to the transfer of the registered office of an SE or SCE between Member States, this act has been changed—current consolidated version: 01/07/2013; the Saving Directive (see Note 23); the Interest and Royalties Directive—Council Directive 2003/49/EC of 3 June 2003 on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States (see Note 24); the Mutual Assistance Directive (see Note 20) and the Arbitration Convention on the elimination of double taxation in connection with the adjustment of profits of associated enterprises, (90/463/EEC) of 23 July 1990.

[29]See more in European Commission (2013).

[30]See above.

[31]See the following section.

[32]For more details about the Forum see: http://www.oecd.org/tax/transparency/.

[33]For more details about the EOIR and Exchange of information see: http://www.oecd.org/tax/transparency/what-we-do/exchange-of-information-on-request/exchange-of-information-on-request-peer-review-process.htm.

[34]For more details about the AEOI and Exchange of information see: http://www.oecd.org/tax/automatic-exchange/. In 2015, more than 90 countries committed to the AEOI and gradually joined the Common Reporting Standard Multilateral Competent Authority Agreement.

[35]For more details see: https://home.treasury.gov/policy-issues/tax-policy/foreign-account-tax-compliance-act. Furthermore, there are available FATCA agreements and understandings in effect by jurisdiction.

significant political momentum for the development of a global automatic exchange standard. The Forum gradually prepared support and control systems for tax information exchange, and it currently has 161 member states.[36]

Furthermore, with the support of the OECD and the EU in the fight against harmful tax competition, there has been a visible trend in tax policy as several countries are broadening their tax bases with the aim of reaching a sufficient volume of tax revenues and introducing various types of specific anti-abuse regimes. These include transfer pricing standards, Controlled Foreign Company legislation (CFC rules), Specific Anti-Avoidance Rules (SAARs[37]), or General Anti-Avoidance Rules (GAARs), in their domestic corporate tax systems with the aim of protecting their taxable base and tax revenues.[38] However, corporate taxation is very sensitive to international taxation when the correct allocation of taxing rights requires a global solution together with the implementation of complex rules. Corporate taxation is also fickle about international tax planning and harmful tax competitiveness when some countries restrict national tax sovereignty of other countries and erode their tax bases. With this connection, many experts[39] have highlighted that the current international tax rules and principles are not sufficient enough to eliminate tax evasion, aggressive tax planning, profit shifting and tax base erosion, and therefore they are incompatible with today's global economy. Moreover, the experts stress that those principles are based on a fundamental misunderstanding how today's MNEs are performing in their businesses compared to when those principles were incorporated into the OECD Model Convention or the UN Model Convention and subsequently into corporate income taxation at the national level (in some cases). The nature of business and technology were absolutely different then, than today.[40]

[36]Furthermore, based on the Statistics, in 2020 there were already 4400 activated bilateral exchange relationships within the common reporting standards (CRS) and over 2700 within Country-by-Country Reporting. These include exchanges between the signatories to the CbC Multilateral Competent Authority Agreement (CbC MCAA), between EU Member States under EU Council Directive 2016/881/EU known as DAC 4, and between signatories to bilateral competent authority agreements for exchanges under Double Tax Conventions or Tax Information Exchange Agreements, including 41 bilateral agreements with the United States. For more information about CbC MCAA, see: https://www.oecd.org/tax/automatic-exchange/international-framework-for-the-crs/.

[37]SAARs are typically very targeted legal statements that remove or reduce the tax effect of certain transactions. Unlike SAARs, a GAAR is intended to apply to all types of transactions and arrangements with the aim of counteracting tax advantages arising from tax arrangements that are abusive.

[38]For more details see also Pistone (2016).

[39]Avi-Yonah and Clausing (2007), Durst (2010, 2011), Avi-Yonah and Benshalom (2010), Keuschnigg and Devereux (2013), Taylor et al. (2015), Solilová and Nerudová (2019), Bartelsman and Beetsma (2000), Wells and Lowell (2014), Hines and Rice (1994) and Huizinga and Laeven (2008) and many others.

[40]For example, until the collapse of the Breton Woods system (early 1970s), the international capital flow was controlled, furthermore, intra-group transactions between associated enterprises were not so significant as they are nowadays. Intra-group transactions between associated enterprises have increased since the 1970s and 1980s, when IT technology (PC and internet) allowed the coordination between MNEs and also the global capital market was reconstructed so that European

Therefore, profit shifting and tax base erosion is performed more easily and the divergence of national corporate income tax systems has created loopholes for mismatches and supported aggressive tax planning.

As a result, another trend during the second decade of the twenty-first century has been global efforts to solve aggressive tax planning, tax evasion, profit shifting and tax treaty abuse via the BEPS project[41] started in 2013, and the global call for increased tax transparency and exchange of information for tax purposes.[42]

4 The Fight Against Tax Base Erosion and Tax Fraud

The OECD (2013) underscores that tax base erosion poses a risk towards tax revenue, tax sovereignty and tax fairness across OECD countries and non-OECD countries alike. To avoid this practice, in February 2013, the OECD, G20 and then also the EU,[43] launched the BEPS project. The BEPS project is the most ambitious project in the history of international taxation. It covers 15 Action plans[44] focusing on huge areas of international tax issues which are crucial for elimination of aggressive tax planning, profit shifting, tax base erosion, and tax treaty abuse. It helps to ensure better tax transparency, tax coordination, fairer taxation and solutions for international tax disputes. The main aim is to design new international tax standards which would be globally applied. Therefore, minimum standards were designed for some recommendations, specifically for the following: Action 5—Harmful tax practices; Action 6—Prevention of tax treaty abuse; Action 13—Country-by-Country Reporting; and Action 14—the Mutual Agreement Procedure. These are considered to be crucial steps and should be introduced/applied in coordinated ways to ensure timely and accurate implementation by all participating states. Minimum standards are also a subject of peer review. For this purpose, the

and Japanese MNEs returned to the global FDI scene, where only the US MNEs remained. Moreover, since the 1960s, the use of offshore, and also onshore jurisdictions, offering some preferential tax regimes was more often across MNEs. For more details, see Dunning and Lundan (2008).

[41]BEPS project, see in detail: https://www.oecd.org/tax/beps/about/.

[42]For more details see: http://www.oecd.org/tax/transparency/what-we-do/.

[43]The EU confirmed support for work within the BEPS project in May 2013, see Council document 9405/13.

[44]Specifically Action 1-Tax Challenges Arising from Digitalisation; Action 2-Neutralising the effects of hybrid mismatch arrangements; Action 3-Controlled Foreign Company; Action 4-Limitation on Interest Deductions; Action 5-Harmful tax practices; Action 6-Prevention of tax treaty abuse; Action 7-Permanent establishment status; Actions 8–10—Transfer pricing; Action 11-BEPS data analysis; Action 12-Mandatory Disclosure Rules; Action 13-Country-by-Country Reporting; Action 14-Mutual Agreement Procedure; and Action 15-Multilateral Instrument. Final reports covering recommendations are mentioned in the link for each action. For more details see: https://www.oecd.org/tax/beps/beps-actions/.

Inclusive Framework on BEPS[45] was established, whereby all members commit to implementing the minimum standards and participating in peer review.

Each action tries to cover a complex view of the issues and find appropriate solutions. There is a brief summary of individual actions with results reached. Action 1 focuses on the digital economy and related taxation issues (both direct and indirect taxes, tax policy and tax administrations), with the aim of fitting international tax rules for purposes in the modern global economy, where digitalization, mobility, intangible assets, centrality of data, network effects, and new business models represent key elements. It covers amendments of the current nexus rule (which is based on physical presence), re-allocation of taxing rights and profit allocation rules (based on the arm's length principle) with the aim of reaching a comprehensive consensus-based solution which is able to secure tax equity amongst traditional and digital businesses, as well as appropriately taxing and allocating profits resulting from digital businesses between states and eliminating profit shifting of profits to low or no tax jurisdictions facilitated by new (digital) technologies.[46] The solution requires the application of the new Multilateral Instruments[47] (MLI), which are currently in the process of approval, or are being enforced in many countries, and which can speedily modify existing bilateral tax agreements which have been brought to their conclusion.

Action 2 focuses on hybrid and branch mismatch arrangements[48] used in aggressive tax planning to achieve double non-taxation or another tax advantage resulting in enormous tax base erosion of participating states. Other negative aspects of these mismatches are harm to competition, economic inefficiency, and unfairness and non-transparency in taxation.[49] The solution requires amendments to tax treaty provisions (limitation of tax treaty benefits) via multilateral instruments and improvement or introduction of domestic law provisions, such as prevention of exemption or non-recognition of payments, elimination of double deduction or double tax relief, such as an exemption from tax, a reduction in the rate of tax or any credit or refund of tax. Since the announcement of BEPS' Action 2 recommendations, a number of countries have adopted rules to address hybrid and branch mismatches.[50] As for the European perspective, the new Directive[51] was adopted introducing hybrid and branch mismatch rules with an effective date no later than the beginning of 2020.

[45]Until beginning of 2021, it covers over 135 members and 14 observer organisations.

[46]For more details, see OECD (2015b).

[47]For more details about the MLI see OECD (2016a, 2020b).

[48]Usage of differences in the tax treatment of an entity/financial instrument/branch structure under the domestic laws of two or more tax jurisdictions with an aim of reaching tax advantages and/or double non-taxation.

[49]See more in OECD (2015c).

[50]For example, the USA, Australia, New Zealand, and EU Member States (see below).

[51]Council Directive (EU) 2017/952 of 29 May 2017 amending Directive (EU) 2016/1164 regarding hybrid mismatches with third countries. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ:L:2017:144:FULL&uri=uriserv:OJ.L_.2017.144.01.0001.01.ENG.

Action 3 focuses on designing effective controlled foreign company rules (CFC rules) which are able to effectively neutralize the possible advantages reached in low-tax countries with previously shifting profits, i.e. the elimination of inappropriate shifting profits to foreign entities/subsidiaries. BEPS recommendations are in the form of building blocks covering the definition of the CFC rule, exemptions and threshold requirements, definition of income subject to the CFC rule, computation of CFC income, attribution of CFC income and prevention and elimination of double taxation.[52] Unfortunately, this new measure is not considered a minimum standard. However, until mid-2019, 49 countries introduced this rule together with the EU Member States who introduced it based upon the ATAD Directive[53] with the effective date being 1 January 2019.

Action 4 focuses on limiting base erosion involving interest deductions and other financial payments which are used by MNEs with the aim of reaching favorable tax results, such as reduction of the tax base via excessive interest expense in high tax countries, using intragroup financing to support the generation of tax-exempt or deferred income, and the reaching of double non-taxation. Debt channel is considered as one of the most often used profit-shifting techniques among MNEs. However, similarly, as in case of the CFC rule, limitation of interest deductions is not considered to be a minimum standard. BEPS recommendations are in the form of a rule connecting net interest deductions to the level of economic activity measured via EBITDA, the so called interest deduction limitation rule (EBITDA rule).[54] According to the OECD Corporate Tax Statistics,[55] published July 2020, 67 countries are in the process of designing an interest limitation rule, and another 67 countries introduced an interest limitation rule in 2019. Regarding the European perspective, EU Member States are implementing this rule based upon the ATAD Directive.[56]

Action 5 focuses on harmful tax practices, taking into account transparency and the substance of this phenomenon, particularly with respect to the assessment of substantial activity/features for any preferential tax regime and no, or only nominal, tax jurisdictions, and the exchange of information on the rules in that regime.[57] This action represents the first of four BEPS minimum standards. Concerning preferential tax regimes, under Action 5, a review and monitoring was undertaken of preferential tax regimes, consolidated regimes, and non-IP regimes, as well as a review of no, or only nominal, tax jurisdictions. Regarding the transparency framework, under

[52]See more in OECD (2015d).

[53]Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32016L1164.

[54]For more details, see OECD (2016b).

[55]See OECD Corporate Tax Statistics Database, OECD (2020a).

[56]Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32016L1164.

[57]For more details see OECD (2015e).

Action 5, standards for the exchange of information on tax rulings[58] was introduced together with terms of reference[59] and methodology[60] for peer reviews. Regular peer review and monitoring is conducted by the Forum on Harmful Tax Practices (FHTP). Furthermore, the standards[61] for the spontaneous exchange of information were introduced.

Action 6 represents the second of four BEPS minimum standards as it is one of the most important source of BEPS interest. It addresses prevention of tax treaty abuse, such as treaty shopping, through new treaty provisions with the aim of reaching treaty benefits in inappropriate circumstances. The action also focuses on the identification of fiscal policy criteria which should be taken into account when jurisdictions are entering into a tax treaty agreement. Under Action 6, based upon BEPS recommendations, members of BEPS Inclusive Framework have to include in their tax treaties provisions eliminating treaty shopping (generally in the preamble a precise statement on non-taxation, and furthermore it should contain one of three methods of addressing treaty shopping—the principal purposes test (PPT), a limitation on benefits (LOB) provision, or a combination of both) to ensure a minimum level of protection against treaty abuse.[62] Additionally, to foster the implementation of the minimum standards and other BEPS treaty-related measures in the global tax treaty network, a multilateral instrument is applied. According to a regular peer review in 2018 and 2019 a large majority of members are modifying their treaty network via MLI; some of the amended tax treaties have been in force since 1 January 2019.

Action 7 deals with the permanent establishment status and its artificial avoidance. The aim of the action is to change its definition in order to prevent its abuse. As the permanent establishment status is considered an allocation rule, i.e. it gives taxing rights to the Source state to tax income generated through permanent establishment, it is crucial to update its definition and prevent the artificial avoidance of this status. Artificial avoidance of permanent establishment statues results in untaxed income or taxation of income at a lower tax rate. BEPS recommendations include several changes, such as the elimination of a number of exceptions; a restriction of preparatory or the auxiliary nature of activities; changes related to construction sites (activities performed by related person/associated enterprises and the splitting-up of contracts); or intermediary activities resulting in the regular conclusion of contracts that give rise to permanent establishment status. The current OECD Model Tax

[58]For this purpose, the Exchange on tax rulings (ETR) XML Schema, User guide standardised electronic format and the ETR Status Message XML Schema were created for exchange between jurisdictions. Since 1 April 2020 their second version has been introduced and used.

[59]It focuses on the information gathering process, exchange of information, confidentiality of information received and statistics.

[60]It includes the process for collecting relevant data based upon the standardised questionnaires, the preparation of reports and their approval, and outputs of the review.

[61]It includes requirements of the standards, exchange timelines, and standardizes IT format for the exchange and NTJ XML Schema.

[62]For more details see OECD (2015f).

Convention[63] integrated the suggested changes in its 2017 updates. Moreover, due to the fact that changes are required in the tax treaty network, the MLI is applied to modify existing tax treaties, specifically Articles 12 to 15 of the MLI Convention.[64] Until the beginning of 2021, almost 50 jurisdictions and MLI Signatories adopted suggested changes of PE status via MLI.

Actions 8 through 10 focus on transfer pricing, specifically on aligning transfer pricing outcomes with value creation of MNEs. Nevertheless, the arm's length principle is a more than 100 year old standard and there is proof that profit shifting is occurring, regardless of the existence of this standard. The opinion of many experts[65] is that it does not reflect economic reality and cannot ensure the fairest and be the most reliable basis for the determination of where profits are to be taxed; still, no adequate substitute has been found. Therefore, the aim is to strengthen both the key standard, the arm's length principle, and proceed towards sufficient and appropriate pricing of hard-to-value intangibles (HTV) within this standard. Moreover, due to globalization and rapid digitalization, it is also necessary to improve its guidance, i.e. OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations[66] (OECD TP Guidelines) to ensure appropriate application of the standards aligning with the global economy, economic activity carried out and value creation of MNEs.[67] BEPS recommendations include several changes, such as those related to comparability analysis, intangibles, risks and capital, allocation of risks, profit split method, high-risk transactions (management fee; head office expenses) and others. However, not all suggested changes were incorporated into the latest updated version of the OECD TP Guidelines in 2017.[68] Up until the

[63]See in detail OECD (2017a).

[64]Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting (MLI Convention), Article 12—Artificial Avoidance of Permanent Establishment Status through Commissionnaire Arrangements and Similar Strategies, Article 13—Artificial Avoidance of Permanent Establishment Status through the Specific Activity Exemptions, Article 14—Splitting-up of Contracts, Article 15—Definition of a Person Closely Related to an Enterprise. Available at: https://www.oecd.org/tax/treaties/multilateral-convention-to-implement-tax-treaty-related-measures-to-prevent-BEPS.pdf.

[65]Hines and Rice (1994), Bartelsman and Beetsma (2000), Swenson (2001), Huizinga and Laeven (2008), Avi-Yonah and Clausing (2007), Durst (2010, 2011), Avi-Yonah and Benshalom (2010), Keuschnigg and Devereux (2013), Wells and Lowell (2014), Taylor et al. (2015), and others.

[66]See more in Schoueri (2015). The current version of the OECD TP Guidelines are available at: https://www.oecd.org/tax/transfer-pricing/oecd-transfer-pricing-guidelines-for-multinational-enterprises-and-tax-administrations-20769717.htm. However, up until the beginning of 2021, the guidelines were updated several times; separate updates were not included in the comprehensive version of the OECD TP Guidelines. The comprehensive version of the OECD TP Guidelines should be available by early 2021.

[67]For more details see OECD (2015g).

[68]In the 2017 version, the following changes were incorporated: statements aligning transfer pricing outcomes with value creation and related transfer pricing documentation and Country-by-Country Reporting (amendments in Chap. I, II, V, VI, VII and VIII); changes in the guidance on business restructuring related to Actions 8–10 and 13; and changes on guidance for safe harbours in Chap. IV, OECD (2017b).

beginning of 2021, the document was updated several times[69] without integration into the comprehensive version of the OECD TP Guidelines.

Action 11 deals with the establishment of methodology to collect, analyze and monitor data on BEPS measures. At the beginning of BEPS, corporate tax losses were estimated to be between 4–10% of global corporate income tax revenues (OECD 2015a). However, before the BEPS project started, there was not sufficient availability of quality data that could be used to determine the overall economic and fiscal effects of aggressive tax avoidance, profit shifting and tax base erosion. Therefore, it is crucial to increase the quality of data, analytical tools available and methodical approaches in order to determine the overall impact of this undesirable behavior/activity and evaluate the effects of implemented BEPS measures. Under Action 11, new and enhanced datasets and analytical tools are currently available. Furthermore, the Corporate Tax Statistics database[70] was first presented in January 2019 (updated in July 2020) and compiles quality and a variable range of data to support the analysis of corporate taxation and BEPS measures for more than 100 jurisdictions. Since 2020, Corporate Tax Statistics have also included aggregated and anonymized statistics based upon CbCR (according to the Action 13); Inclusive Framework on BEPS is responsible for this action.[71]

Action 12 requires taxpayers to disclose aggressive tax planning arrangements, with the aim of securing timely, targeted, enforceable and comprehensive information for governments to sufficiently identify tax risk areas raised by aggressive tax planning. Under Action 12, a mandatory obligation to disclose aggressive tax planning schemes are recommended. Moreover, it provides a modular framework for designing this regime together with specific recommendations both for rules targeting international tax schemes and the improvement of information exchange and co-operation between tax authorities.[72] Concerning the European perspective, EU Member States implemented mandatory disclosure rules for cross-border arrangements based on Directive DAC 6,[73] and incorporated the rules set out in

[69]Such as Revised Guidance on the Application of the Transactional Profit Split Method-BEPS Action 10 published in June 2018 (available at: https://www.oecd.org/tax/transfer-pricing/revised-guidance-on-the-application-of-the-transactional-profit-split-method-beps-action-10.htm), Guidance for Tax Administrations on the Application of the Approach to Hard-to-Value Intangibles - BEPS Action 8 published in June 2018 (available at: https://www.oecd.org/tax/transfer-pricing/guidance-for-tax-administrations-on-the-application-of-the-approach-to-hard-to-value-intangibles-beps-action-8.htm),Transfer Pricing Guidance on Financial Transactions: Inclusive Framework on BEPS: Actions 4, 8–10 published in February 2020, available at: https://www.oecd.org/tax/beps/oecd-releases-transfer-pricing-guidance-on-financial-transactions.htm.

[70]For more details, see OECD (2020a) Corporate Tax Statistics database, OECD (2020a).

[71]For more details, see OECD (2015h).

[72]For more details, see: OECD (2015i).

[73]Council Directive (EU) 2018/822 of 25 May 2018 amending Directive 2011/16/EU regarding mandatory automatic exchange of information in the field of taxation in relation to reportable cross-border arrangements, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0822. The Directive took effect from July 2020. Implementation was postponed due to the Covid-19 pandemic.

the OECD report Model Mandatory Disclosure Rules for CRS Avoidance Arrangements and Opaque Offshore Structures,[74] published in 2018.

Action 13 represents the third of four BEPS minimum standards with the aim of eliminating transfer pricing and BEPS risks areas. Therefore, the minimum standard requires preparing a non-public CbCR for the purpose of tax administrations covering aggregate data in the global allocation of income, profit, taxes paid and economic activity among tax jurisdictions in which an MNE group operates, as well as the improvement of transfer pricing documentation. The first reported period was 2016, and a first exchange of CbCR took place in June 2018. Under the action,[75] the template of CbCR for MNE is available together with the CbC Reporting Implementation Package, which includes a legal framework for the filing requirements of CbCR and the fulfillment of this obligation, as well as a model of Competent Authority Agreements[76] to ensure the exchange of CbCRs. As a minimum standard, the implementation of CbCR must be reviewed and evaluated; currently the 2020 review should be finished. The Inclusive Framework on BEPS is responsible for this activity. As was mentioned in Action 11, since July 2020, the Corporate Tax Statistics OECD (2020a) have also included aggregated and anonymized statistics of CbCR data, specifically of nearly 4000 MNEs groups with headquarters in 26 jurisdictions and operating across more than 100 jurisdictions worldwide. According to the current available CbCR for 2016, 58 jurisdictions introduced this new mandatory disclosure rule and a further 90 jurisdictions are implementing this rule. Moreover, over 2500 relationships are in place for the exchange of CbCR between jurisdictions.

Action 14 focuses on the Mutual Agreement Procedure (MAP, presented by Article 25 of the OECD Model Tax Convention[77]) with the aim of resolving tax-related disputes more effectively. The Global tax treaties network contains this MAP provision, however, usually without para 5,[78] allowing them submission of unresolved issues to tax arbitration and to reach an agreement within a reasonable time limit. Due to this fact, a lot of unresolved MAPs are still open without solution and have resulted in double taxation.[79] Access to MAP and resolving tax disputes via MAP, within a reasonable timeframe and more effectively, is the key aim of this action. It represents the last of four BEPS minimum standards, which is responsible for the Inclusive Framework on BEPS. This includes introductions of BEPS

[74] See more in OECD (2018).

[75] See more details in OECD (2015j).

[76] Exchange of CbCRs can be performed via the Multilateral Convention on Administrative Assistance in Tax Matters, Bilateral tax conventions and Tax Information Exchange Agreements (TIEAs).

[77] See also OECD TP Guidelines, Chap. IV, OECD (2017b). The MAP procedure can also be opened through the EC Arbitration Convention on the elimination of double taxation in connection with the adjustment of profits on associated enterprises (90/463/EEC).

[78] Article 25, para 5 was incorporated into the OECD Model Tax Convention in 2008. In the case of the UN Model Tax Convention in 2011.

[79] See also: Schoueri (2016).

recommendations and their regular review and monitoring process, together with reporting of MAP statistics[80] and developing the reporting framework.[81] Under the action, BEPS minimum standard includes 21 elements and 12 best practices for the areas, including how to prevent disputes, how to access MAP, how to solve MAP cases and how to implement MAP agreements.[82]According to the last peer review (at the end of 2016; period 2016 to 2021; 45 reviewed jurisdictions from an overall 79 jurisdictions), many jurisdictions published guidelines on MAP, tax administrations are closing more MAP cases and new MAP cases are also increasing (access to MAP is also for transfer pricing issues—corresponding adjustments, where Article 9/2 was not covered in the tax treaty and access to MAP was not allowed). Furthermore, 990 recommendations have been issued for reviewed jurisdictions in order to be fully compliant with the BEPS minimum standard requirements. From a general point of view, the process of MAP is more effective, MAP cases are closed in a timely manner and access to MAP has increased. Currently, the second stage of peer review is being undertaken.

Action 15[83] deals with the development of a multilateral instrument via the MLI Convention.[84] The MLI offers rapid amendments of the global tax treaties network based upon the suggested BEPS recommendations, resulting in the closing of loopholes in international tax treaties allowing aggressive tax planning, tax abuse, profit shifting and tax base erosion. The MLI also allows implementing BEPS minimum standards in case of tax treaty abuse and MAP. Under the action, a toolkit for the MLI application, including an MLI Matching Database and interactive flowcharts, were developed[85] in order to ensure better and clearer interpretation and application of amended tax treaty provisions and a new MLI legal instrument. Since 2016, more than 100 jurisdictions from all continents have concluded negotiations on the MLI Convention, and more than 90 jurisdictions[86] have enforced the MLI starting 1 July 2018 with an effective date on 1 January 2019.

[80]Mutual Agreement Procedure Statistics for 2019 is available at: https://www.oecd.org/tax/dispute/mutual-agreement-procedure-statistics.htm.

[81]MAP Statistics Reporting Framework is available at: https://www.oecd.org/tax/dispute/mutual-agreement-procedure-statistics-reporting-framework.pdf.

[82]For more details see: OECD (2015k). Further, also Schoueri and Galdino (2018).

[83]For more details, see: OECD (2015l).

[84]Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting (MLI Convention). Available at: https://www.oecd.org/tax/treaties/multilateral-convention-to-implement-tax-treaty-related-measures-to-prevent-BEPS.pdf. The explanatory statement providing clarification to the approach taken in the MLI and how each provision is intended to affect tax treaties is available at: https://www.oecd.org/tax/beps/explanatory-statement-multilateral-convention-to-implement-tax-treaty-related-measures-to-prevent-BEPS.pdf.

[85]Toolkit for Application of the Multilateral Instrument for BEPS Tax Treaty Related Measures, where the MLI Matching Database is available. Available at: https://www.oecd.org/tax/beps/application-toolkit-multilateral-instrument-for-beps-tax-treaty-measures.htm.

[86]For more about the MLI Positions of individual Signatories see: https://www.oecd.org/tax/beps/beps-mli-signatories-and-parties.pdf.

As it is obvious from the brief summary of BEPS actions and suggested recommendations, the coordination between all participating jurisdictions, which also requires tax transparency, is a very important aspect of the final solution. If the adoption of final recommendations and the BEPS minimum standards were not coordinated and participating states would have introduced recommendations differently, it could potentially give rise to more tax arbitrations, double taxation, distortions in the market, deter cross-border investment flows and globally worsen business environments. Therefore, international tax coordination has a priority, and as a global solution the OECD suggested the development of the MLI which helps to ensure a speedy introduction and application of new international tax standards and modifications of current tax treaties. However, some tax practitioners stress that new international tax practices are more complicated, as not only tax treaties, but also new amendments made via multilateral instruments, must be followed. Moreover, based on several recommendations in the case of each action, it is possible to expect that different rules (variants of recommended rules) would be implemented by participating states. The near future will show whether or not this is the best way, and how much profit shifting, tax base erosion and aggressive tax planning were eliminated.

To avoid the divergent introduction of BEPS recommendations across EU Member States, the European Commission approved ATAD Directive 2016/1164,[87] which lays down five anti-avoidance rules of minimum standards, of which four (the interest limitation rule, GAARs, the CFC rules and the hybrid mismatches rule), are largely consistent with BEPS recommendations, and the fifth (exit taxation) goes beyond the scope of BEPS. The implementation of the above rules[88] is needed to protect the EU's internal market against tax avoidance practices, thereby ensuring fair and effective taxation in the EU in a sufficiently coherent and coordinated manner. Moreover, ATAD represents a minimum level of protection and ensures the implementation of BEPS minimum standard package, which could be considered a suitable solution for the rest of the world. However, the ATAD Directive was not the only one to respond to BEPS. On January 2016, the Commission proposed the Anti Tax Avoidance Package[89] in order to reach fairer, simpler and more effective corporate taxation in the EU based upon strong and coordinated action against tax avoidance. Learning from past failures, the Commission used a combination of soft law (Communication from the Commission to the European Parliament and the

[87]See Note 53 above. The ATAD Directive was amended on 1 January 2020, in consolidated text: Council Directive (EU) 2016/1164 of 12 July 2016 lays down rules against tax avoidance practices that directly affect the functioning of the internal market; available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016L1164-20200101.

[88]For more details about the implementation of those rules see chapter "Tax Policy in Relation to Fair Corporate Taxation".

[89]For more details about the Anti Tax Avoidance Package, see https://ec.europa.eu/taxation_customs/business/company-tax/anti-tax-avoidance-package_en.

Council) and hard law in the form of Directives. The Anti Tax Avoidance Package covers the above mentioned ATAD Directive, revision of the Administrative Cooperation Directive (DAC Directive),[90] recommendations on tax treaties[91] against tax treaty abuse, a new EU external strategy for effective taxation[92] and identification of aggressive tax planning among EU Member States. This package follows both the Tax Transparency Package,[93] presented by the Commission on 18 March 2015, with the aim of combatting corporate tax avoidance via tax transparency, specifically via the introduction of the automatic exchange of information between Member States on their tax rulings, and the EU Action Plan[94] for fair and efficient corporate taxation in the EU adopted by the Commission in June 2015.

Under revision of the DAC 1 Directive, all the necessary procedures in terms of exchange of information standards (spontaneous,[95] automatic[96] and on request[97]), were established together with the structure for a secure platform for cooperation in this field. The revision of DAC 1 addressed the political priority of fighting against aggressive tax planning and consequently, future developments in this field (fighting against profit shifting and tax base erosion). Since its adoption, the original Directive

[90]The predecessor of Council Directive 2011/16/EU, known as DAC 1, was a Mutual Assistance Directive released in 1977. Council Directive 2011/16/EU of 15 February 2011, known as DAC 1 is available at: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32011L0016.

[91]See more: https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/company_tax/anti_tax_avoidance/c_2016_271_en.pdf.

[92]See Communication from the Commission to the European Parliament and the Council on External Strategy for Effective Taxation COM/2016/024 final, available at http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0024.

[93]For more details see: https://ec.europa.eu/taxation_customs/business/company-tax/tax-transparency-package_en.

[94]The EU Action Plan contains 5 Key Areas, specifically (1) Re-launching the Common Consolidated Corporate Tax Base (CCCTB), (2) Ensuring fair taxation where profits are generated, (3) Creating a better business environment, (4) Increasing transparency and (5) Improving EU coordination. For more details see: https://ec.europa.eu/taxation_customs/business/company-tax/action-plan-corporate-taxation_en. See also Commission's Action Plan on a Fairer Corporate Tax System (COM (2015) 302) to tackle tax avoidance: https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/company_tax/fairer_corporate_taxation/com_2015_302_en.pdf.

[95]Spontaneous exchange of information takes place if a country finds out information on possible tax evasion relevant to another country (the source country or the country of residence).

[96]The automatic exchange of information secured automatic electronic channels for the exchange of information and a central directory for storing and sharing information on financial account information, advance cross-border rulings, CbCR, beneficial ownership information or on tax planning cross-border arrangements (tax planning schemes). The first experience in the automatic exchange of information came from the Directive 2003/48/EC known as the Savings Directive, which was repealed by DAC 2 (see Notes 23, 98).

[97]Exchange of information upon request is used when additional information for tax purposes is needed from another country.

DAC1 has been amended five times (DAC 2–6[98]) with the aim of strengthening administrative cooperation and tax transparency among EU Member States. All EU DAC Directives focus on a wide range of information exchange, such as information on non-financial categories, financial account information, advanced cross-border rulings, CbCR, beneficial ownership information or on tax planning cross-border arrangements. With respect to CbCR, it should be highlighted that in the EU other CbCRs are required in the case of specific sectors, specifically for extractive industries and logging of primary forests under the Accounting Directive 2013/34/EU,[99] and for financial institutions under the Capital Requirements Directive 2013/36/EU, known as CRD IV.[100]

Regarding CbCR, from the transfer pricing perspective, the EU transfer pricing documentation requirements[101] do not currently provide any mechanism for the provision of a CbCR contrary with the OECD TP Guidelines where three parts of transfer pricing documentation are newly recommended (i.e. Master File, Local File and CbCR).[102] CbCR is mandatory and automatic exchange is based upon DAC 4 (Directive 2016/881) and all requirements are in line with the international developments of the OECD.[103]

[98]Directive 2014/107/EU (known as DAC 2) dated 9 December 2014 amending Directive 2011/16/EU regarding mandatory automatic exchange of information in the field of taxation in relation to financial account information, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0107. Furthermore, Commission Implementing Regulation (EU) 2015/2378 dated 15 December 2015 laying down detailed rules for implementing certain provisions of Council Directive 2011/16/EU on administrative cooperation in the field of taxation and repealing Implementing Regulation (EU) No 1156/2012, available at: https://eur-lex.europa.eu/eli/reg_impl/2015/2378/oj. Council Directive (EU) 2015/2376 (known as DAC 3) dated 8 December 2015 amending Directive 2011/16/EU (known as DAC 1) concerning mandatory automatic exchange of information in the field of taxation in relation to advanced cross-border rulings and advanced pricing arrangements, available at: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32015L2376. Council Directive (EU) 2016/881 (known as DAC 4) dated 25 May 2016 amending Directive 2011/16/EU regarding mandatory automatic exchange of information in the field of taxation in relation to CbCR, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016L0881. Council Directive (EU) 2016/2258 (known as DAC 5) dated 6 December 2016 amending Directive 2011/16/EU concerning access to anti-money-laundering information by tax authorities (to beneficial ownership information), available at: https://eur-lex.europa.eu/legal-content/CS/ALL/?uri=uriserv%3AOJ.L_.2016.342.01.0001.01.ENG. Council Directive (EU) 2018/822 (known as DAC 6) dated 25 May 2018 amending Directive 2011/16/EU regarding mandatory automatic exchange of information in the field of taxation in relation to reportable cross-border arrangements, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0822.

[99]For more details see http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0034&from=EN.

[100]For more details see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:En:PDF.

[101]EU Transfer pricing documentation and its requirements are mentioned in the Code of Conduct, covering a master file and country specific documentation.

[102]For more details see OECD (2017b), TP Guidelines, Chap. V–Documentation.

[103]For the comparison of OECD CbCR requirements and EU CbCR requirements, see Solilová and Nerudová (2019).

Recommendations on tax treaties against tax treaty abuse, as the third part of the Anti Tax Avoidance Package, follows BEPS recommendations and advises Member States how to improve their tax treaties against abuse by compliance with the EU law. Furthermore, it is also advisable to introduce GAARs and revise the definition of permanent establishment.

Concerning the EU external strategy for effective taxation, the Commission presents a stronger and more coherent EU position in order to introduce and implement BEPS minimum standards in the EU with the aim of promoting good tax governance globally and ensuring effective taxation, and working harder with third countries on good tax governance matters. It also takes into account the creation of a common EU list of non-cooperating third countries for tax purposes. In that respect, in 2016 the Economic and Financial Affairs Council (Ecofin) introduced criteria for screening jurisdictions for the purpose of creating an EU list of non-cooperative jurisdictions which is updated annually. The criteria focus on tax transparency (including information exchange upon request, implementation of Common Reporting Standards for automatic exchange of information and its exchange via the Multilateral Competent Authority Agreement or a bilateral agreement), fair taxation and implementation of BEPS recommendations (namely, minimum standards). The current list adopted by the Council on 6 October 2020, is composed of the following: American Samoa, Anguilla, Barbados, Fiji, Guam, Palau, Panama, Samoa, Trinidad and Tobago, the US Virgin Islands, Vanuatu and Seychelles of which Anguilla, Barbados, Panama, Seychelles and Trinidad and Tobago represent countries with major transparency concerns.

The last part of the Anti Tax Avoidance Package presented is the identification of aggressive tax planning among EU Member States via studies on these practices and Member States' corporate tax rules used for the purpose of avoiding taxation.[104]

Finally, a very important step performed by the EU, which should be mentioned, is related to taxation of the digital economy. Terada-Hagiwara et al. (2019) and Devereux and Vella (2014, 2017) stress that digital economy growth can lead to tax revenue losses, missing taxable matters, unclear income characterization and ineffective tax collection (direct and indirect taxes). Aware of the seriousness and significant distortions within the Internal market which can arise through non-taxation of digital businesses, in 2017 the European Commission released a Communication on a Fair and Efficient Tax System in the European Union for the Digital Single Market.[105] Later in 2018, the European Commission proposed new

[104]See the list of all Taxation papers published and available since 2004, available at: https://ec.europa.eu/taxation_customs/publications/taxation-services-papers/taxation-papers_en.

[105]European Commission, Brussels, 21.9.2017, COM(2017) 547 final. Communication from the Commission to the European Parliament and the Council: A Fair and Efficient Tax System in the European Union for the Digital Single Market, available at: https://ec.europa.eu/taxation_customs/sites/taxation/files/communication_taxation_digital_single_market_en.pdf.

rules to ensure that digital business activities are taxed in a fair and growth-friendly way in the EU, including two proposals.[106]

5 Post-communist Countries with Respect to Aggressive Tax Planning Opportunities and Tax Base Erosion

There have only been a few studies measuring base erosion or profit shifting focus on post-communist countries.[107] In the case of the Czech Republic, Moravec et al. (2019) proved there's a significant impact of profit shifting on corporate tax revenue for the period of 2013–2015, particularly the corporate revenue losses were determined to be CZK 9404 mil. in 2013 with an increasing tendency (i.e. in 2015, CZK 10,377 mil.). Janský (2018) is also focusing on profit shifting in Czechia and estimated that profit shifting leads to an average loss of 10% of corporate income tax revenue. He further stresses that current trends are to overlook the issue of profit shifting in Central Europe. In their previous research, Janský and Kokeš (2015, 2016) argue the relevance of BEPS for the Czech Republic and confirm the debt financing profit shifting from the Czech Republic to Luxembourg, Switzerland and the Netherlands. Similarly, it is also the case in the Slovak Republic. Ištok and Kanderová (2019a, b) proved profit shifting through debt financing techniques to low-tax jurisdictions, or to tax havens through general profit shifting techniques (Khouri et al. 2019). In the case of Visegrad countries, Nerudová et al. (2020) concludes that a one-unit increase in tax differential will lead to a less than one percent tax revenue loss in such countries, which is similar to results in other areas, also in Nerudová et al. (2018, 2019).

According to the Study on Structures of Aggressive Tax Planning and Indicators (European Commission 2015), aggressive tax planning opportunities offered by post-communist countries before BEPS recommendations can be identified (see Table 1).

All 11 CEE-EU countries exhibit indicators relating to interest-cost and its tax-deductibility, namely indicator 9. The tax deduction does not depend on the

[106]Brussels, 21.3.2018, COM(2018) 147 final. Proposal for a COUNCIL DIRECTIVE laying down rules relating to the corporate taxation of a significant digital presence {SWD(2018) 81 final}—{SWD(2018) 82 final}, available at: https://ec.europa.eu/taxation_customs/sites/taxation/files/proposal_significant_digital_presence_21032018_en.pdf, and Brussels, 21.3.2018, COM(2018) 148 final. Proposal for a COUNCIL DIRECTIVE on the common system of a digital services tax on revenues resulting from the provision of certain digital services.

{SWD(2018) 81}—{SWD(2018) 82}, available at: https://ec.europa.eu/taxation_customs/sites/taxation/files/proposal_common_system_digital_services_tax_21032018_en.pdf. For more details see link: https://ec.europa.eu/taxation_customs/business/company-tax/fair-taxation-digital-economy_en.

[107]We focus on Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia. This group of countries is considered to be CEE-EU countries.

Table 1 Summary of ATP indicators in the CEE-EU countries (European Commission 2015)

Country	Active indicator	Lack of anti-abuse indicator	Passive indicators	Set of combined indicators
Bulgaria	10	4, 9, 11, 24, 26, 27	1, 8, 19	1 + 4 8 + 9
Croatia	10	4, 9, 11, 15, 24, 26, 27	3, 8, 19, 22	8 + 9
Czech Republic	n/a	9, 24, 26, 27	1, 8, 18, 19, 22	8 + 9
Estonia	n/a	9, 12 and 13, 24, 26, 27	1, 2, 8, 14, 19	1 + 2 8 + 9 + 12 + 13 + 14
Hungary	10 and 17	9, 11, 27	1, 2, 8, 14, 20, 18, 19, 25	1 + 2 8 + 9 + 14 19 + 20
Latvia	n/a	4, 9, 15, 21, 24, 26, 27	1, 3, 8, 19, 22, 25	1 + 3 + 4 8 + 9 + 15 19 + 21
Lithuania	n/a	4, 6, 9, 26, 27	1, 8, 19, 22, 23, 25	1 + 4 8 + 9
Poland	n/a	4, 9, 15, 21, 26, 27, 32	8, 19, 22, 23	8 + 9 + 15 19 + 21
Romania	n/a	4, 6, 9, 21, 24, 26, 27	1, 8, 19, 25	1 + 4 8 + 9 19 + 21
Slovak Republic	n/a	9, 24, 26, 27	1, 2, 8, 19, 22	1 + 2 8 + 9
Slovenia	n/a	4, 9, 15, 21, 24, 26, 27, 32	8, 19, 25	8 + 9 + 15 19 + 21

Note: for explanation of the indicators, see Table A.1 in chapter "Economic Analysis from the Macro Perspective" or in the Annex of the study

tax treatment in the creditor's state, it is covered by indicator 9 in the group of lack of anti-abuse measures. Croatia, Bulgaria, Hungary, Latvia, Poland and Slovenia represent countries which combine indicator 9 with one or both indicators 11 or 15, i.e. no taxation of benefit from interest-free debt and no beneficial-owner test for reduction of withholding tax on interest. Moreover, all eleven CEE-EU countries combine passive indicator 8 (tax deduction for intra-group interest costs) with any or all of indicators 9, 11, or 15, which allow general deductibility of interest costs without making it conditional on the creditor being taxed on the interest income or a beneficial-owner test as a condition for withholding tax exemptions. Therefore, the general point of view is that it allows tax base erosion via financing costs. Moreover, Hungary represents a country without effective withholding tax on interest payments under domestic law, similar to Estonia. However, Estonia is also a country without effective thin-capitalization rules and interest-limitation rules. So generally, there is room for tax base erosion via financing costs in CEE-EU countries.

In contrast with the interest-cost theme discussed above, four CEE-EU countries (Bulgaria, Latvia, Lithuania and Romania) combined indicators related to dividends.

That is to say, indicator 1 is too generous of a tax-exemption on dividends received, along with any of the indicators 2–4 representing no withholding tax on dividends paid or on dividend equivalents and no beneficial-owner test for reduction of withholding tax on dividends. Furthermore, only the Czech Republic, the Slovak Republic, Hungary and Estonia were identified as countries where the beneficial-owner test for reduction of withholding tax on dividends is applied; among the rest of the CEE-EU countries it is not.

Regarding interest income, only Lithuania and Romania were identified as a country where income from certain hybrid instruments is considered non-taxable. Moreover, all eleven CEE-EU countries (partly Hungary) do not counter the mismatching tax qualification of domestic partnership/company between one's own state and a foreign state (i.e. indicators 26 and 27) which can lead to hybrid or reverse hybrid mismatches and result in double deductions for the same costs, i.e. tax base erosion. In addition, Hungary, Latvia, Lithuania, Romania and Slovenia also do not follow tax qualifications of foreign partnerships like those of foreign states.

Furthermore, eight CEE-EU countries (the Czech Republic, the Slovak Republic, Bulgaria, Croatia, Estonia, Latvia, Romania and Slovenia) do not have CFC rules in force (i.e. indicator 24).

Regarding royalty or other IP costs, all eleven CEE-EU countries allow tax deduction for intra-group royalty costs, when only six countries (the Czech Republic, Croatia, Latvia, Lithuania, Poland and Romania) have in force R&D tax incentives also for costs that are reimbursed. Moreover, Latvia, Poland, Romania and Slovenia do not have a beneficial-owner test for reduction of withholding tax on royalty, and only Hungary did not introduce withholding tax on royalty payments under domestic law. Hungary was also identified as the only CEE-EU country where patent box or other preferential tax treatment of income from an IP is introduced. Moreover, Hungary also represents the country without effective taxation on capital gains upon transfer of an IP, similar to the Czech Republic.

Furthermore, only Lithuania and Poland allow group taxation with an acquisition holding company from all CEE-EU countries. Poland together with Slovenia also represent countries without general or specific anti-avoidance rules to counter the model ATP structures.

Finally, with respect to the set of combination of indicators it is possible to conclude that:

- all 11 CEE-EU countries allow general deductibility of interest costs without making it conditional on the creditor being taxed on the interest income;
- 7 CEE-EU countries are too generous with tax-exemptions on dividends received together with no beneficial-owner test for reduction of withholding tax on dividends or no withholding tax on dividends paid under domestic law; and

- 5 CEE-EU countries allow tax deduction for intra-group royalty costs in combination with no beneficial-test for reduction of withholding tax on royalty or no withholding tax on royalty payments under domestic law.

It is obvious that there is a room for tax base erosion and profit shifting in CEE-EU countries before the BEPS project started and until anti avoidance rules are introduced. Regarding the roles of entities included in ATP structures, there is another important study by European Commissions (2017). The study focuses on ATP structures using interest payments (debt channel), royalty payments (IP profit shifting channel) and using strategic transfer pricing (TP channel) and the distinguished individual role of an entity in ATP structures (i.e. target entities,[108] lower-tax entities[109] and conduit entities[110]). As it is obvious from Table 2, the highest portion of entities is represented by the transfer pricing channel, the IP profit shifting channel is the second most often used channel and the last one is represented by a debt channel across CEE-EU countries. Furthermore, lower-tax entities are preferred in all cases than target entities. Together with the previous results, it gives a comprehensive view of aggressive tax planning opportunities and tax base erosion within CEE-EU countries.

6 Conclusion

Profit shifting plays an important role in tax base erosion. The existence of profit shifting and tax base erosion appears mainly because of the international mismatches in entities; tax treaty abuse; the existence of preferential tax regimes; mispricing and artificial splitting of ownership of assets between legal entities; the low effectiveness of anti-avoidance measures and thin capitalization rules; and different treatment of Controlled Foreign Companies. The contribution of tax havens to profit shifting is extremely serious in this phenomena; as state Tørsløv et al. (2020) more than 40% of profits obtained by MNEs are directed towards tax haven countries through different profit shifting techniques.

[108] A target entity is an entity in a multinational group that has its tax base reduced as a result of aggressive tax planning. Moreover, at least one lower entity must be determined for the identification of a target entity within an MNE group. For further details, see European Commission (2017).

[109] A lower-tax entity is an entity in the multinational group that has its tax base increased as a result of aggressive tax planning, but the base is taxed at lower tax rate. Moreover, at least one target entity must be determined for the identification of a lower-tax entity within an MNE group. For further details, see European Commission (2017).

[110] A conduit entity is an entity in the multinational group that does not see its tax base significantly affected, but this entity is needed for an aggressive tax planning structure. A conduit entity cannot be identified as either the target or lower-tax entity. Moreover, at least one target entity must be determined to identify a conduit entity within an MNE group. For further details, see the European Commission (2017).

Table 2 Summary of roles of ATP structures using different channels (% of entities classified as) (European Commission 2017)

	Interest payments—debt channel			Royalty payments—IP profit shifting channel			Transfer pricing—TP channel		
Country	Target entity	Lower-tax entity	Conduit entity	Target entity	Lower-tax entity	Conduit entity	Target entity	Lower-tax entity	Conduit entity
Bulgaria	0.0	17.4	26.7	0.0	20.2	31.1	0.0	45.7	29.5
Croatia	1.5	3.1	30.5	4.2	11.4	34.0	10.0	27.8	30.2
Czech Republic	0.2	9.1	27.3	0.2	13.9	31.5	0.5	40.5	28.1
Estonia	1.9	1.7	24.4	3.9	6.1	29.6	10.3	25.0	23.3
Hungary	0.9	9.9	49.0	1.4	20.6	61.2	3.1	39.3	48.6
Latvia	0.0	10.3	23.9	0.1	11.6	27.8	0.1	39.1	26.1
Lithuania	0.0	4.5	28.3	0.1	20.2	35.6	0.2	40.0	32.9
Poland	0.2	12.5	33.4	0.3	19.6	40.2	0.5	44.9	35.3
Romania	0.1	8.7	17.3	0.3	15.3	19.8	0.6	42.5	19.9
Slovakia	1.4	7.8	17.3	1.6	13.2	36.7	2.7	34.3	28.3
Slovenia	4.2	13.0	38.0	5.7	22.5	36.9	11.6	35.0	34.5
High values[a]	–	*BG, PL, SI*	*HU*	–	*SI, HU, LT, BG, PL*	*HU*	–	*BG, PL, RO, CZ, LT, HU, LV*	–
Low values[a]	–	*EE*	*RO, LV, EE*	–	–	*RO, LV, EE*	–	–	*RO, EE, LV*

[a]Only countries from the CEE-EU region are mentioned

However, when corporate income taxation was introduced, i.e. in the pre-globalized era, the corporate income taxation did not give rise to such problems as we currently face. There are several reasons why we can consider corporate income taxation outdated, not only at national level, but also at the international level. These reasons include globalization, rapid digitalization, integration of financial markets, increased mobility, higher integration of MNEs activities and many others. Although a corporate income tax is a relatively "young" tax, from the EU perspective it was very difficult to harmonize it and improve its parts without having distortion effects on the Internal Market. The situation changed significantly during the second decade of the twenty-first century. Since the second decade of the twenty-first century, there have been global efforts to solve aggressive tax planning, tax evasion, profit shifting and tax treaty abuse via the BEPS project started in 2013, and a global call for increased tax transparency and exchange of information for tax purposes.

The BEPS project can be considered as the most ambitious project in the history of international and domestic taxation, it covers 15 Action plans focusing on huge areas of international tax issues, which are crucial for elimination of aggressive tax planning, profit shifting, tax base erosion, tax treaty abuse, and it helps to ensure better tax transparency, tax coordination, fairer taxation and solutions to international tax disputes. The main aim is to design new international tax standards which would be applied globally.

From the EU perspective, the EU introduced the Anti Tax Avoidance Package, Tax Transparency Package and the EU Action Plan for fair and efficient corporate taxation in the EU. To avoid the divergent introduction of BEPS recommendations across EU Member States, the European Commission approved the ATAD Directive laying down five anti-avoidance rules of minimum standards, of which four (interest limitation rule, GAARs, CFC rules and hybrid mismatches rule), are largely consistent with BEPS recommendations, and the fifth (exit taxation) goes beyond the scope of BEPS. Besides the ATAD Directive, the EU revised the DAC Directive to combat corporate tax avoidance via strengthening the administrative cooperation and tax transparency among EU Member States, namely, via the introduction of the automatic exchange of information, such as financial account information, advance cross-border ruling, CbCR, beneficial ownership information or on tax planning cross-border arrangements between Member States.

According to the Financial Secrecy Index 2020, it can be concluded that the automatic exchange of information, beneficial ownership registration and CbCR are considered to be the biggest reforms in the area of international taxation.

Regarding post-communist countries, there is a high risk of profit shifting and tax base erosion as these countries offer aggressive tax planning opportunities, and entities operating there are used in ATP structures of MNEs groups, mainly as low-tax entities and target entities. However, there are not many studies focusing on the determination of volume of profit shifting, tax base erosion and corporate tax revenue losses.

Acknowledgements The chapter is the result of the GA ČR No. 18-14082S "Fair corporate taxation: Measurement of the impact of the corporate profit shifting on the budget of the Czech Republic".

References

Alvarez-Martinez M, Barrios S, d'Andria D, Gesualdo M, Nicodème G, Pycroft J (2018) How large is the corporate tax base erosion and profit shifting? A general equilibrium approach. CESifo working paper, No. 6870. https://www.econstor.eu/bitstream/10419/174993/1/cesifo1_wp6870.pdf. Accessed 10 May 2020

Avi-Yonah RS (2000) Globalization, tax competition, and the fiscal crisis of the welfare state', Harward Law Review, p 1575

Avi-Yonah RS, Benshalom I (2010) Formulary apportionment – myths and prospects. Empirical legal studies center working paper no. 10-029. University of Michigan Law School

Avi-Yonah RS, Clausing KA (2007) Reforming corporate taxation in a global economy: a proposal to adopt formulary apportionment. The Hamilton project. http://www.hamiltonproject.org/assets/legacy/files/downloads_and_links/Reforming_Corporate_Taxation_in_a_Global_Economy-_A_Proposal_to_Adopt_Formulary_Apportionment.pdf. Accessed 20 Jul 2017

Bartelsman E, Beetsma R (2000) Why pay more? Corporate tax avoidance through transfer pricing in OECD countries, Tinbergen Institute discussion paper no. 00-54/2. http://www.rrojasdatabank.info/wir2006/pricetransfer.pdf. Accessed 2 May 2017

Clausing KA (2016) The effect of profit shifting on the corporate tax base in the United States and beyond. Natl Tax J 69(4):905–934

Cobham A, Janský P (2018) Global distribution of revenue loss from corporate tax avoidance: re-estimation and country results: global corporate tax avoidance. J Int Dev 30(2):206–232. https://doi.org/10.1002/jid.3348

Cobham A, Janský P, Meinzer M (2015) The financial secrecy index: shedding new light on the geography of secrecy. Econ Geogr 91(3):281–303

Collin P, Colin N (2013) Task force on taxation of the digital economy. http://www.hldataprotection.com/files/2013/06/Taxation_Digital_Economy.pdf. Accessed 15 May 2020

Crivelli E, De Mooij R, Keen M (2016) Base erosion, profit shifting and developing countries. FinanzArchiv: Public Finance Anal 72(3):268–301

De Mooij RA, Devereux MP (2011) An applied analysis of ACE and CBIT reforms in the EU. Int Tax Public Financ 18(1):93–120. https://doi.org/10.1007/s10797-010-9138-8

de Wilde M (2015) Tax jurisdiction in a digitalizing economy: why "online profits" are so hard to pin down. Intertax 43(12):796–803

Deveraux M, de la Feria R (2014) Designing and implementing a destination-based corporate tax. Oxford University Centre for Business Taxation Working Paper Series. http://eureka.sbs.ox.ac.uk/5081/1/WP1407.pdf. Accessed 5 May 2020

Devereux MP, Vella J (2014) Are we heading towards a corporate tax system fit for the 21st century? Fisc Stud 35(4):449–475. https://doi.org/10.1111/j.1475-5890.2014.12038.x

Devereux MP, Vella J (2017) Implications of digitalization for international corporate tax reform. Oxford University Center for Business Taxation Working paper: WP 17/07

Dharmapala D (2014) What do we know about base erosion and profit shifting? A review of the empirical literature. Fisc Stud 35(4):421–448

Dharmapala D, Hines JR Jr (2009) Which countries become tax havens? J Public Econ 93 (9–10):1058–1068

Dowd T, Landefeld P, Moore A (2017) Profit shifting of US multinationals. J Public Econ 148:1–13

Dunning J, Lundan S (2008) Multinational enterprises and the global economy, 2nd edn. Edward Elgar

Durst MC (2010) It's not just academic: the OECD should reevaluate transfer pricing laws. Tax Analysts, 18 January. https://www.taxjustice.net/cms/upload/pdf/Durst_1001_OECD_-_not_just_academic.pdf. Accessed 20 Jul 2017

Durst MC (2011) The two worlds of transfer pricing policymaking. Tax Notes. 24 January. https://www.taxjustice.net/cms/upload/pdf/Durst_1101_Tax_Notes_TP.pdf. Accessed 20 Jul 2017

Dyreng S (2015) Making sense of profit shifting: Scott Dyreng. Tax Foundation Forum Series

EEC Commission (1966) The development of a European Capital Market – Segrè report, Brussels

European Commission (2013) Fighting tax evasion and avoidance: a year of progress, Memo, 2013. https://ec.europa.eu/commission/presscorner/detail/fr/MEMO_13_1096. Accessed 20 May 2020

European Commission (2015) Study on structures of aggressive tax planning and indicators. Final report, WP no. 61–2015. doi:https://doi.org/10.2778/59284

European Commission (2017) Aggressive tax planning indicators. Final report. Taxation Papers, WP no. 71–2017. doi:https://doi.org/10.2778/847061

European Parliamentary Research Service (2015) Aggressive corporate tax planning under scrutiny. http://www.europarl.europa.eu/RegData/etudes/ATAG/2015/571345/EPRS_ATA(2015)571345_EN.pdf. Accessed 10 May 2020

Falcão T, Michel B (2014) Assessing the tax challenges of the digital economy: an eye-opening case study. Intertax 42(5):317

Frecknall-Hughes J (2015) The theory, principles and management of taxation, an introduction. Routledge, New York

GAO - Government Accountability Office (2008) Large US corporations and federal contractors with subsidiaries in jurisdictions listed as tax havens or financial privacy jurisdictions (Report to congressional requestors GAO-09-157). https://www.gao.gov/new.items/d09157.pdf. Accessed 10 Feb 2020

Ferinand HM Grapperhaus (2009) Taxes through the ages: a pictorial history. IBFD

Gravelle JG (2015) Tax havens: international tax avoidance and evasion (Congressional research service report R40623). https://fas.org/sgp/crs/misc/R40623.pdf. Accessed 8 May 2020

Gumpert A, Hines JR Jr, Schnitzer M (2016) Multinational firms and tax havens. Rev Econ Stat 98 (4):713–727

Hellerstein W (2014) Jurisdiction on tax in the digital economy: permanent and other establishments. Bulletin for International Taxation 68(6/7):346–351

Henry JS (2012) The price of offshore revisited. New estimates for missing global private wealth, income, inequality and lost taxes (Report of tax justice network). https://www.taxjustice.net/cms/upload/pdf/Price_of_Offshore_Revisited_120722.pdf. Accessed 3 March 2020

Hines JR Jr, Rice EM (1994) Fiscal paradise: foreign tax havens and American business. Q J Econ 109(1):149–182

Hongler P, Pistone P (2015) Blueprints for a new PE nexus to tax business income in the era of the digital economy. IBFD 2015

Huizinga H, Laeven L (2008) International profit shifting within multinationals: a multi-country perspective. J Public Econ 92(5–6):1164–1182

Ištok M, Kanderová M (2019a) Debt/asset ratio as evidence of profit-shifting behaviour in the Slovak Republic. Technol Econ Dev Econ 25(6):1293–1308. https://doi.org/10.3846/tede.2019.11338

Ištok M, Kanderová M (2019b) Interest expenses as a technique of profit shifting used by Slovak companies. In: Proceedings of the international scientific conference HED 2019, Hradec Kralove, Czech Republic, 5–6 February 2019, vol 9, pp 292–304. https://uni.uhk.cz/hed/site/assets/files/1073/proceedings_2019_1.pdf. Accessed 10 July 2020

Janský P (2018) Estimating the revenue losses of international corporate tax avoidance: the case of the Czech Republic. Post-Communist Econ 30(5):617–635

Janský P, Kokeš O (2015) Corporate tax base erosion and profit shifting out of the Czech Republic. Post-Communist Econ 27(4):537–546. https://doi.org/10.1080/14631377.2015.1084733

Janský P, Kokeš O (2016) Profit-shifting from the Czech multinational companies to European tax havens. Appl Econ Lett 23(16):1130–1133. https://doi.org/10.1080/13504851.2015.1137543
Janský P, Palanský M (2019) Estimating the scale of profit shifting and tax revenue losses related to foreign direct investment. Int Tax Public Financ 26(5):1048–1103. https://doi.org/10.1007/s10797-019-09547-8
Kemmeren ECCM (2006) Source of income in globalizing economies: overview of the issues and a plea for an origin-based approach. Bull Int Tax 60(11):430–452
Keuschnigg C, Devereux M (2013) The arm's length principle and distortions to multinational firm organization. J Int Econ 89(2):432–440
Khouri S, Elexa L, Istok M, Rosová A (2019) A study from Slovakia on the transfer of Slovak companies to tax havens and their impact on the sustainability of the status of a business entity. Sustainability 11:2803
Kofler G, Mayr G, Schlager C (2017) Taxation of the digital economy: "quick fixes" or long-term solution? Eur Tax 57. https://research.ibfd.org/#/doc?url=/collections/et/html/et_2017_12_e2_1.html. Accessed 10 March 2020
Krištofík P, Ištok M, Nedelova G (2017) Motívy zakladania onshore a offshore spoločností slovenskými podnikmi v roku 2014. Politická Ekonomie 65(2):198–216. (The motives of founding onshore and offshore companies by Slovak enterprises in 2014, in Slovak)
Laffitte S, Toubal F (2018) Firms, trade and profit shifting: evidence from aggregate data. CESifo Working Paper no. 7171. https://www.econstor.eu/bitstream/10419/185369/1/cesifo1_wp7171.pdf. Accessed 5 Sept 2019
López EE (2015) An opportunistic, and yet appropriate, revision of the source threshold for the twenty-first century tax treaties. Intertax 43(1):10–13
Markle K (2015) Making sense of profit shifting: Kevin Markle. Tax foundation forum series. https://taxfoundation.org/making-sense-profit-shifting-kevin-markle/. Accessed 10 March 2020
Merrill PR (2010) Corporate tax policy for the 21st century. Natl Tax J 63(4):623–633. https://www.ntanet.org/NTJ/63/4/ntj-v63n04p623-33-corporate-tax-policy-for.pdf. Accessed 8 Mar 2020
Moravec L, Rohan J, Hinke J (2019) Estimation of international tax planning impact on corporate tax gap in the Czech Republic. E&M Ekonomie a Management 22(1):157–170. https://doi.org/10.15240/tul/001/2019-1-011
Murphy R (2008) Finding the secrecy world: Rethinking the language of "offshore". Tax Research LLP, London
Nerudová D, Solilová V (2020) Business models. In: Bakker A (ed) Transfer pricing and business restructurings streamlining all the way. IBFD, online updates
Nerudová D, Solilová V, Dobranschi M, Litzman M (2018) The role of corporate income tax differences on the profit shifting behavior: evidence from the Czech Republic. In: European financial systems 2018: Proceedings of the 15th international scientific conference, pp 454–461
Nerudová D, Solilová V, Dobranschi M, Litzman M (2019) Profit shifting behaviour between sisters companies: the case of Czech Republic. Int J Trade Global Markets 12(3–4):300–310
Nerudová D, Dobranschi M, Solilová V, Litzman M (2020) Profit shifting to onshore and offshore tax havens: the case of Visegrad countries. Post-Commun Econ 32(7):904–946. https://doi.org/10.1080/14631377.2019.1705083
Neumark F (1963) Report of the Fiscal and Financial Committee, prof. In The EEC Reports on Tax Harmonisation. IBFD, Amsterdam
OECD (1998) Harmful tax competition: An emerging global issue. OECD, Paris. https://www.oecd-ilibrary.org/taxation/harmful-tax-competition_9789264162945-en. Accessed 18 Feb 2019
OECD (2013) Addressing base erosion and profit shifting. OECD, Paris
OECD (2015a) OECD/G20 base erosion and profit shifting project 2015 final reports. OECD, Paris
OECD (2015b) Addressing the tax challenges of the digital economy, action 1–2015 final report, OECD/G20 base erosion and profit shifting project
OECD (2015c) Neutralising the effects of hybrid mismatch arrangements, action 2–2015 final report, OECD/G20 base erosion and profit shifting project

OECD (2015d) Designing effective controlled foreign company rules, action 3–2015 final report, OECD/G20 base erosion and profit shifting project
OECD (2015e) Countering harmful tax practices more effectively, taking into account transparency and substance, action 5–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241190-en
OECD (2015f) Preventing the granting of treaty benefits in inappropriate circumstances, action 6–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241695-en
OECD (2015g) Aligning transfer pricing outcomes with value creation, actions 8-10 - 2015 final reports, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241244-en
OECD (2015h) Measuring and monitoring BEPS, action 11–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241343-en
OECD (2015i) Mandatory disclosure rules, action 12–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241442-en
OECD (2015j) Transfer pricing documentation and country-by-country reporting, action 13–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241480-en
OECD (2015k) Making dispute resolution mechanisms more effective, action 14–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris doi:https://doi.org/10.1787/9789264241633-en
OECD (2015l) Developing a multilateral instrument to modify bilateral tax treaties, action 15–2015 final report, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264241688-en
OECD (2016a) Multilateral convention to implement tax treaty related measures to prevent base erosion and profit shifting (MLI convention). https://www.oecd.org/tax/treaties/multilateral-convention-to-implement-tax-treaty-related-measures-to-prevent-BEPS.pdf. Accessed 22 Dec 2020
OECD (2016b) Limiting base erosion involving interest deductions and other financial payments, action 4–2016 update: inclusive framework on BEPS, OECD/G20 base erosion and profit shifting project, OECD, Paris. doi:https://doi.org/10.1787/9789264268333-en
OECD (2017a) Model tax convention on income and on capital: condensed version 2017. doi:https://doi.org/10.1787/mtc_cond-2017-en. https://read.oecd-ilibrary.org/taxation/model-tax-convention-on-income-and-on-capital-condensed-version-2017_mtc_cond-2017-en#page27. Accessed 19 May 2020
OECD (2017b) Transfer pricing guidelines for multinational enterprises and tax administrations. http://www.oecd.org/tax/transfer-pricing/oecd-transfer-pricing-guidelines-for-multinational-enterprises-and-tax-administrations-20769717.htm. Accessed 11 Nov 2020
OECD (2018) Model mandatory disclosure rules for CRS avoidance arrangements and opaque offshore structures. https://www.oecd.org/tax/exchange-of-tax-information/model-mandatory-disclosure-rules-for-crs-avoidance-arrangements-and-opaque-offshore-structures.htm. Accessed 10 Feb 2020
OECD (2020a) Corporate tax statistics database. https://www.oecd.org/tax/beps/corporate-tax-statistics-database.htm. Accessed 10 Dec 2020
OECD (2020b) MLI database. https://www.oecd.org/tax/treaties/mli-database-matrix-options-and-reservations.htm. Accessed 22 Dec 2020
Olbert M, Spengel C (2017) International taxation in the digital economy: challenge accepted? World Tax J 9(1):3–46
Omar N, Zolkaflil S (2015) Profit shifting and earnings management through tax haven subsidiaries: an exploratory analysis of multinational companies. Procedia Econ Finance 28:53–58
Pinto D (2006) The need to reconceptualize the permanent establishment threshold. Bull Int Tax 60 (7):266–279

Pistone P (2016) General report. In: Lang M, Owens J, Pistone P, Rust A, Schuch J, Staringer C, Storck A (eds) Trends and players in tax policy. IBFD
Popa O (2016) Taxation of the digital economy in selected countries – early Echoes of BEPS and EU initiative. Eur Tax 55(1)
Procházka P (2019) BEPS (Base erosion and profit shifting) action plan initiated by OECD/G20: implementation status in Czechia and other CEE countries. Central and Eastern Europe in the changing business environment, 286
Richardson G, Taylor G (2015) Income shifting incentives and tax haven utilization: evidence from multinational US firms. Int J Account 50(4):458–485
Schön W (2019) One answer to why and how to tax the digitalized economy. Working paper of the Max Planck Institute for Tax Law and Public Finance no. 2019-10. https://ssrn.com/abstract=3409783. Accessed 10 July 2020. doi:https://doi.org/10.2139/ssrn.3409783
Schoueri LE (2015) Arm's length: beyond the guidelines of the OECD, Bull Intl Tax 69(12). IBFD
Schoueri LE (2016) Arbitration and constitutional issues. In: Lang M, Owens J (eds) International arbitration in tax matters. IBFD
Schoueri LE, Galdino G (2018) Action 2 and the multilateral instrument: is the reservation power putting the coordination at stake? Intertax 45(2):104
Slemrod J, Wilson JD (2009) Tax competition with parasitic tax havens. J Public Econ 93 (11–12):1261–1270
Solilová V, Nerudová D (2019) Transfer pricing rules for SMEs in the EU. In: Solilová V, Nerudová D (eds) Transfer pricing in SMEs Critical analysis and practical solutions. Springer
Stiglitz JE (2014) Reforming taxation to promote growth and equity. The Roosevelt Institute. https://www8.gsb.columbia.edu/faculty/jstiglitz/sites/jstiglitz/files/Reforming%20Taxation%20Roosevelt%20Paper.pdf. Accessed 20 May 2020
Swenson LD (2001) Tax reforms and evidence of transfer pricing. Nation Tax J 54(1):7–25
Taylor G, Richardson G, Lanis R (2015) Multinationality, tax havens, intangible assets, and transfer pricing aggressiveness: an empirical analysis. J Int Account Res 14(1):25–57
Terada-Hagiwara A, Gonzales K, Wang J (2019) Taxation challenges in a digital economy—the case of the People's Republic of China. Asian Development Bank. http://hdl.handle.net/11540/10186. Accessed 10 July 2020
Tobin G, Walsh K (2013) What makes a country a tax haven? An assessment of international standards shows why Ireland is not a tax haven. Econ Soc Rev 44(3):401–424
Tørsløv T, Wier L, Zucman G (2020) The missing profits of nations. National Bureau of Economic Research. Working Paper 24701. http://www.nber.org/papers/w24701. Accessed 1 Dec 2020
UNCTAD (2015) World investment report 2015: reforming international investment governance. United Nations publications customer service, 253. New York and Geneva: UNCTAD NATIONS. https://doi.org/10.18356/293b1525-en. https://worldinvestmentreport.unctad.org/wir2015/wir2015-ch5-international-tax-and-investment-policy-coherence/. Accessed 10 Feb 2020
van den Tempel AJ (1970) Corporation tax and individual income tax in the European communities, competition: approximation of legislation series, Brussels
Wells B, Lowell C (2014) Tax base erosion: reformation of section 482's arm's length standard. Florida Tax Rev 15(10):737–797
Wilde JH, Wilson RJ (2018) Perspectives on corporate tax planning: observations from the past decade. J Am Tax Assoc 40(2):63–81
Zoromé A (2007) Concept of offshore financial centers: In search of an operational definition. International Monetary Fund Working Paper No. 7-87. https://www.imf.org/external/pubs/ft/wp/2007/wp0787.pdf. Accessed 1 Feb 2019
Zucman G (2014) Taxing across borders: Tracking personal wealth and corporate profits. J Econ Perspect 28(4):121–148

Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion

Jana Tepperová, Jan Pavel, Marian Dobranschi, Veronika Solilová, and Danuše Nerudová

Contents

Abstract This chapter presents a comprehensive analysis of the current techniques of profit shifting and tax base erosion, namely, in relation to macro and micro perspectives. Specifically, categories of profit shifting techniques and their general channels were explained. Further, methodological approaches, current empirical researches on profit shifting and tax base erosion, and estimation of the corporate tax revenue losses were mentioned. Furthermore, it also explains in detail techniques applied for the identification of profit shifting and tax base erosion and the overall estimation of corporate tax revenue losses in the case of post-communist EU countries.

J. Tepperová (✉) · J. Pavel
Faculty of Finance and Accounting, Prague University of Economics and Business, Prague, Czech Republic
e-mail: jana.tepperova@vse.cz; pavelj@vse.cz

M. Dobranschi · V. Solilová · D. Nerudová
Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic
e-mail: marian.dobranschi@mendelu.cz; veronika.solilova@mendelu.cz; danuse.nerudova@mendelu.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_3

1 Categories of Profit Shifting Techniques and their General Channels

With respect to the categories of profit shifting techniques, four main contributors should be highlighted: Gravelle (2015), Contractor (2016), de Simone et al. (2016) and Clausing (2009).

Gravelle (2015) considers as a common method to shift profits and avoid taxation by MNEs the practice *of intracompany loans* granted to subsidiaries placed in high-tax countries in comparison with subsidiaries placed in low-tax nations. *Earning stripping* is another method for MNEs to shift profits addressed by Gravelle (2015). This technique to shift profits pertains to the intracompany loan mechanism. Earning stripping aims to use interest payments as the tool to decrease the tax base and thus lower the tax base for corporate income tax. On the other hand, the borrower is a company that, by being placed in no- or low-tax jurisdictions, would avoid paying taxes on interest income. One of the main countermeasures to overcome this profit shifting method is to limit earning stripping by imposing thin capitalisation rules. Thus, the US imposes a debt-to-equity ratio of 1.5 to 1 and does not allow interest payments in excess of 50% to be deductible if the company is not subject to US corporate income tax. Another common method to shift profits, according to Gravelle (2015), is *transfer pricing*. The countermeasure to limit profit shifting is the arm's length principle. This principle is easily applicable in the case of goods and services that have comparables on the market. However, Gravelle (2015) notes that the ability of the arm's length principle is greatly reduced in the case of intellectual property. Most patents are unique and do not have comparables on the market to establish the true price according to the arm's length principle. Therefore, MNEs can abuse intracompany trade to shift profits by overinvoicing royalty payments to subsidiaries placed in high-tax countries.

Another technique to evade corporate income tax (hereinafter CIT) according to Gravelle (2015) is the *check-the-box practice* used mainly by US MNEs. To register for income tax purposes in the US, a business can choose to be declared as a corporation, a partnership or a disregarded entity. US companies can choose whether their foreign affiliates can be treated as foreign disregarded entities of another corporation. If an MNE chooses to declare its foreign affiliates as foreign corporations (i.e., branches), then all the income obtained by these controlled foreign companies (CFCs) is subject to subpart CFC income rules and liable for corporate income tax. On the other hand, if the CFCs are declared foreign disregarded entities, then the income obtained by these entities does not fall under US tax law (Dowd et al. 2017). The last method to avoid CIT used by MNEs, assessed by Gravelle (2015), is *cross crediting*. MNEs can use the excess foreign taxes paid in one jurisdiction to offset the US tax due on other income obtained by subsidiaries of the same MNE in other countries.

Contractor (2016) notes that there are seven main tax-avoidance techniques used by MNEs to erode the tax base and shift profits from high tax to low- or no-tax jurisdictions.

The first method to shift profit shifting is represented by *exemptions or deferrals of profits* obtained by a company's foreign affiliates. This example is applicable mostly to US MNEs, where the US taxes not only the profits obtained by the parent company based on US soil but also the income obtained abroad by MNE affiliates. However, US tax law allows US MNEs' foreign income to be deferred indefinitely. The reason behind this practice is that MNEs do not remit profits back to the US. Usually, these untaxed profits are held in tax havens or are reinvested in other businesses abroad.

The second most common technique to shift profits used by MNEs is *transfer pricing*. Often, MNEs engage in artificially increasing prices between two subsidiaries to increase costs for affiliates placed in high-tax-rate countries and increase revenues for affiliates placed in low- or no-tax jurisdictions. Contractor (2016) argues that intracompany trade accounts for up to 42–55% of world trade, meaning that there is much space for unfair transfer pricing practices. This technique to shift profits and avoid taxation is more likely in particular cases where the arm's length principle is difficult to enforce (i.e., intermediate products with unique characteristics with embedded technology—intellectual property).

Royalty payments represent the third method to shift profits by MNEs from high- to low-tax countries. Contractor (2016) notes that royalty payments could help MNEs shift profits because the current business is technology intensive and most value is contained in intangible assets or proprietary technologies. Another cause of profit shifting through royalty payments is the current tax rules that allow companies to transfer patents and brands from the parent company to a holding company or subsidiary placed in a low- or no-tax country. The third cause of profit shifting through royalty payments cited by Contractor (2016) is that most tax rules across countries worldwide allow royalty payment deductions even if the patent or the invention is held by the subsidiary of the same MNE.

The fourth technique to shift profits assessed by Contractor (2016) is *intracorporate loans*. This practice is used mainly because the borrower can deduct its interest expenses and thus lower the tax base to pay less CIT. The current tax rules allow interest payment deductions without differentiating who is the real creditor (e.g., the source of loans is a subsidiary controlled by the same MNE or an external financial entity). Profit shifting through intra-corporate loans appears when the borrower company and the lender are subsidiaries owned by the same MNE, except they are based in different countries. Usually, the borrower is placed in a high-tax-rate country, and the lender is based in a low- or no-tax country.

The fifth technique of profit shifting is *parent overhead and cost concentration to the parent company,* which is placed in a high-tax country. Even if the full overheads and costs are not born entirely by the parent company, these expenses are not spread to other subsidiaries.

The sixth method to shift profits is the *use of tax havens by the creation of shell companies* (Contractor 2016). Shell companies based in tax haven countries can be used by MNEs as parking places for profits unrepatriated to the US. This practice is mostly used by US-based MNEs to avoid CIT and maintain an indefinite deferral of foreign profit taxation. Another use of tax haven countries is the so-called

"round-tripping" scheme, used especially by Chinese MNEs to channel FDI in China. First, the outbound Chinese FDI is placed in small tax haven countries such as the Caribbean Islands or Hong Kong. Then, this out-bound FDI returns to China under the pretext of foreign investment, which benefits from special tax breaks and other benefits from the Chinese government.

The seventh technique to evade taxation and shift profits is *inversion*. Contractor (2016) gives the example of the pharmaceutical company Pfizer, which is based in the US, merging with the Ireland-based company Allergan in 2016. An inversion represents a headquarters shift to a lower tax country by acquiring or merging with another company.

De Simone et al. (2016) investigate other techniques to shift profits. The authors analyse the so-called *shift-to-loss strategy* to avoid taxation. This unconventional strategy assumes that MNEs not only direct profits to subsidiaries based in low-tax countries but also shift profits to unprofitable, loss-reporting subsidiaries in high-tax jurisdictions. In other words, even if profitable subsidiaries based in low-tax countries would pay less tax, in comparison with them, the unprofitable subsidiaries based in high-tax countries have an advantage, since reporting a loss means that the marginal tax rate is zero. In this case, the MNEs adopt a shift-to-loss strategy by moving profits to unprofitable subsidiaries, reporting smaller losses and decreasing the tax burden of profitable subsidiaries. De Simone et al. (2016) found that this nonconventional profit shifting technique is performed using intracompany trade, where transfer prices are adjusted between the profitable and unprofitable subsidiaries to shift income towards a zero tax-paying entity.

With respect to discrepancies between studies that assess profit shifting techniques, there are opposite classifications of profit shifting techniques. Clausing (2009) divides profit shifting techniques into two distinct categories, namely, *financial tools as a response to the taxation of corporate income*, such as transfer prices assigned to international trade, the financial structure of subsidiaries and changes in the locations of royalties and intangibles, and *the real response of MNEs to changes in CIT rates* associated with the complete movement of assets, employment and economic activities in low-tax countries. Heckemeyer and Overesch (2017) consider that the strategic use of debt (i.e., intracompany loans) represents tax-efficient financial techniques and that nonfinancial techniques are represented by transfer pricing and licensing.

According to the previous categorisation of profit shifting techniques, there can be distinguished different channels through which multinational companies can shift taxable profits to gain tax advantages. Even though some ATP structures might be very sophisticated and difficult to identify, there are basic tax strategies (channels) that can be observed and remain at the focus of empirical research. Among these channels typically rank the following:

- debt financing and related interest payments, generally known as *debt channels*—as intradebt financing belongs to one of the most significant profit shifting

channels—rely on the deductibility of interest payments under current corporate tax systems[1];
- *transfer pricing channel*[2]; and
- location of intellectual property with related royalties, generally known as the *IP profit shifting channel.*[3]

Different tax strategies can be researched using appropriate datasets. However, data availability predetermines to a great extent the methodology used.

Debt financing as a strategy for aggressive tax planning makes frequent use of intragroup loans. The related interest payments serve as a means to lower the tax base in high-tax jurisdictions. Furthermore, interest payments are also often paid without withholding taxes and are untaxed at the level of their recipient, which can often be achieved using a specific combination of double tax treaties and domestic law rules.

Transfer pricing as the ATP strategy and the second main profit shifting channel is typically used to lower the tax base in the high-tax country and shift the taxable profit to low-tax jurisdictions by setting expedient prices on goods and/or services with the aim of minimising the overall tax burden of the MNE group. Company-level data are typically used in transfer pricing and the related research employing microeconomic analysis. For this purpose, databases such as AMADEUS and ORBIS are often used. Valuable for such research are data from tax returns on the related persons' transactions. A specific issue in transfer pricing represents consulting services or management fees, as their provision can be quite easily overvalued. Thus, consulting services/management fees can be used as a means for tax base erosion and profit shifting via transfer mispricing. This specific issue can also be partly researched with the use of macroeconomic data from balances of payments, as they include consulting services as a specific item.

Issues very closely related to transfer pricing are also specific arrangements of the placement of intellectual property, followed by a set of licence agreements based on which the associated royalty payments are paid. In addition to transfer pricing and debt financing, such arrangements represent the third main profit shifting channel. Intangible assets and intellectual property, such as brands, the results of research and development and others,[4] can be located artificially at a subsidiary in a tax haven or countries offering some preferential tax regime to which service fees/royalties are then paid by other parts of the MNE, resulting in tax exemption or taxing under a

[1]For more details, see also Heckemeyer and Overesch (2013), Johannesen (2014), Riedel (2018), Buettner and Wamser (2013), Desai (2005), Fuest et al. (2011), Huizinga and Laeven (2008) and others.

[2]For more details, see also Bartelsman and Beetsma (2003), Clausing (2003), Peralta et al. (2006), Fuest and Riedel (2012), Davies et al. (2018), Solilová and Nerudová et al. (2018) and others.

[3]For more details, see also Lipsey (2010), Auerbach et al. (2017), Bryan et al. (2017), Dischinger and Riedel (2011), Seabrooke and Wigan (2015), Taylor et al. (2015) and others.

[4]For definitions of intellectual property and intangible assets, see Transfer Pricing Guidelines (OECD 2017).

tax-preferential regime. As discussed by OECD (2017), pricing such intangible assets poses several major challenges, making it fundamentally difficult to detect profit shifting from actual prices. Moreover, royalty payments, similar to interest, lower the tax base in high-tax jurisdictions and often make use of no withholding tax and zero tax on the recipient side. The availability of data on interest, royalties and dividends in balances of payments also allows for the observation of such flows in macroeconomic studies (e.g., Pavel and Tepperová 2020).

The European Commission (2015, 2017) identified seven basic models of ATP,[5] together with 33 indicators that allow or promote aggressive tax planning behaviour. These basic ATP models comprise a set of conditions and rules in the countries involved and describe how each such structure works. From the models, ATP structures clearly are not straightforward flows of payments between two (high/low-tax) jurisdictions. Both high- and low-tax jurisdictions are involved in the structures. However, some countries serve as so-called conduit countries. These countries often report high levels of FDIs, both inward and outward. Conduit countries are often effective due to the use of double tax treaties when an investment location is set up with the aim of so-called treaty shopping (Weyzig 2013). The identification of possible conduit countries due to favourable combinations of double tax treaties, corporate income tax rates, and withholding taxes on dividends points out that the UK, Luxemburg and the Netherlands are attractive in this context (van't Riet and Lejour 2018). The authors also conclude that treaty shopping as a strategy lowers the tax burden on paid dividends by 6 percentage points. Bolwijn et al. (2018) show that 30–50% of bilateral FDIs are structured to flow through such conduit countries.

Exploration of the specific indicators within the tax systems that enable the creation of ATP structures is very important. Therefore, countries try to combat ATP structures and prevent such behaviour by employing transfer pricing regulations, thin capitalisation, or other interest-limitation rules, reclassification of interest to dividends, CFC rules, hybrid mismatches rules, and others.

2 Methodological Approaches and Empirical Research on Profit Shifting and Tax Base Erosion

The first studies focussing on the relationship between taxable profit and effective taxation in the jurisdiction were from the 1990s (e.g., Grubert and Mutti 1991; Hines Jr and Rice 1994). Grubert and Mutti (1991) provide an empirical analysis of three relationships, each supporting the existence of profit shifting. They explore the impact of taxation on the after-tax volume of profit, foreign investments, and destination of sales. All three models indicate the profit shifting tendencies of US multinationals. US corporations and concerns that make extensive use of tax havens

[5]For more details, see European Commission (2015) and European Commission (2017).

and may undesirably impact the US domestic tax base were at the core of the study by Hines Jr and Rice (1994). The authors also provide evidence for the existence of profit shifting, as according to their results, the relative amounts of profit were sensitive to the local tax rates. Aware that profit shifting should not be confused with real activities, they adjusted for the companies' financial structures and capital and labour levels. In particular, Hines Jr and Rice (1994) propose a model to investigate how the profits reported by US affiliates are affected by tax differentials. The authors compare the lost after-tax US earnings of one US dollar investment $(1 - \boldsymbol{\tau})$ with after-tax earnings in tax haven countries, taking into consideration that the US corporate income tax rate $\boldsymbol{\tau}$ is higher than the CIT rate in tax havens $\boldsymbol{\tau}^*$. To analyse the impact of tax differentials, Hines Jr and Rice (1994) build a model that is able to capture the impact of true income and shifted income on reported before-taxation profits.

Hines Jr and Rice (1994) assume that true income can be represented by labour and capital employed in each of the US affiliates, while the shifted income is represented by tax differentials. Therefore, the model of Hines Jr and Rice (1994) becomes as follows:

$$log\,\boldsymbol{\pi}_i = \beta_0 + \beta_1\left(\boldsymbol{\tau}_i^* - \boldsymbol{\tau}_j\right) + \beta_2(\,log\,\boldsymbol{L}_i) + \beta_3(\,log\,\boldsymbol{K}_i) + \boldsymbol{X}_i\gamma + \epsilon_i \qquad (1)$$

where $log\boldsymbol{\pi}_i$ represents the reported pre-tax profits in US affiliate i in logarithms, $\left(\boldsymbol{\tau}_i^* - \boldsymbol{\tau}_j\right)$ represents the tax differentials constructed as the difference between the CIT rate imposed in the host country where affiliate i is based and the CIT rate $\boldsymbol{\tau}_j$ of the US parent company; $log\boldsymbol{L}$ represents the labour input usually proxied by wage bills; $log\boldsymbol{K}$ represents the capital input proxied by fixed tangible assets; $\boldsymbol{X}_i\gamma$ are the country-specific endogenous factors; and ϵ_i represents the error term. One of the country-specific exogenous factors used by Hines Jr and Rice (1994) is the local productivity factor proxied by GDP per capita.

In reviewing the empirical literature with respect to profit shifting techniques, one of the main contributions is Dharmapala (2014). She also starts with the work of Hines Jr and Rice (1994) and Grubert and Mutti (1991) as pioneering studies. Dharmapala (2014) points out that the dominant approach to empirically analysing profit shifting practices is the "Hines-Rice" method. Hines Jr and Rice (1994) were the first economists to propose a methodology to investigate and assess profit shifting. As mentioned above, the methodology used by Hines Jr and Rice (1994) to investigate whether profit shifting does occur assumes that the pre-tax income of an affiliate represents the sum of "true" and "shifted" income. This "true" income is a result of employing labour and capital. Thus, the most important independent variables used by the authors are fixed tangible assets and employment compensation. Hines Jr and Rice (1994) assume that the size of shifted income is determined by the tax incentives in different jurisdictions. The basic tax incentive considered by the authors is the tax difference faced by the parent company based in one country and the tax rates faced by the foreign subsidiary.

The most important coefficient in the Hines Jr and Rice (1994) model is β_1 because it captures the incentive to shift income from a high- to a low-tax country. Dharmapala (2014) argues that β_1 represents the marginal effect or a small change in pre-tax profits due to a tax rate increase, holding all other variables constant. The usual method to build a tax differential is to subtract the tax rate of the parent MNE from the tax rate faced by the affiliate. Moreover, Dharmapala (2014) emphasises that the empirical literature (note) builds a tax differential based on the difference between the tax rate faced by an affiliate and the average CIT rate faced by all sister companies from the same MNE group based elsewhere.

Furthermore, Dharmapala (2014) notes that the literature uses the statutory CIT rate instead of the effective tax rate because the former is able to capture the impact of exogenous tax policy implemented by the government. In contrast, the effective tax rate can capture only endogenous company-specific choices due to various tax credits and deductions used to reduce such companies' tax burden. Therefore, according to Dharmapala (2014), there is a concern regarding the endogeneity of tax differentials used by Hines Jr and Rice's (1994) model because CIT rate changes in one country might be affected by (i.e., or follow) changes in CIT rates in other countries. Even if the use of the statutory CIT rate is more capable of isolating the impact of exogenous tax policy, which is not under the control of the analysed companies, Dharmapala (2014) stresses that there is a risk of misalignment with the true tax rate faced by the affiliates. Therefore, it is customary to add time and company fixed effects to capture other unobserved factors that could affect the profitability of each analysed company.

Another particularity of Hines Jr and Rice (1994) is that empirical analysis is based on cross-sectional data derived from the Bureau of Economic Analysis (BEA) for 1982. These data are aggregated at the country level, leading to an empirical analysis at the macrolevel, even though the basic data are microdata.

As noted by Dharmapala (2014), the model of Hines Jr and Rice (1994) is flexible enough to be applied to panel data analysis, becoming the following:

$$log\,\boldsymbol{\pi}_{i,t} = \beta_1 + \beta_2\left(\boldsymbol{\tau}^*_{i,t} - \boldsymbol{\tau}_{j,t}\right) + \beta_3(\,log\,\boldsymbol{L}_{i,t}) + \beta_3(\,log\,\boldsymbol{K}_{i,t}) + \boldsymbol{X}_{i,t}\gamma + \mu_i + \delta_t + \epsilon_{i,t} \tag{2}$$

All elements remain as described in Eq. (1), but the data refer to affiliate i at time t. Additionally, two new terms are added: μ_i, which is the company fixed effect, and δ_t, which is the time fixed effect.

Furthermore, Dharmapala (2014) both discusses the novel development of this approach (Dyreng and Markle 2013) and proposes other research strategies to capture profit shifting (Dharmapala and Riedel 2013). Dharmapala and Riedel (2013) follow the issue of profit shifting through a multinational parent firm to its foreign subsidiaries, arguing that part of the profit is shifted to subsidiaries from low-tax countries only. Provided that profit shifting is present, it is thus possible to observe a different approach to intragroup profit flows towards foreign subsidiaries in high- and low-tax countries. A different methodology was employed by Dyreng

and Markle (2013). They compare the location of profits and earnings for domestic and foreign entities. Based on the differences between the observed variables, they deduce profit shifting.

Devereux and Maffini (2007) also provide a detailed analysis of empirical literature that assesses the issues of profit shifting. The authors propose a more complex analysis of profit shifting by investigating the impact of taxation on several aspects regarding MNEs' locational decisions. Devereux and Maffini (2007) found that the effective average tax rate plays a more significant role than do marginal tax rates in the case of discrete location choices of MNEs. The differences in statutory tax rates have a significant impact on the location of income (i.e., declared profit). Tax differentials, according to Devereux and Maffini (2007), have affected financial policy, the repatriation of profits and intracompany transfer prices.

Another considerable contribution to the literature regarding the assessment of profit shifting techniques is made by the *group of empirical studies that use US company-level data*, such as Clausing (2006, 2009), Schwarz (2009), Keightley and Stupak (2015), Flaaen (2017) and others.

Clausing (2006) analyses the impact of tax incentives on intracompany trade. The author uses the data provided by the BEA for the period 1982–2000. The data are concerned with US-based multinationals and US international trade. The author demonstrates that tax incentives do affect the international intracompany trade balance due to potential tax savings. In his other contributions in 2009, he uses the data provided by BEA for US MNEs to analyse the sensitivity of profit shifting due to tax differences between countries. When a host country where a subsidiary owned by a US-based MNE decreases the tax rate by 1%, then the subsidiary will declare 0.5% more profit in response to the lower tax burden. Clausing (2009) found that in 2004, the financial techniques used by US MNEs to shift profits lowered US CIT revenues by 35%, or USD 180 billion. The real movement of assets and employment to avoid high CIT rates has decreased US CIT revenues by 18%, or USD 80 billion.

Schwarz (2009) uses the BEA database to research profit shifting techniques employed by US-based MNEs. The author finds that US-owned subsidiaries have a lower equity ratio in high-tax-rate countries than do affiliates in low-tax countries. Thus, the strategic use of debt to shift profits from high- to low-tax countries plays an important role. Additionally, the author finds retained earnings are lower in high-tax countries due to tax deferral rules. Schwarz (2009) concludes that US-controlled subsidiaries report higher pre-tax profitability in low-tax countries than do affiliates based in high-tax countries. Keightley (2013) analyses the occurrence of profit shifting by studying the economic activities of US MNEs. The author uses a rather simple method of comparison between countries where US MNEs have real economic activities and preferred countries or tax havens where profits are shifted. Comparing the two groups of countries, Keightley (2013) found that US MNEs report over 43% of their overseas profits in countries such as Bermuda, Ireland, Luxembourg and Switzerland in 2008, while hiring only 4% of foreign labour and making only 7% of total foreign investments in these countries. In comparison, US MNEs report only 14% of overseas profits in countries such as Australia, Canada, Germany, Mexico and the United Kingdom, while employing 40% of foreign labour

and investing in these country accounts for more than 34% of their foreign investments. These stark discrepancies between the place of real economic activities and reported profits show that US MNEs do use profit shifting to move income from high- to low-tax countries.

Keightley and Stupak (2015) use the US BEA database to examine the main routes of profit shifting by US MNEs. The BEA database provides a detailed set of data regarding the financial operations of US MNEs, including reported profits and their location, and country-level FDI data. The authors conclude that 65% of profits reported by US-owned MNEs are in tax haven countries and tax preferred countries such as the Netherlands, Ireland, Luxembourg and Bermuda. The authors observe that 47% of outbound FDI by US MNEs are directed to tax preferred countries or tax havens. Another strategy of US MNEs is to channel investment in low- or no-tax countries by using holding companies. The authors stress that FDI channelled through holding companies has increased in the last 3 decades from 9.4% to 46.2%.

Gravelle (2015) assesses the role of tax havens in profit shifting by US MNEs. The author lists 50 countries that bear the characteristics of tax havens: low or no taxes, lack of transparency and lack of effective exchange of information. The author uses data regarding controlled foreign companies of US MNEs provided by the Internal Revenue Service and US Statistics of Income. Gravelle (2015) finds that the profits declared by the US CFC in tax havens and tax preferred countries such as Ireland and the Netherlands have increased significantly from 2004 to 2010, signalling profit shifting practices to avoid taxation.

Flaaen (2017) analyses transfer pricing techniques of US MNEs. The author studies the profit shifting behaviour of US MNEs by estimating the impact of CIT rate differences and dividend repatriation tax rates on transfer prices. Flaaen (2017) uses microlevel data for US MNEs from the Linked/Longitudinal Firm Trade Transaction Database. The author finds evidence of profit shifting though transfer prices, where a gap is present between the arm's length principle and related party export prices. The export prices towards low-tax countries tend to be under-priced, and the import prices towards high-tax countries tend to be overpriced. The results obtained by Flaaen (2017) show that US MNEs underreported USD 6 billion of exports and overreported USD 7 billion of imports.

Other groups of empirical studies *use EU company-level data*, such as Dischinger (2008), Overesch (2009), Huizinga and Laeven (2008), Beer and Loeprick (2015), Heckemeyer and Overesch (2017) and others.

Dischinger (2008) emphasises three major categories of profit shifting: intracompany trade with overpriced intermediate goods, the use of overhead costs such as R&D and headquarters services that are strategically allocated to subsidiaries located in low-tax countries, and intercompany financial transactions. The author uses the European micro database AMADEUS to analyse CIT avoidance and finds evidence of profit shifting through subsidiaries based in EU countries. Dischinger (2008) found a decrease in pre-tax profits by 7% if the tax difference between a subsidiary and its immediate shareholder increases by 10%. Moreover, Dischinger (2008) argues that if the parent company owns a larger share of overseas affiliates, profit shifting behaviour tends to intensify. Overesch (2009) adopts a different strategy to

analyse the profit shifting issue. The paper bases its empirical analysis on the assumption that an MNE's real investment in a high-tax country depends on its opportunities to shift profits to a low-tax country. The author found that there is a positive relationship between the size of foreign investment and tax differentials.

Barion et al. (2010) study profit shifting by strategic use of debt by MNEs based in Europe. The authors conclude that subsidiary leverage tends to increase if the statutory corporate income tax rate is high, and leverage tends to stagnate if the parent company statutory CIT rate is higher than the tax rate imposed on the subsidiary.

Huizinga and Laeven (2008) analyse profit shifting by EU-based MNEs using the microlevel data compiled by Bureau van Dijk (AMADEUS). Following the traditional approach of investigating the responsiveness of reported profits to tax differentials, the author introduces a new approach, analysing tax differences between affiliates of the same MNE based in different countries. The average semi-elasticity of reported profits by European subsidiaries is found to be 1.43. Thus, the authors find a substantial response of the reported profits that validates profit shifting among European countries. Huizinga and Laeven (2008) conclude that intra-European profit shifting depends on the international structure and international tax regime that MNEs face in each country where their subsidiaries are based.

Weichenrieder (2009) analyses profit shifting behaviour using inbound and outbound German FDI data. The method adopted by the author is to analyse the correlation between the home country tax rates where the MNEs are based with the after-tax profitability reported by German affiliates. The author does find evidence of profit shifting, where profitable affiliates increase their reported net profit by 0.5% as a response to a 10% increase in the parent's home country tax rate. Buettner and Wamser (2013) use the microlevel database of all German multinationals from the German Central Bank to analyse the amount of profit shifting done by German MNEs using strategic intracompany loans. The author uses the internal loans between subsidiaries owned by German MNEs and tax differentials between multinational groups. The results obtained show that internal loans tend to react significantly to tax differentials between subsidiaries placed in low-tax countries. Vicard (2015) analyses the profit shifting of MNEs in France. The author focusses his empirical analysis on profit shifting by transfer pricing. The study uses the firm level of export and import data by destination and product reported by foreign-owned subsidiaries in France. Vicard (2015) found that the price wedge between the arm's length principle and the tax differential varies greatly depending on the partner country. The author argues that MNEs manipulate transfer prices in such a manner that they manage to decrease the value of French exports by 0.7% and increase the value of imports by 0.5% in 2008. Due to this price manipulation intended to shift profits to low-tax countries, the MNEs based in France managed to shift approximately USD 8 billion in 2008.

Saunders-Scott (2015) analyses the relationship between profit shifting methods, namely, transfer pricing and intracompany loans. The author uses the Bureau van Dijk ORBIS database to collect data regarding the financial information of European multinationals. To investigate the relationship of transfer pricing over intracompany

loans, the author uses the pre-tax income reported and taxes and the responsiveness of the debt-to-equity ratio to government changes in interest deduction rules. Saunders-Scott (2015) finds that earning stripping rule implementation decreases profit shifting through transfer pricing. However, MNEs tend to treat intracompany trade and intracompany loans as substitutes.

Beer and Loeprick (2015) use the ORBIS database to analyse the main drivers of transfer pricing and potential countermeasures. The authors use as profit shifting enhancing factors the intangible asset endowment of subsidiaries and the supply chain complexity of MNEs. Beer and Loeprick (2015) found that if subsidiaries have a greater ratio of intangible to total assets, then they tend to report less profits if the tax rate increases compared with subsidiaries with no intangibles. In the same manner, as the supply chain of subsidiaries becomes more complex, their reported profits tend to decrease as the tax rate increases. The authors conclude that the implementation and enforcement of strict transfer pricing regulations do show a steep decrease in profit shifting though this practice.

Fuest et al. (2013) analyse a profit shifting technique that uses strategic placement of intellectual property rights. The authors present the case of the "Double Irish Dutch Sandwich", used to minimise the tax base and avoid taxation by exploiting the low tax rates of Ireland and the Netherlands and benefitting from withholding tax-free regimes in EU countries. The authors recommend the implementation of a new or to extend the existing withholding taxes on interest and royalty payments, which could limit tax planning and profit shifting.

Janský and Kokeš (2015) analyse the financial and ownership data of companies operating in Czechia, aiming to find evidence of profit shifting. The authors also use data regarding 4124 multinational companies that operate in Czechia. Janský and Kokeš (2015) found that MNEs with links to tax haven countries have a positive impact on the debt-to-equity ratio of subsidiaries. Moreover, Janský and Kokeš (2016) research the ability of MNEs to shift profits from Czechia to three European tax havens, namely, the Netherlands, Switzerland and Luxembourg. The authors found that companies linked to the above-stated countries show a higher debt-to-equity ratio, which indicates profit shifting through strategic use of debt. Marques and Pinho (2016) analyse the effect of transfer pricing tightening on profit shifting by European multinational companies. The authors conclude that the sensitivity of tax rate differences to pre-tax profits tends to decrease if the legislation and rules of transfer pricing are stricter.

Heckemeyer and Overesch (2017) analyse which factors have a greater impact on the profit shifting behaviour of MNEs. The starting point of this research is the negative correlation between the reported profits of parents and subsidiaries and the level of the local tax rate. Heckemeyer and Overesch (2017) perform a meta-analysis using 25 primary empirical studies that amount to 238 estimates representing the tax-rate elasticity of reported parent and subsidiary profits. The authors predict that if the host country decreases the corporate tax rate by 1%, then the tax semi-elasticity of pre-tax profits will increase by 0.8% in absolute terms. Heckemeyer and Overesch (2017) reach opposite conclusions regarding the most commonly used techniques to shift profits used by MNEs compared with previous studies. While Grubert (2003)

considers that profit shifting is done equally through intracompany loans and intracompany trade, Dharmapala and Riedel (2013) find that the strategic use of debt is the main method used to shift profits from high- to low-tax countries. In contrast, Heckemeyer and Overesch (2017) conclude that nonfinancial methods to shift profits dominate the strategic use of debt. The same conclusion was reached in an earlier study by Huizinga et al. (2008), where transfer prices and royalty payments dominate intracompany loans in terms of the main choice to shift profits and avoid taxation. Fatica and Gregori (2020) analyse the amount of profit shifting by European multinational banks. The authors use data from the novel country-by-country reports database since its introduction in 2015. Using the Hines Jr and Rice (1994) approach, Fatica and Gregori (2020) find that approximately 21% of the profits reported by European multinational banks are shifted towards tax haven countries. Alexander et al. (2020) analyse the tax policy changes in Europe between 2003–2013 concerned with addressing profit shifting. The authors find a downward trend of profit shifting in Europe mainly due to tax base broadening and tax enforcement increases. Li and Tran (2020) empirically analyse profit shifting by foreign-owned subsidiaries based in Australia. The authors find that MNEs make extensive use of intragroup transfer prices and strategic use of intragroup debt to shift profits from Australia to low-tax countries. Dutt et al. (2019) build a new database using country-by-country reports for over 100 multinational banks that were headquartered in the EU between 2014 and 2016. Using this new database, the authors uncover a significant disconnection between the profits reported in tax haven countries and their real economic activity. In comparison with the existing databases that report the economic activity of private banks, such as ORBIS, the new country-by-country report data reveal a large amount of profits and real economic activity reported in tax haven countries. These firm-level data were unavailable for a majority of the subsidiaries based in tax havens. Dutt et al. (2019) find that the median profit per employee reported by bank subsidiaries based in tax havens is 2.5 times higher than the profit per employee reported in the EU, where multinational banks have their headquarters. Moreover, Dutt et al. (2019) reanalyse the profit before taxation semi-elasticity to tax differentials using the novel database and find an even higher negative response to the tax differential, up to −4.6, in comparison with smaller semi-elasticities found in the primary literature. The authors conclude that the introduction of country-by-country reporting by MNEs greatly increased transparency regarding real economic activity at the global level and improved the ability to determine the amount of profit shifting.

Bilicka and Seidel (2020) analyse the joint effect of taxation and corruption on profit shifting behaviour using data for European MNEs. The authors build a corruption-weighted tax differential and calculate the impact of this composite tool on tax revenue elasticity in European countries. Bilicka and Seidel (2020) found that profit shifting is indeed significantly higher in countries where tax agencies are more affected by corruption.

The literature that approaches the issue of *profit shifting at the global level* is also well represented in the current debate. Dischinger et al. (2014) find that MNEs tend to shift profits between subsidiaries and parent companies even if the headquarters

are located in high-tax countries. This behaviour is enhanced, especially when the parent company is in a low-tax country. The authors emphasise that MNEs are reluctant to shift profits in jurisdictions other than where the parent company is based. Therefore, Dischinger et al. (2014) conclude that in addition to the existing measures intended to lower profit shifting, countries should also seek to attract the locating of headquarters of MNEs to reduce profit shifting. Fuest et al. (2013) analyse profit shifting by MNEs using intellectual property (hereinafter IP) arrangements and exploiting tax law loopholes. This type of intragroup profit shifting uses IP rights to shift income between sister-companies based in high-tax countries to subsidiaries based in low-tax jurisdictions. The authors emphasise that this type of profit shifting can be reduced by adopting an extension of residence taxation and source taxation. Additionally, Fuest et al. (2013) propose tightening the CFC rules and stricter reporting and transparency requirements. Hines Jr (2014) approaches the issue of base erosion and profit shifting from the policy measures point of view. Looking at the current literature concerned with BEPS, Hines Jr (2014) acknowledges that BEPS represents a serious problem that affects private and public sectors. However, the author emphasises that policy measures that are obsessively focussed on eliminating the BEPS risk undermining economic efficiency and stimulate even more aggressive tax competition among countries. This unwanted effect will lead to even lower tax collection in public budgets. Buettner et al. (2018) analyse the impact of anti-profit shifting rules on FDI. The authors assess two main profit shifting techniques—transfer pricing and intracompany strategic use of debt. The authors found that increasing thin-capitalisation rules has a negative impact on FDI inflow, especially in countries with high corporate income tax rates. Regulation regarding transfer pricing is found to have no significant effect on FDI.

Knoll and Riedel (2019) research the effectiveness of anti-tax avoidance legislation in the case of intellectual property profit shifting. The authors conclude that transfer pricing laws have limited effectiveness in lowering profit shifting by IP. However, the authors emphasise that deduction limits and strong CFC rules inhibit IP-based profit shifting.

In addition to the breakdown of empirical research according to the source of the data used (US-based data, EU-based data, or global-based data), an overview of the measuring approaches to profit shifting and tax base erosion generally *split the methodology into the macro and micro level,*[6] depending on the data used (OECD 2015, p. 24). Microanalyses make use of company-level data, typically from tax returns or specific databases, such as AMADEUS and ORBIS. Macroanalyses, in contrast, build mostly upon data from the national accounts, balance of payments statistics, and the amounts of the FDIs and/or aggregated tax statistics.

From this perspective, a considerable contribution is represented by Bradbury et al. (2018), who point out drawbacks of both the macro and micro approaches, emphasising underrepresentation of developing countries in most of the available data sources. On the side of microdata, they also state that commercial databases for

[6]For more detail, see the following sections.

company-level data contain non-random samples of MNEs, which may skew the resulting estimates.

Furthermore, Bradbury et al. (2018) point out two key methodological issues to be approached with care when either the micro or macro methodology is involved. First, the question of how to separate profit shifting and tax base erosion from real activity needs to be addressed. Second, the decision on the tax rate used within the analysis is also very important. The first issue reflects on the question of what "BEPS" is (and is not) at its core. Profit shifting and tax base erosion relate to aggressive tax planning strategies that take advantage of mismatches and loopholes in tax rules with the aim of reducing effective taxation. The specification of profit shifting and tax base erosion is difficult, as it needs to be distinguished from tax planning that is consistent with real economic activities. At the same time, it is not the practice of tax avoidance that is unequivocally unlawful. There is no clear-cut borderline in the definition of tax planning, tax avoidance, and aggressive tax planning, the latter being at the heart of profit shifting and tax base erosion (e.g., Oats and Tuck 2019; Fuest and Riedel 2009). Not having any clear theoretical base makes it even more challenging to choose the right approach to the relevant data. Moreover, the available data have their own limitations, differentiating between tax base erosion (and profit shifting) and real activity. Based on the given facts, Bradbury et al. (2018) give examples of the measurement of intangible assets, labour, and location of sales where available statistics might be misleading.

An interesting view is presented by Crivelli et al. (2016), who research so-called spillover effects in tax policy. They distinguish between base spillover and strategic rate spillover. Based on their framework, base spillover occurs when the tax base of one country is impacted by the tax policy of another country. Base spillover is further divided into the part that is due to real activity and the part when only the profit is shifted without any real substance of the investment. It is significant to distinguish between the two, as only the latter can be considered tax avoidance. Strategic rate spillover considers the tax policy changes of one country made based on the other countries' tax policy changes. With panel data for 173 countries over 33 years, they conclude that the base spillover effect is a more significant issue for developing countries than for developed economies.

National corporate tax rates, tax rate differentials and their effects on corporate tax burden are also an interesting part of many studies on profit shifting and tax base erosion. Different types of tax rates are adopted across the studies, and there are different strategies of integrating the tax rate variables into the models. The fundamental choice is usually between the statutory (e.g., Crivelli et al. 2016) and effective tax rates. Effective tax rates can be used in different forms (de Mooij and Ederveen 2003). Average tax rates that are computed based on real micro- or macro-data on corporate taxes paid, are often used (e.g., Cobham and Janský 2018; Clausing 2016). Further variations in the form of marginal and effective tax rates can be calculated based on the applicable tax law (de Mooij and Ederveen 2003). Some studies reflect on a special tax on passive income (dividends, royalties and/or interest), as these special taxes often differ from the corporate tax rate and represent a part of the common tax policies among the countries (EU Parent-subsidiary

Directive, double tax treaties). Most of the studies use tax rates as independent variables while researching their impact on profit shifting and tax base erosion measured via various approaches. In contrast, Huesecken and Overesch (2015) research how special tax agreements, so-called advance tax rulings, impact the effective tax rates of multinational corporations.

As is visible, the relevance of studies on profit shifting and tax base erosion significantly increased after 2009, when states were forced to find other sources following the global financial crisis. Until the worldwide crisis, tax optimisation, including aggressive tax planning, was tolerated or even supported as an important economic driving force (Jareš 2014). Moreover, in 2013, the Base Erosion and Profit Shifting (BEPS) project started, when OECD (2013) emphasised that tax base erosion poses a risk for tax revenue, tax sovereignty and tax fairness across OECD countries and non-OECD countries alike. Aggressive tax planning structures (hereinafter ATPSs), profit shifting and tax base erosion have received notable attention in connection with that project. Since 2015, anti-abuse measures have been discussed and introduced in many countries based on the published BEPS final recommendations (OECD 2015). In 2016, the European Union introduced the ATAD directive to ensure harmonised implementation of the main BEPS recommendations, such as controlled foreign corporation (CFC) rules, interest limitation rules, and rules against hybrid mismatches allowing double deductions and exit taxation.

3 Estimation of the Corporate Tax Revenue Losses

According to Devereux and Maffini (2007) and Heckemeyer and Overesch (2017), the empirical literature regarding profit shifting and tax base erosion is driven mainly by data availability rather than developing new methods of examining profit shifting. In the previous section, we group the empirical studies according to the country according to the data source (i.e., United States of America) or group of countries (i.e., the EU) on which the empirical analysis is based. The state of the current literature regarding profit shifting analysis presents a polarisation, where the empirical studies mainly use US or EU company-level data and, to a lesser extent, that of other countries (i.e., China and India). Furthermore, several studies have focussed on the separate channels of profit shifting and tax base erosion and consequently on the estimation of the volume of corporate tax revenue losses.[7]

Before we refer to empirical studies estimating corporate tax revenue losses in a particular country, we would like to highlight the overall estimation. The OECD (2015) emphasises that the overall BEPS magnitude is significant, which translates into annual losses of 4–10% of CIT revenues or USD 100 to 240 billion. UNCTAD (2015), analysing the difference between the share of inward FDI from tax havens and the corresponding return on total FDI stock, found that an average USD

[7]For more details, see the sections above.

450 billion is shifted from developing countries to offshore investment centres, which leads to a yearly tax revenue loss of USD 90 billion. Another study based on FDI data estimates the total amount of annual revenue losses to range from USD 90 billion to USD 280 billion (Janský and Palanský 2019; Tørsløv et al. 2018; Cobham and Janský 2018; Clausing 2016). Specifically, Cobham and Janský (2018) adopted the model proposed by Crivelli et al. (2016) to re-estimate the global scale of profit shifting using a new database. The authors found that the global amount of profit shifting done by MNEs is on average USD 500 billion. Janský and Palanský (2019) estimate the amount of profit shifting as over USD 650 billion in 2016 (i.e., tax losses of USD 196 billion) in countries worldwide using data on global FDI. This amount of income shifted represented 0.9% of the world GDP or almost 6% of the total profits reported by companies worldwide.

Other studies focus on a particular country or area. Clausing (2009) states that in 2004, the financial techniques to shift profits used by US MNEs lowered US CIT revenues by 35%, or USD 180 billion. Moreover, the real movement of assets and employment to avoid high CIT rates has decreased US CIT revenues by 18%, or USD 80 billion. The latest estimation by Clausing (2016) presents a tax revenue loss of up to USD 111 billion on an annual basis. Davies et al. (2018), using French firm-level data, estimated that tax avoidance through transfer pricing in France amounts to 1% of corporate tax collected by tax authorities. Similarly, also with employment of French firm-level data, Vicard (2015) estimates that profit shifting through transfer prices reduced the French corporate tax base by USD 8 billion in 2008. Alvarez-Martinez et al. (2018) analyse the amount of profit shifting done by MNEs from the European Union, Japan and the US and estimate that, on a yearly basis, the EU loses more than EUR 36 billion in CIT tax revenues, Japan loses EUR 24 billion EUR, and the US loses more than USD 100 billion. As pointed out previously by Slemrod and Wilson (2009), Alvarez-Martinez et al. (2018) stress that the negative effect of profit shifting in the EU is leading to a necessary increase in consumption taxes to offset the loss of CIT revenues due to profit shifting. This offsetting measure leads to 0.2% GDP net loss in the EU and close to a one-half percent of GDP net loss in Japan and the US. Janský and Palanský (2019) estimated that approximately USD 420 billion (almost 1% of GDP) is shifted annually from the 79 researched countries, corresponding to approximately USD 125 billion tax revenue losses for these countries.

Only a few studies focus on post-communist countries. In the case of the Czech Republic, Moravec et al. (2019) indicated the significant impact of profit shifting on corporate tax revenue for the period 2013–2015; in particular, corporate revenue losses were determined to be CZK 9404 mil. in 2013, with an increasing tendency (i.e., in 2015, CZK 10,377 mil.). Janský (2018) also focusses on profit shifting in Czechia and estimates that profit shifting leads to an average 10% loss of corporate income tax revenues. He further stresses the current tendency to overlook the issue of profit shifting in Central Europe. In his previous studies, Janský and Kokeš (2015, 2016) argue the relevance of BEPS for the Czech Republic and confirm the debt financing profit shifting from the Czech Republic to Luxembourg, Switzerland and the Netherlands. Similar to the case of the Slovak Republic, Ištok and Kanderová

(2019a, b) showed profit shifting through debt financing techniques to low-tax jurisdictions or to tax havens through general profit shifting techniques (Khouri et al. 2019). In the case of Visegrad countries, Nerudová et al. (2020a) conclude that a one-unit increase in the tax differential will lead to a less than one percent tax revenue loss in such countries, and similar results with respect to other areas are also found in Nerudová et al. (2018, 2019).

4 Current Techniques of Profit Shifting and Tax Base Erosion: Macro Perspective

A substantial number of macroeconomic data-based BEPS analyses make use of FDI statistics. Data on FDI in relation to effective corporate taxation may point towards tax base erosion and profit shifting if skewed in favour of the low-tax jurisdiction. Models considering the relation of FDI to taxes often result in stating FDI tax (semi)elasticities.[8] Such semi-elasticity shows a percentage change in FDI related to a one percentage point change in the tax rate. In comparison, ordinary tax elasticity measures the change in FDI related to a 1% change in the tax rate.

Several studies review the range of empirical research with the aim of obtaining more relevant results. OECD (2007) provides an overview of the models and proposes frameworks in tax effects on FDIs. The study focusses first on policy frameworks—ownership, location, and internalisation (hereinafter OLI)—and the OECD policy framework for investment. According to the OLI framework, the FDI decision is motivated by three advantages, namely, ownership, location, and internalisation. As taxes may influence all three advantages, they are considered to influence FDI location decisions. The OECD Policy Framework for Investment focusses on developing and transitional economies and discusses possible tax policy approaches to attract FDIs.

Furthermore, OECD (2007) discusses two types of models—the neoclassical investment model and models based on new economic geography. The neoclassical investment model works with a statutory tax burden on investment returns and allows estimating the long-term effects of changes in corporate taxation on FDIs by providing the respective tax elasticities. The new economic geography model argues against such an approach of a linear relationship between the tax burden and FDIs, stating that some part of FDIs do not respond to tax changes, as the advantages of the particular business location outweigh the increase in the tax burden. OECD (2007) presents the average semi-elasticity of FDI to tax at −3.72, meaning that if the tax rate increases by one percentage point, FDI decreases by 3.72%. The study also concludes that semi-elasticities for intra-EU capital flows are smaller than are semi-elasticities based on US data.

[8]For more details, see the following studies: de Mooij and Ederveen (2003), Hájková et al. (2006), Desai et al. (2004), OECD (2007), and Beck and Chaves (2011).

In this respect, Hájková et al. (2006) confirm that taxes affect the location of FDIs while at the same time pointing out that including only tax policies in the models can overestimate the sensitivity of FDIs to tax variables. According to the review of the results of previous studies, the average semi-elasticities range from −5.37 to 1.26. Based on their own analysis, Hájková et al. (2006) present semi-elasticities of FDIs using marginal and average effective tax rates separately for home and host countries (using different models). The final results show the semi-elasticities of −2 (METR, i.e., marginal effective tax rate) and −2.8 (AETR, i.e., average effective tax rate) for the home state and −1.1 (METR) and −0.7 (AETR) for the host state. Starting first with the basic model and developing its variations up to the full-scale model by including other variables impacting FDIs, semi-elasticities are shown to change with other variables being included. Inclusion of other variables lowers the resulting tax elasticities.

A considerable contribution is made by de Mooij and Ederveen (2003), who review 25 different studies calculating the tax elasticities of FDIs. Following the comparison, they report an average tax rate elasticity of −3.3. However, they point out that there are differences among the studies. Among the main systematic differences within the following studies, the authors cite different FDI data and different adopted types of tax rates. Most of the reviewed studies use some kind of effective tax rate, as the statutory tax rate does not properly consider the complexity of the tax system. Effective tax rates are being used either as average tax rates computed based on data on the tax paid by the corporation or as the average/marginal effective tax rate based on the tax law computation. According to their results, studies using statutory tax rates present lower semi-elasticities than do studies that adopt average or effective tax rates.

Another comprehensive contribution was made by Heckemeyer and Overesch (2013), who provide an overview of the results of 25 studies with a similar methodology, estimating the tax semi-elasticity of a subsidiary profit before taxation at 0.8. They also conclude that transfer pricing and royalty payments are the main channels for transferring taxable profits.

Most of the studies on the "FDI to tax" relation focus on income taxes. However, Desai et al. (2004) researched how indirect taxes influence the type of FDI and location decision by US MNEs. According to their results, a 10% increase in indirect tax rates relates to a 9.2% decrease in income reported by US affiliates. Furthermore, Beck and Chaves (2011) also focus on other than purely corporate income taxes. Their research aims to address the relationship between FDI and effective taxation of consumption, labour and capital income. They found that the impact of consumption taxes on FDI is insignificant. However, any increase in labour taxation discourages net FDI outflows, whereas an increase in capital taxation encourages them.

A very important turning point came thanks to UNCTAD. An important FDI data-based study by UNCTAD (2015) has intensified the already heated debate on tax evasion by MNEs and developed a new approach to analyse the amount of tax base erosion and profit shifting using FDI data. The lower rate of return on inward FDI from the low-tax jurisdictions is, in this approach, considered to be caused by

tax base erosion and profit shifting. Other studies building on this methodology include Bolwijn et al. (2018) and Janský and Palanský (2019).

Within the World Investment Report 2015, UNCTAD (2015) devotes a substantial part of the report to the relation between tax and cross-border investment policies. The authors of the report emphasise the need to combat tax avoidance while at the same time supporting cross-border investments. The report points out that the relationship between tax policy and FDIs is not one-sided and unambiguous. Tax policy plays a role in tax competition and is an important determinant of the attractiveness of countries from the perspective of investors when choosing a location for business. Individual countries intentionally use tax incentives in various forms within the framework of tax competition. Incoming investments in turn contribute to tax revenues as part of their economic activities in the given country. Within these mechanisms, MNEs have a specific position that allows them to avoid taxes by operating in more than one tax jurisdiction.

However, as stated by Tanzi (1996) and Laulajainen and Stafford (1995), taxes are only one of the determinants when choosing an investment location. Therefore, UNCTAD (2015) discusses the role of taxes on the location of FDI, emphasising that the sensitivity of FDI to taxes depends on the type of investment. While so-called market-seeking investments and resource-seeking investments are relatively insensitive to the tax factor, efficiency-seeking investments based primarily on cost reduction are highly sensitive to taxes. In addition, not only the effective tax burden but also the related administrative burden in tax administration and the stability of the tax system play a role in the decision on the location of the business.

Within the BEPS project and related discussion, corporate tax avoidance is being addressed. However, it is not just the corporate tax through which investments contribute to the tax revenues of the countries in which they invest. UNCTAD (2015) first evaluates the total fiscal contribution of investments, which, in addition to corporate taxes, also includes other taxes and fees, including social security contributions. By assessing the overall corporate contributions, it is then possible to better analyse the loss caused by tax base erosion and profit shifting and its impact on various mature economies. At the same time, the argument of the need for a sensitive approach to combating tax avoidance under BEPS is emphasised, as other, often significant fiscal contributions could be at stake if the measures taken against BEPS cause FDI limitations. Within the overall fiscal contribution, UNCTAD (2015) takes into account not only individual taxes and social security contributions but also other contributions to government finances, such as royalties on natural resources. UNCTAD at the same time emphasises developing countries where the contribution of FDIs is significant and the loss from a possible reduction in FDIs could also be significant.[9]

According to the general overview of government revenues, developing countries tend to rely on tax revenues different from those relied on by developed countries. Developed countries rely to a greater extent on income tax revenues (50% of total

[9]For more details, see the abovementioned section.

taxes) than do developing economies (33% of total taxes). However, importantly, the share of corporate income tax revenues is only 11% of total taxes, compared to 21% in developing countries (UNCTAD 2015). The greater dependence of developing countries on corporate taxes compared to personal income taxes and social security contributions is also evident from the ratio of these taxes to GDP. This dependence is not surprising, as the amount of personal income tax and social security contributions is dependent on the income level. However, according to UNCTAD (2015), the lower amount of personal income tax and social security contributions in developing countries is also caused by the less efficient process of tax collection, which is more complex than the collection of indirect taxes.

Moreover, it must be highlighted with respect to the fiscal contribution of MNEs that, according to UNCTAD (2015), USD 730 bn is annually contributed by foreign affiliates to the budgets of developing countries, representing approximately 10% of total government revenues. One-half of this share (5% of total government revenues) is estimated for developed countries. Furthermore, UNCTAD (2015) determines the fiscal contribution estimates of MNEs using two approaches. First, it adopts the contribution method that estimates economic contribution to host economies. Second, the FDI income method is adopted based on information on FDIs from the balance of payments data. Using different approaches allows the authors a valuable control mechanism in their research, since both methods are individually limited differently due to the possibilities of the data used. The authors point out that the contribution method is limited by not being able to separate the noncorporate business income from calculations, which would, according to them, increase the relative contribution of foreign affiliates of MNEs by not being able to exclude the thin capitalisation rule as one type of ATP strategy. Neither limitation is present within the FDI income method. Other limitations are mentioned in the study, highlighting the approach to effective tax rates used within the contribution and FDI-income method and necessary assumptions regarding the revenue categories within corporate fiscal contributions.

UNCTAD (2015) further focusses on transit FDIs to address the issue of so-called conduit countries being part of ATP strategies of BEPS. According to this report, approximately 30% of cross-border FDIs flow through conduit countries, with the British Virgin Islands being a prime example, with USD 72 billion FDI inflows and USD 64 billion FDI outflows. Relatively high in- and out-flows of FDIs compared to the size of the economy provide an indication of the conduit countries used in tax avoidance or aggressive tax planning strategies. In the form of an offshore investment matrix, the report presents bilateral investment links among jurisdictions identified as tax havens, jurisdictions offering special entities for the purpose of transit investments, and others. Based on the results, it is argued that jurisdiction with special regimes allowing for special-purpose entities (SPE) and other entities for transit investments are most important as conduit countries. In addition, within the analysis of UNCTAD (2015), other specifics are stated for developing countries. Jurisdictions identified as tax havens are labelled more relevant for developing countries than are jurisdictions allowing for SPE regimes, as in 2012, the share of corporate investments from tax havens was 21% for developing economies and 3%

for developed economies. UNCTAD (2015) estimates USD 100 bn in annual losses in tax revenue for developing countries while further stating that 10 percentage points of offshore investment relates to a 1 percentage point lower rate of return.

According to the UNCTAD (2015) report and mentioned methodology, Bolwijn et al. (2018) aim to research MNE tax avoidance schemes and aggressive tax planning structures with the investment-based approach. According to their results, the FDIs flowing through conduit countries are between 30 and 50% of total bilateral FDIs. However, the authors highlight that UNCTAD does not sufficiently prove that a lower rate of return is caused by profit shifting.

Janský and Palanský (2019) also use the UNCTAD (2015) report for their work. They first re-estimate the model presented by UNCTAD (2015) with new data sources. Furthermore, they extend this model by adding a more detailed classification of developing countries by controlling for per capita income groups and by distinguishing among different patterns of investment through tax havens. They also provide further country-level estimates of profit shifting. Finally, they conclude that approximately USD 420 billion (almost 1% of GDP) is shifted annually from the 79 reviewed countries, corresponding to approximately USD 125 billion in tax revenue losses for these countries. The estimate in this study is the lowest from the referential studies that the authors used for the comparison. Only Cobham and Janský (2018) estimate a lower loss amounting to the total annual revenue (USD 90 billion). However, this loss is presented as a short-term figure, compared to their long-term estimate of USD 494 billion being, in contrast, the highest among the presented estimates. Janský and Palanský (2019) also claim to have more balanced coverage in regard to low-income and lower-middle-income countries compared to other studies by Tørsløv et al. (2018), Cobham and Janský (2019) and Clausing (2016). With this statement, they conclude that low- and lower-middle-income countries are affected the most by profit shifting, as they lose the most corporate tax revenue, both as a share of GDP and total tax revenue. The authors also call attention to the fact that low-income countries may struggle the most with the implementation of effective tools against profit shifting.

However, research on tax base erosion and profit shifting using a macroapproach focussed on post-communist states is limited.[10] Pavel and Tepperová (2020) analyse possibilities to identify the presence of ATP behaviour using balance of payments data in the case of the Czech Republic for the years 2014 to 2016. They focus on the payments of dividends, interest, royalties and consulting services. These payments are often used in ATP structures. Within the models, tax variables that could affect the abovementioned flows were included. These tax variables included EATR (effective average corporate tax rate), indicators specifying how the tax systems of the countries involved promote or enable the creation of ATP strategies, and a special indicator FDI ratio that identifies the possible existence of so-called conduit countries. The FDI ratio indicator is created as the share of FDI outflows to FDI inflows, further multiplied by FDI outflows, both values measured as shares of GDP.

[10]New research in that area of interest of these countries is presented in the following section.

The highest values of this indicator occur for potential conduit countries, as the value of the share of FDI outflows to FDI inflows oscillates around 1, while FDI outflows often exceed 1. Among the EU Member States, the highest FDI ratio was presented for Cyprus, followed by the Netherlands and Luxembourg, thus being possible conduit countries.

According to the results of the analysis for the Czech Republic, it is possible to emphasise and conclude that royalties and payments for consulting services (management fees) are aimed at countries with low EATR, and dividends and interest paid to affiliated companies are often directed to identified conduit countries. With respect to the specific tax indicators, the following four tax indicators were proven to be statistically significant: no beneficial-owner test for reduction of withholding tax on dividends, no CFC rules, no rule to counter a mismatch in tax qualification of a domestic company between own state and a foreign state, and no general or specific anti-avoidance rules to counter the model ATP structures.

Tax factors affecting FDI allocation in EU post-communist states were further researched by Pavel et al. (2020) using data on FDI stocks in ten EU post-communist countries. Tax factors were included within the three groups of models using cross-sectional regression with fixed effects. In addition, in Pavel and Tepperová (2020), specific indicators in the form of dummy variables based on the European Commission (2015) are included. The results confirm that investors take into consideration both tax rate differences and indicators for ATP strategies. The elasticity of FDI in the country to its tax rate is estimated to be approximately 1.1 for statutory and 1.9 for effective rates.

5 Current Techniques of Profit Shifting and Tax Base Erosion: Micro Perspective

The landmark paper used by the empirical literature that studies the occurrence of profit shifting is the early study of Hines Jr and Rice (1994), who investigate whether profit shifting does occur by assuming that the pre-tax income of an affiliate represents the sum of "true" and "shifted" income. Authors assume that the amount of shifted income is determined by the tax incentives in different jurisdictions, and the basic tax incentive considered by the authors is the tax differentials. Although the authors analysed the implications of profit shifting on US tax revenues for 1982 based on aggregated data at the country level, leading to an empirical analysis at the macrolevel, the basic data were the microdata of individual companies.[11]

Another paper that further extends the model of Hines Jr and Rice (1994) is Huizinga and Laeven (2008). In comparison with previous papers, Huizinga and Laeven (2008) analyse the incentives to shift profits due to tax differences between not only affiliate and parent companies but also sister companies from the same

[11]For more details, see the above sections.

MNE group. The authors propose a different measure of the tax differential, which is able to capture the incentive to shift income abroad in any country where the MNE operates due to different CIT rates.

The amount of profits shifted and the tax differential equation proposed by Huizinga and Laeven (2008) are as follows:

$$\boldsymbol{S}_i = \frac{\boldsymbol{B}_i}{\gamma(1-\boldsymbol{\tau}_i)} * \frac{\sum_{k=i}^{n}\left(\frac{\boldsymbol{B}_k}{1-\boldsymbol{\tau}_k}\right) * (\boldsymbol{\tau}_k - \boldsymbol{\tau}_i)}{\sum_{k=1}^{n}\left(\frac{\boldsymbol{B}_k}{1-\boldsymbol{\tau}_k}\right)} \tag{3}$$

where $\boldsymbol{S}_i$ represents the amount of profits shifted; B_i is the true tax base; γ represents the Lagrange multiplier; and $(1 - \boldsymbol{\tau}_i)$ represents the after-tax profits reported in country i. The second part of Eq. (3) represents the complex term of weighted tax differential $(\boldsymbol{\tau}_k - \boldsymbol{\tau}_i)$ with weights constructed as $\frac{\left(\frac{\boldsymbol{B}_k}{1-\boldsymbol{\tau}_k}\right)}{\sum_{k=1}^{n}\left(\frac{\boldsymbol{B}_k}{1-\boldsymbol{\tau}_k}\right)}$.

Huizinga and Laeven (2008) coin the term composite tax differential. Similar to Hines Jr and Rice (1994), Huizinga and Laeven (2008) follow an intuitive path to calculate the size of true profits $\boldsymbol{B}_i$. Consequently, the authors assume a Cobb-Douglas production function as follows:

$$\boldsymbol{Q}_i = c\boldsymbol{A}_i^{\varepsilon}\boldsymbol{L}_i^{\alpha}\boldsymbol{K}_i^{\varphi}e^{u_i} \tag{4}$$

where $\boldsymbol{Q}_i$ represents the total output; $\boldsymbol{A}_i$ is the total factor productivity; $\boldsymbol{L}_i$ is the labour input; and $\boldsymbol{K}_i$ is the capital input. The "true" size of profits is deducted from the difference between $\boldsymbol{Q}_i$ and the wage bill, which is assumed to be a marginal product of labour.

The profit shifting equation, according to Huizinga and Laeven (2008), is as follows:

$$\boldsymbol{b}_i^r = \beta_1 + \beta_2\boldsymbol{A}_i + \beta_3\boldsymbol{L}_i + \beta_4\boldsymbol{K}_i - \gamma\boldsymbol{C}_i + u_i \tag{5}$$

where the term $\boldsymbol{b}_i^r$ represents the current level of reported profits before taxation, and $\boldsymbol{C}_i$ represents the composite tax differential. According to Huizinga and Laeven (2008), Eq. (5) shows that reported pre-tax profits are negatively affected by the weighted tax differential. The coefficient of $\boldsymbol{C}_i$ can be interpreted as the semi-elasticity of pre-tax profits to the tax differential. Through this composite tax differential, Huizinga and Laeven (2008) are able to capture the impact of international tax differences and companies' structure (i.e., size of affiliate companies) on pre-tax income. The authors conclude that profits' before-taxation semi-elasticities to the tax differential are on average 1.31 when the statutory CIT rate is considered.

Other research focussing on pre-tax income semi-elasticity is presented by Heckemeyer and Overesch (2017), who perform a meta-analysis by reviewing

27 empirical papers with more than 200 estimates regarding pre-tax income semi-elasticity to tax differentials. The authors consider that the reported pre-tax profits by foreign owned affiliates are equal to the following:

$$\boldsymbol{P}_i^r = \boldsymbol{P}_i + \boldsymbol{P}_i \gamma \Delta \boldsymbol{\tau}_{i,j} = \boldsymbol{P}_i \left(1 + \gamma \Delta \boldsymbol{\tau}_{i,j}\right) \tag{6}$$

where $\boldsymbol{P}_i^r$ is the pre-tax reported profits; $\boldsymbol{P}_i$ represents the unobserved true profits before taxation; and $\boldsymbol{P}_i \gamma \Delta \boldsymbol{\tau}_{i,\ j}$ represents the amount of income shifted abroad. Therefore, the current amount of profits before taxation is the sum of true profits and shifted profits due to tax differential $\Delta \boldsymbol{\tau}_{i,\ j}$, where $i \neq j$ and γ is semi-elasticity. Consistent with Huizinga and Laeven (2008), Heckemeyer and Overesch (2017) argue that the common method to estimate profit shifting occurrence is as follows:

$$ln\, \boldsymbol{P}_i^r = \beta_1 + \beta_2\, ln\, \boldsymbol{A}_i + \beta_3\, ln\, \boldsymbol{L}_i + \beta_4\, ln\, \boldsymbol{K}_i + \gamma \Delta \boldsymbol{\tau}_{i,j} + v_i \tag{7}$$

Using the primary studies that adopt the abovementioned method, Heckemeyer and Overesch (2017) conclude that the average pre-tax profit semi-elasticity to the tax differential is 0.8. This coefficient can be interpreted as follows: the host country, where the affiliate is based, imposes a CIT rate reduction by one percentage point, and the reported pre-tax profits will increase by an average of 0.8%.

In a similar manner, Beer et al. (2020) perform a meta-analysis regarding the semi-elasticity of profits before taxation to tax differentials, using a higher number of primary studies in comparison with Heckemeyer and Overesch (2017). Beer et al. (2020) conclude that the average semi-elasticity is much higher than previously estimated, where a one percentage point decrease in the tax differential will increase the profits before taxation by more than 1.1%.

In addition to the possibility of estimating profit shifting through tax differentials, another possibility of estimating it is *through discrepancy*, i.e., by comparing selected financial indicators of MNEs with a peer group not having any link with tax havens or with preferential tax regimes. This approach is introduced by Grubert and Mutti (1991), who analyse the difference in the average ratio of pre-tax profit and sales in the case of companies operating in countries with a tax rate of 40% and countries with a tax rate of 20%. The authors showed that companies report higher taxable profits in low-tax countries. This approach was further developed by Graham (1996), Fuest and Riedel (2012), Janský and Kokeš (2015, 2016), Janský and Prats (2015), Romdhon et al. (2019), Nerudová et al. (2020a) and others, which are presented in detail below.[12]

The basic premise of this approach is that national companies are operating only in domestic countries without any links with countries offering preferential regimes or with tax havens (i.e., without affiliate companies abroad), so they differ mainly with respect to their flexibility and opportunities to shift income out of/into the host

[12]Such as Khouri et al. (2019), Ištok and Kanderová (2019a, b), Miniaci et al. (2014), Potin et al. (2016), Kubick and Lockhart (2017), and Martinez and Ramalho (2014), etc.

countries and erode their tax base in comparison with MNEs. Thus, MNEs can be expected to engage in profit shifting activities that can be identified through discrepancies in financial indicators. Therefore, this approach is based on a comparison of MNEs with a peer group of national companies[13] that are expected not to engage in significant profit shifting activities.

A comprehensive analysis and considerable contribution to the literature were performed by Fuest and Riedel (2012), who apply a ratio of pre-tax profit per total assets as a proxy for the corporate tax base of companies and a ratio of tax payments per pre-tax profit as a proxy for the average tax rate of the researched companies. The authors prove that national companies face the highest average tax rate; MNEs report lower pretax profits per total assets and pay 1 percentage point lower taxes than national companies. Moreover, MNEs with links to tax havens pay 4.4 percentage points lower taxes. The authors also highlight that MNEs with links to tax havens reach a lower average effective tax rate by 3.4 percentage points than do MNEs without links to tax havens.[14]

Nerudová et al. (2020b) apply the same indicators as Fuest and Riedel (2012) but also add other indicators that are connected with intragroup debt. In their research, they focus on the estimation of profit shifting and corporate tax base erosion in five EU countries (Spain, UK, Denmark, Germany and Cyprus) through links with six tax havens[15] that were mentioned in the Panama Papers or other leaked documents.[16] The main limitation of the study is an interest only in corporations having known shareholder individuals. The authors indicated that UK shareholder individuals of corporations with links to tax havens report an 88% lower ratio of tax payments per pre-tax profit than do domestic entities; in other cases, Denmark shareholder individuals report 49%, Spain reports 40%, Cyprus reports 23% and Germany reports 5%. In that case, they estimate that the overall tax base erosion is EUR 8.6 billion.

Similar research has been performed in the Slovak Republic; Khouri et al. (2019) focus on offshore, midshore and onshore regions with links to the Slovak Republic. They showed that Slovak companies with links to tax havens report a lower return on assets (ROA) than domestic companies; furthermore, onshore businesses paid the lowest taxes per profit, and midshore businesses paid the lowest taxes per total assets. Another study emphasises that profit shifting techniques through debt are

[13]Papers focussing on the selection of companies into the peer group in the case of the developed world include Desai et al. (2006a, b), Maffini (2009), Egger et al. (2010), and Fuest and Riedel (2012).

[14]Similar results were also proven in previous studies through FDI analysis; see more in Becker et al. (2012).

[15]British Virgin Islands, Panama, Bahamas, Seychelles, Samoa and British Anguilla.

[16]In 2015, documents created by, and taken from, Panamanian law firm and corporate service provider Mossack Fonseca about more than 214,000 offshore entities connected to people (largely billionaires, sports stars, drug smugglers and fraudsters) in more than 200 countries and territories were leaked. The leaked documents showed that tax evasion and/or aggressive tax planning is also performed by individuals who are shareholders of off- or onshore companies.

used more frequently by Slovak entities with links to midshore countries, namely, with Cyprus (Ištok and Kanderová 2019a, b).[17]

The strong relationship between aggressive tax planning and ROA was also proven by Potin et al. (2016); in particular, they indicate that companies applying aggressive tax planning report a low ROA, while companies applying moderate tax planning report higher ROA. Similarly, Janský and Prats (2015) emphasise that MNEs with links to tax havens report 1.5% lower ROA, pay 17.4% lower taxes per assets, and the ratio of tax per pre-tax profits is lower by at least 30%.

Other empirical studies that contribute significantly to this issue are presented by a group of researchers focussing on profit shifting techniques related to debt. This kind of technique relies on the deductibility of interest payments under most existing corporate tax systems, when hybrid instruments, hybrid entities or hybrid mismatches are used in ATP structures (Johannesen 2014; Riedel 2018). Scholes et al. (2009) prove a significant relationship between companies' marginal tax rate and the tax benefits resulting from additional interest deductions. Furthermore, Graham (1996) first shows a tendency for entities to have a higher leverage ratio when operating in high-tax jurisdictions than when in low-tax jurisdictions. Desai et al. (2004) follows this research and indicates that MNEs adjust the subsidiary's leverage ratio and maturity of debt based on tax incentives, as there is a direct correlation between the local corporate tax rate and leverage ratio. Miniaci et al. (2014) also prove that there is a great impact of the corporate tax rate, which a company faces, on the debt-to-assets ratio. However, Fuest et al. (2011) emphasise that the impact of the corporate tax rate on the debt ratio of MNEs operating in developing countries is larger than if they operate in developed countries. In the case of Brazil, Martinez and Ramalho (2014) state that the debt ratio represents one of the key indicators of aggressive tax planning.[18] However, they also identified that Brazilian family businesses are more tax aggressive than nonfamily businesses. Furthermore, Kubick and Lockhart (2017), focussing on the maturity of debt and its relationship to tax avoidance, find that short-term debt is used more frequently for the purpose of aggressive tax planning than is long-term debt. In the case of internal debt between associated companies used for the purpose of profit shifting, Buettner and Wamser (2013), focussing on German MNEs and their subsidiaries, prove that internal debt reacts significantly to tax differentials between subsidiaries placed in low-tax jurisdictions. In the case of the Czech Republic, Janský and Kokeš (2015, 2016) prove both profit shifting to three European "tax havens", namely, the Netherlands, Switzerland and Luxembourg, and strategic use of debt.

Finally, the current comprehensive study of the European Commission (2017) must be highlighted; the study provides EU28 country-level indicators that potentially identify the relevance of ATP structures for all EU Member States based on

[17]For more details, see also Ištok and Kanderová (2019a, b).

[18]Book-tax differences can be considered another key factor of tax aggressivity; these differences are measured as the difference between accounting and tax profit. For more details, see Frank et al. (2009) and Ferreira et al. (2012).

economic elements—financial indicators. The study combines the specific indicators for three distinguished channels of ATP structures, specifically through interest payments, royalty payments and strategic transfer pricing, and identifies three types of entities within the MNE group used for the purpose of ATP structures, specifically target entities,[19] lower-tax entities[20] and conduit entities.[21] The study also combines macro and micro indicators.

6 Methodology Used in the Macrodata-Based Analysis for the Purpose of Post-Communist Countries

To identify the extent of profit shifting and tax revenue losses, two methodological approaches may be adopted using macrodata:

- comparing the rate of return by the country of investor and
- identifying excessive outflows of payments for royalties, selected services, and interest.

The first approach is based on the assumption discussed in several already existing studies[22] (e.g., UNCTAD 2015), namely, that this method can be used to identify countries that offer a tax advantage. Its basic premise is that within a competitive market, the average rates of return on investment should converge to a single value, i.e., the normal rate of return. If the rate of return on FDI from different countries in the long term varies and cannot be explained by other relevant economic factors (e.g., by a significantly different income structure of GDP, different approaches to regulation, and investment incentives, etc.), a distortion has likely been identified behind which may also hide profit shifting efforts.

When an investor places the parent company's registered office in a state with a lower tax rate relative to the country of its subsidiary, the parent company will be motivated to attempt to shift profits away from the jurisdiction with higher taxation. Provided that investment owners want to take advantage of this benefit, they will

[19] A target entity is an entity in the multinational group that has its tax base reduced as a result of aggressive tax planning. Moreover, at least one lower entity must be determined for the identification of a target entity within an MNE group. For further details, see European Commission (2017).

[20] A lower-tax entity is an entity in the multinational group that has its tax base increased as a result of aggressive tax planning, but the base is taxed at lower tax rate. Moreover, at least one target entity must be determined for the identification of a lower-tax entity within an MNE group. For further details, see European Commission (2017).

[21] A conduit entity is an entity in the multinational group that does not see its tax base significantly affected, but this entity is needed for the aggressive tax planning structure. A conduit entity cannot be identified as either the target or lower-tax entity. Moreover, at least one target entity must be determined to identify a conduit entity within an MNE group. For further details, see European Commission (2017).

[22] For more details, see Sect. 2 and 4.

seek to reduce the tax base in the country where the investment is located, thereby reducing the average rate of return on FDI from that country compared to FDI from other countries. It may therefore be concluded that FDI from countries "suspected" of providing tax benefits will show a below-normal rate of return. In turn, the difference between the actually achieved and normal rates of return multiplied by the amount of FDI from the given country thus represents a rough approximation of the likely extent of profit shifting. Rate of return on the FDI can be expressed as follows:

$$RoR_{ij} = \frac{DIV_{ij} + RE_{ij}}{FDIstock_{ij}} \tag{8}$$

where RoR_{ij} is the rate of return of FDI from country i allocated in country j, DIV_{ij} are dividends paid from FDI to country i from country j, RE_{ij} are retained earnings of FDI from country i allocated in country j, and $FDIstock_{ij}$ is the volume of FDI from country i invested in country j.

As stated by Janský and Kokeš (2015), the actual transfer of profits, a reduction in the tax base in the country of investment and thus a reduction in the reported rate of return, is usually facilitated via three channels: debt shifting, trade mispricing, and the location of intangibles. Analysis of payments related to the above channels is the essence of the second method of estimation of the extent of profit shifting. In this respect, an attempt is made to determine whether the extent of these payments towards countries suspected of granting tax advantages is not excessive. Provided such an extent is truly excessive, the difference between reported payments and estimates of the usual level in turn corresponds to an approximation of the extent of profit shifting.

One complication, which to a certain degree makes a comprehensive estimate of the extent of profit shifting via this method more difficult, is that the tax base-reducing transactions in the country where the investment is located do not have to flow directly to the investor's country of residence. To limit the probability of detection, more complicated structures are often chosen in which companies from other countries are also involved and through which the transfer finally flows to the country with a tax advantage. This issue does not arise when opting for the rate of return approach.

The first step in estimating the extent of profit shifting is to create an indicator expressing the probability that the given country is being used for purposes of aggressive tax planning. As part of the analysis, we identify these countries based on a large extent of foreign direct investment, both received and invested. For this purpose, we create a special indicator, the FDI ratio, which we use in further analyses. FDIratio, with both *FDIin* and *FDIout* expressed as share of GDP, is as follows.

$$FDIratio = \frac{FDIout}{FDIin} * FDIout \tag{9}$$

where
FDIin is the value of FDI carried out by foreign entities in the territory of a given country, and *FDIout* is the value of FDI carried out by tax residents of the given country in the territory of other states. Both values are reported in percentage of GDP.

The next step is to verify the relevance of the constructed indicator. Using regression analysis, we look for factors impacting the territorial structure (from the perspective of the investor state) of FDI in the individual countries, adopting the FDI ratio indicator as one of the explanatory variables. If the hypothesis of using countries with a high value of the FDI ratio indicator for aggressive tax planning is correct, a statistically significantly positive regression coefficient for this variable should be identified.

Furthermore, it is necessary to test the two assumptions on which the whole macroeconomic approach is based—specifically, whether the rate of return of FDI from the countries suspected of allowing aggressive tax planning is lower than that from other countries and whether the range of interest payments, consulting services, and royalties is excessive. This test is again accomplished using regression analysis, where one of the explanatory variables is the FDI ratio indicator.

If the FDI ratio indicator can indeed be shown to affect the above variables, it is possible to estimate the extent of profit shifting. The adopted method is based on the calculation of the rate of return and flows' values that the three analysed payments would reach if the value of the FDI ratio indicator were identical to the value of Germany. Germany was chosen as representative of a country that is also a major investor abroad, and it is still not considered a state to be used for aggressive tax planning purposes.

The difference between the rate of return's balanced value (calculated based on the performed estimates) and the value calculated using the FDI ratio indicator for Germany is thus a percentage estimate of the FDI return transferred abroad. In turn, its multiplication by the FDI value from the given country allows estimating the extent of profit shifting.

For interest payments, payments for royalties, and consulting services, the estimate is performed by analogy. For these individual payments, both the balanced values and values when using the FDI coefficient for Germany are calculated. The difference is an estimate of the extent of tax profit shifting using the given payment channel.

From the estimates of the extent of profit shifting are in turn calculated tax revenue losses of the individual countries. For this purpose, average effective corporate tax rates applicable in individual countries are adopted. The results are presented both as percentage of GDP and percentage of corporate tax revenue.

Using the above assumption, within the presented analysis, we focus on comparing the rate of return on FDI in 10 post-communist countries[23] and on analysing the above types of payments (related to the potential implementation of tax-optimising schemes). In terms of the country of the investment's origin, we only work with EU countries, mainly due to the availability of data in a uniform format and methodology and because some aspects affecting the mechanisms of profit shifting are uniformly addressed by EU directives. Specifically, these directives relate, e.g., to the tax exemption of dividends, interest and royalties paid in the case of transactions between related parties, in the case of dividends with minimum participation of 10% and in the case of interest and royalties with minimum participation of 25%, considering other conditions. Another reason to limit the analysis to EU countries is an attempt to establish more detailed reasons that some countries are used for aggressive tax planning while others fail to attract this attention. That is, several studies (e.g., Huesecken and Overesch 2015) show that the key factor is not the level of tax rates, which is relatively easy to find, but rather certain elements of the tax system, such as the possibility of preferential taxation of royalties (the so-called patent box) and existence of withholding taxes, etc. This information is available in a uniform form only for EU countries, since the European Commission (2015) has created a system of 33 indicators that characterise tax systems of individual EU Member States in terms of the presence of elements facilitating aggressive tax planning. In turn, these indicators were used in the performed and presented quantitative and qualitative analyses.

For purposes of the extent and structure of the FDI primary income and cross-border payments for consulting services, royalty fees, and interest on provided loans, the presented analysis works with underlying data sourced by balances of payments. FDI stocks and their source countries are based on investment position statistics. In terms of the time horizon, we work with average values for the period 2014–2016. Furthermore, the method of averaging was adopted with the aim of eliminating fluctuations due to economic development or other one-off factors. Information on rates and other tax system parameters is based on the OECD and Eurostat statistics. Further details, the results and conclusions are presented in detail in "Economic Analysis from the Macro Perspective".

7 Methodology Used in the Microdata-Based Analysis for the Purpose of Post-Communist Countries

In this chapter, we present the methodology adopted to analyse the occurrence of profit shifting in Central and East European countries (hereinafter CEE EU) that are members of the European Union, in particular, 11 post-communist countries:

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

Bulgaria, the Czech Republic, Croatia, Hungary, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia.

With respect to the microdata perspective, two methodological approaches were adopted to identify the extent of profit shifting and tax revenue losses:

- estimation of the level of "true" and "shifted" profit based on the tax differentials based on the amended Hines and Rice methodology, and
- identification of discrepancies, i.e., differences in financial indicators and in pre-tax income between the control group (national companies) and the treatment group (MNEs) based on the methodology of Grubert and Mutti (1991), Fuest and Riedel (2012) and Janský and Kokeš (2015, 2016).[24]

Initially, the first approach will be explained in more detail, and the second approach will be explained last.

7.1 First Methodological Approach: Tax Differentials

The data used in our empirical analysis (first methodology approach) are derived from the ORBIS database (last update June 2017). We collect company-level data regarding foreign-owned companies based in CEE EU), namely, in Bulgaria, the Czech Republic, Croatia, Hungary, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia. We collect financial data only for companies that are more than 50% owned by a foreign parent company. Moreover, we select only those affiliates that report at least one profit before taxation in the period 2009–2017. Companies that report only losses or have missing information are excluded from our analysis. Consequently, we collect data for over 350,000 companies based in the CEE EU.

The econometric model chosen for the empirical analysis is similar to the Hines-Rice model. This approach has been previously used by Huizinga and Laeven (2008), Dischinger and Riedel (2011), Beer and Loeprick (2015), Markle (2015), Nerudová et al. (2019) and Nerudová et al. (2020a). The aim is to research the sensitivity of pre-tax profits to tax differentials between sister companies. Consequently, we calculate the tax differential as the difference between statutory CIT rates faced by subsidiaries and the average CIT rate faced by sister companies based in tax haven countries and sister companies based in the EU27 countries. We follow the same procedure as in Nerudová et al. (2019) and Nerudová et al. (2020a). The equation to calculate the tax differential is as follows:

[24]Further also in Desai et al. (2006a, b), Maffini (2009), Egger et al. (2007), focussing on the developed world.

$$\boldsymbol{taxdif} = \boldsymbol{\tau}_V - \left(\frac{\sum_{i=1}^{n} \boldsymbol{\tau}_s}{n} \right) \tag{10}$$

where $\boldsymbol{\tau}_V$ represents the statutory CIT rate faced by the subsidiary, $\boldsymbol{\tau}_s$ represents the average statutory CIT rates of sister companies from the same MNE family, and n represents the number of sister companies based in countries other than the researched subsidiary. In the same manner as in Nerudová et al. (2020a), the ordinary least squares (OLS) regression is focussed separately on the tax differential with sister companies based exclusively in the EU24[25] and tax haven countries. From the EU28, we exclude Ireland, Luxembourg and the Netherlands and the corresponding CEE EU country. Following OECD (1998), Gravelle (2015) and Cobham et al. (2015), we build a group of world tax haven countries.[26] The aforementioned countries are classified as tax haven countries due to a combination of OECD (1998) criteria and Cobham et al. (2015) high financial secrecy criteria.

The main dependent variable of our econometric analysis is pre-tax profit, and the main independent variable is the tax differential, calculated as in Eq. (11):

$$log\, \boldsymbol{\pi}_i = \beta_0 + \beta_1 \left(\boldsymbol{\tau}_i^* - \boldsymbol{\tau}_j \right) + \beta_2 (log\, \boldsymbol{L}_i) + \beta_3 (log\, \boldsymbol{K}_i) + \boldsymbol{X}_i \gamma + \epsilon_i \tag{11}$$

Since our model is similar to the Hines-Rice method of analysing profit shifting, in addition to the tax differential, we use as additional explanatory variables the company's fixed assets as a proxy for capital and the cost of employees as a proxy for labour. This approach is consistent with the Hines-Rice model because the approach aims to estimate the level of "true" and "shifted" profit.

In addition to the previously mentioned independent variable, we also use country-specific factors, which we consider relevant in influencing the level of pre-tax profits reported by foreign-owned companies based in CEE-EU. Therefore, we use yearly GDP per capita in PPP units, the corruption perception index (CPI), population and the unemployment level. These country-specific macroeconomic variables are collected on a yearly basis. The source of GDP, population and unemployment is the Eurostat database, and the CPI is derived from the works of Schneider (2012, 2019) and Scheinder et al. (2015) and Transparency International

[25] Austria, Belgium, Bulgaria, Cyprus, Croatia, Denmark, Estonia, Finland, France, Greece, Germany, Hungary, Italy, Malta, Latvia, Lithuania, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden and the United Kingdom.

[26] Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, British Virgin, Cayman Islands, Dominica, Grenada, Montserrat, the Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Turks and Caicos, U.S. Virgin Islands, Belize, Costa Rica, Panama, Hong Kong, Macau, Singapore, Andorra, Channel Islands (Guernsey and Jersey), Cyprus, Gibraltar, Isle of Ireland, Liechtenstein, San Marino, Maldives, Mauritius, Seychelles, Bahrain, Jordan, Lebanon, Bermuda, Cook Islands, Marshall Islands, Samoa, Nauru, Niue, Tonga, Vanuatu and Liberia, to which we add Luxembourg, Malta, Monaco, Switzerland and the Netherlands.

annual reports. The multivariate OLS regression adopted by this empirical research is as follows:

$$\begin{aligned} log\,\boldsymbol{Pbt}_{i,t} = \beta_0 + \beta_1\left(\boldsymbol{taxdif}_{i,t}\right) + \beta_2\left(log\,\boldsymbol{fix}_{i,t}\right) + \beta_3\left(log\,\boldsymbol{empl}_{i,t}\right) \\ + \beta_4\left(log\,\boldsymbol{mat}_{i,t}\right) + \beta_5(\boldsymbol{X}_{i,t}) + \rho_t + \epsilon_{i,t} \end{aligned} \tag{12}$$

All the variables included in our OLS panel data regression in addition to the tax differential, CPI and unemployment are transformed to natural logarithms. This procedure is beneficial in several ways. First, we eliminate outliers and issues with data stationarity. Second, the obtained estimates can be interpreted as elasticities. Specifically, $log\boldsymbol{Pbt}_{i,\ t}$ represents our main dependent variable, namely, pre-tax profits reported by our selected foreign-owned companies based in CEE-EU in natural logarithms. $tax\boldsymbol{dif}_{i,\ t}$ represents the tax differential calculated as shown previously in Eq. (1). $log\boldsymbol{fix}_{i,\ t}$ represents the fixed assets in natural logarithms as a proxy for capital used by foreign-owned companies; $log\boldsymbol{empl}_{i,\ t}$ represents the cost of employees as a proxy for labour; and $log\boldsymbol{mat}$ represents the material costs. These two independent variables are included in our model to estimate the level of "true" reported profits, while the tax differential has the role of estimating the level of profits shifted due to different statutory CIT rates that sister companies face worldwide. $\boldsymbol{X}_{i,\ t}$ represents country-specific variables, such as GDP in natural logarithms, population, CPI and unemployment. These additional explanatory variables are added to control for the effect of economic growth, level of corruption and labour market conditions on the pre-tax income reported by foreign-owned companies situated in some of CEE-EU:

$$\begin{aligned} log\,\boldsymbol{EBIT}_{i,t} = \beta_0 + \beta_1\left(\boldsymbol{taxdif}_{i,t}\right) + \beta_2\left(log\,\boldsymbol{fix}_{i,t}\right) + \beta_3\left(log\,\boldsymbol{empl}_{i,t}\right) \\ + \beta_4\left(log\,\boldsymbol{mat}_{i,t}\right) + \beta_5(\boldsymbol{X}_{i,t}) + \rho_t + \epsilon_{i,t} \end{aligned} \tag{13}$$

As a robustness check, we estimate Eq. (13), where the core dependent variable pre-tax profits in natural logarithms ($log\boldsymbol{Pbt}$) is replaced by earnings before interest and taxation in natural logarithms ($log\boldsymbol{EBIT}$). The rest of the independent variables are the same as those in Eq. (12).

Our expectations regarding the obtained estimates using a panel data OLS regression are as follows: the main independent variables should have a negative impact on reported pre-tax profits. This expectation is justified by the fact that MNEs are incentivised to shift profits from high- to low-tax countries mainly due to tax differences. Moreover, the capital and labour explanatory variables should have a positive effect on pre-tax profits and economic growth and CPI. We expect unemployment to have a negative impact on pre-tax profits reported by foreign-owned companies based in some CEE-EU countries.

Furthermore, according to Barrios and d'Andria (2020), who adopt a novel method to analyse the occurrence of profit shifting by constructing a multilevel model that could take into account the influence of industrial heterogeneity on profit shifting behaviour, the authors choose this model departing from the assumption that

some industries are more able to avoid taxation than others. Moreover, Barrios and d'Andria (2020) consider that particular industries have higher capacities to shift income abroad due to their specific economic activities. The authors argue that the mainstream fixed effects panel data regression tends to focus only on the "between" effects and seldom disregards the cross-sectional information.

Therefore, the multilevel or hierarchical model is also adopted by our analysis to take into consideration the cross-sectional and industry-specific effects on profit shifting behaviour in CEE-EU countries. One of the most important advantages of hierarchical or mixed effects models is that they allow the slopes to vary across different industries[27] and employ a probabilistic weighting. The mixed effect equation is as follows:

$$\begin{aligned} log\, \boldsymbol{Pbt}_{e,i,t} = &\left(\beta_0^e + \beta_0^i + \beta_0^t\right) + \left(\beta_1^e + \beta_1^i + \beta_1^t\right) \boldsymbol{taxdif}_{e,i,t} \\ &+ \left(\beta_2^e + \beta_2^i + \beta_2^t\right) log\, \boldsymbol{fix}_{e,i,t} + \left(\beta_3^e + \beta_3^i + \beta_3^t\right) log\, \boldsymbol{empl}_{e,i,t} \\ &+ \left(\beta_4^e + \beta_5^i + \beta_5^t\right) log\, \boldsymbol{mat}_{e,i,t} + \beta_x^t(\boldsymbol{X}_{e,i,t}) + \mu_i + \rho_t + \epsilon_{e,i,t} \end{aligned} \tag{14}$$

where the subscript $e = 1...N$ of industries selected; $i = 1...N$ of companies analysed, and $t = 1...T$ represents the time period. μ_i represents the industry fixed effects, and ρ_t represents the time fixed effects. The remaining variables are the same as in Eqs. (12) and (13).

To analyse in detail the sensitivity of profits before taxation, we also predict the marginal effect of tax differentials on pre-tax income using the following formula:

$$\frac{\delta\widehat{\boldsymbol{y}}}{\delta\boldsymbol{x}} * \frac{1}{\widehat{\boldsymbol{y}}} = \frac{\widehat{\beta}}{\widehat{\boldsymbol{y}}} \approx \frac{\Delta\widehat{\boldsymbol{y}}}{\Delta\boldsymbol{x}} \tag{15}$$

where $\delta\widehat{\boldsymbol{y}}$ represents the fitted level of profits before taxation, and $\delta\boldsymbol{x}$ is the estimated impact of the tax differential with the tax haven on the pre-tax income in the CEE EU. Since our model follows a log-level regression, the interpretation should follow this formula:

$$\%\Delta\boldsymbol{y} = 100 * \beta_1\boldsymbol{x} * \Delta\boldsymbol{x} \tag{16}$$

Finally, to estimate the amount of profits shifted from CEE EU countries to tax havens and EU24, we use the formula proposed by Weichenrieder (2009) and later by Godar (2018):

[27] In Eq. (14), we use the Nomenclature of Economic Activities classification (NACE), where all industries are included in our analysis.

$$\textbf{\textit{Profits shifted}}_i = \sum_{i=1}^{n} \frac{\textbf{\textit{pbt}}_i}{1 - \tau_i^{CEE\ EU}} x\, \textbf{\textit{taxdif}}_i\, x\, \beta_1 \tag{17}$$

where the amount of profit shifting equals the aggregated net of tax profits reported by foreign affiliates based in each CEE EU country multiplied by tax differentials with tax havens and EU24, and the semi-elasticity coefficient is determined according to the previous equations.

Further details, the results and conclusions are presented in detail in "Economic Analysis from the Micro-Perspective".

7.2 Second Methodological Approach: Comparison of Financial Indicators

The data used in our empirical analysis (second methodology approach) are also derived from the ORBIS database (update number 173, of 18 June 2018). We created a dataset covering firm-level data for a five-year (2013–2017) period regarding the MNEs having associated enterprises or affiliates in the CCE-EU and in the rest of world and having ultimate global owner (GUO) in the EU. Entities that have no recent financial data were excluded. Moreover, MNE groups were split into groups having effective CFC rules in the headquarters country and groups without effective CFC rules in the headquarters country. According to Buettner and Wamser (2013), CFC rules[28] are able to reduce some ATPSs, namely, via debt channels.

Our key strategy is based on Grubert and Mutti (1991) and Fuest and Riedel (2012). Similar to the study of the European Commission (2017), we distinguish three types of entities within MNE groups that can be included in the ATPS: target entities,[29] lower-tax entities[30] and conduit entities.[31] However, in contrast to the previous studies and the last study mentioned, the aggressive tax planning channel

[28]CFC rules are an important part of the EU Directive (the ATAD directive laying down rules against tax avoidance practices), which is currently being implemented by European Member States, and in particular CFC, which was slated to be implemented and in force as of 1 January 2019. However, nine European Member States (Austria, Denmark, Germany, Greece, Ireland, Latvia, Portugal, Romania and Spain) failed to comply with EU law (i.e., failure to fully/correctly implement the ATAD Directive) with respect to the implementation of CFC rules.

[29]A target entity is an entity in the multinational group that has its tax base reduced as a result of aggressive tax planning. Moreover, at least one lower entity must be determined for the identification of a target entity within an MNE group. For further details, see European Commission (2017).

[30]A lower-tax entity is an entity in the multinational group that has its tax base increased as a result of aggressive tax planning, but the base is taxed at lower tax rate. Moreover, at least one target entity must be determined for the identification of a lower-tax entity within an MNE group. For further details, see European Commission (2017).

[31]A conduit entity is an entity in the multinational group that does not see its tax base significantly affected, but this entity is needed for the aggressive tax planning structure. A conduit entity cannot be identified as either the target or lower-tax entity. Moreover, at least one target entity must be

Table 1 Obligatory (key) requirements for the successful ATPS (European Commission 2017, amended)

Information	*MNE group (headquarters country)*	*Subsidiary—lower tax entity*	*Subsidiary—target entity*
	Obligatory requirements for the successful ATPS		
MNE group	• At least one subsidiary in a lower tax country—If statutory tax rate (CIT) is at least 5 percentage points lower than in other parts (countries) of the same MNE group • Consolidated effective tax rate is lower than the CIT in the headquarters country • Gap between consolidated pre-tax profitability$_{1,2}$ in comparison with domestic entities		
Country	• No effective CFC rules	• Zero CIT rate/lower CIT rate	

covers not only the interest payments indicator but also the new indicators of long-term debt, total liabilities and nonbank liabilities,[32] all of which are measured per unit of assets, which is consistent with the current literature (e.g., Janský and Kokeš 2015; Janský and Kokeš 2016; Huizinga and Laeven 2008; Ištok and Kanderová 2019a, b; Khouri et al. 2019). The indicators mentioned above, together with other financial indicators (such as the effective tax rate and profitability), are determined for four types of entities: domestic entities belonging to the multinational group, the whole multinational group with the consolidated results and purely domestic entities as a peer group, which is further distinguished with respect to the entities operating in the same industry[33] as the researched entity. Thus, in contrast with previous research, we also determined the values of selected indicators consistent with the identified role of the entity in question.

For the purpose of the identification of target, lower-tax and conduit entities, the key requirement is having at least one subsidiary in a low-tax country or in a zero/no-tax country and the possibility of some ATPS or legal-tax mismatches (see more in Table 1). Furthermore, a multicriterion model was applied to identify the roles of the entities operating in CEE-EU and belonging to MNE groups in an ATPS. In the model, the general conditions were first set at the group level, and second, the specific conditions for the identification of the role were set at the level of

determined to identify a conduit entity within an MNE group. For further details, see European Commission (2017).

[32]Nonbank liabilities were estimated as noncurrent liabilities minus long-term debt and serve as a proxy for internal debt financing.

[33]Industry is classified based on the NACE codes between A and S, except C (Manufacturing) and M (Professional services), where two-digit codes were used. Further, at least 20 entities with sufficient economic data for each industry classification were considered, and five-year averages were applied.

Table 2 Characteristics of lower-tax entities and target entities (European Commission 2017, amended—new indicators added)

ATPS—without any specification		
Information	*Subsidiary—lower tax entity*	*Subsidiary—Target entity*
Subsidiary	• Higher pre-tax profitability • Higher operating profitability • Higher financial profitability • Lower CIT rate than the average for the group	• Lower pre-tax profitability • Lower operating profitability • Lower financial profitability • Higher CIT rate than the average for the group
ATPS—Debt channel		
Information	*Subsidiary—Lower tax entity*	*Subsidiary—Target entity*
Subsidiary	Moreover • Lower interest payments • Lower debt share (long-term debt or total liabilities) • Lower nonbank liabilities	Moreover • Higher interest payments • Higher debt share (long-term debt or total liabilities) • Higher nonbank liabilities

subsidiaries/entities (see Table 2). Finally, the combination of all criteria was considered with the final identification of the role.

A lower consolidated tax burden together with a gap between consolidated pre-tax profitability and consolidated operating profitability (via earnings before interest and taxation, hereinafter EBIT) should reflect that ATPSs are successfully implemented in an MNE group. This value is determined as follows:

$$\text{Consolidated effective tax rate}_1 = \frac{\text{taxation}}{\text{profit before tax}} \tag{18}$$

$$\text{Consolidated effective tax rate}_2 = \frac{\text{taxation}}{\text{EBIT}} \tag{19}$$

$$\text{Consolidated pre} - \text{tax profitability}_1 = \frac{\text{profit before tax}}{\textit{total assets}} \tag{20}$$

$$\text{Consolidated pre} - \text{tax profitability}_2(\text{operating profitability}) = \frac{\text{EBIT}}{\textit{total assets}} \tag{21}$$

The two measures of consolidated profitability were compared with the consolidated profitability of domestic entities (a peer group, 5-year average). Moreover, the comparison between pre-tax profitability and operating profitability allows us to identify whether MNEs are able to reduce pre-tax profits through financial transactions more than a peer group does.

Furthermore, the existence of noneffective CFC rules in the headquarters country and a zero or lower CIT rate (at least five percentage points) for subsidiaries are other important requirements for successful ATPS.

The lower-tax entity should report higher entity pre-tax (operational) profitability, which is taxed at a lower CIT rate than the average CIT rate for the group. Base erosion or profit shifting though the lower-tax entity in the MNE group can be performed via the transfer pricing channel, IP profit shifting channel or debt channel. If the necessary legal framework related to IP, such as patent boxes,[34] is not proven in the ATPS of MNEs, then base erosion/profit shifting is performed via transfer pricing. In that case, we analysed pre-tax and operating profitability and the CIT rate. To identify base erosion or profit shifting via debt instruments in the MNE group, the lower-tax entity should report not only higher entity pre-tax (operational) profitability and/or entity financial profitability but also lower interest payments, a lower debt share or lower nonbank liabilities. This approach is in contrast to the case of the target entity, for which lower pre-tax (operational) profitability and/or lower financial profitability should be detected, together with higher interest payments, debt share and nonbank liabilities. Moreover, the target entity should tax its profit before tax at a higher CIT rate than the average CIT rate for the group (see Table 2).

The identification of lower-tax entities or target entities is based on two comparisons. The first is at the level of the MNE group, where the 5-year average pre-tax (operating) profitability of a subsidiary (entity) is compared with the 5-year average pre-tax (operating) profitability of the MNE group as a whole. The second is at the level of the peer group, where the 5-year average pre-tax (operating) profitability of a subsidiary (entity) is compared with the 5-year average of the peer group, i.e., entities in the same industry.[35] A similar approach was applied for the other indicators, such as financial profitability, interest payments, debt share and nonbank liabilities, as follows:

$$\text{Entity pre} - \text{tax profitability}_1 = \frac{\text{profit before tax}}{\textit{total assets}} \tag{22}$$

$$\text{Entity pre} - \text{tax profitability}_2 = \frac{\text{EBIT}}{\textit{total assets}} \tag{23}$$

$$\text{Entity financial profitability} = \frac{\text{financial profit or loss}}{\textit{total assets}} \tag{24}$$

[34]From the CEE-EU countries, only Hungary introduced a patent box regime in 2003. For more details about the legal Frameworks of CEE-EU countries related to the ATPS, see "Profit Shifting and Tax Base Erosion in the Twenty-First Century".

[35]See Note 33 above.

$$\text{other financial indicator}_i = \frac{\text{other financial}_i}{\textit{total assets}} \tag{25}$$

where other financial$_i$ is one of following indices: interest paid, total liabilities, long-term debt, or nonbank liabilities.

For the purpose of comparison, the following formulas were used:

At the level of the MNE group:

$$\text{Gap between } \frac{\text{financial}_\text{i}}{\text{Total assets}_\text{i}} \text{ and } \frac{\text{financial}_{\text{for a group}}}{\text{Total assets}_{\text{for a group}}} \text{ the } 5-\text{year average} \tag{26}$$

where financial$_i$ is one of the following indices: entity-pre-tax profitability$_{1,2}$, entity-financial profitability, interest paid, total liabilities, long-term debt or nonbank liabilities for a subsidiary (entity), measured as a 5-year average. Financial$_{\textit{for a group}}$ represents items (such as financial$_i$) for the MNE group as a whole, measured as a 5-year average.

At the level of the peer group:

$$\text{Gap between } \frac{\text{financial}_\text{i}}{\text{Total assets}_\text{i}} \text{ and } \frac{\text{financial}_{\text{peer group}}}{\text{Total assets}_{\text{peer group}}} \text{ the } 5-\text{year average} \tag{27}$$

where financial$_i$ is one of the following indices: entity-pre-tax profitability$_{1,2}$, entity-financial profitability, interest paid, total liabilities, long-term debt or nonbank liabilities for a subsidiary (entity), measured as a 5-year average. Financial$_{\textit{peer group}}$ represents items (such as financial$_i$) for the peer group in the same industry as the subsidiary is operating, measured as a 5-year average.

Taking into account these restrictions, we applied two classifications of indicators: the first is a strict classification, and the second is a nonstrict classification. The strict classification includes an aggregate combination of indicators at the level of the MNE group and the peer group, which is in contrast to the nonstrict classification, which is determined at the level of the MNE group or the peer group.

Finally, after the identification of the ATPS and particular channels, the estimation of profit shifting and tax base erosion was performed through the comparison of tax payable per unit of profits between peer groups and entities belonging to the MNE group, following Fuest and Riedel (2012), Janský and Kokeš (2015 and 2016) and Nerudová et al. (2020b); see the indicator below:

$$\text{I}_\text{A} = \text{T}/\text{P} \tag{28}$$

where *I* represents indicators of profit shifting, *T* represents tax, and *P* the profit before tax.

$$\text{I}_\text{B} = \text{T}/\text{P} \tag{29}$$

where *I* represents indicators of profit shifting, *T* represents tax, and *P* represents EBIT (operating profit).

Derived negative differences of both indicators—tax payable per unit of profit—based on the 5-year average were applied for the purpose of adjustment of reported profit before tax and EBIT. Then, the estimated base erosion and profit shifting for each CEE-EU country were recalculated through the CIT rate on the corporate tax revenue losses.

Further details, the results and conclusions are presented in detail in "Economic Analysis from the Micro-Perspective".

8 Summary

To summarise, current techniques of profit shifting and tax base erosion are very diverse. MNEs can apply different ATP strategies and ATPSs. For this purpose, they can use earning stripping via debt instruments, modified prices of transfer goods/products, services, and property, etc. which abuse the arm's length principle; IP transfers and related royalty payments; check-the-box practice; cross crediting; exemptions or deferrals of profits; intrafinancing; centralisation of overheads and costs to parent company; establishment of shell companies in ATPSs; inversion of headquarters; shift-to-loss strategy and many others.

However, according to the type of amendments in the corporate tax system, we are able to distinguish the responses of MNEs. Specifically, if the CIT rate is changed, the response of MNEs is real in the form of the movement of assets, employment and economic activities, as there is strong sensitivity to CIT rate changes. However, if there are amendments in the taxation of corporate income, the responses of MNEs are through financial tools via transfer pricing, location of royalties, and intangibles, etc. Therefore, according to the categorisation of profit shifting techniques, there can be distinguished different channels through which MNEs can shift taxable profits to gain tax advantages. Among these channels are typically the rank, *debt channel*, *transfer pricing channel* and *IP profit shifting channel*.

The most important contributors with respect to profit shifting techniques are Hines Jr and Rice (1994) and Grubert and Mutti (1991), who first focussed on the determination of profit shifting and tax base erosion. Different ATP strategies can be researched using appropriate datasets. However, data availability rather than developing new methods of examining profit shifting predetermines to a great extent the methodology used.

A substantial number of macroeconomic data-based BEPS analyses make use of FDI statistics when models consider the *relation of FDI to taxes resulting in stating FDI tax (semi)elasticities*. In the area of micro-based data, landmark research is presented by Hines Jr and Rice (1994), who estimate profit shifting and tax base erosion according to "true" and "shifted" income through *tax differentials*. Another methodologic approach introduced by Grubert and Mutti (1991) is presented through

discrepancy by comparing selected financial indicators of MNEs with a peer group not having any link with tax havens or with preferential tax regimes. This approach was further developed by Fuest and Riedel (2012).

The seriousness of profit shifting and tax base erosions presents empirical studies estimating corporate tax revenue losses. The OECD (2015) emphasises that the overall BEPS magnitude is significant, which translates into annual losses of 4–10% of CIT revenues or USD 100 to 240 billion. UNCTAD (2015) found that an average USD 450 billion is shifted from developing countries to offshore investment centres, which leads to a yearly tax revenue loss of USD 90 billion. Another study based on FDI data estimates the total amount of annual revenue losses to range from USD 90 billion to USD 280 billion (Janský and Palanský 2019; Tørsløv et al. 2018; Cobham and Janský 2018; Clausing 2016). However, only a few studies focus on post-communist countries, such as Moravec et al. (2019), Janský (2018), Janský and Kokeš (2015, 2016) (in the case of the Czech Republic), Ištok and Kanderová (2019a, b), Khouri et al. (2019) (in the case of the Slovak Republic), and Nerudová et al. (2020a) (in the case of the Visegrad countries).

Therefore, the last part of the chapter focusses on methodological approaches based on macro-based and microdata-based analyses that were applied to identify profit shifting and tax base erosion and to estimate overall corporate tax revenue losses in the case of post-communist EU countries. Both approaches are explained in detail.[36]

Acknowledgement This chapter is the result of GA ČR No. 18-14082S "Fair corporate taxation: Measurement of the impact of corporate profit shifting on the budget of the Czech Republic".

References

Alexander A, De Vito A, Jacob M (2020) Corporate tax reforms and tax-motivated profit shifting: evidence from the EU. Account Bus Res 50(4):309–341

Alvarez-Martinez M, Barrios S, d'Andria D, Gesualdo M, Nicodème G, Pycroft J (2018) How large is the corporate Tax Base erosion and profit shifting? A general equilibrium approach. CESifo Working paper, No. 6870. https://www.econstor.eu/bitstream/10419/174993/1/cesifo1_wp6870.pdf. Accessed 10 Aug 2020

Auerbach A, Devereux MP, Keen M, Vella J (2017) International tax planning under the destination-based cash flow. Natl Tax J 70(4):783–802. https://doi.org/10.17310/ntj.2017.4.04

Barion F, Miniaci R, Panteghini PM, Parisi ML (2010) Profit shifting by debt financing in Europe, CESifo Working Paper, No. 2985, Center for Economic Studies and Ifo Institute (CESifo), Munich

Barrios S, d'Andria D (2020) Profit shifting and industrial heterogeneity. CESifo. Econ Stud 66 (2):134–156

[36]Results and conclusions are mentioned in "Economic Analysis from the Macro Perspective" (macro-based analysis) and in "Economic Analysis from the Micro-Perspective" (micro-based analysis).

Bartelsman EJ, Beetsma RM (2003) Why pay more? Corporate tax avoidance through transfer pricing in OECD countries. J Public Econ 87(9):2225–2252
Beck S, Chaves A (2011) The impacts of various taxes on foreign direct investment. Working Papers 2011–18, University of Delaware, Department of Economics. https://lerner.udel.edu/sites/default/files/ECON/PDFs/RePEc/dlw/WorkingPapers/2011/UDWP2011-18.pdf. Accessed 1 July 2020
Becker J, Fuest C, Riedel N (2012) Corporate tax effects on the quality and quantity of FDI. Eur Econ Rev 2012(56):1495–1511
Beer S, De Mooij R, Liu L (2020) International corporate tax avoidance: a review of the channels, magnitudes, and blind spots. J Econ Surv 34(3):660–688
Beer S, Loeprick J (2015) Profit shifting: drivers of transfer (mis) pricing and the potential of countermeasures. Int Tax Public Financ 22(3):426–451
Bilicka K, Seidel A (2020) Profit shifting and corruption. Int Tax Public Financ 27:1–30
Bolwijn R, Casella B, Rigo D (2018) An FDI-driven approach to measuring the scale and economic impact of BEPS. Transl Corp 25:107. https://doi.org/10.18356/c4f9fd3c-en
Bradbury D, Hanappi T, Moore A (2018) Estimating the fiscal effects of base erosion and profit shifting: data availability and analytical issues. Transl Corp 25:2
Bryan D, Rafferty M, Wigan D (2017) Capital unchained: finance, intangible assets and the double life of capital in the offshore world. Rev Int Polit Econ 24(1):56–86
Buettner T, Overesch M, Wamser G (2018) Anti profit-shifting rules and foreign direct investment. Int Tax Public Financ 25(3):553–580
Buettner T, Wamser G (2013) Internal debt and multinational profit shifting: empirical evidence from firm-level panel data. Natl Tax J 66(1):63–96
Clausing KA (2003) Tax-motivated transfer pricing and US intrafirm trade prices. J Public Econ 87 (9–10):2207–2223. https://doi.org/10.1016/S0047-2727(02)00015-4
Clausing KA (2006) International tax avoidance US international trade. Natl Tax J 59(2):269–287
Clausing KA (2009) Multinational firm tax avoidance and tax policy. Natl Tax J 62(4):703–725. https://econpapers.repec.org/article/ntjjournl/v_3a62_3ay_3a2009_3ai_3a4_3ap_3a703-25.htm. Accessed 24 March 2018
Clausing KA (2016) The effect of profit shifting on the corporate tax base in the United States and beyond. Natl Tax J 69(4):905–934
Cobham A, Janský P (2018) Global distribution of revenue loss from corporate tax avoidance: re-estimation and country results: global corporate tax avoidance. J Int Dev 30(2):206–232. https://doi.org/10.1002/jid.3348
Cobham A, Janský P (2019) Measuring misalignment: the location of US multinationals' economic activity versus the location of their profits. Dev Policy Rev 37(1):91–110. https://doi.org/10.1111/dpr.12315
Cobham A, Janský P, Meinzer M (2015) The financial secrecy index: shedding new light on the geography of secrecy. Econ Geogr 91(3):281–303
Contractor FJ (2016) Tax avoidance by multinational companies: methods, policies, and ethics
Crivelli E, De Mooij R, Keen M (2016) Base erosion, profit shifting and developing countries. FinanzArchiv: Public Finance Analysis 72(3):268–301. https://doi.org/10.1628/001522116X14646834385460
Davies RB, Martin J, Parenti M, Toubal F (2018) Knocking on tax Haven's door: multinational firms and transfer pricing. Rev Econ Stat 100(1):120–134. https://doi.org/10.1162/REST_a_00673
de Mooij RA, Ederveen S (2003) Taxation and foreign direct investment: a synthesis of empirical research. Int Tax Public Financ 10:673–693. https://doi.ogr/10.1023/A:1026329920854
De Simone L, Klassen KJ, Seidman JK (2016) Unprofitable affiliates and income shifting behavior. Account Rev 92(3):113–136
Desai MA (2005) The degradation of reported corporate profits. J Econ Perspect 19(4):171–192. https://doi.org/10.2139/ssrn.758144

Desai MA, Foley CF, Hines JR (2004) Foreign direct investment in a world of multiple taxes. J Public Econ 88(12):2727–2744. https://doi.org/10.1016/j.jpubeco.2003.08.004
Desai MA, Foley CF, Hines JR (2006a) Do tax havens divert economic activity? Econ Lett 90 (2):219–224
Desai MA, Foley CF, Hines JR (2006b) The demand for tax haven operations. J Public Econ 90 (3):513–531
Devereux M, Maffini G (2007) The impact of taxation on the location of capital, firms and profit: a survey of empirical evidence
Dharmapala D (2014) What do we know about base erosion and profit shifting? A review of the empirical literature. Fisc Stud 35(4):421–448
Dharmapala D, Riedel N (2013) Earnings shocks and tax-motivated income-shifting: evidence from European multinationals. J Public Econ 97:95–107
Dischinger M (2008) Profit shifting by multinationals and the ownership share: evidence from european micro data, Munich Discussion Paper, No.2008–17, Ludwig-Maximilians-Universität München, Volkswirtschaftliche Fakultät, München, doi: https://doi.org/10.5282/ubm/epub.5661
Dischinger M, Knoll B, Riedel N (2014) The role of headquarters in multinational profit shifting strategies. Int Tax Public Financ 21(2):248–271
Dischinger M, Riedel N (2011) Corporate taxes and the location of intangible assets within multinational firms. J Public Econ 95(7):691–707
Dowd T, Landefeld P, Moore A (2017) Profit shifting of US multinationals. J Public Econ 148:1–13
Dutt V K, Nicolay K, Vay H, Voget J (2019) Can European banks' country-by-country reports reveal profit shifting? An analysis of the information content of EU banks' disclosures. An analysis of the information content of EU banks' disclosures, 19–042
Dyreng D S, Markle K S (2013) The effect of financial constraints on tax-motivated income shifting by U.S. Multinationals, Working paper. http://ssrn.com/abstract=2336997. Accessed 10 July 2020
Egger P, Eggert W, Winner H (2010) Saving taxes through foreign plant ownership. J Int Econ 81 (1):99–108
European Commission (2015) Study on structures of aggressive tax planning and indicators. Final Report. WP no. 61–2015. doi: https://doi.org/10.2778/59284
European Commission (2017) Aggressive tax planning indicators. Final Report. Taxation Papers, WP no. 71–2017. https://doi.org/10.2778/847061
Fatica S, Gregori WD (2020) How much profit shifting do European banks do? Economic Modelling
Ferreira FR, Martinez AL, Costa FM, Passamani RR (2012) Book-tax differences and earnings management: evidence in the Brazilian equity market. Rev Adm Empresas 52:488–501
Flaaen A (2017) The role of transfer prices in prot-shifting by U.S. multinational firms: evidence from the 2004 Homeland Investment Act, Finance and Economics Discussion Series 2017–055. Washington: Board of Governors of the Federal Reserve System
Frank MM, Lynch JL, Rego SO (2009) Tax reporting aggressiveness and its relation to aggressive financial reporting. Account Rev 2009(84):467–696
Fuest C, Hebous S, Riedel N (2011) International debt shifting and multinational firms in developing economies. Econ Lett 113(2):135–138. https://doi.org/10.1016/j.econlet.2011.06.012
Fuest C, Riedel N (2009) Tax evasion, tax avoidance and tax expenditures in developing countries: a review of the literature. Report. Oxford University Centre for Business Taxation. https://assets.publishing.service.gov.uk/media/57a08b3de5274a31e0000a66/60670_TaxEvasionReportDFIDFINAL1906.pdf. Accessed14 July 2020
Fuest C, Riedel N (2012) Tax evasion and tax avoidance: the role of international profit shifting. In: Reuter P (ed) Draining development? Controlling flows of illicit funds from developing countries, pp 109–142. https://openknowledge.worldbank.org/handle/10986/2242. Accessed 10 July 2020

Fuest C, Spengel C, Finke K, Heckemeyer J, Nusser H (2013) Profit shifting and 'aggressive' tax planning by multinational firms: issues and options for reform. ZEW-Centre for European Economic Research Discussion Paper, (13–078)

Godar S (2018) Tax haven investors and corporate profitability - evidence of profit shifting by German-based affiliates of multinational firms, working papers IES 2018/12, Charles university Prague, faculty of social sciences, institute of economic studies, revised Dec 2018

Graham JR (1996) Debt and the marginal tax rate. J Financ Econ 41(1):41–73. http://www.sciencedirect.com/science/article/pii/0304-405X(95)00857-B. Accessed 24 March 2019

Gravelle J G (2015) Tax havens: international tax avoidance and evasion (Congressional Research Service Report R40623). https://fas.org/sgp/crs/misc/R40623.pdf. Accessed 24 March 2019

Grubert H (2003) Intangible income, intercompany transactions, income shifting, and the choice of location. Natl Tax J 56(1):221–242

Grubert H, Mutti J (1991) Taxes, tariffs and transfer pricing in multinational corporate decision making. Rev Econ Stat 1991(80):365–373

Hájková D, Nicoletti G, Vartia L, Yoo K-Y (2006) Taxation, business environment and FDI location in OECD countries. OECD Economics Department Working Papers, No. 502, OECD Publishing, Paris. https://doi.org/10.1787/874058477248

Heckemeyer J H, Overesch M (2013) Multinationals' profit response to tax differentials: effect size and shifting channels. ZEW–Centre for European Economic Research Discussion Paper No. 13–045

Heckemeyer JH, Overesch M (2017) Multinationals' profit response to tax differentials: effect size and shifting channels. Canadian J Econ/Revue Canadienne d'économique 50(4):965–994

Hines JR Jr (2014) How serious a problem is base erosion and profit shifting? Canadian Tax J 62 (2):443–453

Hines JR Jr, Rice EM (1994) Fiscal paradise: foreign tax havens and American business. Q J Econ 109(1):149–182

Huesecken B, Overesch M (2015) Tax avoidance through advance tax rulings–evidence from the LuxLeaks firms. SSRN Electron J. https://doi.org/10.2139/ssrn.2664631

Huizinga H, Laeven L (2008) International profit shifting within multinationals: a multi-country perspective. J Public Econ 92(5–6):1164–1182

Huizinga H, Laeven L, Nicodeme G (2008) Capital structure and international debt shifting. J Financ Econ 88(1):80–118

Ištok M, Kanderová M (2019a) Debt/asset ratio as evidence of profit-shifting behaviour in the Slovak Republic. Technol Econ Dev Econ 25(6):1293–1308. https://doi.org/10.3846/tede.2019.11338

Ištok M, Kanderová M (2019b) Interest expenses as a technique of profit shifting used by Slovak companies. In: Proceedings of the International Scientific Conference HED 2019, Hradec Kralove, Czech Republic, 5–6 February 2019, vol 9, pp 292–304. https://uni.uhk.cz/hed/site/assets/files/1073/proceedings_2019_1.pdf. Accessed 10 Dec 2020

Janský P (2018) Estimating the revenue losses of international corporate tax avoidance: the case of the Czech Republic. Post-Communist Econ 30(5):617–635

Janský P, Kokeš O (2015) Corporate tax base erosion and profit shifting out of the Czech Republic. Post-Communist Econ 27(4):537–546. https://doi.org/10.1080/14631377.2015.1084733

Janský P, Kokeš O (2016) Profit-shifting from the Czech multinational companies to European tax havens. Applied Economic Letters 23(16):1130–1133. https://doi.org/10.1080/13504851.2015.1137543

Janský P, Palanský M (2019) Estimating the scale of profit shifting and tax revenue losses related to foreign direct investment. Int Tax Public Financ 26(5):1048–1103. https://doi.org/10.1007/s10797-019-09547-8

Janský P, Prats A (2015) International profit-shifting out of developing countries and the role of tax havens. Dev Policy Rev 33(3):271–292. https://doi.org/10.1111/dpr.12113

Jareš M (2014) Mezinárodní stěhování zisků–politická a ekonomická perspektiva. Bulletin KDP ČR 2014(3)

Johannesen N (2014) Tax avoidance with cross-border hybrid instruments. J Public Econ 112:40–52. https://doi.org/10.1016/j.jpubeco.2014.01.011
Keightley MP (2013) An analysis of where American companies report profits: indications of profit shifting. Congressional Research Service, Washington, DC
Keightley MP, Stupak JM (2015) Corporate Tax Base erosion and profit shifting (BEPS): an examination of the data. CRS Report 44013
Khouri S, Elexa L, Ištok M, Rosová A (2019) A study from Slovakia on the transfer of Slovak companies to tax havens and their impact on the sustainability of the status of a business entity. Sustainability 11:2803
Knoll B, Riedel N (2019) Patent Shifing and anti-tax avoidance legislation. Ifo. DICE Report 17 (04):25–29
Kubick TR, Lockhart GB (2017) Corporate tax aggressiveness and the maturity structure of debt. Adv Account 36:50–57. https://doi.org/10.1016/j.adiac.2016.10.001
Laulajainen R, Stafford HA (1995) Corporate geography: business location principles and cases. https://doi.org/10.2307/490835
Li X, Tran A (2020) An empirical study on cross-border profit shifting in Australia.ANU research publications. eJournal of Tax Research 17:193. http://hdl.handle.net/1885/207817. Accessed 10 Dec 2020
Lipsey RE (2010) Measuring the location of production in a world of intangible productive assets, FDI, and intra firm trade. Rev Income Wealth 56. https://doi.org/10.1111/j.1475-4991.2010.00385.x
Maffini G (2009) Tax haven activities and the tax liabilities of multinational groups (pp 1–63). Oxford University Centre for Business Taxation, Oxford. http://econpapers.repec.org/RePEc:btx:wpaper:0925. Accessed 20 March 2019
Markle K (2015) Making sense of profit shifting: kevin markle. Tax foundation forum series. https://taxfoundation.org/making-sense-profit-shifting-kevin-markle/. Accessed 20 March 2019
Marques M, Pinho C (2016) Is transfer pricing strictness deterring profit shifting within multinationals? Empirical evidence from Europe. Account Bus Res 46(7):703–730
Martinez AL, Ramalho GC (2014) Family firms and tax aggressiveness in Brazil. Int Bus Res 7 (3):129–136. https://doi.org/10.5539/ibr.v7n3p129
Miniaci R, Parisi ML, Panteghini PM (2014) Debt shifting in Europe. Int Tax Public Financ 21 (3):397–435. https://doi.org/10.1007/s10797-012-9266-4
Moravec L, Rohan J, Hinke J (2019) Estimation of international tax planning impact on corporate tax gap in the Czech Republic. E&M Ekonomie a Management 22(1):157–170. https://doi.org/10.15240/tul/001/2019-1-011
Nerudová D, Dobranschi M, Solilová V, Litzman M (2020a) Profit shifting to onshore and offshore tax havens: the case of Visegrad countries. Post-Communist Econ 32(7):904–946. Oxfordshire: Taylor & Francis. https://doi.org/10.1080/14631377.2019.1705083
Nerudová D, Solilová V, Dobranschi M, Litzman M (2018) The role of corporate income tax differences on the profit shifting behavior: evidence from the Czech Republic. In: European financial systems 2018: Proceedings of the 15th International Scientific Conference, pp 454–461
Nerudová D, Solilová V, Dobranschi M, Litzman M (2019) Profit shifting behaviour between sisters companies: the case of Czech Republic. International Journal of Trade and Global Markets 12(3–4):300–310
Nerudová D, Solilová V, Litzman M, Janský P (2020b) International tax planning within the structure of corporate entities owned by the shareholder-individuals through Panama papers destinations. Development Policy Review 38(1):124–139
Oats L, Tuck P (2019) Corporate tax avoidance: is tax transparency the solution? Account Bus Res 49(5):565–583. https://doi.org/10.1080/00014788.2019.1611726
OECD (1998) Harmful tax competition: an emerging global issue. OECD Publishing, Paris. https://www.oecd-ilibrary.org/taxation/harmful-tax-competition_9789264162945-en. Accessed 10 March 2019

OECD (2007) Tax effects on foreign direct investment: recent evidence and policy analysis. OECD Tax Policy Studies, 17, OECD Publishing. https://doi.org/10.1787/9789264038387-en
OECD (2013) Addressing base erosion and profit shifting. OECD, Paris
OECD (2015) OECD/G20 base erosion and profit shifting project 2015 final reports. OECD, Paris
OECD (2017) OECD transfer pricing guidelines for multinational enterprises and tax administrations 2017. OECD Publishing, Paris. https://doi.org/10.1787/tpg-2017-en
Overesch M (2009) The effects of multinationals' profit shifting activities on real investments. Natl Tax J 62:5–23
Pavel J, Tepperová J (2020) ATP identification using balance of payments data: case of the Czech Republic. Prague Economic Papers. https://doi.org/10.18267/j.pep.757
Pavel J, Tepperová J, Arltová M (2020) Tax factors affecting FDI allocation in the EU post-socialist states tax factors affecting FDI allocation in the EU post-socialist states. Post Communist Economies. https://doi.org/10.1080/14631377.2020.1827198
Peralta S, Wauthy X, Van Ypersele T (2006) Should countries control international profit shifting? J Int Econ 68(1):24–37
Potin S, Silva VC, Reina D, Neto AS (2016) Analise da Relacao de Dependencia entre Proxies de Governanca Corporativa, Planejamento Tributario e Retorno sobre Ativos das Empresas da BM&FBOVESPA. Rev Organ Contexto 2016(12):455–478
Riedel N (2018) Quantifying international tax avoidance: a review of the academic literature. Rev Econ 69(2):169–181. https://doi.org/10.1515/roe-2018-0004
Romdhon M, Pansuri CH, Rahayu R (2019) Effective tax rate and Book.Tax difference based on industrial sectors companies on the Indonesia stock exchange. Review of Integrative Business and Economics Research 8(s4):325–332
Saunders-Scott MJ (2015) Substitution across methods of profit shifting. Natl Tax J 68(4):1099
Scheinder F, Raczkowski K, Mróz B (2015) Shadow economy and tax evasion in the EU. Journal of Money Laundering Control 18(1):34–51
Schneider F (2012) The shadow economy and work in the shadow: what do we (Not) know? Johannes Kepler University of Linz and IZA Discussion Paper No. 6423. http://ftp.iza.org/dp6423.pdf. Accessed 10 March 2019
Schneider F (2019) Size of the shadow economies of 28 European Union countries from 2003 to 2018. In: Vlachos V, Bitzenis A (eds) European Union. Post crisis challenges and prospects for growth. Palgrave Macmillan, London
Scholes MS, Wolfson MA, Erickson MM, Maydew E L, Shevlin TJ (2009) Taxes and business strategy: a planning approach (4th edition) New Jersey: Pearson Prentice Hall, Upper Saddle River, NJ
Schwarz P (2009) Tax-avoidance strategies of American multinationals: an empirical analysis. Manag Decis Econ 30(8):539–549
Seabrooke L, Wigan D (2015) How activists use benchmarks: reformist and revolutionary benchmarks for global economic justice. Rev Int Stud 41(5):887–904
Slemrod J, Wilson JD (2009) Tax competition with parasitic tax havens. J Public Econ 93 (11–12):1261–1270
Solilová V, Nerudová D (2018) Transfer pricing rules for SMEs in the EU. In: Transfer pricing in SMEs. Contributions to management science. Springer, Cham. https://doi.org/10.1007/978-3-319-69065-0_2
Tanzi V (1996) Globalization, tax competition and the future of tax systems. International monetary fund, 1996. SSRN 883038. Page 8. https://ssrn.com/abstract=883038. Accessed 28 Feb 2020
Taylor G, Richardson G, Lanis R (2015) Multinationality, tax havens, intangible assets, and transfer pricing aggressiveness: an empirical analysis. J Int Account Res 14(1):25–57
Tørsløv T R, Wier LS, Zucman G (2018) The missing profits of nations. National Bureau of Economic Research Working Paper No. w24701. https://gabriel-zucman.eu/files/TWZ2018.pdf. Accessed 1 July 2020
UNCTAD (2015) World investment report 2015: reforming international investment governance. United Nations Publications Customer Service, 253. New York and Geneva: UNCTAD

NATIONS. https://doi.org/10.18356/293b1525-en. https://worldinvestmentreport.unctad.org/wir2015/wir2015-ch5-international-tax-and-investment-policy-coherence/. Accessed 10 Feb 2020

van't Riet M, Lejour A (2018) Optimal tax routing: network analysis of FDI diversion. Int Tax Public Financ 25(5):1321–1371. Springer US

Vicard V (2015) Profit shifting through transfer pricing: evidence from french firm level trade data (May 1, 2015). Banque de France Working Paper No. 555. https://ssrn.com/abstract=2614864. Accessed 10 July 2020

Weichenrieder AJ (2009) Profit shifting in the EU: evidence from Germany. Int Tax Public Financ 16(3):281–297

Weyzig F (2013) Tax treaty shopping: structural determinants of foreign direct investment routed through the Netherlands. Int Tax Public Financ 20(6):910–937. https://doi.org/10.1007/s10797-012-9250-z

Economic Analysis from the Macro Perspective

Jan Pavel and Jana Tepperová

Contents

Abstract This segment of the book contains an analysis of the extent of profit shifting in 10 post-communist EU countries. To solve this problem, a macroeconomic approach and data from the balances of payments and investment positions of these 10 countries are used. The methodological approaches to the measurement of profit shifting, tax base erosion and the overall estimation of corporate tax revenue losses are explained in detail in the "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion". Estimates are made using the indicator rate of return on foreign direct investment (FDI) and through identifying excessive cross-border flows for selected balance of payments items. The analysis showed that these payments are skewed in favour of the post-communist EU countries. The effect is most pronounced for interest and royalty payments.

J. Pavel (✉) · J. Tepperová
Faculty of Finance and Accounting, Prague University of Economics and Business, Prague, Czech Republic
e-mail: pavelj@vse.cz; jana.tepperova@vse.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_4

1 Introduction

The previous chapter presented, among other things, the results of studies that are based on the microeconomic approach and predominantly grounded in analyses of company data. However, any cross-border transactions of an individual company will also be reflected in the macroeconomic data, specifically those that are reported in the balance of payments and the investment position of the given country. If some approaches to aggressive tax planning are more widely adopted, it can be expected that this fact will most likely be apparent in the excessive scope of some types of transactions (e.g., royalty/licence fee payments or certain types of services). In addition, this fact has implications for the scored rate of return on FDI. However, questions remain regarding how to identify such excessive ranges for certain types of transactions and how to determine the usual rate of return.

1.1 Profit Shifting and Tax Base Erosion from the Macro Perspective

Efforts to optimise tax liabilities are carried out via two main groups of methods. The first group includes procedures to reduce the tax base in the country in which a given economic activity takes place through boosting tax deductible expenses, usually using business transactions with a related company domiciled in a country with a lower tax burden. This brings financial advantages to the owner, as his/her company's profit is taxed at a more favourable rate. In these transactions, licence (royalty) fees and consulting services are often used, for which it is very difficult to determine the correct market price due to the difficulty in comparing the qualitative parameters of individual transactions. Another option is to reduce the tax base through interest-bearing loans. These loans can be provided by either related or independent parties. In the first case, many countries seek a way to reduce this optimisation by setting a cap on the tax-deductible interest costs paid to the related parties. For example, a low capitalisation rule may be adopted, which sets a maximum limit on loans from the related parties as a ratio relative to equity. If loans from the related party exceed this cap, interest payments on such loans can no longer reduce the tax base. The tax deductibility of interest costs for loans from unrelated parties usually remains without any specific regulation, which in fact may result in the conception of more complex optimisation structures and attempts to obscure the links among the companies involved.

The second group of aggressive tax planning procedures consists of transferring already taxed profits to tax locations with a lower taxation of dividend income or lower degree of transparency, which in turn allows for the transfer of profits to the account of the owning individual with lower tax costs. The transfer of already taxed

profits between individual member states is facilitated by the existing EU directive,[1] which provides for an exemption from tax on dividend income provided the income is paid to a parent company. Additionally, there is often a multistage transfer of such taxed profits between several states, and at the end of the chain, there may be countries that have a double taxation agreement with some tax-favourable location outside the EU to which the profit is finally transferred.

The fact that the application of any of the above approaches affects the values of cross-border flows of the selected types of payments allows for macroeconomic data to be used in the identification of the likely optimisation methods as well as to estimate the general extent of profit shifting at the national level among individual countries.[2]

2 Methodology and Data Description

In this chapter, we focus on 10 post-communist EU countries, and using macroeconomic data, we try to quantify the extent of the transfer of tax profits from these countries to other EU Member States. The group of post-communist countries was chosen for several reasons. On the one hand, they share a similar history with a centrally planned economy until the late 1980s and a subsequent economic transformation. Furthermore, in most cases, these are open, usually relatively small economies (with the exception of Poland), which have been trying to attract foreign direct investment since the 1990s to modernise their economies and boost their competitiveness. Another common denominator is the lower quality of their public institutions, including tax law.[3] This, to a considerable degree, facilitates (and thus also stimulates) the adoption of the abovementioned optimisation schemes, as there is a lower probability of detection compared to countries with a better level of institutional quality.

The available data allow a focus only on the first group of optimisation schemes, i.e., those in which the tax base in the country of the investment's location are reduced (see below). We therefore aim to quantify the extent of profit shifting as opposed to the consequences of the owners' efforts to relocate the company's profit to locations with lower taxation of its disbursement. Basic information on the selected methodology is contained in Sect. 6 in "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

[1]Council Directive 2011/96/EU of 30 November 2011 on the common system of taxation applicable in the case of parent companies and subsidiaries of different member states, known as Parent-Subsidiary Directive.

[2]For more details, see Sects. 1–4 in "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

[3]Within the various rankings analysing the quality of public administration and tax law, the post-communist countries are regularly ranked well below the level of the old member states. See, e.g., World Economic Forum (2018): Global Competitiveness Index 2017–2018.

Within the presented analysis, we focus on comparing the rate of return on FDI in 10 post-communist countries and on analysing the three types of payments related to the potential implementation of tax-optimising schemes. In terms of the country of the investment's origin, we work only with EU countries. This is mainly due to the availability of data in a uniform format and with a uniform methodology and because some aspects affecting the mechanisms underlying profit shifting are uniformly addressed by EU directives. Specifically, these relate, e.g., to the tax exemption of dividends and interest paid in the case of transactions between related parties. Another reason to limit the analysis to EU countries is to attempt to establish more detailed reasons why some countries are used for aggressive tax planning while others fail to attract this attention. That is, a number of studies (e.g., Huesecken and Overesch 2015) show that the key factor is not the level of the tax rates, which is relatively easy to find, but rather certain elements of the tax system, such as possibility of preferential taxation of royalties (the so-called patent box), and the existence of withholding taxes. This information is available in a uniform format only for EU countries, since the European Commission (2015) has created a system of 33 indicators that characterise individual tax systems in terms of the presence of elements facilitating aggressive tax planning. In turn, these indicators are used in the performed and presented quantitative and qualitative analyses.

For purposes of researching the extent and structure of the primary FDI income and cross-border payments for consulting services, royalty fees, and interest on provided loans, the presented analysis works with the underlying data sourced by balances of payments. FDI stocks and their source countries are based on investment position statistics. In terms of the time horizon, we work with average values for the period 2014–2016.

Averaging was adopted with the aim of eliminating fluctuations due to economic development or other one-off factors. Information on rates and other tax system parameters is based on OECD and Eurostat statistics.

3 Determination of Profit Shifting and Tax Base Erosion: Post-Communist Countries

3.1 Corporate Tax in Post-Communist Countries and Factors Influencing Its Rate

A standard corporate income tax was introduced in post-communist countries during the economic transformation of the 1990s. Previously, under the central planning system, the economic situation of enterprises was directly or indirectly linked to public budgets. Especially at the end of the 1990s and the beginning of the twenty-first century, statutory rates were gradually reduced, and investment incentives were introduced with the aim of attracting FDI. This was largely successful, as evidenced by the relatively high shares of FDI in GDP (see below and Table 1).

Table 1 Investment positions of EU Member States, shares of FDIin and FDIout as a % of GDP, averages for 2014–2016 (OECD 2020, https://data.oecd.org/fdi/fdi-stocks.htm#indicator-chart)

Country	FDI received	FDI invested abroad
Austria	39	53
Belgium	102	122
Bulgaria	84	5
Croatia	61	11
Cyprus	1043	999
Czech Republic	61	10
Denmark	32	56
Estonia	83	28
Finland	34	47
France	29	52
Germany	23	39
Greece	15	12
Hungary	64	19
Ireland	277	276
Italy	19	25
Latvia	51	6
Lithuania	37	7
Luxembourg	356	386
Malta	1623	590
Netherland	179	281
Poland	39	6
Portugal	51	23
Romania	42	0
Slovakia	49	3
Slovenia	31	14
Spain	42	40
Sweden	55	69
United Kingdom	56	56

Corporate income tax revenue in the 10 surveyed countries ranges between 1.5 and 3.5% of GDP. The difference is mainly due to the statutory tax rates (where a directly proportional relationship can be identified) and is further due to the income structure of GDP, specifically the share of compensation of employees (with an inversely proportional relationship). Both of these relations are evident from Figs. 1 and 2. Assuming stagnation of the statutory rates, in the future, a gradual decline in the importance of this tax due to the convergence of the economic maturity of post-communist countries with that of the old member states may be expected. That is, the convergence process is associated with an increase in the share of compensation of employees in GDP, which, *ceteris paribus,* leads to a reduction in the share of profits and thus also the corporate tax base. The decline in the importance of this tax may be partially slowed down by the phasing out of tax incentives from the first decade of the twenty-first century, which should lead to a gradual increase in the effective tax rate.

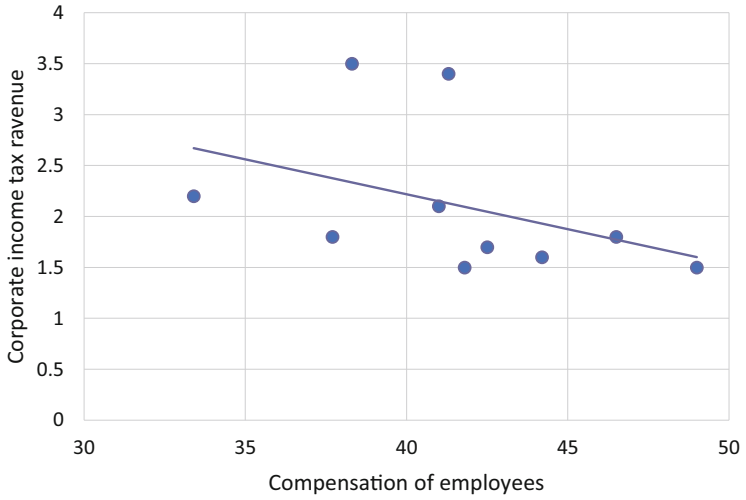

Fig. 1 The relationship between the compensation of employees and corporate income tax revenue (both as a % of GDP) (Eurostat, own calculations)

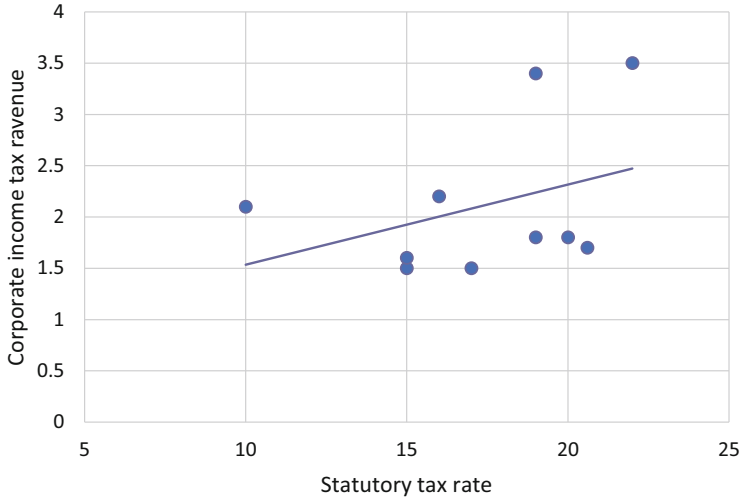

Fig. 2 The relationship between the statutory tax rate (%) and corporate income tax revenue (% of GDP) (Eurostat, own calculations)

3.2 Which EU Countries Are Used for Aggressive Tax Planning Purposes?

Countries used for the purposes of aggressive tax planning are referred to by most of the literature as so-called tax havens. However, no EU country is usually included in

this category, although some publications occasionally divert from this rule and identify some EU countries as being suspected of supporting aggressive tax planning (e.g., Janský and Kokeš 2015, 2016; van't Riet and Lejour 2018). Within the presented context, we shall work with the term "country used for aggressive tax planning". The question of suitable criteria for the assessment of individual countries, however, remains.

Some studies (e.g., UNCTAD 2015) identify these countries based on selected elements of their tax systems and legal frameworks. These include specific taxation regimes for certain types of income, nondisclosure provisions with respect to other countries, and the absence of an obligation to disclose the ultimate investment owners. For EU countries, however, many of these provisions are unthinkable, and this approach is thus inapplicable. Therefore, we approach the solution to this problem differently and categorise the individual countries based on the available data on invested and received FDI. We start by answering the question of how these indicators are impacted by situations in which the given country is used for aggressive tax planning.

Provided the given country offers significant tax savings (either directly, through lower final taxes, or indirectly, through the ability to shift profits to even more tax-favourable locations), investment owners can be expected to seek to place their parent company in such a jurisdiction and to use this company for investments in a more highly taxed country. As a result, the country offering tax savings will report a very high volume of FDI into other EU countries. Additionally, provided that the ultimate owner is not a resident of the given country, the parent company will list its owner as being in another country, which will increase the range of FDI received. Situations in which such a country serves as a conduit country, i.e., profits from this country are further shifted to other tax jurisdictions, will have the same effect. It may thus be concluded that countries suspected of permitting applications of aggressive tax planning should report a high volume of FDI allocated to other countries and at the same time also show a high level of FDI received from other countries.

Table 1 contains information on the shares of FDI in GDP in individual EU Member States, both FDI in the given country (FDIin) and FDI invested abroad by economic entities based in that country (FDIout). The reported values are averages for the period 2014–2016 to eliminate possible fluctuations. Looking at the presented data, three groups of countries may be identified. The first group includes countries that show a low volume of FDI placed abroad and a high volume of received FDI. These are predominantly post-communist EU countries that have in the past sought to secure FDI to modernise their economies. The second group consists of countries whose share of FDI usually does not exceed 50% of GDP. These are mostly large and developed economies, such as Germany or the United Kingdom. Finally, the last group includes countries where the share of both received and placed FDI exceeds 100% of GDP. Such high values are strongly atypical, and it is very difficult to find any relevant economic factors that would explain them. Therefore, these countries are likely countries used for tax planning. The highest absolute values are in Cyprus, where the share of both FDI received and invested is

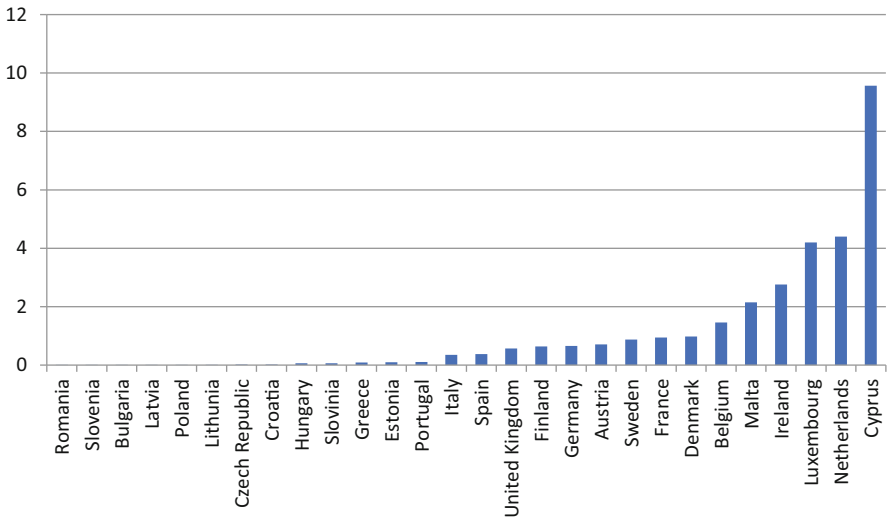

Fig. 3 FDIratio indicator for EU Member States (OECD, own calculations)

approximately ten times the country's GDP. Even higher values with respect to FDI received are scored by Malta (1623% of GDP).

To make the classification of EU countries based on their relationship to possible support of aggressive tax planning activities more transparent and with the aim of designing a uniform indicator to be used in the subsequent quantitative analysis, we propose and design the FDIratio indicator. This indicator takes on the following form[4]:

$$FDIratio = (FDIout/FDIin) \cdot FDIout \tag{1}$$

where

FDIin is the value of FDI carried out by foreign entities in the territory of a given country and *FDIout* is the value of FDI carried out by tax residents of that country in the territory of other states. Both values are reported as a % of GDP.

When ranking the EU countries according to the size of this indicator (see Fig. 3), it is again possible to clearly identify three groups. The first group includes countries with a very low value for this indicator (up to the value of 0.1), which may be labelled net recipients of FDI. These are predominantly post-communist countries as well as some less developed old EU Member States (Greece and Portugal). The second group consists of countries with an indicator value of up to 1.0; these are countries in which the volume of FDI placed abroad usually does not exceed 50% of their GDP and the share of FDI received is somewhat lower. From the perspective of our analysis, however, the most interesting group is the last group, for which the FDI

[4]This indicator was first adopted in our paper Pavel and Tepperová (2020).

indicator value is in excess of 1.0. These are countries in which the share of both received and placed-abroad FDI exceeds 100% of GDP and in some cases is even reported as a multiple of GDP. The highest value of the FDI indicator is calculated for Cyprus, for which the volume of investments received and placed abroad amounts to approximately ten times its GDP. The excessively high values of received and placed-abroad investments are very difficult to explain by the factors that according to most empirical analyses make countries attractive for FDI placement. Rather, it may be assumed that the reason behind this phenomenon represents factors related to aggressive tax planning (see Fig. 3).

Given the topic of the analysis, it is relevant to address the question of which factors are responsible for higher values of the FDIratio indicator and whether these factors relate to possible aggressive tax planning. A partial answer to this question is provided by the results of the regression analysis presented in Table 2. Only the final regression equation (thus containing only variables with statistically significant regression coefficients) is presented, and it takes the following form:

$$FDIratio_i = \beta_0 + \beta_1 lnGDPT_i + \beta_2 lnGDPppp_i + \beta_3 X_i + \varepsilon_i, \quad (2)$$

where FDIratio is the explained variable, and the explanatory variables are represented in part by economic quantities describing the size (*GDPT* is GDP in euros) and economic maturity (*GDPppp* is the level of GDP per capita in purchasing power standards, where the average of the EU is 100) of the surveyed countries and in part by variables that describe selected parameters of the tax system (the vector $\boldsymbol{X}$). These include the values of statutory rates, dividend tax rates and withholding tax rates as well as dummy variables that indicate the presence of a certain type of element that allows for aggressive tax planning (in this case, we made use of a set of indicators presented by the European Commission 2017). A list of the indicators and their descriptions is in the attachment to this chapter (Table 7), as well as descriptive statistics of the nonbinary variables used (Table 8).

The model shows that high values of the FDIratio indicator correspond to rather small (*GDPT*) though economically developed countries (*GDPppp*). Surprisingly, in terms of the tax system's parameters, the statutory corporate tax rates, the rate of taxation of dividends paid to individuals and the existence and size of withholding taxes are not of crucial importance (the coefficients for these variables were statistically insignificant). However, two partial parameters of the corporate income tax appear to be key. The first parameter is the possibility of tax income from royalties by a specific tax-favourable regime (the so-called patent box), and the second factor is the possibility of not considering locally incorporated firms as tax residents if their central management and control are in another country. This element of the tax system is used in the so-called two-tiered intellectual property aggressive tax planning structure, which is based on the establishment of a company to which intellectual property rights are transferred. The executive management is located in a country where the taxation of income is zero or very low. The income of the company from the provision of licences and sub-licences to other enterprises in

Table 2 Factors affecting FDIratio

Response variable: FDIratio	Parameter (prob.)
Const.	−8.7880 (0.0000)
lnGDPT	−0.1945 (0.0021)
lnGDPppp	2.5833 (0.0000)
P17 (Patent Box)	0.7374 (0.0372)
P29 (no tax resident if the management in another country)	8.11 (0.0000)
R2	0.90
No. of observation	28

Note: p-values in parentheses

the EU is then shifted to a zero- or low-tax country. This element is present only in the tax system in Cyprus.

Therefore, it follows that the FDIratio indicator is impacted by factors related to possible aggressive tax planning. This fact should be reflected in the structure of the received FDI in individual countries; in terms of the country of origin, the structure should skew in favour of countries with a high FDIratio score. The following analysis examines the extent to which this also applies to post-communist countries.

To solve the first problem, we have prepared a regression analysis in which we look for factors impacting the volume of FDI from EU Member States in the 10 surveyed post-communist countries. For the sake of clarity, we further present only the reduced form of the model, which contains only variables with statistically significant regression coefficients. The regression equation has the following structure:

$$\ln FDI_{ij} = \beta_0 + \beta_1 \ln FDIratio_i + \beta_2 \ln GDPT_i + \beta_3 NEI + \varepsilon_i, \qquad (3)$$

where the stock of FDI from country i allocated to country j (FDI) represents the response variable, $FDIratio_{\mathrm{i}}$ is the value of the indicator FDIratio calculated according to (1) for country i, $GDPT_i$ denotes the GDP in euros of country i, and NEI is a binary variable that assumes the value of 1 when countries i and j are adjacent to each other.

Given that we work with averages for the period 2014–2016, the structure of the underlying data set is in the form of 10 cross-sectional units (post-communist countries), each with 27 observations (investor countries). Therefore, to estimate the model, we adopt a panel (cross-sectional) regression with fixed effects. The results of the model estimation are presented in Table 3.

Table 3 Factors affecting the volume of FDI with a focus on the investor country

Response variable: lnFDI	parameter prob.
Const.	−7.8520 (0.0003)
FDIratio	0.7186 (0.0000)
lnGDPT	0.9977 (0.0000)
NEI	2.7068 (0.0001)
R2	0.62
No. of observation	264

Note: p-values in parentheses

The presented results show that post-communist countries tend to receive more investment from large (*GDPT*) and neighbouring (*NEI*) countries. The positive regression coefficient for the variable *FDIratio* confirms that the extent of FDI increases with that variable's growth. Therefore, it may be concluded that the territorial structure of the source of investments is skewed in favour of countries with high values of the *FDIratio* indicator, which are suspected of being used for aggressive tax planning.[5]

3.3 Comparison of the Rate of Return

In itself, the link between the volume of investments placed and the *FDIratio* indicator does not necessarily mean that the countries in question are used for aggressive tax planning. To test this hypothesis, it is necessary to turn our attention to an analysis of the rate of return. Proof of the existence of a negative relationship between these two variables would be an indication that profit shifting does indeed take place.

An analysis of this issue may be approached from several directions. The first option is an analysis using the average rate of return on FDI in individual post-communist countries and a comparison based on the *FDIratio* indicator of the source countries, weighted by the share of their investment in the total FDI of the given country. The rate of return is calculated as the share of paid dividends and retained

[5]In Pavel et al. (2020), we performed an analysis of the factors impacting the allocation of FDI in post-communist countries, focusing on the tax system of the investor's country but without adopting the FDIratio indicator. The results confirm geographical proximity as a significant factor as well as the presence of the following elements in the tax system of the investor's country: the possibility of using SPE, a withholding tax on interest income, a patent box and not considering locally incorporated firms as tax residents if their central management and control are in another country.

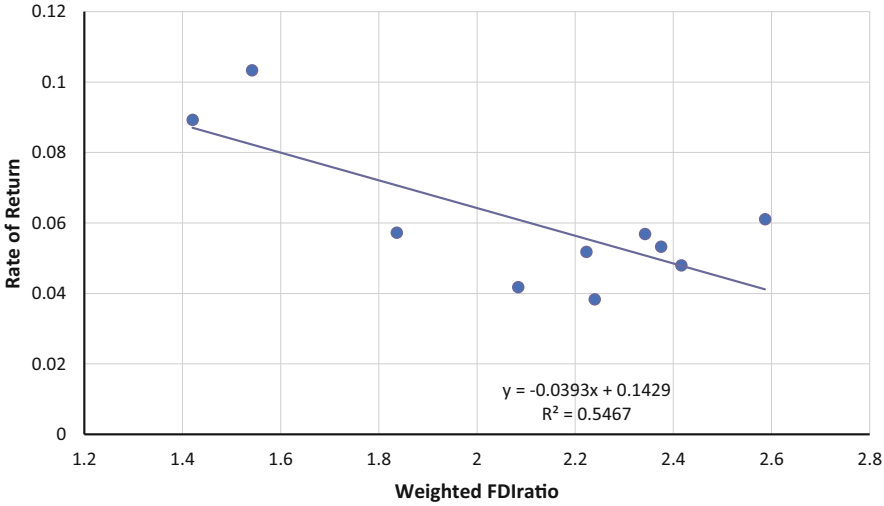

Fig. 4 Relationship between the weighted FDIratio indicator of source countries and the rate of return on FDI

earnings in the total volume of the investment. Both variables in the numerator are thus representative of the profit that has been taxed in the recipient's country.

Provided that investments from countries with a higher *FDIratio* indicator show, on average, lower rates of return, there should be an inversely proportional relationship between the average rate of return on all FDI in the given country and the *FDIratio* indicator of the investor countries, weighted by the share of individual investments in the total FDI of the given country.[6]

Figure 4 shows the relationship between the above two quantities; to enhance clarity, the points are connected with a regression line. Its slope confirms the inversely proportional relationship, which is also in line with the value of the correlation coefficient (−0.74). The rate of return on FDI in countries with higher investment from countries with a high FDIratio indicator is indeed lower.

Further confirmation of the above relationship can also be obtained by estimating a regression model of the following form:

$$\ln RoR_{ij} = \beta_0 + \beta_1 FDIratio_i + \varepsilon_i, \tag{4}$$

where the rate of return on FDI from country i allocated to country j (RoR_{ij}) represents the response variable, and the $FDIratio_i$ indicator of country i is the explanatory variable.

The results of the model presented in Table 4 once again confirm the inversely proportional relationship between the two quantities, although the regression

[6] A similar approach to this analysis is adopted in, e.g., Janský and Palanský (2019).

Table 4 The relationship between the rate of return and the FDIratio indicator

Response variable: lnRoR	Parameter prob.
Const.	−2.7794 (0.0000)
FDIratio	−0.0714 (0.0930)
R2	0.15
No. of observation	222

Note: p-values in parentheses

coefficient is now significant at only a 10% level of significance. The rate of return therefore decreases with the indicator's growth, which in fact confirms the hypothesis of possible aggressive tax planning.

3.4 Excessiveness of Selected Cross-border Payments

The reduction in tax bases in the country of investment generates higher costs than would otherwise be the norm. However, most countries oppose this situation and adopt various rules to ensure that foreign input prices do not become inflated. Nevertheless, there are already several channels for which this can be ensured only partially. These are interest payments, licence (royalty) fees and payments for consulting services. For all these items, it is very difficult to determine comparable prices; the only exception is perhaps the portion of interest payments to related persons, for which a number of states have adjusted their regulations (in terms of the extent of tax deductibility).

To determine whether in these three items result in higher-than-usual payments to countries with high *FDIratio* indicator values, three models were estimated with the following explanatory variables: payments for royalties (*ROY*), payments for consulting services (*SER*) and interest payments (*INT*). The final regression equation has the following form (here, for payments for royalties; the structure of the regression equations for the other two cases is similar).

$$\ln ROY_{ij} = \beta_0 + \beta_1 \ln FDIratio_i + \beta_2 \ln GDPT_i + \beta_3 NEI + \varepsilon_i, \tag{5}$$

where the value of payments for royalties from country i to country j (ROY_{ij}) represents the response variable, and the $FDIratio_j$ indicator of country i is the explanatory variable. FDIratio_i is the value of the indicator FDIratio calculated according to (1) for country i, $GDPT_i$ denotes GDP in euros in country i, and *NEI* is a binary variable that assumes a value of 1 when countries i and j are adjacent to each other.

The results of the regression analysis are presented in Table 5. All three types of payments show that they are directed more towards neighbouring countries (*NEI*), economically larger countries (*GDPT*) and countries with a higher value of the

Table 5 Factors affecting royalty fees, interest payments and payments for consulting services

Response variable:	lnROY parameter prob.	lnSER parameter prob.	lnINT parameter prob.
Const.	−6.37765 (0.0005)	−5.26543 (0.0007)	−2.75457 (0.0344)
lnFDIratio	0.294800 (0.0005)	0.0930947 (0.0930)	0.250092 (0.0005)
lnGDPT	0.614350 (0.0002)	2.5833 (0.0000)	0.422509 (0.0010)
NEI	1.28660 (0.0004)	2.08535 (0.0000)	1.16264 (0.0004)
R2	0.54	0.59	0.54
No. of observation	228	262	184

Note: p-values in parentheses

FDIratio indicator. This factor is most significant for royalties and interest payments, suggesting that these two channels are key to aggressive tax planning. A limitation of the performed analysis is the fact that this type of profit shift can be more complicated. For example, a new company may be established in a tax location other than the source of the investment to collect payments for royalties, consulting services and interest. Its profits can be transferred to the final jurisdiction (even through additional intermediaries). However, existing macroeconomic data do not correctly capture these more complex types of transactions.

3.5 Estimation of the Extent of Profit Shifting

In the previous section, it was established that the data from balances of payments and the investment positions of individual countries indeed point towards a shift in profits from post-communist countries into other EU countries. In particular, this is reflected in the fact that the return on investments from countries with high FDIratio values is on average lower than that on investments from the countries with lower values for this indicator and is furthermore reflected by the reality that a higher volume of interest payments, royalties and management consulting services flows to these countries.

The results of the regression analyses undertaken may be used to estimate the extent of the volume of profit shifts from the 10 post-communist states into other EU countries. To this end, we adopt estimated regression equations for individual models, notably considering the regression coefficients for the FDIratio indicator. The calculation procedure is based on the following steps (we start with the method for the rate of return).

Based on the estimated regression equations, we calculate equalised values for the rate of return on investments from all of the post-communist countries. Subsequently, values for the rate of return that correspond to the values of the FDIratio

indicator for Germany, specifically 0.66, are calculated. Germany was chosen for two reasons. First, it is a major investor in the post-communist countries for which there is usually no evidence of being used for any significant aggressive tax planning. Furthermore, the value of 0.66 corresponds to the average FDIratio indicator's value for the part of the EU Member States that neither belong to the group of net beneficiaries nor report overly high FDI ratio values.

The difference between the two calculated rate of return values (equalised and with the indicator's value set at 0.66) indicates the extent to which the rate of return that corresponds to a high FDIratio country is lower than usual. If this percentage is multiplied by the level of FDI that flows from the given country into the territory of the recipient country, we obtain an estimate of the extent of shifts in tax profits. For better comparability, we converted these figures into the percentage share in GDP. The results are shown in Fig. 5.

The average extent of the estimated profit shits from post-communist countries to other EU Member States is approximately 0.35% of GDP, with significantly higher values estimated for the Czech Republic (more than 0.9% of GDP) and Hungary (0.8% of GDP). On the opposite side, i.e., countries with relatively low estimated profit shifts, ranks Slovenia (only 0.05% of GDP) and Romania (0.12% of GDP).

The application of the second approach (i.e., through the flow of payments for royalties, consulting services and interest payments) is analogous. Based on the estimated regression equations, equalised values were calculated for the respective cross-border payments between the two corresponding countries. Furthermore, the same equation was applied, but the FDIratio indicator for the investor's country was replaced with the value corresponding to Germany, i.e., 0.66. The results were subtracted, and if the value equalised with the original data was higher than the value equalised using the FDIratio value of 0.66, the difference was taken as an estimate of an excessive shift in profits. Finally, the calculated values were once again converted to % shares in GDP.

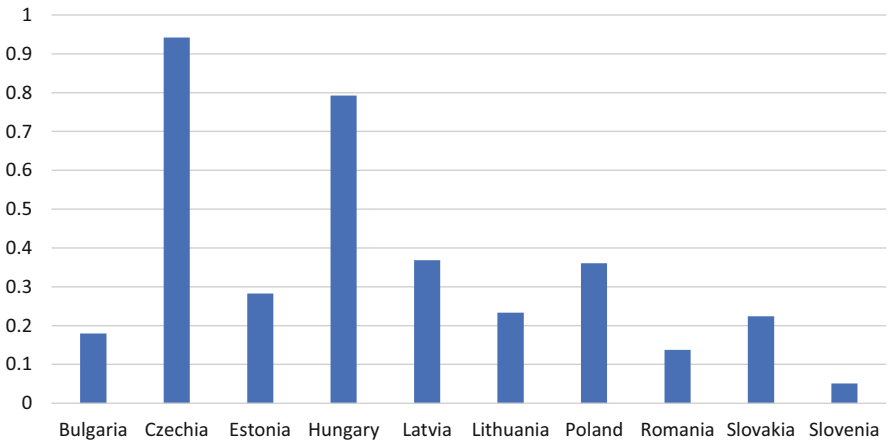

Fig. 5 Estimation of the extent of profit shifting (as a % of GDP) using the rate of return method

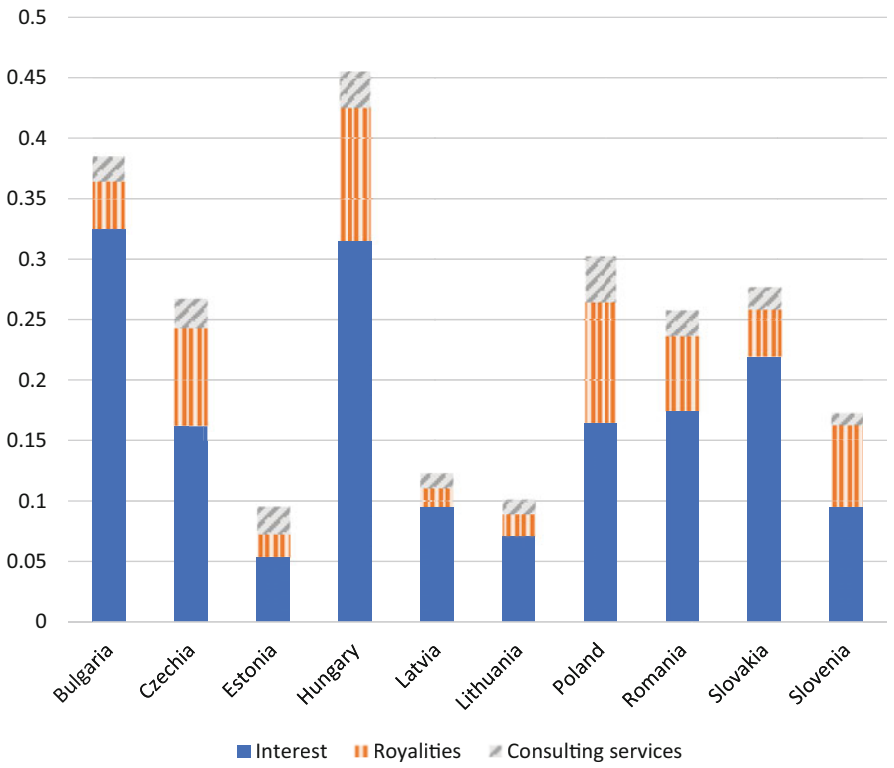

Fig. 6 Estimate of the extent of profit shifting (as a % of GDP) due to overpayments for royalties, interest and consulting services

In presenting the results of the calculations, Fig. 6 suggests that the key channels for profit shifting are interest payments and royalties, while the importance of payments for consulting services is relatively limited. The chart also shows that the extent of shifts through these three channels varies among the post-communist states. In the case of the Baltic States, profit shifting can be defined as relatively insignificant since our estimates point to a shift of approximately 0.1% of GDP. For the other countries, however, the estimated extent of relocation is more than double that of the Baltic States. Our model estimates the highest values for Hungary, where the figure stands at more than 0.45% of GDP; another country with an estimate significantly above average is Bulgaria (0.38% of GDP).

In the case of Hungary and Bulgaria, the most important channel for the outflow of profits is interest payments. This is probably because the tax systems in both countries also allow for tax base deductions of the usual interest on interest-free loans. This element is not present in the tax systems of other countries.

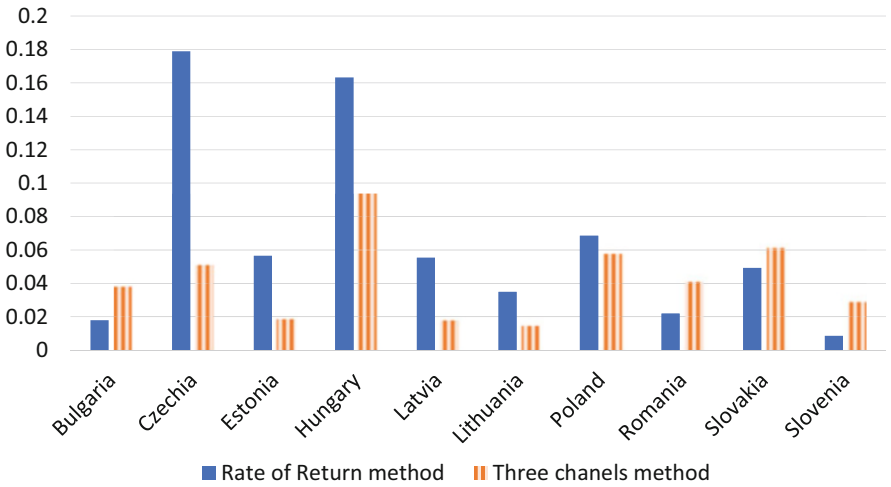

Fig. 7 Estimate of the reduction in tax revenues (as a % of GDP) due to profit shifting

Following the estimation of the extent of profit shifting, it is possible to proceed to the final part of our analysis, which is the quantification of the impact of profit shifting on the tax revenues of individual countries. The estimated extent to which profits were shifted is multiplied by the applicable corporate income tax rate for the given country. The results of both approaches are summarised in Fig. 7, where the data are presented as a % of GDP.

According to our estimates, the loss of corporate tax revenues amounts on average to approximately 0.05% of GDP. Significantly higher values are reported for Hungary (using both methods) and the Czech Republic (though using only the rate of return method).

Figure 8 relates our results to corporate tax revenues and thus shows by how many percent such revenues are probably lower as a result of these processes. In most countries, this loss amounts to no more than 3% of total revenues. The highest loss is once again found in the case of Hungary, where the first type of estimate points to an approximately 10% drop, and the second, to an approximately 5% drop.

Compared to the results of existing studies, the estimated results presented here are lower (see Table 6). However, most of the analyses performed so far work for a wider set of states and are not limited to post-communist states. Moreover, we have worked only with investor countries from the EU. Figure 9 shows the share of EU country FDI in total FDI invested in the analysed post-communist countries. With the exceptions of Hungary and Slovenia, the share is above 50%, while for the Czech Republic, Poland, Slovakia, Estonia and Lithuania, this indicator stands at over 80%. For these countries, the estimated profit shifts are likely very close to the actual figures.

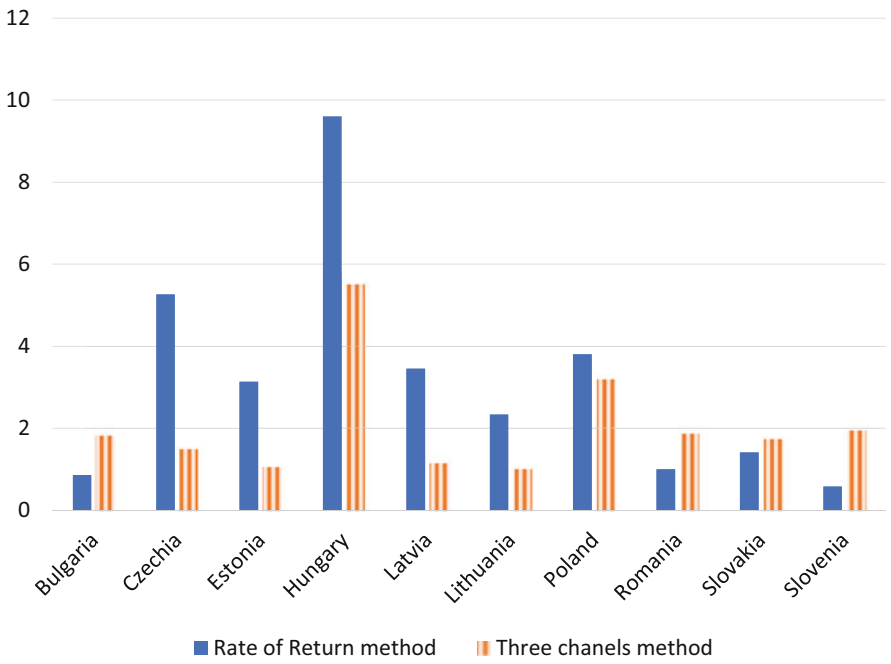

Fig. 8 Estimated reduction in corporate income tax revenues, % of revenue

Table 6 Estimates of the impact of profit shifting on tax revenues (Janský and Palanský 2019)

Source	Estimated loss of tax revenue as a % of GDP
Clausing (2016)	0.48
Janský and Palanský (2019)	0.26
Cobham and Janský (2018)	0.15
Cobham and Janský (2019)	0.21
Tørsløv et al. (2018)	0.26

4 Conclusions

Estimates of the extent of aggressive tax planning may be calculated in a number of ways. Some of these methods work with macroeconomic data from the balances of payments and investment positions of individual countries. Their essence is based on the assumption that if the given country stimulates or does not prevent aggressive tax planning, this fact will be reflected in an excessive amount of some types of cross-border financial flows and lower rates of return on foreign direct investment.

This chapter has focused on analysing the situation in 10 post-communist EU countries, while the extent of profit shifting was estimated using two methods—an analysis of the rate of return and the identification of overpayments for royalties,

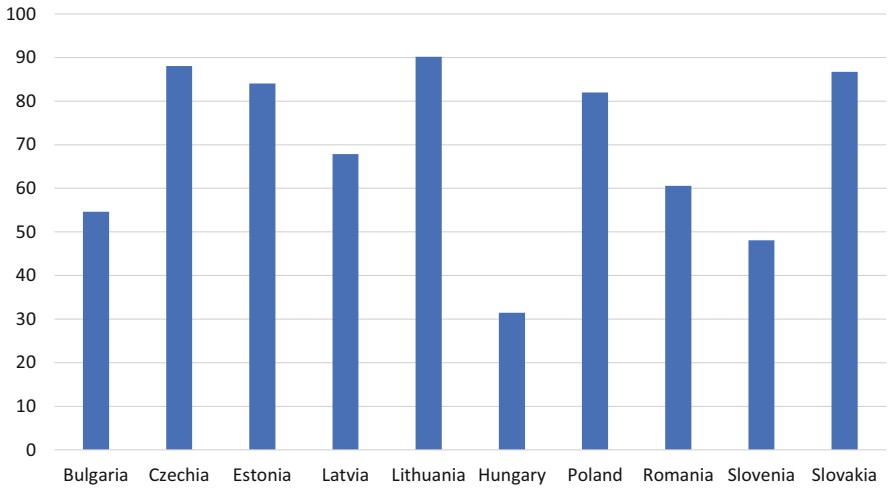

Fig. 9 Share of EU country FDI in total FDI invested in the analysed post-communist countries (%)

consulting services, and interest payments. To carry out the estimations, countries that may be assumed to facilitate aggressive tax planning were identified. It was established that the characteristic feature of these countries is a high volume of foreign direct investment both received and placed in other countries. Among EU countries, these are mainly Cyprus, Malta, Luxembourg, and the Netherlands.

The analysis undertaken showed that in terms of their origin, foreign direct investments into post-communist countries are biased in favour of the abovementioned countries. At the same time, the rate of return on foreign direct investment from these countries also exhibits lower values than that on investments from other countries. This confirms the hypothesis that they are used for purposes of aggressive tax planning. A similar conclusion has also been reached through an analysis of the extent of cross-border interest payments, royalties, and consulting services. The analysis showed that these payments are skewed in favour of the abovementioned countries. The effect is most pronounced for interest and royalty payments.

Using the above results, we estimated the extent of profit shifting from the 10 post-communist countries to other EU states. The results show that, on average, the extent of these shifts amounts to 0.2% of GDP, and losses in corporate tax revenues are approximately 0.05% of GDP. However, rather significant differences may be detected among the individual countries. In the case of the Baltic States, estimates show relatively little tax profit shifting to the EU states, while the extent of such shifting is highly above average in the case of Hungary and the Czech Republic.

Acknowledgement This chapter is the result of GA ČR No. 18-14082S "Fair corporate taxation: Measurement of the impact of corporate profit shifting on the budget of the Czech Republic".

Annexure

Table 7 Description of ATP indicators (European Commission 2017)

Category	Indicator Number	Subject	Category
Dividends received	P1	Too generous tax-exemption of dividends received	Passive
Dividends paid	P2	No withholding tax on dividends paid (absent under domestic law)	Passive
	P3	No withholding tax on dividend equivalents (e.g., buy-back of shares)	Passive
	P4	No beneficial-owner test for reduction of withholding tax on dividends	LoA-A
	P5	Tax deduction for dividends paid	Active
Interest income	P6	Income from certain hybrid instruments non-taxable	LoA-A
	P7	No deemed income from interest-free loans (non-arm's length transactions)	Active
Interest costs	P8	Tax deduction for intra-group interest costs	Passive
	P9	Tax deduction does not depend on tax treatment in the creditor's state	LoA-A
	P10	Tax deduction allowed for deemed interest costs on interest-free debt	Active
	P11	No taxation of benefits from interest-free debt	LoA-A
	P12	No thin-capitalization rules	LoA-A
	P13	No interest-limitation rules	LoA-A
	P14	No withholding tax on interest payments (absent under domestic law)	Passive
	P15	No beneficial-owner test for reduction of withholding tax on interest	LoA-A
Allowance for equity capital	P16	Notional interest deductions for share capital	Active
Royalty or other IP income	P17	Patent box or other preferential tax treatment of income from IP	Active
	P18	No taxation of capital gains (fair market value) upon transfer of IP	Passive
Royalty or other IP costs	P19	Tax deduction for intra-group royalty costs	Passive
	P20	No withholding tax on royalty payments (absent according to domestic law)	Passive
	P21	No beneficial-owner test for reduction of withholding tax on royalty	LoA-A
	P22	R&D tax incentive also obtainable for costs that are reimbursed	Passive
Group taxation	P23	Group taxation with acquisition holding company allowed	Passive
CFC Rules	P24	No CFC rules	LoA-A

(continued)

Table 7 (continued)

Category	Indicator Number	Subject	Category
Foreign legal entities	P25	Tax qualification of foreign partnership does not follow that of the foreign state	Passive
	P26	No rule to counter a mismatch in the tax qualification of a domestic partnership between own state and a foreign state	LoA-A
	P27	No rule to counter a mismatch in tax qualification of a domestic company between own state and a foreign state	LoA-A
Tax-free company	P28	Zero corporate tax rate	Active
	P29	Locally incorporated company not a tax-resident if management/control is in another state	Active
Ruling practices	P30	Unilateral ruling on, e.g., interest spread or royalty spread can be obtained	Passive
	P31	Excess profits rulings	Active
GAAR/SAAR	P32	No general or specific anti-avoidance rules to counter the model ATP structures	LoA-A
Other themes	P33	Any other significant ATP indicator to be identified by national tax experts	

Note: Indicators are marked as active if they promote tax planning structures or passive if they make tax planning structures possible but do not promote such structures by themselves. Lack of anti-abuse (LoA-A) is when there are missing rules that could hinder aggressive tax planning as such

Table 8 Nonbinary variables used in the regression analyses and their descriptive statistics (basic information)

Variable	Description	Source	Mean	S. D.	Min	Max
lnFDI	FDI stock	Eurostat	5.44	2.79	−2.30	10.45
FDIratio	FDI ratio	own calculations	1.12	2.01	0.00	9.56
lnFDIratio	FDI ratio	own calculations	−1.88	2.77	−10.08	2.26
lnGDPT	GDP in euros	Eurostat	12.11	1.55	9.23	14.97
lnGDPppp	GDP per capita in Purchasing Power Standards (PPS) expressed in relation to the EU average, set to equal 100	Eurostat	4.53	0.36	3.89	5.55
lnROY	Payments for royalties in euros	Eurostat	0.86	2.14	−3.91	5.885
lnSER	Payments for consulting services in euros	Eurostat	1.867	2.04	−3.91	6.487
lnINT	Interest payments in euros	Eurostat	2.21	1.79	−1.71	6.56
lnRoR	Rate of Return	own calculations	−2.87	0.94	−9.28	−0.69

References

Clausing KA (2016) The effect of profit shifting on the corporate tax base in the United States and Beyond. Natl Tax J 69(4):905–934

Cobham A, Janský P (2018) Global distribution of revenue loss from corporate tax avoidance: re-estimation and country results. J Int Dev 30(2):206–232. https://doi.org/10.1002/jid.3348

Cobham A, Janský P (2019) Measuring misalignment: the location of US multinationals' economic activity versus the location of their profits. Dev Policy Rev 37(1):91–110. https://doi.org/10.1111/dpr.12315

European Commission (2015) Study on structures of aggressive tax planning and indicators. Final Report. WP no. 61–2015. https://doi.org/10.2778/59284

European Commission (2017) Aggressive tax planning indicators. Final report. Taxation Papers, WP no. 71–2017. https://doi.org/10.2778/847061

Huesecken B, Overesch M (2015) Tax avoidance through advance tax rulings–evidence from the LuxLeaks firms. SSRN Electron J. https://doi.org/10.2139/ssrn.2664631

Janský P, Kokeš O (2015) Corporate tax base erosion and profit shifting out of the Czech Republic. Post-Communist Econ 27(4):537–546. https://doi.org/10.1080/14631377.2015.1084733

Janský P, Kokeš O (2016) Profit-shifting from the Czech multinational companies to European tax havens. Appl Econ Lett 23(16):1130–1133. https://doi.org/10.1080/13504851.2015.1137543

Janský P, Palanský M (2019) Estimating the scale of profit shifting and tax revenue losses related to foreign direct investment. Int Tax Public Financ 26(5):1048–1103. https://doi.org/10.1007/s10797-019-09547-8

OECD (2020) Data on FDI. https://data.oecd.org/fdi/fdi-stocks.htm#indicator-chart Accessed 10 Feb 2020

Pavel J, Tepperová J (2020) ATP identification using balance of payments data: case of the Czech Republic. Prague Economic Papers, https://doi.org/10.18267/j.pep.757

Pavel J, Tepperová J, Arltová M (2020) Tax factors affecting FDI allocation in the EU post-socialist states Tax factors affecting FDI allocation in the EU post-socialist states. Post Comm Econ. https://doi.org/10.1080/14631377.2020.1827198

Tørsløv TR, Wier S, Zucman G (2018) The missing profits of nations. National Bureau of Economic Research Working Paper No. w24701. https://gabriel-zucman.eu/files/TWZ2018.pdf. Accessed 10 March 2020. https://doi.org/10.3386/w24701

UNCTAD (2015) World investment report 2015: reforming international investment governance. Chapter V. In: International tax and investment policy coherence. UNCTAD NATIONS, New York and Geneva. https://doi.org/10.18356/293b1525-en

van't Riet M, Lejour A (2018) Optimal tax routing: network analysis of FDI diversion. Int Tax Public Financ 25(5):8. Springer US

World Economic Forum (2018) Global competitiveness index 2017–2018. https://widgets.weforum.org/global-competitiveness-report-2017/. Accessed 10 Feb 2020

Economic Analysis from the Micro-Perspective

Marian Dobranschi, Veronika Solilová, Marek Litzman, and Danuše Nerudová

Contents

Abstract This segment of the book contains an analysis of profit shifting and tax base erosion together with an estimation of the corporate tax revenue losses in 11 post-communist EU countries, namely Bulgaria, the Czech Republic, Croatia, Hungary, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia. To solve this problem, a microeconomic approach and data from the ORBIS database are used. From a micro-perspective, this research allows the determination of pre-tax income sensitivity to tax rate differentials and the identification of profit shifting channels and corporate tax revenue losses based on the construction of a set of financial indicators together with the fulfilment of conditions. The indicator system that is suitable for various optimization strategies allows us to further categorize the various types of tax havens and to determine what kind of channels are predominantly used to move the tax bases from post-communist EU countries. The analysis showed that post-communist EU countries play an important role in the aggressive tax planning structures (ATPS).

M. Dobranschi · V. Solilová (✉) · M. Litzman · D. Nerudová
Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic
e-mail: marian.dobranschi@mendelu.cz; veronika.solilova@mendelu.cz; marek.litzman@mendelu.cz; danuse.nerudova@mendelu.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_5

1 Introduction

The previous chapters presented, among other things, the results of studies that are based on the microeconomic approach and predominantly grounded on the analyses of company data. As current techniques of profit shifting and tax base erosion are very diverse, MNEs can apply many different ATP strategies and ATPS.

The relevance of studies on profit shifting and tax base erosion significantly increased after 2009, when following the global financial crisis, states were forced to find other revenue sources. Until the worldwide crisis occurred, tax optimization, including ATP strategies and ATPS, was tolerated or even supported as an important economical driving force (Jareš 2014). However, since 2013, when the BEPS project started, OECD (2013) has emphasized that tax base erosion poses a risk to tax revenue, tax sovereignty and tax fairness across OECD countries and non-OECD countries alike. Moreover, since 2015, anti-abuse measures have been discussed and introduced in many countries, such as the ATAD directive in the EU.

Based on the government's responses to the ATP strategies used and ATPS in the form of amendments in the corporate tax system, we are able to distinguish the responses of MNEs. Specifically, if the CIT rate is changed, the response of MNEs is real in the form of the movement of assets, employment and economic activities, as there is strong sensitivity to CIT rate changes. However, if there are amendments in the taxation of corporate income (i.e., new anti-abuse measures introduced), the responses of MNEs are through financial tools via transfer pricing, location of royalties, intangibles, etc. Therefore, according to the categorization of the profit shifting techniques, the different channels through which MNEs can shift taxable profits to gain tax advantages can be distinguished. Among these, the channels typically used in rank order are the following: the *debt channel*, the *transfer pricing channel* and the *IP profit shifting channel*.

The most important contributors not only with respect to profit shifting techniques but also from the micro-based data perspective are Hines Jr and Rice (1994) and Grubert and Mutti (1991), who first focused on the determination of profit shifting and tax base erosion. Hines Jr and Rice (1994) estimated profit shifting and tax base erosion according to "true" and "shifted" income through *tax differentials*. Another methodologic approach introduced by Grubert and Mutti (1991) is presented through *discrepancy* by comparing the selected financial indicators of MNEs with a peer group not having any link with tax havens or with preferential tax regimes. This approach was further developed by Fuest and Riedel (2012). However, different ATP strategies can be researched by using the appropriate data sets. Thus, data availability predetermines to a great extent the methodology used more than does the development of new methods of examining profit shifting.

The researchers examining profit shifting and tax base erosion have presented empirical studies estimating corporate tax revenue losses. The OECD (2015) underlines that the overall BEPS magnitude is significant and translates into annual losses of 4–10% of CIT revenues or USD 100 to 240 billion. However, post-communist countries have been the focus of only a few studies, such as Moravec et al. (2019),

Janský (2018), Janský and Kokeš (2015, 2016) (in the case of the Czech Republic), Ištok and Kanderová (2019a, b), Khouri et al. (2019) (in the case of the Slovak Republic), and Nerudová et al. (2020a) (in the case of the Visegrad countries).

1.1 Methodology and Data Description

In this chapter, we analyse the occurrence of profit shifting and corporate tax revenue losses in CEE EU countries, particularly 11 post-communist countries—Bulgaria, the Czech Republic, Croatia, Hungary, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia. From a micro-data perspective, two methodological approaches were adopted to identify the extent of profit shifting and tax revenue losses:

- estimation at the level of "true" and "shifted" profit based on the tax differentials according to the amended Hines and Rice methodology; and
- identification of discrepancy, i.e., differences in financial indicators and in pre-tax income between the control group (national companies) and the treatment group (MNEs), based on the methodologies of Grubert and Mutti (1991), Fuest and Riedel (2012) and Janský and Kokeš (2015, 2016).[1]

According to the *first approach,*[2] we collected company-level data (over 350,000 foreign-owned companies based in CEE EU countries) from the ORBIS database (latest update June 2017) for the 2009–2017 period. To conduct research between sister companies on the sensitivity of pre-tax profits to tax differentials, we used an econometric model similar to the Hines-Rice model. We determine the tax differential as the difference between the statutory CIT rates faced by subsidiaries and the average CIT rate faced by sister companies sitting in tax haven countries and by sister companies sitting in EU27 countries. We focused separately on the tax differential with the sister companies sitting exclusively in the EU24[3] and tax haven countries.[4]

[1]Further also used in Desai et al. (2006a, b), Maffini (2009), Egger et al. (2010) focusing on the developed world.

[2]The methodology in detail is presented in "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

[3]Austria, Belgium, Bulgaria, Cyprus, Croatia, Denmark, Estonia, Finland, France, Greece, Germany, Hungary, Italy, Malta, Latvia, Lithuania, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden and the United Kingdom.

[4]According to studies of OECD (1998), Gravelle (2015) and Cobham et al. (2015), we build a group of world tax haven countries. The aforementioned countries are classified as tax haven countries due to a combination of OECD (1998) criteria and Cobham et al. (2015) high financial secrecy criteria. Tax havens include the following countries: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, British Virgin, Cayman Islands, Dominica, Grenada, Montserrat, Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Turks and Caicos, U.S. Virgin Islands, Belize, Costa Rica, Panama, Hong Kong, Macau, Singapore, Andorra, Channel Islands (Guernsey

We applied the panel data of a multivariate OLS regression, in which the main dependent variable of our econometric analysis is pre-tax profit[5] and the main independent variable is the tax differential. As additional explanatory variables, we applied the company's fixed assets as a proxy for capital and the cost of employees as a proxy for labour and material costs. Furthermore, we also use country-specific factors, which we consider to be relevant in influencing the level of pre-tax profits reported by foreign-owned companies based in CEE-EU. Therefore, we use yearly GDP per capita in PPP units, the Corruption Perception Index (CPI), population and the unemployment level. Our expectations regarding the estimates obtained by using a panel data OLS regression are as follows: the main independent variables should have a negative impact on reported pre-tax profits. This expectation is justified by the fact that mainly due to tax differences, MNEs are incentivized to shift profits from high- to low-tax countries. Moreover, the capital and labour explanatory variables should have a positive effect on pre-tax profits as well as economic growth and CPI. We expect unemployment to have a negative impact on the pre-tax profits reported by foreign-owned companies based in some CEE-EU countries.

Furthermore, we also applied a multilevel (mixed effects) model that takes into account the cross-sectional and industry-specific effects on profit shifting behaviour in CEE EU countries. One of the most important advantages of hierarchical or mixed effects models is that they allow the slopes to vary across different industries[6] and employ a probabilistic weighting.

Finally, to estimate the amount of profits shifted from CEE EU countries to tax havens and EU24 countries, we use the formula proposed by Weichenrieder (2009) and later by Godar (2018), in which the amount of profit shifting equals the aggregated net of tax profits reported by foreign affiliates based in each CEE EU country multiplied by the tax differentials to tax havens and EU24 countries and the semi-elasticity coefficient determined according to the previous equations.

According to the *second approach,*[7] from the ORBIS database (update number 173 of 18 June 2018), we derived for a five-year (2013–2017) period, company-level data regarding MNEs with global ultimate owners (GUOs) in the world and having associated enterprises or affiliates in the CCE-EU and in the rest of the world. Moreover, MNE groups were split into groups having effective CFC rules in the headquarters country and groups without effective CFC rules in the headquarters country. Our key strategy is based on Grubert and Mutti (1991) and Fuest and Riedel

and Jersey), Cyprus, Gibraltar, Isle of Ireland, Liechtenstein, San Marino, Maldives, Mauritius, Seychelles, Bahrain, Jordan, Lebanon, Bermuda, Cook Islands, Marshall Islands, Samoa, Nauru, Niue, Tonga, Vanuatu and Liberia. To this list, we add Luxembourg, Malta, Monaco, Switzerland and Netherlands.

[5]As a robustness check, we replaced pre-tax profit with earnings before interest and taxation.

[6]In the Eq. 14, we use the Nomenclature of Economic Activities classification (NACE) by which all industries are included in our analysis. See "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

[7]The methodology in detail is presented in "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

(2012). Similar to the study of the European Commission (2017), we distinguish within MNE groups three types of entities that can be included in the ATPS: target entities,[8] lower-tax entities[9] and conduit entities.[10]

For the purpose of the identification of target, lower-tax and conduit entities, we applied a multi-criteria model. In the model, the general conditions were first set at the group level, and second, the specific conditions for the identification of the role were set at the level of subsidiaries/entities.[11] Finally, the combination of all criteria was considered with the final identification of the role. For example, a lower consolidated tax burden together with a gap between consolidated pre-tax profitability and consolidated operating profitability (via earnings before interest and taxation, hereinafter EBIT) should reflect that ATPSs are successfully implemented in an MNE group. Furthermore, the existence of non-effective CFC rules in the headquarters country and a zero CIT rate or lower CIT rate (at least five percentage points) for subsidiaries are other important requirements for successful ATPS. In addition, the comparison between pre-tax profitability and operating profitability allows us to identify whether MNEs are able to reduce pre-tax profits through financial transactions more than a peer group, i.e., the domestic entities in the same industry.[12]

The identification of lower-tax entities or target entities is based on two comparisons. The first is at the level of the MNE group; at this level, the 5-year average pre-tax (operating) profitability of a subsidiary (entity) is compared with the 5-year average pre-tax (operating) profitability of the MNE group as a whole. The second is at the level of the peer group; at this level, the 5-year average pre-tax (operating) profitability of a subsidiary (entity) is compared with the 5-year average pre-tax (operating) profitability of the peer group. A similar approach was applied for the other indicators, such as financial profitability, interest payments, debt share and non-bank liabilities. According to this approach, the lower-tax entity should report

[8] A target entity is an entity in the multinational group that has its tax base reduced as a result of aggressive tax planning. Moreover, at least one lower entity must be determined for the identification of a target entity within an MNE group. For further details, see the European Commission (2017).

[9] A lower-tax entity is an entity in the multinational group that has its tax base increased as a result of aggressive tax planning, but the base is taxed at a lower tax rate. Moreover, at least one target entity must be determined for the identification of a lower-tax entity within an MNE group. For further details, see the European Commission (2017).

[10] A conduit entity is an entity in the multinational group that does not see its tax base significantly affected, but this entity is needed for the aggressive tax planning structure. A conduit entity cannot be identified as either the target or lower-tax entity. Moreover, at least one target entity must be determined to identify a conduit entity within an MNE group. For further details, see the European Commission (2017).

[11] See Tables 1 and 2 in "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

[12] An industry is classified based on the NACE codes between A and S, except C (Manufacturing) and M (Professional services), for which two-digit codes were used. Further, at least 20 entities with sufficient economic data for each industry classification were considered, and five-year averages were applied.

higher entity pre-tax (operational) profitability, which is taxed at a lower CIT rate than the average CIT rate for the group. To identify base erosion or profit shifting via debt instruments in the MNE group, the lower-tax entity should also report higher entity financial profitability, lower interest payments, a lower debt share or lower non-bank liabilities. This is in contrast to the case of the target entity, for which lower values of the researched indicators are reported together with the taxation of its pre-tax profit at a higher CIT rate than the average CIT rate for the group.

Finally, after the identification of the ATPS and particular channels, following Fuest and Riedel (2012), Janský and Kokeš (2015, 2016) and Nerudová et al. (2020b), the estimation of profit shifting and tax base erosion was performed through the comparison of a tax payable per unit of profits between the peer groups and the entities belonging to the MNE group. The derived negative differences in the tax payable per unit of profit (5-year average) were applied to enable the adjustment of the reported profit before tax and EBIT. Then, the estimated base erosion and profit shifting for each CEE-EU country were recalculated through the application of the CIT rate to the corporate tax revenue losses.

1.2 Determination of Profit Shifting and Tax Base Erosion: Post-Communist Countries: First Methodological Approach via Tax Differentials

Initially, the summary statistics of the panel data used to run the classical OLS regression and multilevel mixed effects model are presented in Table 1. The average statutory CIT rate in CEE EU countries is close to 17.45% on annual basis, while the average CIT rate in the rest of the EU24 countries is approximately 5.10% higher. From the profit shifting standpoint, the CEE EU countries are in a tax advantageous position. At first glance, one can assume that the tax rate difference represents the de facto context, in which MNEs are incentivized to shift profits to CEE EU countries due to the relatively low CIT rate in comparison with that of other EU countries. Therefore, we consider it necessary to present a detailed distribution of statutory CIT rates across the CEE EU countries as averages across the 2009–2017 period.

As shown in Table 2, the lowest average CIT rate is found in Bulgaria, with only 10%, and the highest CIT rates are in Estonia and Slovakia, in which the rates in both countries exceed the 20% threshold. The average CIT rate in the EU24 countries is considerably higher than that in each CEE EU country; therefore, the resulting tax differential takes negative values. This means that foreign owned companies based in CEE EU countries have a tax advantage when compared with their sisters based in the other EU countries. The situation is significantly different when we compare the differences between the CEE EU countries' CIT rate and the average CIT rate in tax haven countries. The average CIT rate of sister companies based in tax havens is 14.24% or 3.22% lower than the average CIT rate in the CEE EU. This means that considering only the tax differentials, there is a clear incentive to shift profits from

Table 1 Summary statistics (own compilation based on ORBIS database)

Variable		Obs. (No.)	Mean	Std. Dev.	Min	Max
Profit before taxation	mil. EUR	3,210,010	0.090	4.317	0	2450
EBIT		3,210,010	0.074	3.589	0	2530
Fixed assets		3,210,010	0.607	35.8	−57	19,700
Cost with employees		3,210,010	0.185	2.824	−234	865
Cost with materials		3,210,010	0.786	19.9	−181	7420
Statutory CIT rate	%	103,581	17.45	2.53	9	23
Average CIT rate in EU24		103,581	22.56	0.48	21.39	23.10
Average CIT rate in tax havens		103,581	14.24	0.31	13.39	14.80
Tax differential to tax havens		103,581	3.22	2.54	−4.47	8.56
Tax differential to EU24		103,581	−5.10	2.55	−13.10	0.25
GDP per capita (in PPP)	EUR	3,210,010	19,593.78	3767.14	10,600	26,400
Unemployment	%	3,210,010	5.50	1.92	2.7	12.6
CPI		3,210,010	51.95	9.48	33	69
Population	No.	3,210,010	12,500,000	12,400,000	1,314,870	38,100,000

Note: CIT rates are presented in %, and the rest of the data is presented in absolute values

CEE EU countries to tax havens. Bulgaria is the only CEE EU country that has a lower CIT rate than the average CIT rate in the tax havens. In the rest of the CEE EU countries, the tax differential in the tax havens has a positive value, reflecting the fact that there is an incentive to shift income to tax havens due to their relatively low statutory corporate income tax rates.

OLS Panel Data Regression Model

The OLS panel data regression helps us to estimate the semi-elasticity to tax differentials, of the profits before taxation. The main independent variables that are of interest besides the other included regressors are the two tax differentials: the tax differential to the sister companies based in tax haven countries and the tax differential to the sister companies based in the EU24 countries, namely, *tax_dif_haven* and *tax_dif_EU24,* respectively. For the purpose of a robustness check of our model, we replace the dependent variable of pre-tax income with EBIT. The results of the OLS panel data regression are shown in Table 3. The tax differential independent variables are statistically significant and have a negative impact on the profits before taxation and EBIT. This is the first sign that indicates that foreign owned companies based in the CEE EU engage in profit shifting due to tax difference incentives. The

Table 2 Average statutory corporate income tax rates in CEE EU and tax differentials between 2009–2017

Country	Foreign owned companies based in the CEE EU	Sister companies from the same MNE group		Differences	
	Average statutory CIT rate	Average statutory CIT rate in tax havens	Average statutory CIT rate in EU24	Tax differential tax havens	Tax differential EU24
	%				
Bulgaria	10.00	14.09	23.02	−4.09	−13.02
Croatia	20.00	14.15	21.77	5.85	−1.77
Czechia	19.11	14.63	22.64	4.48	−3.53
Estonia	20.67	14.22	22.60	6.45	−1.93
Hungary	17.56	13.75	21.87	3.81	−4.31
Latvia	15.00	14.70	22.78	0.30	−7.78
Lithuania	15.56	14.18	22.81	1.38	−7.25
Poland	19.00	14.45	22.64	4.55	−3.64
Romania	16.00	14.50	22.77	1.50	−6.77
Slovakia	20.67	14.35	22.66	6.32	−1.99
Slovenia	18.44	13.62	22.57	4.82	−4.13
Average	17.45	14.24	22.56	3.22	−5.10

main input variables, such as fixed assets, which is used as a proxy for capital, and cost with employees, which is used as a proxy for labour and material costs, are statistically significant in all four regressions and have a positive impact on the pre-tax income as well as on EBIT. Since the regression is on the log-level between profits before taxation and the independent input variables, the estimates can be interpreted as elasticities. For example, a 1% increase in labour is associated with a 0.36% increase in pre-tax income.

Looking at the second half of Table 3, we did not find significant differences by switching between pre-tax income and EBIT as dependent variables. Consequently, our model proves to withstand the robustness test. With respect to country-specific variables, such as GDP per capita and unemployment, we find that these exogenous factors are not statistically significant in our model. However, according to estimates presented in Table 3, population and CPI tend to have a positive and statistically significant impact on pre-tax income reported by the foreign affiliates in CEE EU countries. These results meet our expectation, especially in the case of CPI, which has a positive impact on profits before taxation. Consequently, if the corruption level decreases in CEE EU countries, profit shifting tends to decrease, and foreign-owned companies will report more pre-tax income.

Special care should be dedicated to the log-level regression. Since the main independent variables, namely, *tax_dif_haven* and *tax_dif_EU24,* take negative values, we cannot transform them in logarithm format. Therefore, the OLS panel data regression estimates the semi-elasticity of pre-tax profits to tax differentials, as

Table 3 OLS estimation results

	(1)	(2)	(3)	(4)
	Profits before taxation (log)	Profits before taxation (log)	EBIT (log)	EBIT (log)
Tax_dif_havens	−0.0468***		−0.0454***	
	(0.00688)		(0.00607)	
Tax_dif_EU24		−0.0462***		−0.0455***
		(0.00688)		(0.00608)
Fixed assets (log)	0.195***	0.195***	0.194***	0.194***
	(0.00546)	(0.00546)	(0.00484)	(0.00484)
Cost with employees (log)	0.366***	0.366***	0.341***	0.341***
	(0.00854)	(0.00854)	(0.00752)	(0.00752)
Material costs (log)	0.160***	0.160***	0.182***	0.182***
	(0.00575)	(0.00575)	(0.00511)	(0.00511)
GDP per capita in PPP (log)	0.0290	0.0599	0.127	0.161
	(0.102)	(0.104)	(0.0908)	(0.0925)
Population (log)	0.196***	0.205***	0.223***	0.232***
	(0.0178)	(0.0177)	(0.0158)	(0.0158)
Unemployment (log)	−0.0683	−0.0583	−0.0141	−0.00377
	(0.0407)	(0.0409)	(0.0359)	(0.0361)
CPI (log)	0.349**	0.338**	0.217*	0.211*
	(0.119)	(0.119)	(0.105)	(0.105)
_cons	−1.891	−2.700*	−2.628**	−3.483**
	(1.137)	(1.198)	(1.008)	(1.061)
N	33,955	33,955	34,682	34,682
R^2	0.584	0.584	0.634	0.634

Note: the (log) represents that each dependent and independent variable is transformed in logarithm before estimation

shown in Table 3. At first glance, keeping all other variables constant, we can interpret that a one-unit increase in the tax differential to the tax haven will decrease the profits before taxation reported in CEE EU by 4.68%. To analyse in detail the sensitivity of profits before taxation, we predict the marginal effect of tax differentials on pre-tax income (Eq. 15). Since our model follows a log-level regression, the interpretation should follow Eq. 16.

Based on the (Eqs. 15 and 16), we obtain a marginal effect of −0.003762, which means that a one-unit increase in the tax differential is associated with a 0.3762% decrease in profits before taxation. Consequently, if the tax haven countries in which the sister companies are based would introduce a 10% decrease in the statutory CIT rate, it would lead to a 3.7% reduction in profits before taxation reported by foreign owned companies based in the CEE EU.

Additionally, we choose to predict the varying marginal effects of the tax differential on pre-tax income. As shown in Fig. 1, the horizontal line presents the

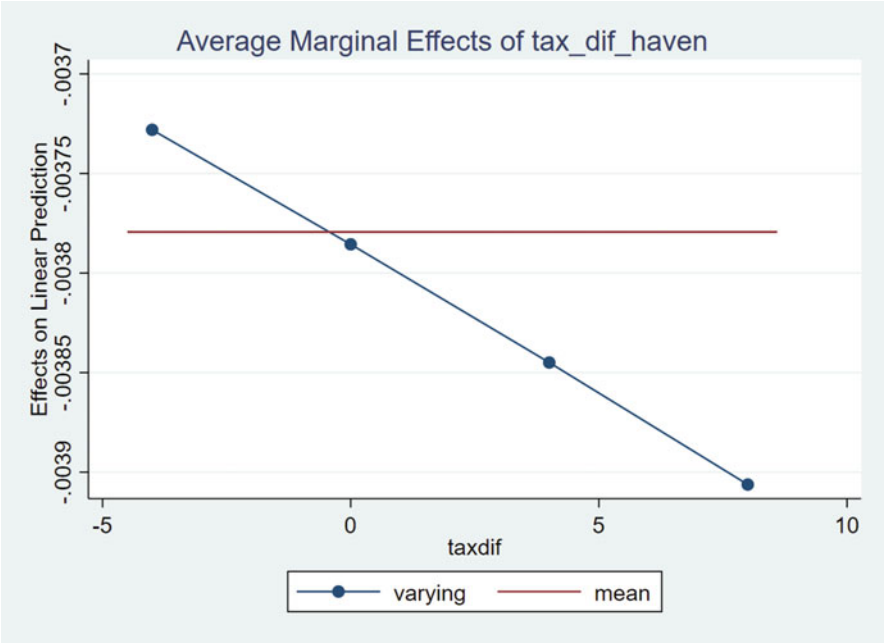

Fig. 1 Comparison between the mean and varying marginal effect of the tax differential to tax havens on profits before taxation in CEE EU countries, as predicted from the OLS panel data regression

predicted mean marginal effect, and the dotted line shows the varying marginal effects at different values of the tax differential. To build this figure, we considered minimum, mean and maximum values of the tax differential to predict varying marginal effects. One can observe that if the tax differential increases or the gap between the selected CEE EU country and the tax havens increases in terms of statutory CIT rates, the marginal effects have a higher negative impact on the pre-tax income reported by foreign owned companies. On the opposite side, if the tax differential would take negative values or tax haven countries in which the sister companies are based would have a higher CIT rate than that in the CEE EU countries, the negative impact on the pre-tax income would decrease.

A similar marginal mean effect is obtained in the case of the tax differential to EU24 countries, in which a one-unit increase in the tax differential will decrease the profit before taxation reported in the CEE EU countries by 0.372%. This means that if the EU24 countries would decrease their statutory CIT rate by 10%, the pre-tax profits reported by foreign affiliates based in the CEE EU would decrease by an average of 3.72%. We also predict the varying marginal effect of the tax differential to EU24 on the pre-tax income reported in CEE EU.

As shown in Fig. 2, the varying marginal effects of the tax differential to sister companies based in the EU24 countries are significantly steeper than the varying marginal effects predicted in Fig. 1. This means that the profits before taxation

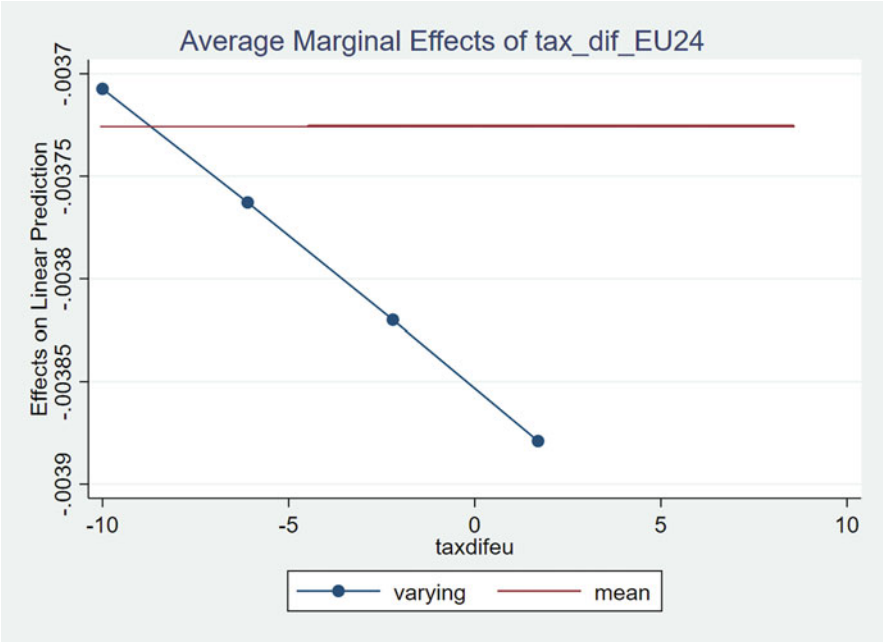

Fig. 2 Comparison between the mean and varying marginal effect of tax differential to EU24 on profits before taxation in CEE EU countries, as predicted from the OLS panel data regression

reported in the CEE EU countries by foreign owned companies are more sensitive to the tax differential to sisters based in tax havens than to sisters based in EU24 countries. A gradual increase in the tax differential to EU24 countries would have a smaller negative impact on pre-tax income than a gradual increase in the tax differential to tax haven countries.

Mixed Effects Model Estimation

The mixed effects model proposed by Barrios and d'Andria (2020) introduces a different approach than the classical OLS regression because it also takes into consideration the cross-sectional effects. Our multilevel or hierarchical model according to Barrios and d'Andria's approach is estimated at the company, time and industry levels.

As shown in Table 4, the mixed effects model tends to produce somewhat higher estimates regarding the impact of tax differentials on the profits before taxation reported by foreign-owned companies based in CEE EU countries. A 10% increase in the tax differential to tax havens is associated with an average 5% decrease in profits. Similarly, the semi-elasticity to the tax differential to EU24 countries also has a negative effect on the profits before taxation reported in CEE EU countries. If the host EU24 countries in which the sister companies are based would introduce a

Table 4 Mixed effects panel data regression estimation results

	(1)	(2)
	Profits before taxation (log)	Profits before taxation (log)
Tax_dif_havens	−0.0491***	
	(0.00783)	
Tax_dif_EU24		−0.0474***
		(0.00778)
Fixed assets (log)	0.181***	0.181***
	(0.00591)	(0.00591)
Cost with employees (log)	0.363***	0.362***
	(0.00895)	(0.00895)
Material costs (log)	0.206***	0.206***
	(0.00655)	(0.00655)
GDP per capita in PPP (log)	0.151	0.182
	(0.102)	(0.103)
Population (log)	0.219***	0.228***
	(0.0174)	(0.0173)
Unemployment (log)	−0.0495	−0.0388
	(0.0410)	(0.0412)
CPI (log)	0.356**	0.342**
	(0.119)	(0.119)
_cons	−4.283***	−5.099***
	(1.159)	(1.216)
Industry fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
N	33,952	33,952
chi2	14,154.2	14,144.9

Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$

10% reduction in statutory CIT rates, the profits before taxation reported by foreign affiliates based in the CEE EU would decrease by an average of 4.7%. The rest of the independent variables have a similar positive impact as that estimated in the case of the classical OLS panel data regression. The input variables, such as fixed assets, cost with employees and material cost, are statistically significant and have a positive effect on the pre-tax income. The unemployment rate and GDP per capita are found to be statistically insignificant. The total population and CPI have a statistically significant and positive effect on the profits before taxation reported by foreign-owned companies based in the CEE EU countries.

Using the formula Eq. 15, we predict the marginal mean effects of tax differentials on the pre-tax income reported in CEE EU countries. The mean marginal effect predicted is −0.0039, which means that a one-unit increase in the tax differential to tax havens is associated with a 3.9% decrease in profits before taxation. This marginal mean effect is slightly higher than the one estimated after the OLS panel data regression. According to Barrios and d'Andria (2020), mixed effects or

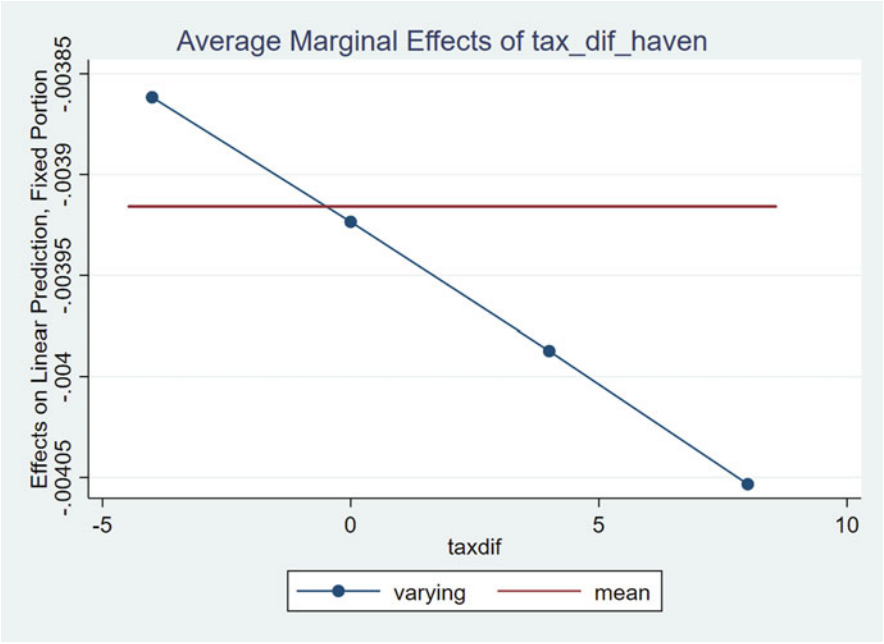

Fig. 3 Varying versus mean marginal effects of the tax differential to the tax haven on profits before taxation in CEE EU countries, as predicted from the multilevel model

multilevel models are superior to an OLS regression because these models take into account cross-sectional information. Therefore, by adding the industry effects to our model, we obtain a higher semi-elasticity of pre-tax income to tax differentials.

In Fig. 3, we graphically present the comparison between the mean marginal effect and the varying marginal effect of the tax differential on tax havens. While the mean marginal effect estimated close to a 0.39% decrease is associated with a one-unit increase in the tax differential, the varying marginal effect shows an even more significant sensitivity of pre-tax income to the tax differential. Therefore, if the tax difference in terms of the statutory CIT rate is increasing between the CEE EU countries and tax havens in which the sisters of foreign affiliates are based, the profits before taxation tend to decrease to a larger extent due to profit shifting incentives.

The varying marginal effects predicted for the tax differential to EU24 countries, shown in Fig. 4, follow a similar pattern to the varying marginal effects predicted after the OLS panel data regression in Fig. 2. If the tax differential to EU24 increases, the profits before taxation tend to be less sensitive to the tax difference, decreasing to a lesser extent.

The results of the robustness check of our mixed effects model (by replacing the main dependent variable of profits before taxation with EBIT) are presented in Table 5. The estimates obtained are close to those obtained in Table 4. Both the tax differential to tax havens and the tax differential to EU24 have a statistically

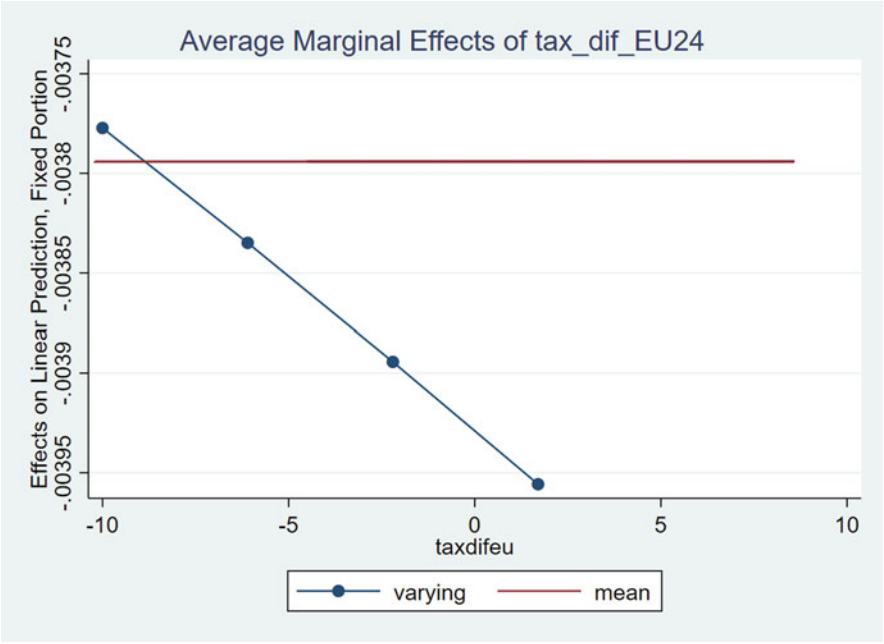

Fig. 4 Varying versus mean marginal effects of the tax differential to the EU24 on profits before taxation in CEE EU countries, as predicted from the multilevel model

significant impact and tend to decrease EBIT. This represents an indirect indication of a profit shifting occurrence due to tax differentials incentives.

Furthermore, the impact of tax differentials (i.e., the tax differential to tax havens and the tax differential to EU24) on EBIT has the same statistically significant and negative effect as that in the case of profits before taxation. The input variables, such as fixed assets, cost with employees and material cost, maintain a positive effect and are statistically significant. Since the relationship between the dependent variables and their regressors is in a log-level regression, the estimates can be interpreted as elasticities. In comparison with the mixed effects model in which the profits before taxation are used as the dependent variable (see Table 4), when we switch to EBIT (see Table 5), we find that three out of four country-specific independent variables, namely, GDP per capita, total population and CPI, are statistically significant and have a positive impact on EBIT. The unemployment rate is the only country-specific exogenous variable that does not hold a statistically significant impact on EBIT.

Estimation of the Extent of Profit Shifting

The estimates obtained regarding the pre-tax income sensitivity to tax differentials (see Table 4) can be used to estimate the amount of profit shifting and corresponding corporate income tax revenue losses. This estimation requires some level of

Table 5 Robustness check on the mixed effects model

	(1)	(2)
	EBIT(log)	EBIT(log)
Tax_dif_havens	−0.0469***	
	(0.00694)	
Tax_dif_EU24		−0.0457***
		(0.00683)
Fixed assets (log)	0.185***	0.185***
	(0.00502)	(0.00502)
Cost with employees (log)	0.340***	0.340***
	(0.00782)	(0.00783)
Material costs (log)	0.220***	0.220***
	(0.00568)	(0.00569)
GDP per capita in PPP (log)	0.266**	0.286**
	(0.0891)	(0.0909)
Population (log)	0.236***	0.242***
	(0.0153)	(0.0152)
Unemployment (log)	0.00474	0.0202
	(0.0361)	(0.0360)
CPI (log)	0.208*	0.222*
	(0.105)	(0.104)
_cons	−4.915***	−5.678***
	(1.018)	(1.066)
Industry fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
N	34,679	34,679
chi2	20,159.5	20,109.3

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$

aggregation of profits before taxation reported by foreign owned companies based in CEE EU countries. In Table 6, we determine the annual average of total profits before taxation in each CEE EU country. Additionally, we determine the average statutory CIT rates and the average effective CIT rates (EATR) in the CEE EU countries. The EATR is approximately 3% lower than the statutory CIT rate.

To estimate the amount of profits shifted from CEE EU countries to tax havens and to EU24, we use the formula proposed by Weichenrieder (2009) and later by Godar (2018)[13]; in this formula, the amount of profit shifting equals the aggregated net of tax profits reported by foreign affiliates based in each CEE EU country multiplied by the tax differentials to tax havens and EU24 countries and the semi-elasticity coefficient (see the results in Table 7).

[13]For more details, see "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

Table 6 Annual average profit before taxation and corporate income tax rates in CEE EU countries between 2009–2017 (own compilation using the ORBIS database 2018)

Country	Profit before taxation	Statutory CIT rate	EATR
	Bln. EUR	%	
Bulgaria	1.05	10.00	8.00
Croatia	0.93	20.67	13.00
Czechia	15.00	19.11	19.00
Estonia	2.13	20.00	15.00
Hungary	1.71	17.56	12.00
Latvia	0.45	15.56	14.00
Lithuania	0.29	15.00	13.00
Poland	5.15	19.00	18.00
Romania	2.68	16.00	20.00
Slovakia	2.25	18.44	5.00
Slovenia	0.69	20.67	22.00
Mean	2.94	17.45	14.45

Note: profits before taxation represent aggregated data, which means we calculate annual average total profits reported by the foreign-owned companies in each CEE EU country

Table 7 Estimated profits shifted from CEE EU countries to tax havens and to EU24 and the associated CIT losses/gains

Country	Profit shifted to tax havens	Profit shifted to EU24	CIT revenues gain/loss to tax havens	CIT revenues gain/loss to EU24	CIT revenues gain/loss to tax havens	CIT revenues gain/loss to EU24
			Via Statutory CIT rate		Via EATR	
	Bln. EUR		Mil. EUR			
Bulgaria	0.234	0.684	23.414	68.438	17.580	51.386
Croatia	−0.335	0.135	−67.021	26.995	−65.182	26.254
Czechia	*−4.078*	*2.920*	*−779.258*	*558.090*	*−605.470*	*433.626*
Estonia	−0.850	0.226	−175.612	46.726	−21.371	5.686
Hungary	−0.387	0.479	−67.988	84.019	−46.368	57.301
Letonia	−0.023	0.110	−3.570	17.119	−3.215	15.419
Lithuania	−0.008	0.184	−1.144	27.572	−0.970	23.375
Poland	−1.420	1.035	−269.792	196.558	−252.169	183.719
Romania	−0.235	0.970	−37.575	155.190	−47.078	194.441
Slovakia	−0.880	0.239	−181.821	49.358	−191.532	51.995
Slovenia	−0.201	0.160	−37.103	29.602	−10.613	8.467
Mean	−0.744	0.649	−145.220	114.520	−111.49	95.61
Total	−8.926	7.791	−1742.690	1374.180	−1337.88	1147.27

Note: a negative sign (−) represents outward profit shifting, and a positive sign shows inward profit shifting in the CEE EU countries. The same rule applies for CIT revenue, for which a negative sign shows losses and a positive sign shows gains. For the tax differential to tax havens, we use $\beta_1 = -0.0491$, and for the tax differential to EU24, we use $\beta_1 = -0.0474$

It is important to emphasize that the negative sign represents outward profit shifting, while the positive sign of our estimate represents inward profit shifting. The average annual profits shifted from CEE EU countries to tax havens are close to EUR 9 billion because the average statutory CIT rate in these CEE EU countries is 3.22 higher than the average CIT rates in tax havens (see Table 2). The only country that shows an inward profit shifting is Bulgaria because its statutory and EATR are significantly low. The statutory CIT rate in Bulgaria is 4.09% lower than the average statutory CIT rate in the tax havens. In the second column of Table 7, we estimate the inward and outward profit shifting when the tax differential to EU24 is used. The positive values obtained show that CEE EU countries experience inward profit shifting because the statutory CIT rate in the CEE EU countries is 5.10% lower than the average statutory CIT rate in the EU24. A negative sign of the tax differential to EU24 and our estimation shows that foreign-owned companies find CEE EU countries a tax advantageous destination to shift income from the other EU24 countries.

Furthermore, we also used the statutory CIT rate and EATR to determine in CEE EU countries the potential tax revenue losses due to profit shifting to tax havens. The Czech Republic is the country with the highest tax revenue losses due to profit shifting to tax haven countries, losing EUR 780 million on average per year when the statutory CIT rate is considered. Switching to EATR, Czechia is losing close to EUR 600 million due to profit shifting to tax havens. The second place in terms of tax losses is Poland, which we estimate to lose on average per year between EUR 270 and 250 million due to profit shifting (see Table 7).

On the opposite side, since the CEE EU countries experience an inward profit shifting from sister companies based in other EU24 countries, we estimate that CEE EU countries have an average annual tax revenue gain of EUR 1.37 billion. The total inward profit shifting in the CEE EU from EU24 countries is estimated to be EUR 7.79 billion on an annual basis. The use of EATR leads to lower CIT revenue losses in the case of tax differentials to tax havens (see Table 7).

Our estimate is close to the profit shifting estimate calculated by Nerudová et al. (forthcoming), in which the authors found that the annual average profit shifting in Czech Republic between 2009–2015 is close to EUR 5.74 billion, leading to an approximate CIT revenue annual loss of EUR 1 billion. Nerudová et al. (forthcoming) use the Hines Jr and Rice (1994) model to measure the amount of profit shifting in the EU. The authors estimate that close to EUR 16.3 billion are shifted from CEE EU countries to sister companies based elsewhere.

1.3 Determination of Profit Shifting and Tax Base Erosion: Post-Communist Countries: Second Methodological Approach via Discrepancy Between Financial Indicators

Our data panel contains financial data for 3075,282 multinational entities with a worldwide GUO and with a link to the CEE-EU region, creating 1,883,559 groups (based on GUO), of which 2,031,566 entities are located in the CEE-EE (the highest portion is presented by Romania; for more details, see Table 8). Furthermore, 602,393 entities based in the CEE-EU region do not have a link to the rest of the world (i.e., without associated enterprises or affiliates outside of the domestic country), unlike the 15,872 entities (in 6556 groups) that have either direct or indirect links to tax havens.[14] Moreover, the researched groups can be split into 197,306 groups having effective CFC rules in the headquarters country and 1,686,253 groups without effective CFC rules in the headquarters country. The situation of individual countries in the CEE-EU region is presented in Table 8.

Similar to the study of the European Commission (2017), we distinguish within MNE groups three types of entities that can be included in the ATPS: target entities, lower-tax entities and conduit entities. Base erosion or profit shifting through the lower-tax entity in the MNE group can be performed via the transfer pricing channel, IP profit shifting channel or the debt channel. If the necessary legal framework related to IPs, such as patent boxes, is not proven in the ATPS of MNEs, then base erosion/profit shifting is performed via transfer pricing. In that case, we analysed pre-tax and operating profitability and the CIT rate. To identify base erosion or profit shifting via debt instruments in the MNE group, the lower-tax entity should report not only higher entity pre-tax (operational) profitability and/or entity financial profitability but also lower interest payments, a lower debt share or lower non-bank liabilities.

For the purpose of the identification of target, lower-tax and conduit entities, we applied a multi-criteria model, and a summary of the general and specific conditions

[14]There is no one correct definition of tax havens; therefore, based on the OECD (1998) criteria and the Financial Secrecy Score by Cobham et al. (2015), we create our own list of tax havens. As tax havens, we consider countries with low or no corporate income tax rates (such as Anguilla, Antigua and Barbuda, Aruba, the Bahamas, Barbados, the British Virgin Islands, the Cayman Islands, Dominica, Grenada, Montserrat, the Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Turks and Caicos, the US Virgin Islands, Belize, Costa Rica, Panama, Hong Kong, Macau, Singapore, Andorra, the Channel Islands (Guernsey and Jersey), Cyprus, Gibraltar, the Republic of Ireland, Liechtenstein, San Marino, the Maldives, Mauritius, the Seychelles, Bahrain, Jordan, Lebanon, Bermuda, the Cook Islands, the Marshall Islands, Samoa, Nauru, Niue, Tonga, Vanuatu and Liberia) and countries, such as Luxembourg, Malta, Monaco and Switzerland, that present some tax haven features. Having direct links means that the Czech company has a subsidiary in the tax haven, and having indirect links means that the multinational group to which the Czech company belongs has such a connection. Based on this classification, we identified the largest portion of entities in Singapore, Ireland, Luxembourg, Malta, the Cayman Islands, Bermuda and Hong Kong.

Table 8 Data summary of CEE-EU entities with a worldwide global ultimate owner (World GUO) (ORBIS database 2018)

	No. entities				No. groups			
							effective CFC rules in the headquarters	
Country	in dataset	domestic entities	domestic entities without a cross-border link	domestic entities having a link to tax havens	in dataset	having a link to tax havens	NO	YES
RO	815,898	685,069	101,813	2131	670,133	929	650,820	19,313
BG	467,891	385,890	49,782	754	306,798	410	305,257	1541
CZ	323,024	187,189	26,197	2717	174,664	1084	169,778	4886
SK	281,903	174,650	101,867	1378	168,869	632	162,010	6859
PL	260,510	99,463	18,312	4880	86,697	1366	9105	77,592
EE	196,416	133,844	130,944	553	123,294	288	119,320	3974
HU	179,620	72,209	2646	1557	70,775	658	673	70,102
SI	178,576	112,381	96,866	444	108,824	299	108,264	560
LV	175,451	107,088	29,501	534	102,309	318	97,829	4480
HR	140,163	66,341	43,028	649	64,451	373	62,711	1740
LT	55,830	7442	1437	275	6745	199	486	6259
Total	3075,282	2,031,566	602,393	15,872	1,883,559	6556	1,686,253	197,306

is presented in Tables 9 and 10.[15] As a lower consolidated tax burden together with a gap between consolidated pre-tax profitability and consolidated operating profitability (via EBIT) should reflect that ATPSs are successfully implemented in an MNE group, we first focused on the effective tax rates in the CEE-EU countries (for details, Table 11).

In the CEE-EU region, as in the case of the effective average tax rate (EATR) according to ZEW studies (Spengel et al. 2014, 2018, 2019), the lowest statutory tax rate at 10% is in Romania, followed by Latvia and Lithuania (15%). This fact is also reflected in the number of groups (see Table 8), which are linked with Romania (more than 670,000 groups). However, even though we focused more on MNEs having at least one subsidiary in a zero-tax country, significant tax rate differentials (between domestic entities and the MNE group) were not identified. Only MNE groups linked with Romania, the Czech Republic, Croatia, Lithuania, Poland and the Slovak Republic generate a lower consolidated EATR than that of the domestic entities (EBIT or PBT level) or than the EATR associated with the ZEW studies (see Table 11). Furthermore, some countries in the CEE EU region can benefit from ATPS that have a positive effect on their tax base, namely, profit shifting and tax base erosion via a debt channel. Therefore, based on the role of entities in ATPS in the CEE EU region (see Table 12), we researched EATR at the level of subsidiaries.

According to the classification of entities within MNE groups that are involved in the ATPS (i.e., target, lower-tax and conduit entities) and the effects of the ATPS on the profit before tax, we evaluated the effective tax rates for those entities. As the results show (Table 12), based on their features in the ATPSs (i.e., a reduction of the tax base), the target entities generate the lowest EATRs, zero EATRs or negative EATRs. From a general point of view, it is obvious that MNE groups having subsidiaries in the CEE EU region are able to make most of the country's tax laws to their advantage in the case of the ATPSs used, specifically in the case of the Czech Republic, Bulgaria, Croatia, Estonia, Latvia, Romania and Slovak Republic, as EATRs are zero or negative. Furthermore, the significant tax rate differentials are obvious if we compare the EATRs of target entities with the EATRs of the lower-tax entities. The significantly higher EATRs of the lower-tax entities are in line with their main role in the ATPSs (i.e., an increase in the tax base that is taxed via a lower tax rate). Moreover, if we compare their EATRs with the EATRs of domestic entities—peer group (see Table 11—there are also significant tax rate differentials in almost all cases (except Poland and Lithuania,[16] where higher EATRs are presented). It initially appears that entities based in the CEE EU region and belonging to MNEs are effectively used in ATPSs because their tax base is decreased or increased based on their role in the ATPS. Nevertheless, there are some BEPS

[15]For more details about the methodology used, see "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

[16]EATRs were determined with limited numbers of entities (under 25). Results and conclusions should take into account this limitation.

Table 9 Summary of the combination of indicators—strict and non-strict—target and lower-tax entities in ATPS without any specification (Own selection based on the European Commission 2017, amended—new indicators added)

Entity	Level	Indicator	Non-strict classification	Strict classification
General Target entity	Group-level	• At least one subsidiary in a lower tax country[1] • Consolidated effective tax rate is lower than the CIT in the Headquarters country • No CFC rules • Gap between the consolidated pre-tax profitability and consolidated operating profitability compared to the consolidated pre-tax profitability and consolidated operating profitability in the peer group	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
	Entity-level	• Lower pre-tax profitability or operating profitability of the subsidiary compared to that in the rest of the MNE group • Lower pre-tax profitability or operating profitability of the subsidiary compared to that of the peer group	or	✓ ✓
		• Lower financial profitability of the subsidiary compared to that of the rest MNE group • Lower financial profitability of the subsidiary compared to that of the peer group	or	✓ ✓
		• Higher CIT rate than the average CIT rate for the group	✓	✓
		• At least one Lower tax entity must be determined for the identification of a Target entity within a MNE group.	✓	✓
		Indicator	Non-strict	Strict
General Lower entity	Group-level	• At least one subsidiary in a higher tax country[2] • Consolidated effective tax rate is lower than the CIT in the Headquarter country • No CFC rules • Gap between the consolidated pre-tax profitability and consolidated operating profitability in comparison with the consolidated pre-tax profitability and consolidated operating profitability of a peer group	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
	Entity-level	• Higher pre-tax profitability or operating profitability of the subsidiary compared to that of the rest MNE group • Higher pre-tax profitability or operating profitability of the subsidiary compared to that of the peer group	or	✓ ✓
		• Higher financial profitability of the subsidiary compared to that of the rest MNE group	or	✓ ✓

(continued)

Table 9 (continued)

Entity	Level	Indicator	Non-strict classification	Strict classification
		• Higher financial profitability of the subsidiary compared to that of the peer group		
		• Lower CIT rate than the average CIT rate for the group	✓	✓
		• At least one Target entity must be determined for the identification of a Lower entity within a MNE group.	✓	✓

[1]If the statutory tax rate (CIT) is zero or at least 5 percentage points lower than that in other parts (countries) of the same MNE group
[2]If the statutory tax rate (CIT) is at least 5 percentage points higher than that in other parts (countries) of the same MNE group

Table 10 Summary of the combination of indicators—strict and non-strict—in the debt channel (Own selection based on the European Commission 2017, amended – new indicators added)

Indicator	Non-strict classification	Strict classification
Target entity		
In addition to general specifications (Table 9)		✓
• Higher interest payments or higher value for at least one of the indicators, namely, long-term debt, total liabilities or non-bank liabilities of the subsidiary, compared to that of the rest MNE group • Higher interest payments or higher value for at least one of the indicators, namely, long-term debt, total liabilities or non-bank liabilities of the subsidiary, compared to that of the peer group	or	✓ ✓
Lower-tax entity		
In addition to general specification (Table 9)		
• Lower interest payments or a lower value for at least one of the indicators, namely, long-term debt, total liabilities or non-bank liabilities of the subsidiary, compared to that of the rest of the MNE group • Lower interest payments or a lower value for at least one of the indicators, namely, long-term debt, total liabilities or non-bank liabilities of the subsidiary, compared to that of the peer group	or	✓ ✓

recommendations,[17] and those entities still play an important role in the case of ATPSs.

[17]For more details about BEPS recommendations and the legal framework of CEE-EU countries, see "Profit Shifting and Tax Base Erosion in the Twenty-First Century", for the current development see "Tax Policy in Relation to Fair Corporate Taxation".

Table 11 Effective and statutory tax rates at the group level (%)

Country	Average Statutory tax rate (2013–2017)	Effective average tax rate[1]	Dataset: Effective tax rates (median value)			
			For a country—peer group[2]		For a group—consolidated[3] *(World GUO)*	
			EBIT	PBT	EBIT	PBT
CZ	19	16.7	17.93	14.76	17.18	14.16
BG	10	9.0	9.57	21.53	29.06	22.10
HR	19	15.56	21.55	35.51	16.05	22.10
EE	20.5	16.1	5.98	4.51	17.19	14.16
(LV)Latvia	15	14.3	11.73	10.25	48.52[a]	37.77[a]
(LT)Lithuania	15	13.6	14.24	12.31	10.72	7.10
PL	19	17.5	15.38	14.64	21.00	13.86
HU	16	15.2	12.72	11.83	16.05	13.86
RO	16	14.8	17.99	19.7	17.19	14.16
SK	22	19.23	26.2	25.4	17.19	14.16
SI	18	16.4	11.43	14.56	23.13	18.54

[1]Based on the ZEW study of effective average tax rates by Spengel et al. (2014, 2018, 2019), EATRs represent the average EATRs for the period 2013–2017

[2]All entities available with suitable data in the ORBIS database and a known domestic GUO, without any other conditions related to the rest of the dataset and without any cross-border link (see note 3 below)

[3]Multinational entities having associated enterprises or affiliates in some CEE EU countries under certain conditions: no effective CFC rules, zero CIT rate in the group, a consolidated effective tax rate lower than the CIT in the headquarters country, a gap between consolidated pre-tax and operating profitability$_{1,2}$ in comparison with that in domestic entities, and the existence of at least one target or one lower-tax entity in the group

[a]Based on these conditions, only 8 groups were identified in the case of Latvia

Table 12 Effective tax rate—at the level of subsidiaries (median value, %)

Entity non-strict classification, World GUO						
	EBIT			PBT		
Country	Target	Lower tax	Conduit	Target	Lower tax	Conduit
CZ	0	11.02	9.43	0	13.70	13.89
BG	0	3.61	0.19	0	6.08	1.60
HR	0	7.40	0	0	12.66	0
EE	0	3.64	2.78	0	4.50	1.99
RO	0	8.98	0	−0.014	9.39	0
LV	−0.17	1.08	0	−0.32	1.44	0
SK	−2.79	20.45	17.23	−3.25	22.04	21.09
HU	5.15	9.98	9.27	4.31	9.82	9.78
LT	9.91	15.10	15.27	5.13	15.20	15.45
SI	8.25	15.06	10.38	10.00	15.46	16.97
PL	13.60	20.49	18.03	15.02	20.21	21.05
Average	3.08	10.62	7.51	2.80	11.86	9.25

Table 13 Pre-tax profitability (median value, %)—at the group level

Country	For a country—peer group		For a group consolidated World GUO	
	EBIT / Total assets	PBT / Total assets	EBIT / Total assets	PBT / Total assets
SI	2.07	1.54	1.83	1.33
BG	4.36	4.38	1.83	1.33
HR	1.07	0.56	1.83	1.33
CZ	3.05	3.85	1.83	1.36
SK	2.81	3.03	2.01	1.48
RO	3.74	3.51	2.01	1.82
HU	2.48	2.54	2.06	1.82
PL	2.59	2.76	2.01	2.21
EE	2.25	3.31	2.01	2.45
LV*	2.17	2.54	2.88	3.70
LT*	3.86	4.55	3.40	3.81
Average	2.77	2.96	2.15	2.19
High values	BG, LT, RO	BG, LT	LT	LV, LT
Low values	HR	HR, SI	–	BG, HR, SI

[a]Consolidated profitability's were determined with a limited numbers of entities (under 10). The results and conclusions should take into account this limitation

To support this assertion, in the next step, we focus on the pre-tax profitability (Eqs. 20, 21, 22 and 23) at the group and entity (subsidiary) levels. The common feature of an ATPS is a higher pre-tax profitability in lower tax jurisdictions and a lower pre-tax profitability in high-tax jurisdictions.

Pre-tax profitability differentials were found in the results obtained at the group level, i.e., compared to the peer group, the MNE groups generate significantly lower consolidated operating profitability, which is lower on average by approximately 28% (equal on average to 2.15%), and consolidated pre-tax profitability, which is lower on average by approximately 35% (equal on average to 2.19%) (see Table 13). The lowest values of consolidated pre-tax profitability are presented by MNE groups having subsidiaries in Bulgaria, Croatia and Slovenia, while the highest values are presented by those having subsidiaries in Latvia and Lithuanian. In this aspect, we note that MNE groups having subsidiaries in Latvia and Croatia generate higher consolidated operating and pre-tax profitability than their peer groups.

At the entity-subsidiary level, the CEE-EU entities clearly play a role in ATPSs with respect to profitability (see Table 14). Target entities are intended to reduce their tax base and exhibit negative values of pre-tax profitability, and lower-tax entities, which are supposed to increase their tax base, generate positive values with a visible increase between operational profitability and pre-tax profitability. As the table further shows, almost all pre-tax profitability at the entity level is negative for target entities. On average, target entities generate an operating profitability of −0.59% and a pre-tax profitability of −2.60%, representing a 3.36 and 5.56 percentage points lower operating profitability and pre-tax profitability, respectively,

Table 14 Pre-tax profitability—at the level of subsidiaries (median value, %)

Entity non-strict classification, World GUO						
	EBIT/Total assets			PBT/Total assets		
Country	Target	Lower tax	Conduit	Target	Lower tax	Conduit
LV	−2.64	0.66	−0.06	−4.93	2.83	−0.09
RO	−2.41	2.50	−0.14	−4.64	3.33	−0.21
SK	−2.14	1.57	2.81	−4.53	2.10	1.73
HR	−1.49	1.98	0.37	−4.36	2.16	0.18
BG	−1.15	2.83	1.37	−3.65	4.01	1.10
CZ	−0.53	1.52	2.41	−2.25	2.52	1.64
PL	1.46	9.43	7.93	−1.75	9.72	5.96
HU	0.93	12.22	10.61	−1.13	13.75	9.20
SI	0.55	3.81	2.18	−0.96	4.19	1.28
EE	0.46	2.81	8.19	−0.71	7.61	7.56
LT[1]	0.47	17.12	9.26	0.27	17.63	8.48
Average	−0.59	5.13	4.08	−2,60	6.35	3.35

[1]Profitability's were determined with a limited numbers of entities (under 25). The results and conclusions should take into account this limitation

than the average operating profitability and pre-tax profitability of the peer groups (see also Table 12). The lower-tax entities generate on average 85% higher operating profitability and 214% higher pre-tax profitability than the domestic entities (a peer group). However, in the case of the lower-tax entities based in the Czech Republic, Bulgaria, Romania and Slovak Republic, neither pre-tax profitability measure (operating or pre-tax) reaches the value of the peer group. The rest of the entities (in Croatia, Estonia, Latvia, Lithuania, Poland, Hungary and Slovenia) generate significantly higher pre-tax profitability than their respective peer groups.

The previous results demonstrate that by exploiting the role of CEE-EU subsidiaries, MNEs are able to more effectively manipulate their operating profitability and/or pre-tax profitability in an ATPS than their peer group (domestic entities). These results did not distinguish different channels, such as debt channels, transfer pricing channels and IP profit shifting channels, through which MNEs can shift taxable profits to gain tax advantages. However, because there are significant differences between the level of operating profitability and pre-tax profitability, we further focus in detail on the debt channel, as it affects financial profit or loss and consequently overall pre-tax profitability.

With respect to the choice of debt or interest channels, the specific indicators related to the ATPSs via d diversity in the use of individual financial instruments by the CEE-EU entities (for details, see Tables 15 and 16). We evaluate specific indicators in combination with the entities' tax positions demonstrated through the EATRs and their pre-tax profitability (see Tables 11–14) and compare them to the those of the peer group. Generally, an ATPS via debt decreases the consolidated tax burden of MNEs by either interest payment deductions combined with financial losses in high-tax jurisdictions and legal-tax mismatches or by relocating the tax base

Table 15 Financial indicators related to debt (median value, %)—at the group level

Country	Groups (peer group and World GUO)	Financial indicators to total assets				
		Interest paid	Total liabilities	Long-term debt	Non-bank liabilities	Financial profit/loss
CZ	For a country – peer group	0.32	26.20	3.97	5.38	0.36
	For a group (consolidated)	0.86	39.82	13.78	4.64	−0.53
BG	For a country – peer group	1.31	50.49	8.77	11.49	−0.13
	For a group (consolidated)	0.94	43.48	14.49	6.20	−0.53
HR	For a country – peer group	0.15	30.26	12.96	1.06	−0.88
	For a group (consolidated)	–	39.82	26.17	6.20	−0.62
EE	For a country – peer group	0.07	24.20	9.52	1.65	0.33
	For a group (consolidated)	–	26.20	7.03	2.41	−0.05
LV	For a country – peer group	0.44	34.94	12.40	6.65	−0.04
	For a group (consolidated)	0.30	74.66	11.67	3.52	−0.57
LT	For a country – peer group	–	29.64	5.94	2.16	0.17
	For a group (consolidated)	–	58.06	20.89	10.67	0.30
PL	For a country – peer group	0.39	26.92	5.14	5.96	−0.49
	For a group (consolidated)	1.31	45.19	10.18	6.55	−0.18
HU	For a country – peer group	0.35	33.01	2.98	9.42	−0.09
	For a group (consolidated)	0.92	45.19	15.21	6.20	−0.30
RO	For a country – peer group	0.51	39.91	1.96	7.03	−0.44
	For a group (consolidated)	0.86	43.48	10.18	6.20	−0.25
SK	For a country – peer group	0.39	37.44	4.63	10.67	−0.18
	For a group (consolidated)	0.55	39.82	10.18	6.20	−0.62
SI	For a country – peer group	0.21	27.76	10.99	2.57	−0.51
	For a group (consolidated)	0.89	39.82	17.63	6.20	−0.33

(continued)

Table 15 (continued)

Country	Groups (peer group and World GUO)	Financial indicators to total assets				
		Interest paid	Total liabilities	Long-term debt	Non-bank liabilities	Financial profit/loss
Average	For a country – peer group	0.41	32.79	7.20	5.82	−0.17
Average	For a group (consolidated)	0.83	45.05	14.31	5.90	−0.33

to lower tax jurisdictions. The effects of these ATPSs are visible at the profit level, particularly for financial profit/losses. As the results show, the ratios between financial profit/loss and total assets and between interest and total assets are significantly higher (almost twice as high) than those for the peer group, which is a finding in line with the literature (e.g., Janský and Kokeš 2015, 2016, Huizinga and Laeven 2008, Ištok and Kanderová 2019a, b, Khouri et al. 2019). Moreover, MNE groups show a significantly higher indebtedness relative to total assets (i.e., by approximately 37% for total liabilities and almost twice as high for long-term debt) than the peer group (see Table 15). MNEs more frequently exploit the advantages of the leverage ratio, and further, internal debt is used within the limits of thin capitalization rules, as the ratio of non-bank liabilities to total assets (on average), representing internal debt, is similar in both groups.

The situation in individual CEE EU subsidiaries proves the previous results (see Table 16). The ratio between financial profit/loss and total assets is negative in all cases of the target entities. Furthermore, it is also negative in the case of lower-tax entities only in three cases (subsidiaries based in Czech Republic, Croatia and Slovakia). From a general point of view, target entities generate much more financial losses than other entities, which is in line with their role in ATPS resulting into the lower EATRs. More frequent use of internal debt financing and higher indebtedness is also more obvious in the target entities than in other entity types. This fact is further related to a higher share of interest payments paid to total assets. Although the indebtedness of the CEE EU subsidiaries belonging to an MNE group is evidently higher than that in the peer group, some entities do not use long-term debt financing, particularly subsidiaries based in the Czech, Bulgaria, Poland, Hungary, Romania and Slovakia. Based on the results, we assume that those entities, except the Romanian subsidiaries, are using internal debt financing (in Table 16 as a proxy for non-bank liabilities), which can offer better conditions than official bank financing. In addition, internal debt financing is not used by subsidiaries based in Croatia and Estonia.

Based on the combination of all indicators (effective tax rates, pre-tax profitability and specific indicators), it is obvious that the CEE-EU target entities used for ATPS performed via debt have very high indebtedness; they make extensive use of long-term debt together with the combination of related-party debt, although this is done within the limits of thin capitalization rules; in addition, their effective tax rate is on average 2.79% compared to 16.78% in a peer group. The CCE-EU entities

Table 16 Financial indicators related to debt—at the level of subsidiaries (median value, %)

Entity (non-strict classification) World GUO	Financial indicators to total assets					Effective tax rates	
	Interest paid	Total liabilities	Long-term debt	Non-bank liabilities	Financial profit/loss	EBIT	PBT
CZ							
Target	1.51	86.46	0.00	3.69	−1.30	0	0
Lower tax	0.64	53.66	0.00	0.66	−0.01	9.75	12.98
Conduit	0.78	56.73	0.00	1.09	−0.29	14.73	10.40
BG							
Target	2.60	90.31	0.00	4.39	−1.73	0.00	0.00
Lower tax	0.88	44.62	0.00	0.00	0.00	3.56	6.01
Conduit	1.25	60.39	0.00	0.73	−0.18	0.34	1.68
HR							
Target	2.35	86.61	13.34	0.00	−1.60	0.00	0.00
Lower tax	0.58	58.93	0.49	0.00	−0.01	7.14	12.51
Conduit	1.59	70.86	3.00	0	−0.51	0	0
EE							
Target	2.19	45.87	10.19	0	−0.70	0	0
Lower tax	–	20.20	1.37	0.00	0.72	4.49	4.76
Conduit	2.03	40.10	16.64	0.00	−0.01	2.78	1.99
LV							
Target	1.88	98.17	15.68	0.85	−0.90	−0.18	−0.32
Lower tax	0.60	69.63	2.90	0.48	0.00	0.94	1.33
Conduit	1.25	79.96	0.76	0.65	−0.03	0.00	0.00
LT[1]							
Target	–	51.50	12.38	3.11	−0.92	9.91	5.13
Lower tax	–	56.54	0.00	0.52	0.02	15.10	15.05
Conduit	–	59.10	4.14	0.30	−0.18	15.28	15.46
PL							
Target	2.04	88.99	0.00	19.22	−2.51	13.47	14.85
Lower tax	0.22	44.39	0.00	4.47	0.11	20.51	20.22
Conduit	0.99	57.89	0.00	6.01	−0.97	18.56	20.80
HU							
Target	0.73	82.30	0.00	6.91	−1.79	5.15	4.31
Lower tax	0.30	56.65	0.00	1.04	0.46	9.99	9.83
Conduit	0.89	73.98	0.00	1.05	−0.69	9.31	9.79
RO							
Target	1.91	100.86	0.00	0.00	−1.15	0.00	−0.01
Lower tax	0.55	59.54	0.00	0.00	0.00	8.47	9.04
Conduit	1.03	77.01	0.00	0.00	−0.12	0.00	0.00
SK							
Target	1.34	96.61	0.00	2.82	−1.30	−2.80	−3.26
Lower tax	0.54	73.80	0.00	0.40	−0.08	20.38	22.01
Conduit	0.83	74.41	0.00	1.16	−0.51	17.73	21.24

(continued)

Table 16 (continued)

Entity (non-strict classification) World GUO	Financial indicators to total assets					Effective tax rates	
	Interest paid	Total liabilities	Long-term debt	Non-bank liabilities	Financial profit/loss	EBIT	PBT
SI							
Target	0.18	69.43	17.99	2.09	−1.24	8.25	10.00
Lower tax	0.06	52.54	5.27	3.04	0.01	14.95	15.28
Conduit	0.08	50.23	9.20	2.06	−0.28	11.36	16.92
Average							
Target	1.67	81.56	13.92	5.39	−1.38	3.07	2.79
Lower tax	0.49	53.68	2.01	1.52	0.11	10.48	11.73
Conduit	1.07	63.70	6.75	1.63	−0.34	8.19	8.93

[1]Financial indicators were determined with limited numbers of entities (under 25). The results and conclusions should take into account this limitation

characterized as lower-tax entities in ATPSs via debt present different features. They also have higher indebtedness than the domestic entities (almost two times higher, 53.68%); however, their interest payments ratio on average is almost the same as that in the peer group. It is in line with our expectations that lower-tax entities increase their tax base for the purpose of taxation at a lower tax rate; thus, they are more in the position of creditors and receive interest payments. As a result, they usually generate a financial profit or a non-significant financial loss; in our case, 0.11% on average as a ratio to total assets. With respect to EATRs via profit before tax, there is obviously a substantial leap from the 2.79% EATR in the target entities to the 11.73% EATR in the lower-tax entities, although this EATR is still lower by approximately 30% than that in a peer group. In the case of the conduit entities,[18] the results (on average) are not significantly different from those for lower-tax entities based in the CEE EU. However, note that their interest payments ratio on average is more than 2.5 times higher and their EATR values as determined via PBT are almost 2 times lower than those in the peer group. In all cases, it is evident that the indebtedness of the CCE EU subsidiaries belonging to an MNE group is clearly very high.

CFC Rules Effective

Another interesting view on ATPS implemented via debt is through CFC rules, which are able to successfully reduce such aggressive tax planning. The previous results were determined under the basic condition that the CFC rules were not implemented in the headquarters country of the MNE group. How the overall

[18]A conduit entity is an entity in the multinational group and does not see its tax base significantly affected, but this entity is needed for the aggressive tax planning structure. A conduit entity cannot be identified as either the target or lower-tax entity.

indicators change if the CFC rules had been in force in the headquarters country can be seen in Table 17.

The most significant changes are in profitability, the interest payment ratio along with long-term debt, and in the positive effects on EATR. As is evident, entities belonging to the MNE group having CFC rules effective in the headquarters country are more profitable, or their losses in the target entities decrease. When CFC rules are implemented in the headquarters country, the EATRs determined via EBIT are higher by at least 43% for lower-tax entities and by 40% for conduit entities in comparison with the situation in which CFC rules are not in force; similarly, EATRs determined via PBT for lower-tax entities and conduit entities are higher by 30% and 45%, respectively. The target entities are still generating losses from financial operations and in almost all cases, from overall operations (i.e., profit before taxation), but the ratio between profit/losses and total assets decreases significantly, similar to the long-term debt ratio (current value on average is 4.99%, the peer group value is 7.20%, and the value for the MNE group not having CFC rules in force is 13.92%). In the case of lower-tax and conduit entities, the interest payment ratio can be considered comparable with that of the peer group. The indebtedness (debt share) also decreases, similar to long-term debt financing (for more details, see Table 17).

Although the overall profitability increased and indebtedness decreased together with a lower use of long-term debt and decreased interest payments, the role of entities in ATPS is still obvious. According to the average results, we can consider the situation of the lower-tax entities and conduit entities comparable to that of the peer group; however, the target entities are still significantly diverse and do not reach comparable values.

Estimation of the Extent of Profit Shifting and Tax Base Erosion

To estimate the amount of profit shifting and tax base erosion of the CEE-EU countries, we use the tax rate differentials,[19] the total amount of recorded EBIT and profit before tax (PBT) by CEE EU countries having a worldwide GUO, and the adjusted EBIT and PBT as reflected through the tax rate differentials. The tax revenue losses were determined through the assumed volume of base erosion and the average statutory tax rate for the period 2013–2017.

As is obvious in Tables 18 and 19, we first focused on the estimation of the tax base erosion related to "all" ATP activities (namely, the transfer pricing channel, the IP profit shifting channel and the debt channel). We assume that ATPS performed via the transfer pricing channel or the IP profit shifting channel would affect the amount of EBIT and that the PBT would be affected by ATPS performed through the debt channel. According to our assumption, we estimate the total maximum amount of profit shifting and tax base erosion at EUR 26.2 billion (annually on average), of

[19]The effective tax rates of the domestic entities and determined via EBIT and PBT minus the effective tax rates of target entities and lower-tax entities.

Table 17 Summary of the indicators for subsidiaries (median values, %—CFC rules in force (World GUO)

	Non-strict classification, World GUO									
		Effective tax rates		Financial indicators to total assets						
Country	Entity	EBIT	PBT	EBIT	PBT	Interest paid	Total liabilities	Long-term debt	Non-bank liabilities	Financial profit/loss
CZ	Target	0	0	−0.27	−1.12	0.96	79.51	0.00	1.91	−1.01
	Lower tax	18.21	18.80	6.16	7.77	0.40	46.73	0.00	0.52	−0.02
	Conduit	17.29	19.13	7.86	6.39	0.45	48.40	0.00	0.28	−0.52
BG	Target	0	0	−0.37	−2.55	2.25	93.90	0.00	7.39	−1.94
	Lower tax	9.65	9.98	4.76	6.60	0.40	45.75	0.00	1.06	0.16
	Conduit	6.01	9.89	5.78	3.81%	0.88	66.41	0.00	2.45	−0.53
HR	Target	0.00	0.00	−1.26	−3.50	6.35	102.23	25.16	0.00	−1.72
	Lower tax	14.47	16.63	2.75	3.14	0.03	74.17	0.38	0.00	0.02
	Conduit	4.47	9.07	4.98	2.21	–	62.95	4.73	0.00	−0.25
EE	Target	0.00	0.00	0.34	0.00	–	54.00	7.89	0.02	−0.21
	Lower tax	11.49	10.90	7.80	10.18	–	35.93	1.79	0.06	0.40
	Conduit	16.70	17.34	8.83	8.66	–	44.48	20.76	0.73	−0.14
LV	Target	0.00	−0.02	−1.46	−3.40	1.67	90.67	0.00	0.54	−0.38
	Lower tax	13.73	14.65	6.60	7.33	0.39	51.03	0.00	1.67	−0.05
	Conduit	6.62	7.25	3.30	2.13	1.15	59.06	0.00	2.36	−0.36
LT	Target	11.04	11.45	1.36	0.80	–	69.56	8.53	0.75	−0.28
	Lower tax	15.48	15.46	7.79	8.53	0.22	48.60	6.04	1.72	−0.01
	Conduit	14.47	15.19	7.68	7.48	0.08	50.68	7.05	1.56	−0.18
PL	Target	4.95	2.36	−0.15	−2.63	1.56	73.20	0.21	6.57	−1.85
	Lower tax	19.92	19.78	5.60	6.43	0.45	43.95	0.00	4.88	0.15
	Conduit	17.39	19.63	5.10	3.49	0.74	55.07	0.00	5.44	−0.64
HU	Target	0.77	−0.40	0.14	−2.18	1.28	76.83	0.00	13.53	−1.42
	Lower tax	9.51	9.37	7.67	8.82	0.26	51.06	0.00	3.48	0.30
	Conduit	8.55	9.66	6.94	5.45	0.85	59.44	0.00	5.04	−0.48

(continued)

Table 17 (continued)

	Non-strict classification, World GUO									
		Effective tax rates		Financial indicators to total assets						
Country	Entity	EBIT	PBT	EBIT	PBT	Interest paid	Total liabilities	Long-term debt	Non-bank liabilities	Financial profit/loss
RO	Target	0.00	0.00	−1.24	−3.72	1.59	101.43	0.00	0.00	−1.59
	Lower tax	13.76	13.84	4.79	5.11	0.48	62.27	0.00	0.00	0.00
	Conduit	1.09	0.02	1.38	0.73	0.87	76.59	0.00	0.00	−0.63
SK	Target	−0.11	−0.81	−0.94	−2.97	1.25	93.30	0.00	2.52	−1.58
	Lower tax	21.98	21.93	3.26	4.26	0.45	62.52	0.00	1.54	−0.14
	Conduit	21.27	22.87	6.44	4.24	0.64	68.79	0.00	1.64	−0.33
SI	Target	14.24	14.83	3.07	3.31	0.05	69.98	13.07	1.31	−0.19
	Lower tax	16.33	17.25	6.83	7.09	0.05	52.91	2.21	1.29	−0.02
	Conduit	11.54	12.58	7.85	6.31	0.09	54.33	0.03	1.37	−0.10
Average	Target	2.81	2.49	−0.07	−1.63	1.88	82.24	4.99	3.14	−1.11
	Lower tax	14.96	15.33	5.82	6.84	0.31	52.27	0.95	1.47	0.07
	Conduit	11.40	12.97	6.01	4.28	0.64	58.75	2.96	1.90	−0.38

Table 18 Estimation of the extent of base erosion and tax revenue losses—all channels of the ATPS (World GUO)

Country	Role of entity	Total for dataset		Indicator T/P domestic (%)		Indicator T/P having a link to tax havens (%)		T/P differential		Adjusted EBIT	Assumed volume of base erosion (EBIT)	Adjusted PBT	Assumed volume of base erosion (PBT)	Total per country	tax revenue losses	Average statutory tax rate 2013–2017 (%)
		EBIT in mil EUR	PBT in mil EUR	EBIT	PBT	EBIT	PBT	EBIT	PBT	in millions EUR						
CZ	Target	440.34	−118.72	17.93	14.76	0	0			440.34	440.34	559.06	559.06	1523.18	289.40	19.00
	Lower-tax	3733.05	13,424.89			11.02	13.7	−0.3854	−0.0718	5171.73	1438.67	14,389.01	964.12			
BG	Target	−1046.27	−2769.83	9.57	21.53	0	0			–		1723.56	1723.56	4536.57	453.66	10.00
	Lower-tax	1779.40	3920.01			3.61	6.08	−0.6228	−0.7176	2887.57	1108.17	6733.01	2813.01			
HR	Target	−2415.36	−6475.43	21.55	35.51	0	0			–		4060.07	4060.07	4853.22	922.11	19.00
	Lower-tax	629.24	1232.59			7.4	12.66	−0.6566	−0.6435	1042.41	413.17	2025.74	793.15			
EE	Target	85.67	80.74	5.98	4.51	0	0			85.67	85.67	80.74	80.74	80.91	16.59	20.50
	Lower-tax	45.68	75.46			3.64	4.5	−0.3913	−0.0022	63.56	17.87	75.62	0.17			
LV	Target	52.87	−409.62	11.73	10.25	−0.17	−0.32			52.87	52.87	462.48	462.48	1614.39	242.16	15.00
	Lower-tax	742.72	1340.19			1.08	1.44	−0.9079	−0.8595	1417.06	674.34	2492.09	1151.91			
LT	Target	10.07	−28.72	14.24	12.31	9.91	5.13	−0.3041		13.13	3.06	38.78	38.78	38.78	5.82	15.00
	Lower-tax	677.50	690.15			15.1	15.2	0.0604	0.2348	–	–	–	–			
PL	Target	940.61	−548.50	15.38	14.64	13.6	15.02	−0.1157	0.0260	1049.47	108.86	–	–	108.86	20.68	19.00
	Lower-tax	4558.73	4769.36			20.49	20.21	0.3322	0.3805	–		–	–			
HU	Target	313.67	−3417.68	12.72	11.83	5.15	4.31	−0.5951		500.34	186.67	3731.35	3731.35	6187.61	990.02	16.00
	Lower-tax	13,439.45	14,456.53			9.98	9.82	−0.2154	−0.1699	16,334.43	2894.98	16,912.80	2456.27			

(continued)

Country	Role of entity	Total for dataset		Indicator T/P domestic (%)		Indicator T/P having a link to tax havens (%)		T/P differential		Adjusted EBIT	Assumed volume of base erosion (EBIT)	Adjusted PBT	Assumed volume of base erosion (PBT)	Total per country	tax revenue losses	Average statutory tax rate 2013–2017 (%)
		EBIT in mil EUR	PBT in mil EUR	EBIT	PBT	EBIT	PBT	EBIT	PBT	in millions EUR						
RO	Target	−684.11	−3136.43	17.99	19.7	0	−0.014			–	–	2452.31	2452.31	5809.89	929.58	16.00
	Lower-tax	6135.89	6415.53			8.98	9.39	−0.5008	−0.5234	9208.95	3073.06	9773.10	3357.57			
SK	Target	−47.85	−689.96	26.2	25.4	−2.79	−3.25			–	–	642.10	642.10	788.36	173.44	22.00
	Lower-tax	615.82	1105.63			20.45	22.04	−0.2195	−0.1323	750.98	135.15	1251.88	146.26			
SI	Target	−802.41	−1586.52	11.43	14.56	8.25	10			–	–	784.11	784.11	784.11	141.14	18.00
	Lower-tax	2030.80	1633.25			15.06	15.46	0.3176	0.0618	–	–	–	–			
Total in millions EUR											10,632.88		26,217.02		4,84.60	–

Table 19 Estimation of the extent of base erosion and tax revenue losses—debt channel of ATPS (World GUO)

Country	Role of entity	Total for dataset		Indicator T/P domestic (%)		Indicator T/P having a link to tax havens (%)		T/P differential		PBT-EBIT	Average statutory tax rate 2013–2017	Adjusted EBIT	Assumed volume of base erosion	Adjusted PBT	total per country	Assumed volume of tax revenue losses
		EBIT	PBT													
		in mil EUR	in mil EUR	EBIT	PBT	EBIT	PBT	EBIT	PBT	in mil EUR	(%)	in millions EUR				
CZ	Target	440.46	−118.58	17.93	14.76	0	0	–	–	−559.05	19.00		559.05		682.54	129.68
	Lower-tax	3075.82	12,659.94			9.75	12.98	−0.4562	−0.1206	9584.120		4479.07	123.49	14,186.68		
BG	Target	−1046.27	−2769.83	9.57	21.53	0	0	–	–	−1723.563	10.00		1723.56		3413.26	341.33
	Lower-tax	1665.81	3795.25			3.56	6.01	−0.6280	−0.7209	2129.447		2711.94	1689.69	6531.077		
HR	Target	−2415.36	−6475.43	21.55	35.51	0	0	–	–	−4060.068	19.00		4060.07		4441.24	843.83
	Lower-tax	552.00	1158.37			7.14	12.51	−0.6687	−0.6477	606.364		921.11	381.17	1908.644		
EE	Target	83.90	79.15	5.98	4.51	0	0	–	–	−4.746	20.50		79.15		79.15	16.23
	Lower-tax	41.57	71.20			4.49	4.76	−0.2492	0.0554	29.626		51.93	–	–		
LV	Target	52.87	−409.62	11.73	10.25	−0.18	−0.32	–	–	−462.484	15.00		462.48		946.74	142.01
	Lower-tax	711.85	1308.89			0.94	1.33	−0.9199	−0.8702	597.042		1366.65	484.25	2447.94		
LT	Target	10.07	−28.72	14.24	12.31	9.91	5.13	−0.1355	–	−38.783	15.00		38.78		38.78	5.82
	Lower-tax	390.92	402.83			15.1	15.05	0.0604	0.2226	11.909		–	–	–		
PL	Target	940.58	−548.78	15.38	14.64	13.47	14.85	−0.1242	0.2100	−1489.358	19.00	–	–	–	0	0
	Lower-tax	3773.73	3964.54			20.51	20.22	0.3336	0.3811	190.805		–	–	–		
HU	Target	313.67	−3417.68	12.72	11.83	5.15	4.31	−0.5951	–	−3731.346	16.00		3731.35		3291.11	526.58
	Lower-tax	13,252.07	14,219.38			9.99	9.83	−0.2146	−0.1691	967.313		16,096.26	−440.24	16,623.33		

(continued)

Country	Role of entity	Total for dataset		Indicator T/P domestic (%)		Indicator T/P having a link to tax havens (%)		T/P differential		PBT-EBIT	Average statutory tax rate 2013–2017	Adjusted EBIT	Assumed volume of base erosion	Adjusted PBT	total per country	Assumed volume of tax revenue losses
		EBIT	PBT													
		in mil EUR	in mil EUR	EBIT	PBT	EBIT	PBT	EBIT	PBT	in mil EUR	(%)	in millions EUR				
RO	Target	−693.81	−3125.27	17.99	19.7	0	−0.01	–	–	−2431.463	16.00		2431.46		2653.15	424.50
	Lower-tax	5777.40	6059.67			8.47	9.04	−0.5292	−0.5411	282.263		8834.71	221.68	9338.656		
SK	Target	−47.85	−689.96	26.2	25.4	−2.8	−3.26	–	–	−642.105	22.00		642.10		655.74	144.26
	Lower-tax	584.24	1074.57			20.38	22.01	−0.2221	−0.1335	490.326		714.02	13.63	1217.983		
SI	Target	−802.41	−1586.52	11.43	14.56	8.25	10	–	–	−784.114	18.00		784.11		784.11	141.14
	Lower-tax	1972.66	1575.29			14.95	15.28	0.3080	0.0495	−397.371		–	–	–		
Total in millions EUR												16,985.81		–	–	2715.38

which EUR 10.6 billion is on the level of EBIT and related to the transfer pricing channel and IP profit shifting channel. The annual base erosion related to the debt channel is presented in detail in Table 19, and its estimation as a maximum is almost EUR 17 billion.

The overall tax revenue losses related to the ATPS are estimated at EUR 4.2 billion (annually on average), of which EUR 2.7 billion is related with the debt channel. Hungary, Romania and Croatia are among the countries with the largest tax revenue losses (more than EUR 9 billion). Note that only Hungary from the CEE-EU region introduced a patent box regime with a patent box rate of 9.5% in 2003. Estonia, Lithuania and Poland are among the countries with the lowest tax revenue losses. This is related to the fact that entities based in Lithuania, Poland and Slovenia and that have a worldwide GUO have higher effective tax rates (indicated by taxation divided by profit before tax or divided by EBIT) than domestic entities, resulting in positive tax rate differentials. Therefore, we do not assume that ATPSs are effectively applied in these countries, and tax base erosion is not estimated.

There are three obvious situations. The first is when tax base erosion is not estimated, as effective tax rate differentials are positive (see column T/P differentials in Table 19). The second is when the overall PBT is negative together with a zero or a negative effective tax rate in the target entities. In that situation, we assume that maximum tax base erosion is different between PBT and EBIT because the target entities use all possibilities to decrease their tax base together with efforts to achieve zero taxation. The third situation is when the effective tax rate differentials are negative and the total amount of PBT or EBIT is positive (i.e., the target or lower-tax entities used some ATPS resulting in a decreased EBIT or PBT but not a negative amount; however, the tax is still at a lower effective tax rate than that of the domestic entities). We estimate tax base erosion as adjusted difference between PBT and EBIT subtracted by recorded difference between PBT and EBIT.

If we look at the debt channel in detail (see Table 19), Hungary, Romania and Croatia are again among the countries with the largest tax revenue losses (between EUR 0.4 and 0.9 billion). Furthermore, in only the case of entities based in Poland, base erosion or profit shifting via debt channels was not proved. A similar situation was identified in the case of lower-tax entities based in Lithuania and Slovenia, according to the first situation (see above).

1.4 Conclusions

This chapter focuses on the analysis based on microdata sources because we consider these more well suited to the identification of corporate tax base erosion and profit shifting activities than macrolevel data.

In the first part of this chapter, following the Hines and Rice methodology, we investigated the occurrence of profit shifting in CEE EU countries. We analyse foreign-owned companies' pre-tax income sensitivity to tax differentials constructed as the difference between each CEE EU country statutory CIT rate and the average

statutory CIT rate of their sister companies based in tax havens and in EU24 countries. We adopt the model proposed by Hines Jr and Rice (1994). The rationale of this model assumes that profit shifting can be observed by regressing the current level of profits before taxation to the "true" and "shifted" level of profits. The first part can be proxied by classical input factors such as labour and capital, while the "shifted" part can be observed by estimating the semi-elasticity to tax differentials. We run two different models, one based on a classical OLS panel data regression and one based on the innovative approach of a multilevel or mixed effects model. To check the robustness of our estimates, we replace the profits before taxation as the dependent variable with EBIT. In all cases, we do find that profit shifting occurs, and in this shifting, the profits before taxation reported by foreign owned companies based in the CEE EU countries are negatively affected by tax differentials. To investigate the semi-elasticity at the smallest change in the regressor, we calculate the mean and varying marginal effects of tax differentials on pre-tax income. In the case of OLS post-estimation, the mean marginal effect of the tax differential is −0.37%, which means that a one-unit increase in the tax differential will decrease the profits before taxation by 0.37%. The marginal mean effect predicted after the mixed effects model shows a slight increase, where a one-unit increase in the tax differential is associated with a 0.39% decrease in profits before taxation.

Comparing the estimates obtained by our empirical analysis with the primary studies of Heckemeyer and Overesch (2017), we obtain a lower semi-elasticity value of 0.372% compared with the 0.786% estimated by Heckemeyer and Overesch (2017). The main explanation of the different estimates stems from the particular group of countries that we focus on (e.g., CEE EU countries), while the study of Heckemeyer and Overesch (2017) performs a meta-analysis collecting estimates from over 26 papers that focus on profit shifting at the global level. Additionally, as presented in Table 2, the CEE EU countries hold a tax advantageous position when compared with other EU24 member states, and the average statutory CIT rate is more than 5.10% lower than the average CIT rate in the rest of the EU countries. In this context, the semi-elasticity of pre-tax income to tax differentials tends to be less sensitive. Beer et al. (2020) found that the average semi-elasticity of pre-tax income to the tax differential produced by micro-studies is 0.72, while the macro-studies produce a larger estimate of 1.11. However, Beer et al. (2020) argue that macrostudies tend to overestimate semi-elasticities because their methodology ignores the matching between production factors and profitability measurements at the company level. Our estimated semi-elasticity is only half the one found by Beer et al. (2020). The main reason for this difference stems from our microlevel approach, where we use company-level data to estimate the sensitivity of pre-tax income to tax differentials. Comparing our results with the estimates obtained by Barrios and d'Andria (2020), we found that there are similar semi-elasticities when a multi-level model is employed. Barrios and d'Andria (2020) obtained a semi elasticity of −0.475, which is close to our result of −0.491.

The estimation of semi-elasticities represents an indirect method to research the occurrence of profit shifting. Our models show that profits before taxation are highly sensitive to tax differentials. If sister companies from the same MNE group face a

decrease in the statutory CIT rate, foreign-owned companies based in CEE EU countries tend to report less pre-tax income.

We also estimate the amount of profit shifting by using the coefficient from our mixed effects model. We found that when the tax differential to tax havens is considered, the amount of profits shifted from CEE EU to tax havens is on average EUR 8.9 billion per year. This produces an annual CIT revenue loss of EUR 1.74 billion in CEE EU countries. In contrast, since the statutory CIT rate in the CEE EU is smaller than that in the rest of the EU24 countries, we found that inward profit shifting occurs when the tax differential to the EU24 is considered. We estimate that close to EUR 7.8 billion are shifted towards CEE EU from sister companies in the EU24 countries, which leads to an annual average CIT revenue gain of EUR 1.37 billion when the statutory CIT rate is used.

In the second part of this chapter, consistent with Grubert and Mutti's (1991) and Fuest and Riedel's (2012) approach, we investigated the occurrence of profit shifting in CEE-EU countries through discrepancies between selected financial indicators. We amended the multi-criteria model proposed by the European Commission (2017), and similar to the study of the EC (2017), we distinguished within MNE groups three types of entities that can be included in the ATPS (i.e., a target entity, a lower-tax entity and a conduit entity).

The effects of ATPS performed via the transfer pricing channel, IP profit shifting channel and debt channel are visible at the profit level. Our results demonstrate that MNEs are able to more effectively manipulate their operating profitability and/or pre-tax profitability in the ATPS than the peer group (domestic entities). Moreover, MNEs have significantly higher indebtedness, a higher utilization of long-term debt and higher interest payments relative to total assets. At the entity-subsidiary level, the CEE-EU entities clearly play a role in ATPS, such as serving as target entities or lower-tax entities. Target entities seek to decrease their tax base as much as possible; thus, the identified entities generate the highest interest payment ratio and debt share ratio, and they make extensive use of long-term debt together with the combination of a related-party debt resulting in very high financial losses, as well as operating profitability (loss) or pre-tax profitability (loss) and significantly lower EATRs than those of the domestic entities. The lower-tax entities seek to effectively increase their tax base and make it subject to a lower tax rate; thus, the identified entities generate positive operating profitability and pre-tax profitability as well as EATRs, but these values are still significantly lower than those of the peer group.

The CEE-EU countries actively combat profit shifting, tax base erosion and tax evasion/fraud.[20] The CFC rules comprise one of the most important tools for

[20]For more details about the current implementations related to the BEPS recommendations, see "Tax Policy in Relation to Fair Corporate Taxation". For example, the Czech Republic introduced the following: a special withholding tax for transactions involving tax havens that do not have a Tax convention or TIES; added to the annual income tax return, a special annex related to transfer pricing transactions and internal debt financing; and limitations on interest deductibility (interest expenses are disallowed as a deductible item due to their relation to income that is tax exempt or taxed outside the standard tax base) before the ATAD directive became effective.

eliminating profit shifting and tax base erosion.[21] According to Buettner and Wamser (2013), CFC rules are able to reduce some ATPSs, namely, those performed via debt channels. Knoll and Riedel (2019) add that CFC rules are also effective tools in the case of intellectual property profit shifting. Therefore, we also focused on the changes in selected financial indicators if an MNE's headquarters had CFC rules in force. Our results demonstrate that although the overall profitability of entities increased and indebtedness decreased together with a lower use of long-term debt and decreased interest payments, the role of entities in ATPS is still obvious. Specifically, target entities are still significantly diverse, not reaching comparable values in comparison with those of the lower-tax entities, which are almost comparable to the target entities.

Our estimation of tax base erosion and profit shifting takes into account negative effective tax rate differentials between peer group and CEE-EU entities, which were determined at entities fulfilling conditions set in our multi-criteria model (see Tables 9 and 10). Negative tax rate differentials were used for the adjustments of EBIT and profit before tax and for the estimation of the overall tax base erosion. We estimate the total maximum amount of profit shifting and tax base erosion at EUR 26.2 billion (annually on average), of which EUR 10.6 billion is at the level of EBIT and related to the transfer pricing channel and IP profit shifting channel. The annual base erosion related to the debt channel is estimated as a maximum of almost EUR 17 billion. The overall tax revenue losses related to the ATPS are estimated at EUR 4.2 billion (annually on average), of which EUR 2.7 billion is related with the debt channel.

Based on the overall results, we can conclude that CCE EU subsidiaries play an important role in ATPSs, which is a finding that is consistent with the current research.[22] However, the situation can change, as currently, the CEE EU countries, similar to the rest of the EU Member States, are in the process of the implementation of the BEPS recommendations and, consequently, the ATAD Directive.[23]

Acknowledgement This chapter is the result of GA ČR No. 18-14082S "Fair corporate taxation: Measurement of the impact of corporate profit shifting on the budget of the Czech Republic".

[21]CFC rules are an important part of the EU Directive (the ATAD directive laying down rules against tax avoidance practices), which is currently being implemented by European Member States; the CFC was slated to be implemented and in force as of 1 January 2019. However, nine European Member States (Austria, Denmark, Germany, Greece, Ireland, Latvia, Portugal, Romania and Spain) failed to comply with EU law (i.e., failure to fully/correctly implement the ATAD Directive) with respect to the implementation of CFC rules.

[22]See more details in Miniaci et al. (2014), Finke et al. (2014), Janský and Kokeš (2015, 2016), Kubick and Lockhart (2017), Ištok and Kanderová (2019a, b), Khouri et al. (2019), Nerudová et al. (2020a, b), Pavel and Tepperová (2020), and Moravec et al. (2019).

[23]For more detail, see "Tax Policy in Relation to Fair Corporate Taxation".

References

Barrios S, d'Andria D (2020) Profit shifting and industrial heterogeneity. CESifo Econ Stud 66 (2):134–156

Beer S, De Mooij R, Liu L (2020) International corporate tax avoidance: a review of the channels, magnitudes, and blind spots. J Econ Surv 34(3):660–688

Buettner T, Wamser G (2013) Internal debt and multinational profit shifting: empirical evidence from firm-level panel data. Natl Tax J 66(1):63–96

Cobham A, Janský P, Meinzer M (2015) The financial secrecy index: shedding new light on the geography of secrecy. Econ Geogr 91(3):281–303

Desai MA, Foley CF, Hines JR (2006a) Do tax havens divert economic activity? Econ Lett 90 (2):219–224

Desai MA, Foley CF, Hines JR (2006b) The demand for tax haven operations. J Public Econ 90 (3):513–531

Egger P, Eggert W, Winner H (2010) Saving taxes through foreign plant ownership. J Int Econ 81 (1):99–108

European Commission (2017) Aggressive tax planning indicators. Final report. Taxation Papers, WP no. 71–2017. https://doi.org/10.2778/847061

Finke K, Fuest C, Nusser H, Spengel C (2014) Extending taxation of interest and royalty income at source–an option to limit base erosion and profit shifting? ZEW Discussion Papers, No. 14–073

Fuest C, Riedel N (2012) Tax evasion and tax avoidance: the role of international profit shifting. In: Reuter P (ed) Draining development? Controlling flows of illicit funds from developing countries, pp 109–142. https://openknowledge.worldbank.org/handle/10986/2242. Accessed 23 May 2019

Godar S (2018) Tax haven investors and corporate profitability: evidence of profit shifting by German-based affiliates of multinational firms (No. 36/2018). IES Working Paper

Gravelle J G (2015) Tax havens: international tax avoidance and evasion (Congressional Research Service Report R40623). https://fas.org/sgp/crs/misc/R40623.pdf. Accessed 20 Feb 2019

Grubert H, Mutti J (1991) Taxes, tariffs and transfer pricing in multinational corporate decision making. Rev Econ Stat 80:365–373

Heckemeyer JH, Overesch M (2017) Multinationals' profit response to tax differentials: Effect size and shifting channels. Canadian Journal of Economics/Revue canadienne d'économique 50 (4):965–994

Hines JR Jr, Rice EM (1994) Fiscal paradise: foreign tax havens and American business. Q J Econ 109(1):149–182

Huizinga H, Laeven L (2008) International profit shifting within multinationals: a multi-country perspective. J Public Econ 92(5–6):1164–1182

Ištok M, Kanderová M (2019a) Debt/asset ratio as evidence of profit-shifting behaviour in the Slovak Republic. Technol Econ Dev Econ 25(6):1293–1308. https://doi.org/10.3846/tede.2019.11338

Ištok M, Kanderová M (2019b) Interest expenses as a technique of profit shifting used by Slovak companies. In Proceedings of the International Scientific Conference HED 2019, Hradec Kralove, Czech Republic, 5–6 February 2019; vol 9, pp 292–304. https://uni.uhk.cz/hed/site/assets/files/1073/proceedings_2019_1.pdf Accessed 20 July 2020

Janský P (2018) Estimating the revenue losses of international corporate tax avoidance: the case of the Czech Republic. Post-Communist Econ 30(5):617–635

Janský P, Kokeš O (2015) Corporate tax base erosion and profit shifting out of the Czech Republic. Post-Communist Econ 27(4):537–546. https://doi.org/10.1080/14631377.2015.1084733

Janský P, Kokeš O (2016) Profit-shifting from the Czech multinational companies to European tax havens. Appl Econ Lett 23(16):1130–1133. https://doi.org/10.1080/13504851.2015.1137543

Jareš M (2014) Mezinárodní stěhování zisků – politická a ekonomická perspektiva. Bulletin KDP ČR 2014(3)

Khouri S, Elexa L, Ištok M, Rosová A (2019) A study from Slovakia on the transfer of Slovak companies to tax havens and their impact on the sustainability of the status of a business entity. Sustainability 11:2803

Knoll B, Riedel N (2019) Patent Shifing and Anti-Tax Avoidance Legislation. ifo. DICE Report 17 (04):25–29

Kubick TR, Lockhart GB (2017) Corporate tax aggressiveness and the maturity structure of debt. Adv Account 36:50–57. https://doi.org/10.1016/j.adiac.2016.10.001

Miniaci R, Parisi ML, Panteghini PM (2014) Debt shifting in Europe. Int Tax Public Financ 21 (3):397–435. https://doi.org/10.1007/s10797-012-9266-4

Moravec L, Rohan J, Hinke J (2019) Estimation of international tax planning impact on corporate tax gap in the Czech Republic. E&M Ekonomie a Management 22(1):157–170. https://doi.org/10.15240/tul/001/2019-1-011

Nerudová D, Dobranschi M, Solilová V, Litzman M (2020a) Profit shifting to onshore and offshore tax havens: the case of Visegrad countries. Post-Communist Econ 32(7):904–946. Oxfordshire: Taylor & Francis. https://doi.org/10.1080/14631377.2019.1705083

Nerudová D, Solilová V, Litzman M, Janský P (2020b) International tax planning within the structure of corporate entities owned by the shareholder-individuals through Panama Papers destinations. Dev Policy Rev 38(1):124–139

Nerudová D, Dobranschi M, Solilová V, Litzman M (forthcoming) Profit shifting and tax revenue losses in the European Union

Maffini G (2009) Tax haven activities and the tax liabilities of multinational groups (pp 1–63). Oxford: Oxford University Centre for Business Taxation. Retrieved from http://econpapers.repec.org/RePEc:btx:wpaper:0925

OECD (1998) Harmful tax competition: an emerging global issue. OECD Publishing, Paris. https://www.oecd-ilibrary.org/taxation/harmful-tax-competition_9789264162945-en. Accessed 10 July 2020

OECD (2013) Addressing base erosion and profit shifting. OECD, Paris

OECD (2015) OECD/G20 Base erosion and profit shifting project 2015 Final reports. OECD, Paris

ORBIS database, Bureau Van Dijk (2018) Update number 173, at 18th June 2018

Pavel J, Tepperová J (2020) ATP identification using balance of payments data: case of the Czech Republic. Prague Economic Papers. https://doi.org/10.18267/j.pep.757

Spengel CH, Endres D, Finke K, Heckemeyer J (2014) Effective tax levels using the Devereux/Griffith methodology. Project for the EU Commission TAXUD/2013/CC/120: Final report 2014. Centre for European economic research (ZEW), ZEW–Leibniz-Zentrum für Europäische Wirtschaftsforschung, Mannheim

Spengel CH, Schmidt F, Heckemeyer J, Nicolay K (2018) Effective tax levels using the Devereux/Griffith methodology. Project for the EU Commission TAXUD/2018/DE/307: Intermediary report 2018, ZEW-Gutachten und Forschungsberichte, ZEW–Leibniz-Zentrum für Europäische Wirtschaftsforschung, Mannheim

Spengel CH, Schmidt F, Heckemeyer J, Nicolay K (2019) Effective tax levels using the Devereux/Griffith methodology. Project for the EU Commission TAXUD/2019/DE/312: Final report 2019, ZEW-Gutachten und Forschungsberichte, ZEW–Leibniz-Zentrum für Europäische Wirtschaftsforschung, Mannheim

Weichenrieder AJ (2009) Profit shifting in the EU: evidence from Germany. Int Tax Public Financ 16(3):281–297

Tax Policy in Relation to Fair Corporate Taxation

Leoš Vítek and Veronika Solilová

Contents

Abstract This chapter focuses on tax policy in relation to fair corporate taxation. At the beginning of the chapter, an evaluation of tax systems and their development is provided, and then the concept of fair taxation and possible areas for strengthening fair taxation are presented. In addition, taxation issues related to the digital society are discussed together with the international exchange of information as a suitable solution. Finally, the situations of the CEE-EU countries are evaluated in respect to fair corporate taxation, current situation and future development in that area is mentioned, lastly policy recommendations are introduced.

L. Vítek
Faculty of Finance and Accounting, Prague University of Economics and Business, Prague, Czech Republic
e-mail: leos.vitek@vse.cz

V. Solilová (✉)
Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic
e-mail: veronika.solilova@mendelu.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_6

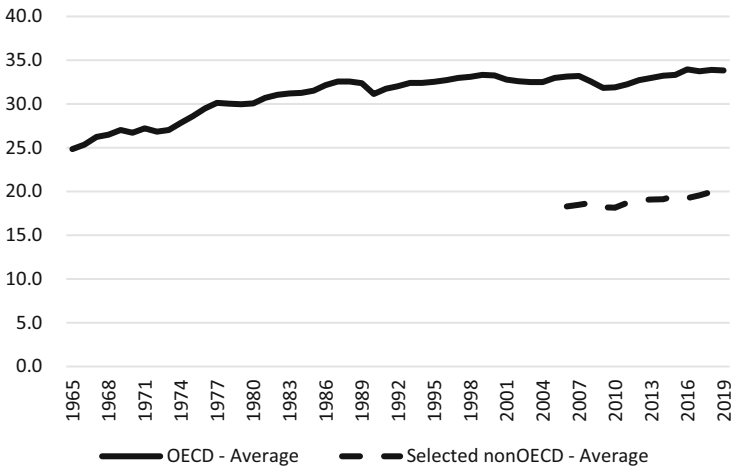

Fig. 1 Tax-to-GDP ratios in OECD and developing countries (% of GDP) (OECD 2020f)

1 Tax Systems and Their Development

A general overview of the evolution of tax systems can be seen through tax quotas (tax-to-GDP ratios), which measure the ratio of overall government tax revenue to gross domestic product. For a long time, tax quotas have been rising both in developed and developing countries, escalating over the period from 1965 to 2019 in the OECD countries by almost ten percentage points to the level of 34.8%, as shown in Fig. 1. The tax quota growth in developing countries (captured by Global Revenue Statistics; 67 countries excluding Venezuela) over the past 5 years is roughly double the growth in the OECD countries; even so, the 2018 average tax quota in the emerging countries for which recent data was available stands at 20.0%.

When discussing the overall level of taxation (which may also affect the assessment of a given country in terms of whether it is considered to have favourable tax conditions), the methodology for calculating tax revenues should also be taken into account. Bearing in mind that social security contributions to non-compulsory and equivalent social security schemes (in particular, pension insurance) are not included in tax revenue, countries with a higher emphasis on these social security components will have a lower tax-to-GDP ratio; the ratio of personal income taxes and contributions to GDP and the share of personal income taxes and contributions in the tax revenue structure will also be lower. This fact is among the reasons why, for example, continental European countries have a higher tax-to-GDP ratio than Anglo-Saxon countries or countries with less emphasis on redistributive social protection systems.

However, the level of taxation among individual countries has long been very different; countries with the highest tax quota (Denmark and France) reach values of over 45%, whereas the tax quotas of Mexico, Colombia or Chile are below or just above 20%. As Fig. 2 shows, over the decade following the 2009–2010 economic

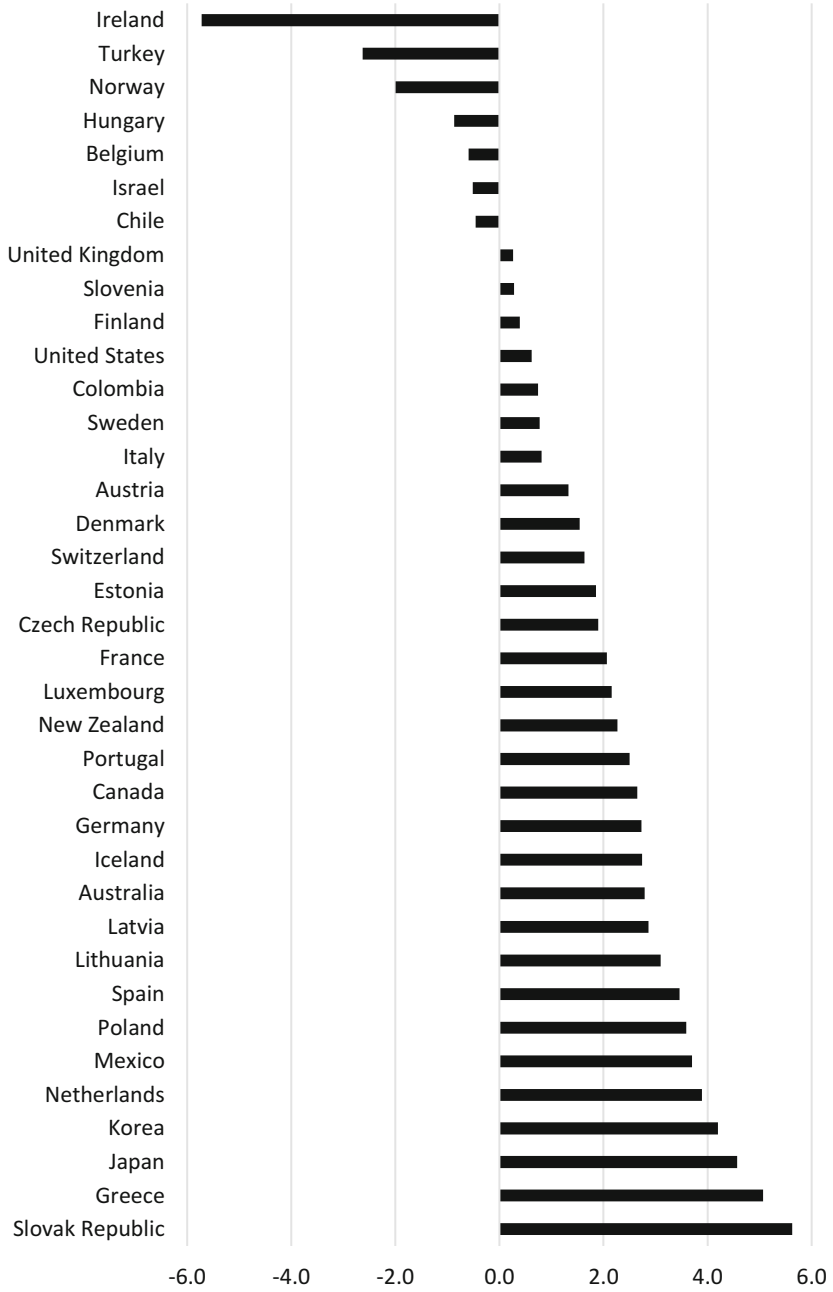

Fig. 2 Changes in Tax-to-GDP ratios in OECD countries (% of GDP, 2011–2019) (OECD 2020g)

crisis, overall taxation increased in most countries; only Ireland, Turkey and Norway significantly reduced the level of their overall taxation.

Moreover, over the past two decades, taxation in developed countries has mostly been affected by the global financial crisis and the economic crisis of 2009–2010. The tax quota in developed countries fell from its peak in 2010 by 1.3 percentage points, while from 2011 to 2016, it again gradually increased to 34.0%. Since 2016–2019, the tax quota has stabilised in developed countries but has continued to grow in developing countries. The reaction of tax systems in both country groups has been similar, as shown in Fig. 3.

Although current data are not available, the closure of economies due to the global pandemic in 2020 and experience from previous economic recessions show that significant reductions in tax quotas may be expected in all countries between 2020 and 2021. The reason is an expected slowdown in wage growth and rise in unemployment, a decline in corporate profits and a reduction in private consumption. In addition, there will be an increase in the share of consumption of basic goods and services, which is less taxed by excise duties than other consumption. For these reasons, tax quotas may fall by as much as a few percentage points, depending on the equiproportionality of the decline in tax revenues and economic performance.

Furthermore, as Fig. 4 shows, the current structures of tax revenues in developed countries show that almost two-thirds of the countries utilize various forms of income taxation. The most important forms are social security contributions, which account for almost 26% of all tax revenues. Their importance has stabilised over the last 20 years and closely competes with the importance of personal income taxes, accounting for 24% of OECD countries' tax revenues. Personal and corporate taxes, social security contributions, and payroll and employment taxes, which all tax income in various forms, account for 61% of all tax revenues. The third major tax channel is general excise duties (usually value-added taxes), which generate 21% of the tax revenue budget. Together with selective excise duties, consumption taxes account for 33% of tax revenues.

From an international perspective, factors that threaten fair taxation are base erosion and profit shifting, which are most threatening to corporate taxation, the taxation of certain types of business income, personal pension taxation (capital gains) and the taxation of high-income mobile employees. For consumption, taxation and the evasion of value-added taxes are particularly risky cross-border transactions in services and digital transactions and platforms. In the case of selective excise duties, cross-border imports and the smuggling of cigarettes and alcohol are particularly risky.

In recent decades, discussions on base erosion in the international context have focused on corporate income tax. Despite an increase in the intensity of the discussions and work on reforms aimed at limiting the possibilities of international tax planning, corporate tax revenues have increased over the last several decades: since 1995, the rate has actually grown by 1.9 percentage points to 10.0% of the total tax revenue (3.1% of GDP), and since 1965, it has had a long-term increase of 1.2 percentage points. The only exception to this long-term trend was a rapid increase in

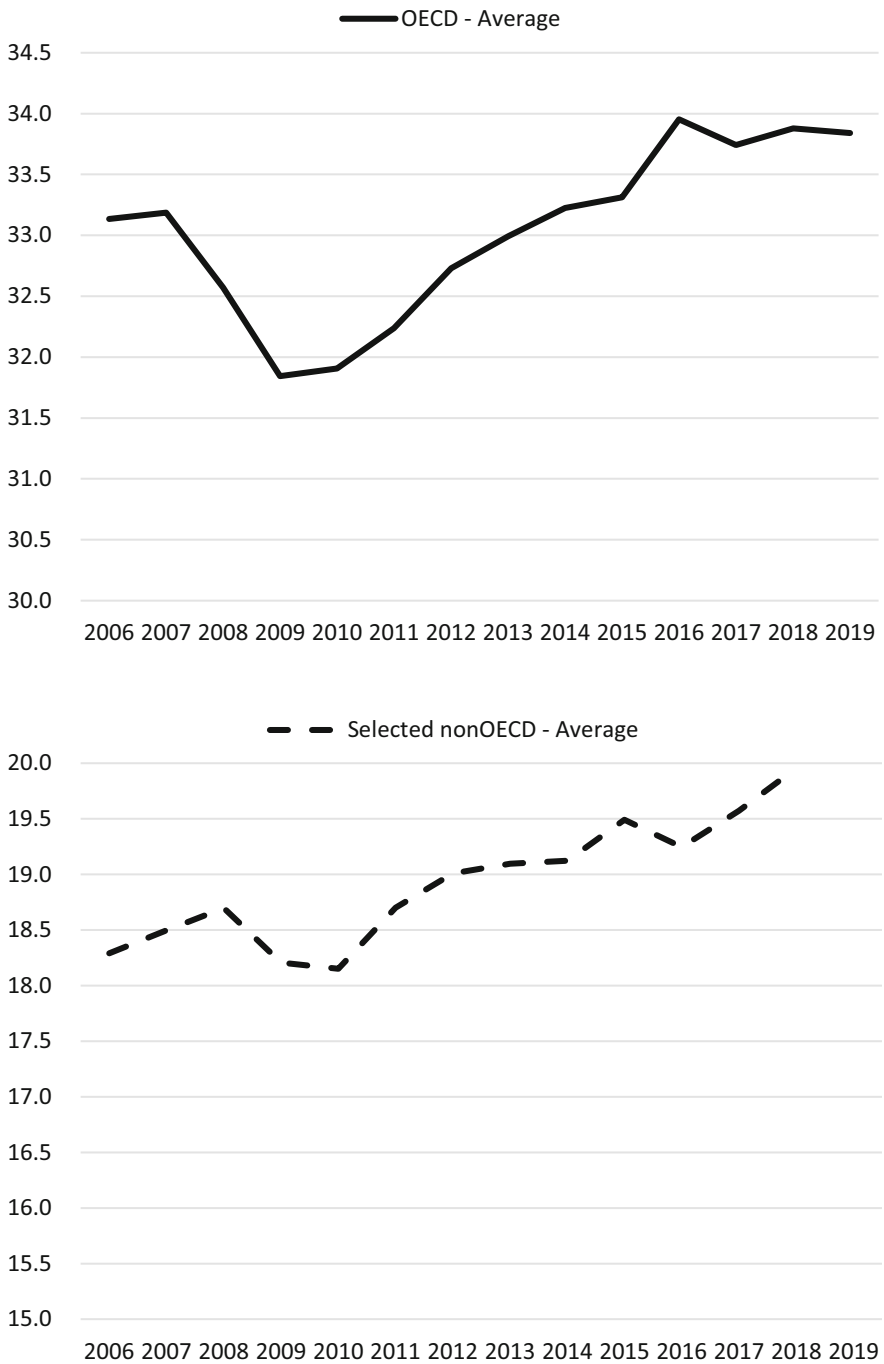

Fig. 3 Tax-to-GDP ratios (% of GDP) during and after the financial and economic crisis (OECD 2020f)

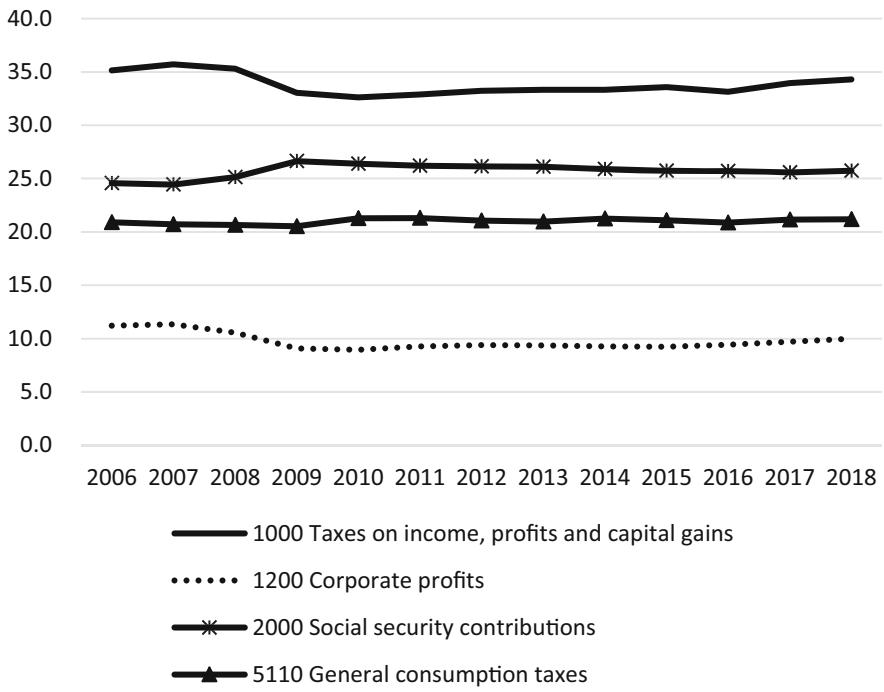

Fig. 4 Structures of tax revenues in OECD Countries (% of total tax revenues) (OECD 2020g)

the corporate tax revenue share of total tax revenues to the level of 10.5–11.3% during the period 2005–2008.

While the average share of corporate tax revenues in developed countries reached 10% in 2018, the situation in developing countries was significantly different. As Fig. 5 shows, the average figure for the 62 countries monitored by the Global Revenue Statistics Database was almost double (18%) that of the developed countries in 2018. Since its peak in 2008 at 20.9%, the share of corporate taxes in developing countries has fallen by 3 percentage points. The overall average for the 99 countries monitored by the OECD in 2018 reached 15%.

In recent years, the International Monetary Fund's Government Finance Statistics have shown a similar picture. In 2018, for the 88 countries surveyed, the average amount of revenues payable by corporations and other enterprises reached 3.1% of GDP and fluctuated over the past two decades by approximately 3% of GDP. The period of 2005–2008 was an exception, when there was an increase to between 3.2 and 3.4% of GDP (IMF 2019, 2020).

Table 1 presents the countries with the largest ratios of corporate taxes to GDP according to the IMF statistics (2020). In the first part of the table, the countries are selected regardless of their economic maturity, while the second part covers OECD countries and a highly advanced tax jurisdiction of the Hong Kong, China.

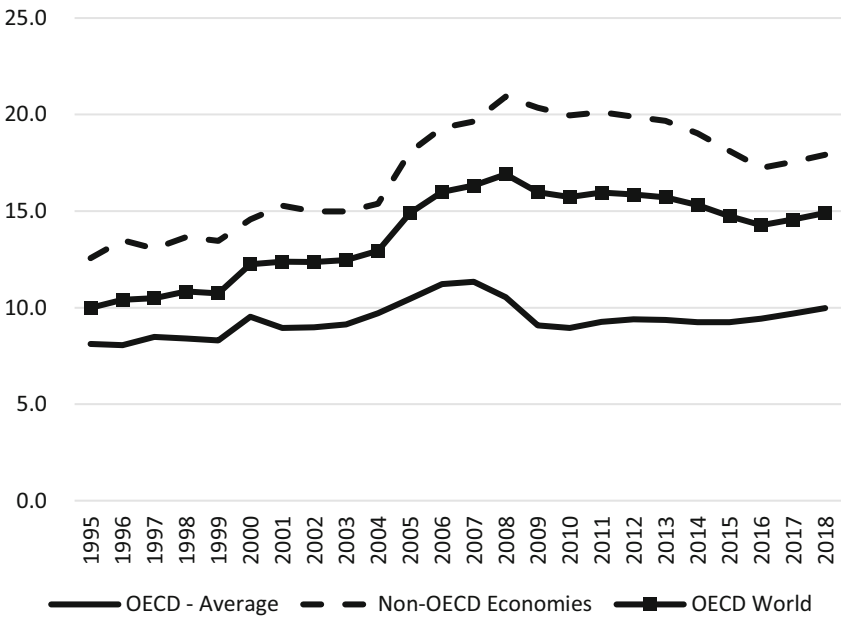

Fig. 5 Corporate income tax revenues in OECD and developing countries (OECD 2020f)

Table 1 Countries with the largest share of corporate taxes (% of GDP) (IMF 2020)

Country	2018	Country	2018
Timor-Leste, Dem. Rep. of	10.4	Norway	6.8
Norway	6.8	China, P.R.: Hong Kong	6.0
Seychelles	6.6	Luxembourg	5.9
China, P.R.: Hong Kong	6.0	Cyprus	5.6
Luxembourg	5.9	Malta	5.6
Cyprus	5.6	New Zealand	5.5
Malta	5.6	Australia	5.1
New Zealand	5.5	Japan	4.7
Kazakhstan, Rep. of	5.3	Belgium	4.4
Australia	5.1	Colombia	4.2

In contrast, Latvia, the United States, Hungary, Lithuania, Italy and Slovenia are among the developed countries with low corporate tax revenues. Very low or zero corporate taxation are reported by San Marino and oil states, such as Saudi Arabia and the United Arab Emirates.

In their tax policies, individual countries approach corporate taxation in highly different ways. If we compare the share of corporate taxes with total tax revenues between 2007 (the last year prior to the major financial crisis) and 2018, according to OECD data (2020m), some countries have reduced the significance of corporate taxes by almost half or more (Latvia, the USA, Mongolia, and Hungary), while

others have dramatically increased the importance of these taxes (Cuba, the Solomon Islands, Ghana, the Democratic Republic of the Congo).

From the macroeconomic perspective, the level of corporate taxation is provided by the implicit tax rate (ITR) on corporate income, along with other indicators (such as the implicit tax rate on labour, consumption, energy, etc.) adopted by the European Commission for purposes of tax policy assessment. This indicator applies only to non-financial corporations and measures the average effective tax burden. In the case of firms, data from national accounts of tax revenues from non-financial corporations are measured against a macroeconomic estimate of the potential tax base in the economy. The tax base includes both business and capital income, which, according to the Schmidt-Faber (2004), means that the base depends on, among other things, business cycles, stock price fluctuations, financing structures and the form of profit payments, where, e.g., a greater emphasis on the dividend channel of profit distribution increases the average corporate tax rate (i.e., a shift towards increased dividend distributions results, on average, in a higher tax burden on corporate profits). Obvious factors impacting implicit tax rates are changes in the rates and the widening or narrowing of the tax bases.

As is obvious from Table 2, traditionally high implicit corporate income tax rates are reported by France, Portugal and Belgium, while tax policies aimed at low corporate taxation are applied in former centrally planned economies (Latvia, Lithuania, and Estonia), Cyprus and Ireland. The differential between rates in countries with low and high implicit rates is more than sixfold (5.8 in Latvia vs. 35.4 in France). Over the last decade, this implicit tax rate has increased in only a few countries, the most notable examples being Germany, France and Sweden. The opposite approach was adopted by Latvia, Cyprus, Slovenia, Italy and Hungary, where ITRs have decreased by more than 10 percentage points. The no-dividend version of ITR shows a similar picture, where Sweden and the United Kingdom are among the countries with high ITRs. When the indicator is measured in this way, Luxembourg reports a negative value.

Although Schmidt-Faber (2004) does not recommend using microeconomic indicators of effective corporate tax rates for international comparisons, since the data in national account systems are collected for the purpose of making comparative analyses more consistent, such indicators are nevertheless adopted in empirical studies. These indicators adopt calculations of effective tax rates based on data from the financial statements of sample company groups or based on calculations of effective tax rates for standardised companies.

Table 3 presents the average effective tax rates for large corporations within the EU's nonfinancial sector in 2019. Calculations based on the Devereux/Griffith methodology are performed regularly by the ZEW[1] on the model case of a company standardised for average asset composition and funding sources (Spengel et al. 2019).

[1]ZEW—Leibniz-Zentrum für Europäische Wirtschaftsforschnung.

Table 2 Implicit tax rates on capital in the EU (%) (EU 2020b)

Implicit tax rate on corporate income (traditional version)			Implicit tax rate on corporate income (no dividends version)		
Country	In 2018	Diff. 2008 to 2018	Country	In 2018	Diff. 2008 to 2018
Belgium	24.6	3.4	Belgium	32.0	5.0
Czechia	22.7	−0.5	Czechia	23.2	−0.4
Denmark	17.6	−0.6	Denmark	23.9	−2.9
Germany	20.3	5.6	Germany	24.6	7.9
Estonia	9.3	1.2	Estonia	10.0	0.9
Ireland	10.0	−2.1	Ireland	11.8	−2.5
Greece	17.4	−1.9	Greece	17.8	−1.8
Spain	15.7	−5.1	Spain	17.9	−6.4
France	35.4	5.1	France	55.0	14.9
Italy	16.9	−12.6	Italy	18.1	−13.5
Cyprus	7.1	−13.6	Cyprus	n.a.	n.a.
Latvia	7.4	−15.4	Latvia	7.6	−15.3
Lithuania	5.8	−5.3	Lithuania	5.9	−5.2
Luxembourg	8.0	2.7	Luxembourg	−6.4	4.7
Hungary	8.0	−11.0	Hungary	8.5	−14.0
Netherlands	9.4	−0.3	Netherlands	25.3	3.8
Austria	17.5	1.7	Austria	22.5	4.0
Poland	13.7	−5.9	Poland	13.8	−5.9
Portugal	25.6	−9.6	Portugal	27.7	−11.0
Romania	11.6	−0.4	Romania	11.7	−0.4
Slovenia	19.7	−12.8	Slovenia	21.0	−13.8
Slovakia	18.3	0.9	Slovakia	18.8	1.3
Finland	14.1	−4.6	Finland	18.5	−3.9
Sweden	21.6	5.2	Sweden	35.0	7.4
United Kingdom	20.7	−9.0	United Kingdom	31.6	−14.8
Norway	14.0	−3.9	Norway	18.8	−1.2

According to the ZEW's final report (Spengel et al. 2019), the average effective rate has been gradually declining since the financial and economic crisis, reaching almost 20% in 2019. France, Spain and Germany are the countries with the highest effective corporate tax rates in the EU, while according to this indicator, Bulgaria, Hungary, Lithuania and Cyprus tax have the lowest effective rates. The difference in the effective rates is dramatic: the countries in the first group, with the highest taxes, impose a tax burden on companies that is three times greater than that imposed by the countries in the second part of the spectrum. Over the past 10 years, the largest declines in effective corporate rates have been reported in Hungary, the United Kingdom and Malta, while the largest growth has been recorded in Latvia, Cyprus and Slovakia.

Table 3 The average effective tax rates on large nonfinancial corporations in the EU (%) (Spengel et al. 2019)

Country	In 2019	Difference 2009–2019 (pp)	Country	In 2019	Difference 2009–2019 (pp)
France	33.4	−1.3	Finland	19.6	−4.0
Spain	30.1	−2.7	Sweden	19.4	−3.8
Germany	28.9	0.9	Slovakia	18.7	1.9
Greece	26.6	−3.9	Slovenia	17.3	−1.8
Malta	25.3	−6.9	Czechia	16.7	−0.8
Belgium	25.0	0.3	Latvia	16.7	2.9
Italy	24.6	−2.9	Poland	16.6	−0.9
Austria	23.1	0.4	Croatia	14.8	−1.7
Netherlands	22.5	0.3	Romania	14.7	−0.1
Luxembourg	21.8	−3.2	Ireland	14.1	−0.3
Portugal	21.4	−2.3	Estonia	13.9	−2.6
United Kingdom	20.2	−8.1	Cyprus	13.4	2.8
Denmark	19.8	−2.8	Lithuania	12.7	−4.1
EU28	19.7	−1.9	Hungary	11.1	−8.4
			Bulgaria	9.0	0.2

Finally, statutory rates provide evidence of tax policies in the domain of corporate taxation. Although the amount of tax paid is affected by the interaction of the tax base and the statutory rate and, therefore, no clear conclusions on tax policy can be drawn from the size and development of rates, they are still indicators monitored by companies and governments. Table 4 shows the development of statutory corporate tax rates in the EU.

An international survey shows (OECD 2020a, m) that the average corporate statutory rates[2] in the EU have declined over the last 15 years, despite a dramatic deterioration in the fiscal situation of most governments as a result of the 2008–2010 crisis. The combined corporate income tax rate has also declined over the past almost-20 years in the countries monitored by the OECD.[3] However, as shown above, the ratios of corporate tax revenue to GDP have not declined over the long-run (with the exception of a fluctuation over the period 2008–2014). This can be explained by various factors, such as the broadening of tax bases, growth in corporate profitability, or the substitution of firms for individual entrepreneurs.

[2]OECD Tax Database is available at: https://www.oecd.org/tax/tax-policy/tax-database/. As regard to corporate statutory tax rates, see https://stats.oecd.org/Index.aspx?QueryId=78166.

[3]It has declined in the OECD member states by 1.5 percentage points to 23.5% and in the other surveyed countries from 18.6 to 16.5%.

Table 4 Top statutory corporate income tax rates (%) (EU 2020b)

Country	1995	2010	2020	Diff. 2020–1995
Bulgaria	40.0	10.0	10.0	−30.0
Hungary	19.6	20.6	10.8	−8.8
Ireland	40.0	12.5	12.5	−27.5
Cyprus	25.0	10.0	12.5	−12.5
Lithuania	29.0	15.0	15.0	−14.0
Romania	38.0	16.0	16.0	−22.0
Croatia	25.0	20.0	18.0	−7.0
Czechia	41.0	19.0	19.0	−22.0
Poland	40.0	19.0	19.0	−21.0
Slovenia	25.0	20.0	19.0	−6.0
United Kingdom	33.0	28.0	19.0	−14.0
Estonia	26.0	21.0	20.0	−6.0
Latvia	25.0	15.0	20.0	−5.0
Finland	25.0	26.0	20.0	−5.0
Iceland	33.0	18.0	20.0	−13.0
Slovakia	40.0	19.0	21.0	−19.0
Sweden	28.0	26.3	21.4	−6.6
EU28	*35.0*	*23.2*	*21.4*	*−13.5*
Denmark	34.0	25.0	22.0	−12.0
Norway	28.0	28.0	22.0	−6.0
Greece	40.0	24.0	24.0	−16.0
Luxembourg	40.9	28.6	24.9	−15.9
Belgium	40.2	34.0	25.0	−15.2
Spain	35.0	30.0	25.0	−10.0
Netherlands	35.0	25.5	25.0	−10.0
Austria	34.0	25.0	25.0	−9.0
Italy	52.2	31.4	27.8	−24.4
Germany	56.8	29.5	29.9	−26.9
Portugal	39.6	29.0	31.5	−8.1
France	36.7	34.4	32.0	−4.6
Malta	35.0	35.0	35.0	0.0

2 Concepts of Fair Taxation and Their Implications

Tax theories and tax policies usually discuss two basic tax principles: tax fairness and tax efficiency. The concept of tax fairness is generally somewhat controversial and unclear, as it may involve several different approaches.

Traditionally, a tax system is perceived as fair when it complies with the principle of horizontal tax fairness (everyone in the same situation should pay the same taxes). Horizontal tax fairness is also an approach that promotes tax efficiency: taxable persons are taxed in the same way, and the tax system is thus, in this respect, not distorted. Naturally, the issue of how to measure tax capacity remains, i.e., whether to use income, consumption, assets, or a combination of measures.

As states Ok (1995) tax fairness based on the equal sacrifice principles of taxation requires (especially regarding the taxation of income and property) that as a result of taxation, taxpayers suffer the same sacrifice. This concept is likely to lead to a progressive taxation system, but the question that again remains is what the measure of taxation should be; another question, especially for tax policy, is how progressive the given tax or the entire tax system should be. Both of the above approaches are essentially microeconomic and focus on the issues of equal conditions for taxpayers within tax systems and the (re)distributional effects of taxation.

Recent debates on the fairness of taxation have focused on the following areas.

1. The fairness referred to is fairness in the sense of neutrality, where it is considered unfair when some taxpayers avoid taxation. In this way, these taxpayers either gain an unfair competitive advantage over those who pay taxes fairly, or they make excessive profits compared to a situation in which taxes are paid correctly. This scenario mainly occurs through tax avoidance and tax evasion in the domain of corporate taxation and the taxation of self-employed individuals, both at the national and supranational levels. This area of debate also includes discussions on new industries and business models (digital companies and platforms, virtual currencies, etc.) for which, due to new and rapid developments, current tax rules are not set sufficiently at the national or international level.

   In these areas, most of the BEPS measures, particularly Actions 1,[4] 5[5] and 6[6] and the instruments for the international exchange of information in taxes (in Actions 12[7] and 13[8]), are aimed at, in part, discussions on the CCCTB[9] in the European Union.
2. The unfairness of financial sector taxation that is the subject of debate is unfairness in the sense that, as a result of the financial crisis of 2008–2009, governments had to spend significant resources on rescuing the financial sector, and it would therefore be fair for the financial sector to contribute to the costs incurred by the governments (by higher income- or asset- taxation of this sector or, e.g., by paying value-added taxes, from which this sector is exempt). Other arguments aim at oligopolistic structures in financial markets and at the appropriate reduction of monopoly profits through increased taxes.

[4]For more details about the action, see OECD (2015b).

[5]For more details about the action, see OECD (2015c).

[6]For more details about the action, see OECD (2015d).

[7]For more details about the action, see OECD (2015e).

[8]For more details about the action, see OECD (2015f).

[9]For more details about the CCCTB in the EU, see https://ec.europa.eu/taxation_customs/business/company-tax/common-consolidated-corporate-tax-base-ccctb_en. Some results related to the CCCTB are also available on the website of the FairTax project: http://umu.diva-portal.org/smash/resultList.jsf?aq2=%5B%5B%5D%5D&af=%5B%5D&searchType=RESEARCH&sortOrder2=dateIssued_sort_desc&query=&language=sv&aq=%5B%5B%7B%22freeText%22%3A%22fairtax%22%7D%5D%5D&sf=all&aqe=%5B%5D&sortOrder=dateIssued_sort_desc&onlyFullText=false&noOfRows=100&dswid=-6843.

3. Further discussion on unfair taxation focuses on excise taxation in the sense that it is not perceived as fair if some sectors (e.g., financial services) do not pay substantial parts of consumption taxes. Situations that are considered unfair in terms of equal market conditions and tax neutrality include situations in which certain types of companies or industries use international tax planning to take advantage of tax inconsistencies and avoid (or significantly reduce) the payment of value-added taxes on cross-border (digital) transactions.
4. It can also be perceived as unfair (although in a broader context than a purely tax context) if some countries or groups of countries set low environmental and social standards in a given economy and thus achieve a higher level of competitiveness compared to countries with higher levels of environmental and social regulation or protection (typically European Union member states). Although highly normative, the assessment of an "unfairly low" level of taxation (or regulation) in one group of countries may result in the introduction of retaliatory duties, fees or taxes in countries that want to maintain or expand their environmental and social standards. This in turn is reflected in discussions and proposals on the introduction of global carbon or other emission taxes, carbon offsets, transnational charges for nonrecycled plastics, taxation of air transport, etc.
5. Recently, the debate on unfair taxation has begun to gradually focus on the issue of the "fair" allocation of taxing rights between countries. These are basically two interconnected issues.

   (a) First, it may be perceived as unfair that some countries focus their tax policies on low or zero corporate taxation and allow specific multinationals to transfer profits to their jurisdictions (tax havens) to avoid paying taxes in a country where profits would otherwise be "reasonably appropriately" taxed. This not only reduces the tax revenues of countries with normal tax rates but also favours certain companies over their competitors.
   (b) Second, in view of the historical setting of international income tax rules, it is debatable whether, due to technological change (digitisation), countries where digital companies and platforms do not physically reside but have customers should not share revenues from the taxation of these companies. Of course, the current system is generally suitable for the countries where these companies are physically located, except in cases where companies use tax havens to substantially reduce the payment of taxes.

This area aims at Action BEPS[10] and the discussed reform of the principles of international income taxation.

The link between the above concepts of fair taxation and sectors and economic policies is outlined in Table 5. With regard to the arbitrary definitions of individual

[10]For more details, see OECD (2013). https://www.oecd.org/tax/beps/beps-actions/.

Table 5 The concepts of fair taxation and their impacts

Possible areas for strengthening fair taxation	Horizontal impacts/ links	Specific links	Secondary impacts
Tax evasion	All economic sectors	Especially MNEs Self-employed individuals Boosting economic efficiency	Long-term reduction of tax competition and room for increasing tax revenue Possibility of increasing government spending Restriction of competition for domestic producers Increase in administrative and compliance costs for MNEs
Taxation of the financial sector	Financial sector	Particularly MNEs Reduction of monopoly profits	Transfer of taxes on customers or suppliers Efforts to move digital financial services out of the scope of increased taxation Increase in administrative costs (AC) and compliance costs (CC) for the financial sector
Consumption taxation	Services, primarily digital	Cross-border companies mainly supplying services Digital companies and platforms	Restriction of competition for domestic producers Reducing motivation for technological innovation Increase in AC and CC for digital companies and platforms
Environmental taxation	All economic sectors	Imports from developing countries Imports of energy-intensive goods and some services	Increase in global pressure to protect the environment Restriction of competition for domestic producers Possible link with the pressure on the quality of goods Increase in AC and CC for import companies
Allocation of tax rights	All economic sectors	In the first round, digital services; in later rounds, possibly others MNEs	Restrictions on the possibility of aggressive tax planning by digital companies using tax havens Unification of the conditions of competition (domestic and international)

policies, the OECD focuses on 26 main policies, contrary to the EU's 22 main policy areas and 297 subpolicies (see Table 6).[11]

The strengthening of fair taxation in all of the above areas should lead to a long-term increase in government tax revenues in the area of corporate taxation or in

[11]For more details, see https://ec.europa.eu/info/policies_en, https://europa.eu/european-union/topics_en, https://www.oecd.org/#.

Table 6 Main policies of the EU and OECD (OECD 2020k, European Commission 2020)

OECD	EU
1. Agriculture and fisheries	1. Food safety
2. Chemical safety and biosafety	2. Customs
3. Competition	3. Taxes
4. Corporate governance	4. Transport
5. Corruption and integrity	5. Energy
6. Development	6. Competition
7. Digital	7. Humanitarian aid and civil protection
8. Economy	8. Single market
9. Education	9. Culture
10. Employment	10. Human rights and democracy
11. Environment	11. Trade
12. Finance	12. Business and industry
13. Green growth and sustainable development	13. Regional policy
14. Health	14. Development and co-operation
15. Industry and entrepreneurship	15. Justice and fundamental rights
16. Innovation	16. Research and innovation
17. Insurance and pensions	17. Education, training and youth
18. Investment	18. Foreign and security policy
19. Migration	19. Employment and social affair
20. Public governance	20. Health
21. Regional, rural and urban development	21. Agriculture
22. Regulatory reform	22. Environment
23. Science and technology	
24. Social and welfare issues	
25. Tax	
26. Trade	

For EU policies see European Commission, available at https://ec.europa.eu/info/policies_en. The main OECD policies (topics) are available at https://www.oecd.org/#

general excise duties. Moreover, if I strengthen of fair taxation together with the use of additional tax revenues to reduce tax distortion (e.g., the taxation of all corporate income, the reduction of employers' social security contributions, and the reduction of capital gains taxation), it would result in a double-dividend concept[12] and long-term increase in economic efficiency.

3 Taxation and the Digital Society

The dynamic advent of digitisation and development of new business models of globally operating companies in the last decade has raised questions regarding reforms to the global rules of income taxation and national tax policies. Currently,

[12]For more details about the double-dividend concept or hypothesis, see Chiroleu-Assouline and Fodha (2006), Bento and Parry (1999), Goodstein (2003) and Nerudová and Dobranschi (2016).

there is a key discussion about the over-a-century-old system and two principles enshrined in the double-taxation treaties: where the taxes on activities, particularly income or profits, of multinational and digital companies are to be paid, and what share of profits should be taxed in which jurisdiction (the "nexus"[13] and "profit allocation" rules). Given the need for an international consensus, the current mechanism was established as a compromise between the interests of individual jurisdictions; this feature cannot be circumvented under the system of autonomy for individual countries regarding national tax policies.

Tax policies also seek to modernise the taxation of digital services through value-added taxes and to create a new system for the taxation of digital currencies. However, in the opinion of most countries, these changes require, among other things, strengthening and standardising the exchange of information on digital platforms and the gig economy.[14] All this will not be possible without modernising and digitising tax administrations. According to the OECD (2020n), within the next decade, this process will include, e.g., work related to digital identity, electronic invoicing, and secure mechanisms for cross-border online information sharing.

3.1 Digitisation and Fair Income Taxation: National Tax Policies and International Coordination

In 2015, the BEPS agenda identified as one of its main priorities the issue of tax challenges arising from digitisation (Action 1: Tax challenges arising from digitisation).[15] The digitisation of economies and other domains of life relates to the liberalisation of the trade and capital flows of previous decades and is characterised by several features that have implications for tax policies:

- scale without mass: within a given jurisdiction, the business models of digital firms without substantial physical presence in the jurisdiction may cover large-scale activities (sales, data collection, etc.), thus achieving local operational scale without local mass.
- reliance on intangible assets: business models of multinational companies in general and digital companies in particular reinforce the importance of investing in intangible assets (e.g., IP assets) that companies directly own or lease.
- centrality of data: businesses collect, process and trade data centrally, outside the jurisdiction of their collection/emergence.

[13]For more details, also see Hongler and Pistone (2015), Spinosa and Chand (2018), Losada (2019), Li (2018) and Johannes and Fuest (2012).

[14]A gig economy is based on a free market system in which temporary, flexible job positions are commonplace and companies/organisations hire independent workers for short-term commitments instead of full-time employees.

[15]For more details about the action, see OECD (2015b).

The rapid digitisation of developed and developing countries over the past two decades has important implications for the discussion of the fair setting of global rules affecting the tax policies of individual jurisdictions. In the context of digital activities, the debate on fair taxation is seen primarily as a debate on three issues: (1) Where should taxes on the activities of multinational and digital companies be paid? (2) What proportion of profits should be taxed in each jurisdiction? (3) How should value-added taxed digital services and activities be included in the gig economy?

The debate over the change in global rules for digital corporate taxation is increasingly serious, as the importance of digital services in the economy has increased rapidly in recent years (out of the companies that Market Capitalisation ranked as the top 10 largest companies in 2020, 7 companies operate as digital businesses; other key businesses operate in financial services, which also feature elements of digital business models), and the digitisation process will accelerate further in 2020–2021 due to the global COVID-19 pandemic. In principle, therefore, potential key corporate taxpayers in developed countries already use or will soon use new digital business models.

From the perspective of double-taxation treaties, the system of taxation of transnational activities in the pre-Internet era was based on (1) physical presence in the given jurisdiction (branch or permanent establishment; the "nexus" rule) and (2) profit allocation within the MNE group, based on the arm's length principle (the profit allocation rules). This was, and still is, the operating system for many industries and business models and was supposed to reduce the international double taxation of business activities and, along with the appropriate setting of tax rules in individual jurisdictions and international agreements, reduce double non-taxation. However, technological developments have increasingly weakened the need for a physical presence in target markets, and digital business models[16] have finally eliminated this need entirely.

Fair taxation in the domain of digital companies is a discussion on the issue of the "allocation of the entitlement to tax" between individual tax jurisdictions. In the original, pre-Internet model of international taxation which is currently applied,[17] almost all the profits of digital companies are taxed in the companies' countries of residence, which for the largest companies are the United States and China. The countries where the customers of digital companies are located (but where the companies themselves do not physically operate or own standard intangible assets) do not participate in the tax revenue from the companies' profits.

Apart from the USA and China, the largest digital companies and industries are mainly located in a few developed countries. Other developed countries in which digital giants are not based and all developing countries are therefore motivated to

[16]For more details about digital business models, see Brousseau and Penard (2007), Remane et al. (2017), Vendrell-Herrero et al. (2018), Kraus et al. (2018), Blaschke et al. (2017) and Nerudová and Solilová (2020).

[17]Namely before the BEPS project and introduction of suggested changes in the tax treaty network.

change the system into a new one that would allow them to participate in tax revenues.

Another issue for discussion is the domicile of digital companies in countries with preferential tax regimes. If it is not possible to clearly identify in which country a digital firm (or its key activities and assets) is present, it is difficult to prevent the firm from using international tax schemes involving jurisdictions with extremely favourable income or property taxation. If digital companies use aggressive international tax planning, tax revenues from their profits ultimately fail to be collected even by the countries where they actually reside, and the companies therefore avoid taxation either completely or substantially.

While the possibility of avoiding income taxation (or substantially reducing taxation) for digital firms may be perceived in the short-term as a form of support for modern technologies and business models, it ultimately results in tax inefficiencies and distortions among sectors and reduces overall economic efficiency. With regard to the fiscal interests of all countries (except for tax havens), it is therefore desirable to specify or completely change the nexus and profit allocation rules for digital business models. Therefore, a combination of actions in two areas is necessary: (1) limiting base erosion and profit shifting towards tax havens for digital companies and (2) adjusting rules or implementing new rules to define the place and scope of tax payments for these companies/industries (i.e. adjusting allocation of tax rights and profit allocation rules).

In an effort to reduce the risk of the unilateral introduction of digital taxes, which could result in retaliatory taxes, customs and trade measures by countries with reduced tax revenues, multinational institutions have sought to enforce a multilateral and transnational consensual solution to the reform of the international taxation of digital companies. However, in each supranational institution, such as the EU, OECD/G20 Inclusive Framework on BEPS, IMF and UN, the interests of countries with different fiscal involvement are represented differently, and thus, the pressure to introduce changes is different in each institution. Some countries have even adopted separate digital taxes or have tried to adopt or implement them, though this may represent a form of pressure to adopt a transnational consensual solution.

The reform of international corporate income taxation proposed by the OECD in 2019–2020 (BEPS 2.0) with respect to BEPS Action 1 consists of two pillars:

1. The first pillar (the redistribution of tax rights[18]) focuses on new business models and "nexus" rules, i.e., issues related to commercial presence, the place of tax payment and tax base and the distribution of tax bases between the countries of customers/users and the countries of corporate residence. The reform extends the right to tax to "market" jurisdictions, i.e., where the value or corporate profits

[18]For more details, see the document available at https://www.oecd.org/tax/beps/public-consultation-document-secretariat-proposal-unified-approach-pillar-one.pdf.

emerge (e.g., where a company sells its products or services or secures or collects data or contributions from users).
2. The second pillar (the Global Anti-Base Erosion (GloBE) Proposal[19]) seeks to reduce the transfer of tax bases to low-tax jurisdictions, e.g., by proposing the introduction of a minimum tax paid by companies, and seeks to reduce the incentives for moving activities (and profits) into low-tax jurisdictions.

The reform is therefore based on the idea that a company's profits and their taxation should be aligned with the place of revenue generation (even if the company does not have a physical presence there) rather than with the place of the company's legal ownership or management. The basic argument for this approach is that the customer or user base is an intangible asset in itself, and it is therefore fair for the jurisdiction in which this intangible asset is located to participate in the taxation of the resulting income and profits. However, this new approach to defining intangible assets is likely to come into conflict with the arm's length principle[20] and may constitute a systemic change in the entire system of international income taxation.

3.2 Other Areas of Tax Policy and Digital Activities (Value-Added Taxes, Virtual Currencies and Digital Platforms)

Digital services, especially cross-border services, increase the possibilities for creating schemes that limit the payment of value-added taxes. Thus, incorporating the issue of VATs on digital services, intangible assets, and online sales of goods intensifies the discussion regarding the reform of rules related to the choice of jurisdiction and the timing of tax collection so that the entire system is perceived to be fair. Sales by digital companies and multilateral digital platforms (platforms, online marketplaces, and intermediaries) and sales of goods and services to end consumers (the B2C model) or between consumers themselves are generally involved in this discussion.

The OECD (2019, p. 6) defines digital platforms as "*... platforms that enable, by electronic means, direct interactions between two or more customers or participant groups (typically buyers and sellers) with two key characteristics: (i) each group of participants ("side") are customers of the platforms in some meaningful way, and (ii) the platforms enable a direct interaction between the sides*."

The key issue that arises, with the aim of strengthening the fairness of platform taxation, is the provision of information on the business transactions of platform participants (the identity of participants, the number of transactions and the volume

[19]For more details, see the document available at https://www.oecd.org/tax/beps/public-consultation-document-global-anti-base-erosion-proposal-pillar-two.pdf.pdf.

[20]For more details about this issue, see Choi et al. (2020) and Pankiv (2016).

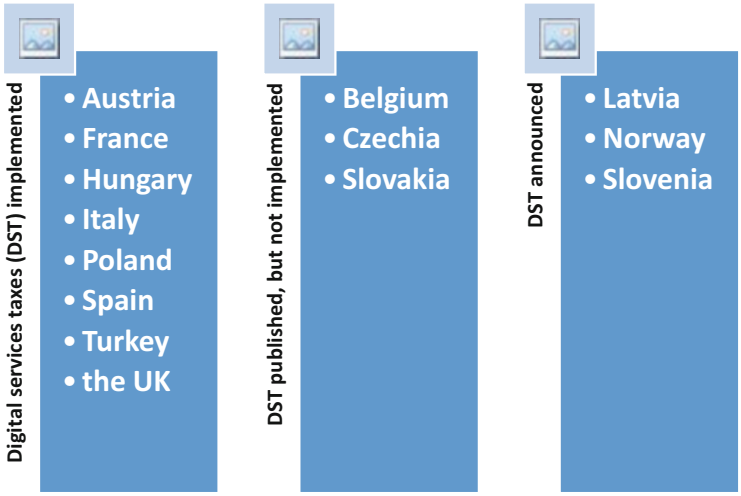

Fig. 6 Countries with new or proposed digital services taxes (October 2020, Europa) (The Tax Foundation, Asen (2020)

of revenues). That is, from the perspective of tax neutrality, it is clearly necessary to ensure the same level of taxation of comparable business transactions, whether or not they are carried out using digital platforms. By providing tax administrations with relevant data on participant transactions, platforms significantly reduce the risk of the non-registration of entities and transactions with the tax administration and the possibility of a consequent non-payment of the relevant income and consumption taxes. Figure 6 presents countries have already introduced digital services taxes.

Taxing transactions carried out through digital platforms usually requires interaction between multiple jurisdictions (at least the country of residence of the platform owner and the countries where the platform provides its services). Therefore, when taxing platform transactions, it is appropriate that, in line with the Ottawa Taxation Framework Conditions 1998 (OECD 2001), all countries respect certain principles in the area of consumption taxation, such as neutrality, efficiency, certainty and simplicity, effectiveness and fairness, and flexibility.

To promote the neutrality and fairness of the taxation of transactions carried out by means of digital platforms in a shared and gig economy, and to reduce the scope of tax evasion, Model Rules for Reporting by Platform Operators with Respect to Sellers in the Sharing and Gig Economy were introduced. These model rules require platform operators to provide the relevant tax administrations with information on the income of platform participants from accommodation, transport, and other services. Such centralised data collection on the activities and income of platform participants should not only be relatively inexpensive but also allow the capturing of activities that were not previously reported and instead moved into the shadow, tax-free economy.

Given the long-term efforts of most developed countries to reduce the risks associated with money laundering and tax evasion, issues related to cryptocurrencies as well as other financial innovations and models, such as stablecoins, digital currencies of central banks and decentralised financing, are also discussed.[21]

The issue is not only that, compared to standard currencies, these currencies and mechanisms are less regulated and therefore may be more easily misused to engage in illegal transactions but also that there is no discussion in the international context about their fair taxation from the perspective of income, consumption, or property taxation. Their high volatility and trade in unregulated markets also create vast room for losses, which may erode income tax bases.

The OECD survey (2020l) shows that most countries that already deal with the taxation of virtual currencies consider virtual currencies to be assets in their legislation or in practice and tax those currencies in the same manner that other forms of intangible assets are taxed. Income from their mining (or exchange for other currencies or goods) is subsequently taxed by some countries as a capital gain or as a form of capital, while some countries opt to treat it as other income.

Trading in virtual currencies may be considered either a commercial or non-commercial (occasional) activity. In the commercial concept, the standard taxation of income is applied; in the non-commercial concept, the taxation of capital gains is applied. Most countries consider transactions in virtual currencies to be subject to income tax.

The use of virtual currencies is mostly exempt from consumption taxation, and within the EU, it is linked to a case decided by the ECJ in 2015.[22] From the perspective of property taxes, these intangible assets are subject to taxes on property holding, donation and inheritance.

From the long-term perspective, and due to the current epidemiological situation, the importance of virtual currencies can be expected to increase along with the decline in the importance of cash. Given their virtual and global nature, this will force further international tax coordination measures. At the same time, however, it is necessary to take into account the energy intensity of mining of these currencies and to control the administrative intensity of their taxation for small taxpayers and occasional transactions.

[21]For example, the total market capitalisation of virtual currencies reached almost USD 400 billion in 2020.

[22]According to a decision of the European Court of Justice in 2015, exchanges of Bitcoin are exempt under the EU VAT Directive.

4 International Exchange of Information and the Fairness of Taxation

Discussions on the need for and technical possibilities of decreased international tax evasion (OECD 1998) led to a consensus within both the OECD and the EU (see BEPS Action No. 12 and 13[23]) on the necessity to strengthen international information exchange to prevent money laundering and tax evasion and to increase the transparency of financial systems. Following the initial steps aimed at specifying and identifying harmful tax practices in individual jurisdictions, a consensus was reached among the developed countries that new tools needed to be advanced for the international exchange of information in order to reduce potential tax evasion. One of the most important outcomes was the founding of the Global Forum on Transparency and Exchange of Information for Tax Purposes (Global Forum)[24] in 2000, initiated by the OECD and G20 countries.

The Global Forum gradually prepared support and control systems for tax information exchange. In the process, pressure on international cooperation in this area intensified, notably after 2001 and following the financial and economic crisis of 2008–2009. According to the OECD (2019), over this period, countries were split into three groups: (1) those that had substantially implemented the internationally agreed tax standard (40 countries/jurisdictions), (2) those that were committed to the standard but had not yet substantially implemented it (38 jurisdictions) and (3) those that were not committed to the standard (4 jurisdictions).

To parallel the American Foreign Account Tax Compliance Act (FATCA),[25] the Convention on Mutual Administrative Assistance in Tax Matters (CMAA)[26] was amended, and since 2010, it has also included the automatic exchange of information (AEOI). In 2014, the AEOI standards[27] for financial accounts were created. The number of Global Forum members had increased from the founding 32 participants in 2000 to 161 members as of the end of September 2020. The EU also holds a membership as a separate entity, and there are an additional 19 multinational organisations that act as forum observers. As of the end of 2020, Belarus and Serbia were the only European countries that were not members of the forum, Colombia and Venezuela were the only countries from the Americas that were not members, and Iran, Myanmar, North Korea and Vietnam were the only countries from Asian regions that were not represented.[28] All of the countries that were previously

[23]For more details about the actions, see OECD (2015e, f).

[24]For more details about the Global Forum see: http://www.oecd.org/tax/transparency/.

[25]For more details about the FATCA, see https://www.irs.gov/businesses/corporations/foreign-account-tax-compliance-act-fatca.

[26]For more details, see http://www.oecd.org/ctp/exchange-of-tax-information/convention-on-mutual-administrative-assistance-in-tax-matters.htm.

[27]For more details about the AEOI standards and exchange of information, see https://www.oecd.org/tax/automatic-exchange/.

[28]There are also African and Pacific region non-member countries.

discussed in connection with harmful tax practices joined the forum relatively quickly.

The main goal of the Global Forum is to establish and evaluate global/international standards for information exchange. The introduction and implementation of standards are evaluated in two phases and in regular cycles and several rounds (see below). The exchange of information takes place according to (1) the standard for the exchange of information on request (EOIR)[29] or (2) the standard for the automatic exchange of information (AEOI).

4.1 Exchange of Information on Request (EOIR)

The main activities of the Global Forum during 2009–2020 were (1) involving as many countries as possible in the group, (2) creating the EOIR standard, (3) setting up a system for the mutual evaluation of the adoption and implementation of the standard, and (4) starting peer-to-peer evaluations.[30] Within 10 years, the activities of the Global Forum and the adoption of the standard had spread to virtually all major world countries. The number of forum members increased from 30 (2000) to 161 (2020). Thirty-four countries remain fully outside the forum or participate only partially.

The EOIR standard is based on principles from the OECD Model Tax Information Exchange Agreement (2002) and Article 26 of the OECD Model Tax Convention and its 2012 update. Adoption of the EOIR standard (and acceptance of the regular evaluation of its implementation) is a mandatory condition for participation in the Global Forum.

The system for the mutual assessment[31] of the adoption and implementation of the standard is based on evaluations in three groups/clusters (A = the availability of information, B = the ease of access to information, and C = the implementation of information exchange), in which a total of 10 indicators/components are evaluated:

A1 Ownership & identity information
A2 Accounting information
A3 Banking information
B1 Access to information
B2 Rights & safeguards
C1 EOI mechanisms
C2 Network of EOIR mechanisms

[29]For more details about the EOIR and exchange of information, see http://www.oecd.org/tax/transparency/what-we-do/exchange-of-information-on-request/exchange-of-information-on-request-peer-review-process.htm.

[30]For more details about the review process, see http://www.oecd.org/tax/transparency/documents/exchange-of-information-on-request-peer-review-process.htm.

[31]For more details in respect of a critical assessment, see Neve (2017).

C3 Confidentiality
C4 Rights & safeguards
C5 Quality & timeliness of responses

These elements are evaluated by the Peer Review Group (PRG) (33 members in 2020) in two so-called rounds: In Round 1, the group assesses how the legislation adopted in a given country meets the requirements of the standard. In Round 2, the implementation of the standard in practice is evaluated, i.e., how effectively the standard has been adopted and whether its use is not only formal. The entire evaluation process for a country takes at least one year, and the evaluation report is first approved by the Peer Review Group and subsequently by all the forum members. The report also includes recommendations on what the country should do to fully comply with the standard. The OECD publishes the full text of the evaluation reports.

The first round of evaluations for all countries concluded in 2016 (2013–2016). The evaluation rules were subsequently modified, and thus, the currently ongoing second round (2016–2023) is not fully comparable. The second, ongoing round of evaluation includes the new members and reflects on the progress of the jurisdictions evaluated in the first round, see Figs. 7, 8, 9, and 10.

To identify countries with insufficient progress in meeting the standard, a so-called accelerated evaluation mechanism has been introduced. It aims to allow, upon request from the country in question, an accelerated assessment of the country's progress since the last assessment.

The May 2020 evaluation plan for the period 2016–2023 envisages the conclusion of the second round in the second half of 2023. Of the former centrally planned European economies, Poland and Slovenia are to be evaluated in 2021; in 2022, Albania, the Czech Republic, Serbia, Bosnia and Herzegovina and Bulgaria; and in 2023, Romania and Lithuania.

The evaluations are presented both as an overall assessment (compliant, largely compliant, partially compliant, or noncompliant) and as a detailed review of the assessment of the 10 individual components (mentioned above).

According to the OECD (2020h), of the 125 jurisdictions, 111 had been assessed by the end of August 2020 as compliant (22), largely compliant (87), preliminarily largely compliant (2), partially compliant (11) or noncompliant (3). The combined review of rounds 1 and 2 has been completed for more than half of the involved countries.

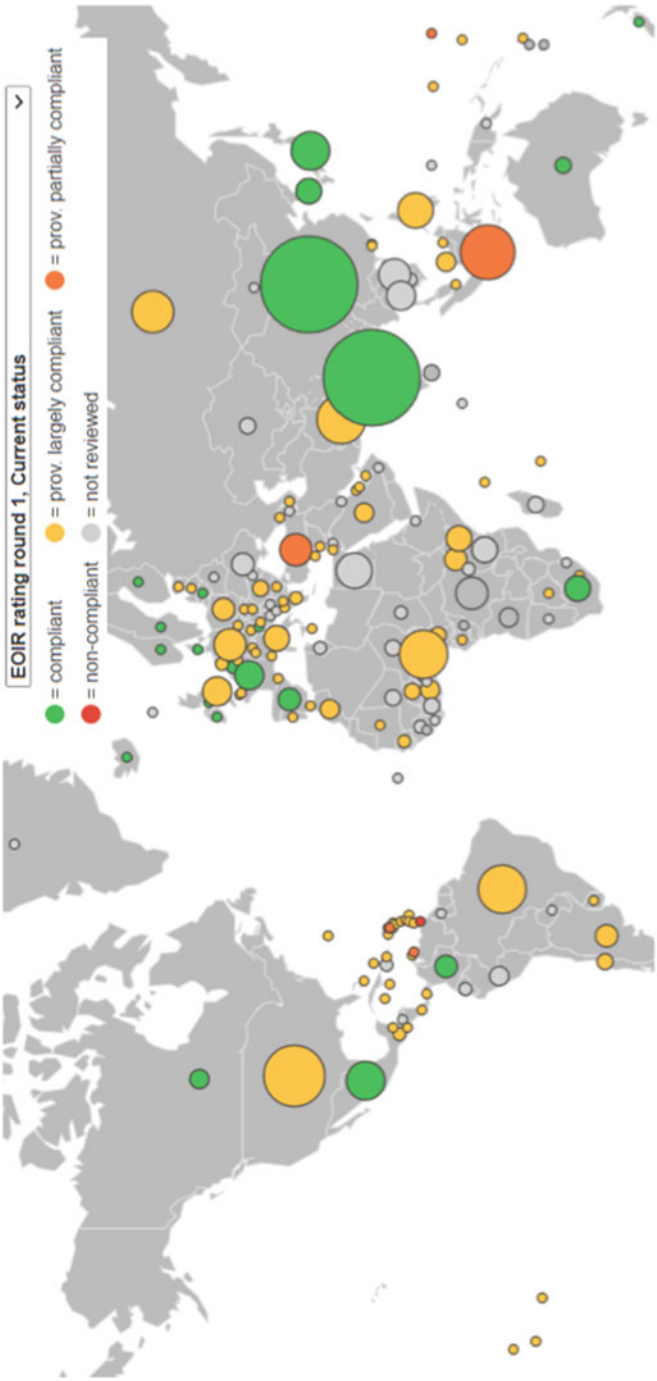

Fig. 7 First-round peer reviews on transparency and the exchange of information on request (EOIR) (OECD 2020h)

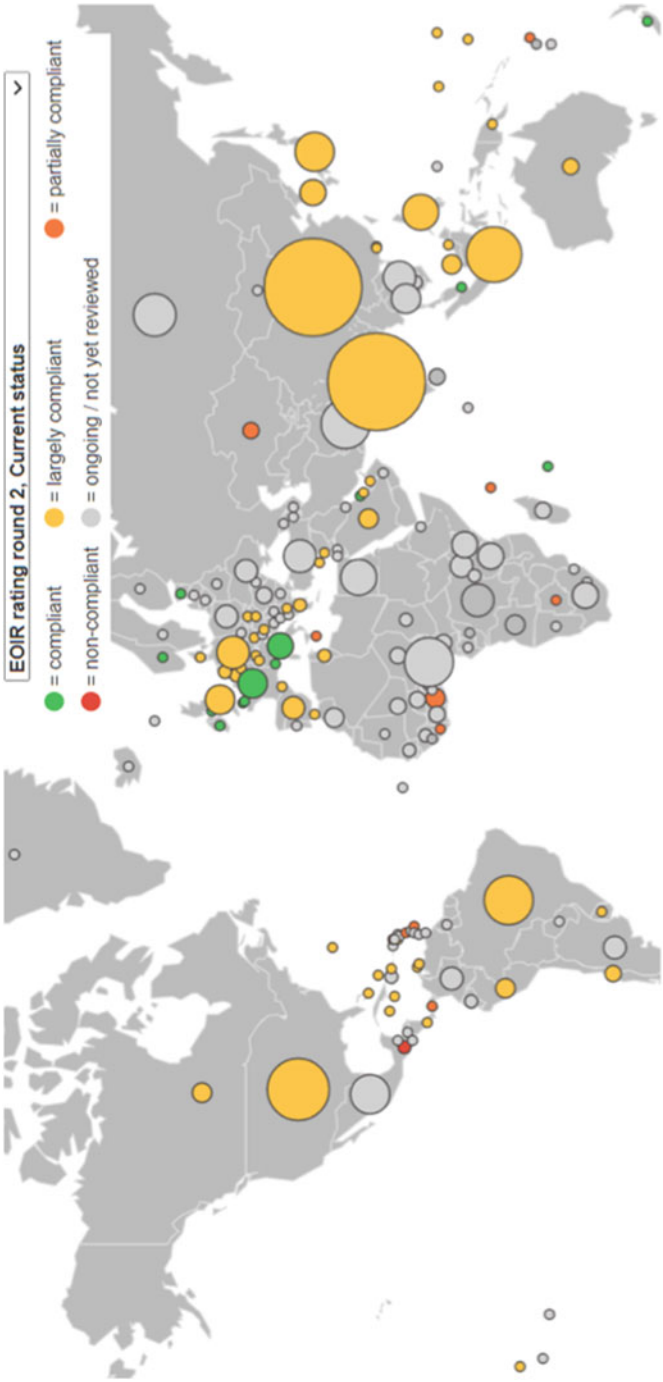

Fig. 8 Second-round peer reviews on transparency and the exchange of information on request (EOIR) (OECD 2020h)

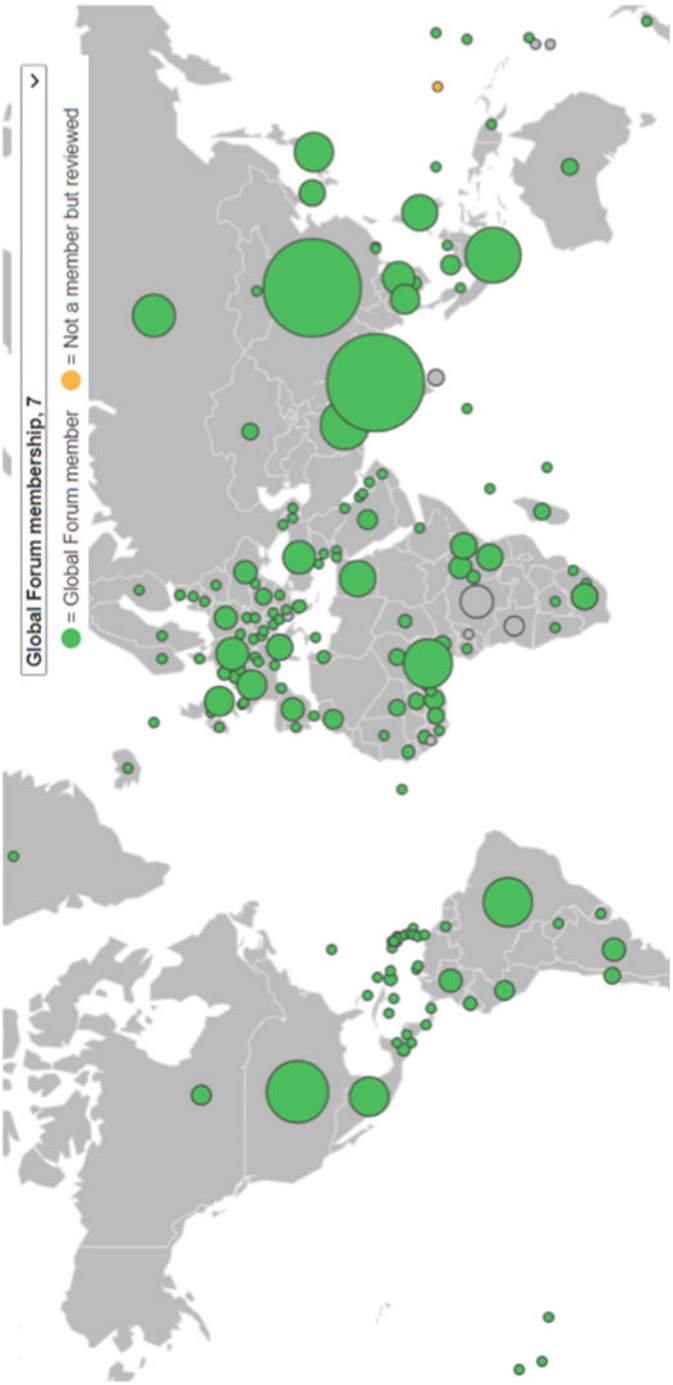

Fig. 9 Exchange of information on request, Global Forum membership (worldwide picture) (OECD 2020i)

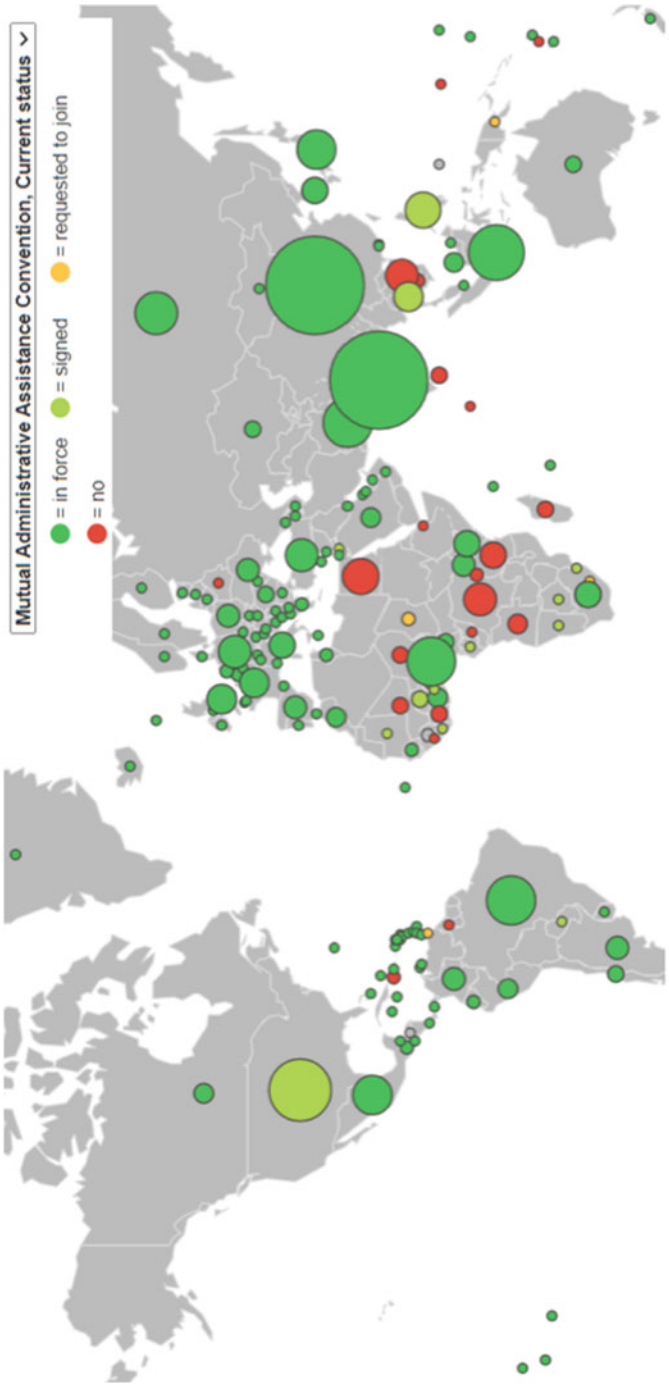

Fig. 10 Exchange of information on request, Mutual Administrative Assistance Convention (worldwide picture) (OECD 2020i)

4.2 Automatic Exchange of Information

The first transnational program for the automatic exchange of tax information was established by the EU Savings Directive[32] in 2003. Further progress was made through the American Foreign Compliance Tax Act (FATCA 2010), followed by inter-governmental agreements entered into between the United Kingdom, France, Spain, Italy and Germany in 2012 on the mutual automatic exchange of information with the United States. In turn, the OECD took steps to adopt the Common Reporting Standard (CRS)[33] and the Multilateral Competent Authority Agreement (CRS MCAA)[34] in 2014, along with the work of the Global Forum on the acceptance of commitments by its individual members. At the same time, based upon Council Directive 2011/16/EU,[35] known as DAC1, the EU established all the necessary procedures in terms of the information exchange standards (spontaneous, automatic and on request) and provided the structure for a secure platform for cooperation. However, since its adoption, the original DAC1 directive has been amended five times with the aim of strengthening administrative cooperation among the EU Member States. The application of DAC1 in terms of the AEOI standards and non-AEOI standards for the exchange of information is presented in detail in Table 7.

While the EU DAC directive focuses on a wide range of information exchanges, such as information on nonfinancial categories, financial account information, advanced cross-border rulings, CbCR, beneficial ownership information and tax planning cross-border arrangements, the OECD automatic exchange of information focuses only on the exchange of information on financial accounts (AEOI Stan-

[32]Council Directive 2003/48/EC of 3 June 2003 on the taxation of savings income in the form of interest payments, known as the Savings Directive, is available at https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32003L0048. It is no longer in force (date of end of validity: 31/12/2015) as it was superceded by parts of Directive 2014/107/EC of 9 December 2014 amending Directive 2011/16/EU regarding the mandatory automatic exchange of information in the field of taxation. Directive 2014/107/EC is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0107.

[33]For more details about the CRS see: https://www.oecd.org/tax/automatic-exchange/common-reporting-standard/.

[34]The international framework for the CRS is available at https://www.oecd.org/tax/automatic-exchange/international-framework-for-the-crs/. The text of the CRS MCAA is available at https://www.oecd.org/tax/automatic-exchange/international-framework-for-the-crs/multilateral-competent-authority-agreement.pdf. The list of signatories is available at https://www.oecd.org/tax/automatic-exchange/about-automatic-exchange/crs-mcaa-signatories.pdf.

[35]Council Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation, repealing Directive 77/799/EEC, which first established the legal basis for administrative cooperation in the field of direct taxation in Europe, is available at https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32011L0016.

Table 7 Application of Directive DAC 1–6 (European Commission, Administrative cooperation in (direct) taxation in the EU, DAC1–6)

Directive on Administrative Cooperation—DAC						
DAC1 2011/16/EU NON AEOI	DAC1 2011/16/EU AEOI ITEMS	DAC2 2014/107/EU AEOI ITEMS	DAC3 2015/2376/EU AEOI ITEMS	DAC4 2016/881/EU AEOI ITEMS	DAC5 2016/2258/EU NON AEOI	DAC6 2018/822/EU AEOI ITEMS
Applies:1/2013 All exchanges of info except Art. 8	Applies: 1/2015 first exchanges on 2014 by: 30.6.2015 Art. 8	Applies: 1/2016 first exchanges on 2016 by: 30.9.2017 Art. 8, para 3a	Applies: 1/2017 first exchanges by 30.9.2017 Art. 8a	Applies: 6/2017 first exchanges on 2016 by: 30.6.2018 Art. 8aa	Applies: 1/2018 Art. 22, para 1a	Applies: 7/2020 first exchanges by: 31.8.2020 Art. 8aaa and hallmarks in Annex 4
• Exchanges on request • Spontaneous exchanges • Presence in adm. Offices • Simultaneous controls • Request for notification • Sharing best practices • Use of standard forms	• Automatic exchange of information on five non-financial categories: – Income from employment – Directors fees – Pensions – Life insurance products – Immovable property (income and ownership)	• Automatic exchange on financial account information: – Interests, dividends or other income generated by financial account – Gross proceeds from sale or redemption – Account balance	• Automatic exchange of information (using a central directory as from 1. 2018) of: – Advance cross-border rulings – Advance pricing arrangements	• Automatic exchange of information on country-by-country reports on certain financial information: – Revenues Profits – Taxes paid and accrued – Accumulated earnings – Number of employees – Certain assets	• Access by tax authorities to beneficial ownership information as collected under AML rules	• Mandatory disclosure rules for intermediaries and • Automatic exchange of information on tax planning cross-border arrangements

dard).[36] The legal frameworks are the multilateral Convention on Mutual Administrative Assistance in Tax Matters (CMAA)[37] and CRS or possibly bilateral agreements (double-tax treaties and tax information exchange agreements).[38] Financial institutions must inform their tax authorities about non-residents for whom they maintain financial accounts. Subsequently, the data obtained in this way are provided to the tax authorities in the country of residence of the given account holder through the tax administrations. For the implementation of the AEOI, it is necessary not only to introduce into domestic legislation the requirement to collect data on the financial accounts of non-residents (CRS MCAA) but also to enter into international agreements on information exchange and join the common transmission system (CTS).

In 2015, more than 90 countries committed to the AEOI and gradually joined the Common Reporting Standard Multilateral Competent Authority Agreement (CRS MCAA). As of 2015, almost 80 countries had already joined, and 110 countries had joined by December 2020; the countries that joined most recently (2020–2021) include Kazakhstan, Liberia, Oman, Peru, Ecuador and Morocco. The first automatic data exchanges under the CRS took place in 2017, and as of 2020, 4400 bilateral exchange relationships had already been activated within the CRS and over 2700 had been activated for country-by-country reporting (CbCR or CbC reports).[39]

BEPS Action 13[40] also created the CbCR,[41] in which large multinational corporations with consolidated net turnover exceeding EUR 750 mil. provide tax administrations with an overview of the basic structure of their financial results, assets and activities (e.g., revenues, paid and accrued taxes, employees, capital, retained profits, tangible assets, etc.) by individual tax jurisdiction.

As seen in Table 8, a similar number of bilateral trade relations have not yet been activated for automatic country-by-country reporting. There are currently approximately 2700 of these relationships (February 2021), while automatic exchanges

[36]The AEOI standard requires the following: specification of the information exchanged (especially interest and dividends); specification of the financial institutions to which the companies report; specification of the entities about which information is exchanged (natural and legal persons, including trusts and foundations) and due diligence procedures for financial institutions.

[37]For more details, see http://www.oecd.org/ctp/exchange-of-tax-information/convention-on-mutual-administrative-assistance-in-tax-matters.htm.

[38]According to the OECD (2020h), some CRS exchanges are legally based on the EU DAC directive, agreements between the EU and third countries or bilateral agreements (such as the UK-CDOT agreements).

[39]These include exchanges between the signatories to the CbC Multilateral Competent Authority Agreement (CbC MCAA); between EU Member States under EU Council Directive 2016/881/EU, known as DAC 4; and between signatories to bilateral competent authority agreements for exchanges under double-tax conventions or tax information exchange agreements, including 41 bilateral agreements with the United States. For more information about CbC MCAA, see https://www.oecd.org/tax/automatic-exchange/international-framework-for-the-crs/.

[40]For more details about the action, see OECD (2015f).

[41]For more details about CbCR in the context of transfer pricing documentation requirements and comparisons with the OECD and EU perspectives, see Solilová and Nerudová (2019).

Table 8 The number of activated exchange relationships for CRS and CbCR information (example of Germany, February 2021) (OECD 2020j)

From jurisdiction Germany to all jurisdiction	
To jurisdiction	Legal instrument
1. Andorra	EU Agreeement
2. Antigua and Barbuda	CRS MCAA activated
3. Argentina	CRS MCAA activated
4. Australia	CRS MCAA activated
5. Austria	EU Directive 2014/107/UE
6. Azerbaijan	CRS MCAA activated
7. Barbados	CRS MCAA activated
8. Belgium	EU Directive 2014/107UE
9. Bonaire, Saint Eustatius and Saba	CRS MCAA activated
10. Brazil	CRS MCAA activated
...	
74. Uruguay	CRS MCAA activated

within the CbCR have taken place since mid-2018 on the basis of the Multilateral Competent Authority Agreement on the Exchange of CbC Reports (CbC MCAA).[42]

The effects of the reforms implemented in recent years can also be seen in the Financial Secrecy Index (FSI),[43] which was financially supported by the EU. The FSI represents a comprehensive assessment of individual jurisdictions through a composite indicator that, as of 2020, consists of four groups of 20 key indicators; the four groups include the following: (1) ownership registration, (2) legal entity transparency, (3) the integrity of tax and financial regulation, and (4) international standards and cooperation. Within the individual groups of indicators, criteria such as CbCR are also evaluated.

According to the FSI 2020, the automatic exchange of information, beneficial ownership registration and CbCR are considered the largest reforms, although CbCR has weaker results. To address the issues of profit shifting and tax base erosion, it is important to attack their roots, i.e., to identify the jurisdictions that make it their business to provide offshore secrecy and help erode the tax base of taxpayers from other jurisdictions. As seen in Table 9, high values (scores above 79) are reported by Algeria, Angola and the Maldives. Some of the high level score countries are characterised by government disintegration due to wars or other institutional shocks, and some are remote island regions. As expected, these countries are also characterised by relatively weak involvement in the systems of international co-operation and exchange of information in tax matters.

[42]For CbCR, countries may also adopt models under double-tax conventions or under tax information exchange agreements.

[43]The FSI ranks jurisdictions according to their secrecy and the scale of their offshore financial activities. It is a tool for understanding global financial secrecy, tax havens or secrecy jurisdictions, and illicit financial flows or capital flight.

Table 9 Financial Secrecy Index 2020 (countries with the highest levels of secrecy) (Tax Justice network 2020)

Jurisdiction	Secrecy score
Algeria	80
Angola	80
Maldives	80
Bolivia	79
United Arab Emirates	78
Jordan	78
Anguilla	78
Turks and Caicos Islands	78
Liberia	78
Brunei	78
Qatar	77
Paraguay	77
Cayman Islands	76
Kenya	76
Vanuatu	76
Antigua and Barbuda	76
Bahamas	75
Liechtenstein	75
St. Kitts and Nevis	75
Samoa	75
Curacao	75
Gambia	75
Montserrat	75

5 The CEE-EU Countries and Fair Taxation

As mentioned in previous sections, globalisation, rapid digitalisation and growing deficits caused by the economic and financial crisis have been the main drivers of tax reforms since 2000. The importance of global tax transparency and tax cooperation and the international exchange of tax information have grown during the last decade. Global problems need global answers; therefore, the BEPS project was initiated in 2013, and the previous bilateralism in international taxation issues has been replaced by the multilateral implementation of global minimum standards.

With respect to the EU, before the BEPS project started, the EU performed several steps to address tax evasion and avoidance, such as expanding the automatic exchange of information widely within the EU, proposing provisions to close loopholes in the Parent-Subsidiary Directive, establishing a Platform on Tax Good Governance, approving new instruments (reverse-charge mechanism) to better fight VAT fraud, and launching the debate on digital taxation.[44] In addition, since 2014,

[44]See more in Fighting Tax Evasion and Avoidance: A year of progress, European Commission, Memo, 2013. https://ec.europa.eu/commission/presscorner/detail/fr/MEMO_13_1096.

the European Council has adopted several directives related to the exchange of information (known as DAC 1–6[45]) as possible solutions for aggressive tax planning, tax base erosion and profit shifting. Further, in 2016, the Economic and Financial Affairs Council (Ecofin) introduced criteria for screening jurisdictions for the purpose of creating an EU-list of noncooperative worldwide jurisdictions, which is updated annually. The criteria focus on tax transparency (including the exchange of information on request, CRS, and CMAA), fair taxation and the implementation of the BEPS recommendations (namely, minimum standards). The list adopted by the council on 6 October 2020 is composed of American Samoa, Anguilla, Barbados, Fiji, Guam, Palau, Panama, Samoa, Trinidad and Tobago, the US Virgin Islands, Vanuatu and Seychelles (EU 2020a).

In 2016, the European Commission published an anti-avoidance package[46] focusing on the introduction of the Anti-avoidance Directive,[47] recommendations on tax treaties (how to prevent tax treaty abuse and implement the GAARs), a revision of the Administrative Cooperation Directive 2011/16/EU (which focuses on CbCR and the exchange of information) and communication regarding an external strategy for effective taxation and good tax governance.

[45]Directive 2014/107/EU (known as DAC 2) of 9 December 2014, amending Directive 2011/16/EU as regards the mandatory automatic exchange of information in the field of taxation, is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0107. Further, the Commission Implementing Regulation (EU) 2015/2378 of 15 December 2015 laying down detailed rules for implementing certain provisions of Council Directive 2011/16/EU on administrative cooperation in the field of taxation and repealing Implementing Regulation (EU) No 1156/2012, is available at https://eur-lex.europa.eu/eli/reg_impl/2015/2378/oj. Council Directive (EU) 2015/2376 (known as DAC 3) of 8 December 2015, amending Directive 2011/16/EU (known as DAC 1) as regards the mandatory automatic exchange of information in the field of taxation, is available at https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32015L2376. Council Directive (EU) 2016/881 (known as DAC 4) of 25 May 2016, amending Directive 2011/16/EU as regards the mandatory automatic exchange of information in the field of taxation, is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016L0881. Council Directive (EU) 2016/2258 (known as DAC 5) of 6 December 2016, amending Directive 2011/16/EU as regards access to anti-money-laundering information by tax authorities, is available at: https://eur-lex.europa.eu/legal-content/CS/ALL/?uri=uriserv%3AOJ.L_.2016.342.01.0001.01.ENG. Council Directive (EU) 2018/822 (known as DAC 6) of 25 May 2018, amending Directive 2011/16/EU as regards the mandatory automatic exchange of information in the field of taxation in relation to reportable cross-border arrangements, is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0822.

[46]For more details, see https://ec.europa.eu/taxation_customs/business/company-tax/anti-tax-avoidance-package_en.

[47]Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market, is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.193.01.0001.01.ENG&toc=OJ:L:2016:193:TOC. Changed in 1th January 2020, its consolidated text: Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market, is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016L1164-20200101.

As part of the anti-avoidance package, the Anti-Tax Avoidance Directive 2016/1164[48] (ATAD) was adopted in July 2016 after a 6-month negotiation process; represents a milestone in the efforts to eliminate base erosion and profit shifting within the EU. The ATAD sets forth five anti-avoidance minimum-standard rules, four of which (the interest limitation rule, GAAR, CFC rule and hybrid mismatches rule) are largely consistent with the BEPS recommendations, and the fifth (exit taxation) goes beyond the scope of the BEPS recommendations. The implementation of the above rules is needed to protect the EU's internal market against tax avoidance practices, thereby ensuring fair and effective taxation in the EU in a sufficiently coherent and coordinated manner. Moreover, the ATAD represents a minimum level of protection and ensures the implementation of the BEPS minimum-standard package, which could be considered a suitable solution for the rest of the world.

The final, very important step is related to the taxation of the digital economy. In 2017, the European Commission released its Communication on a Fair and Efficient Tax System in the European Union for the Digital Single Market;[49] later, in 2018, the European Commission proposed new rules, including two proposals,[50] to ensure that digital business activities are taxed in a fair and growth-friendly way in the EU.

Whether these recent developments reflect the tax legislation in the CEE-EU countries is discussed in detail below. The situation that existed prior to the BEPS project is presented in chapter "Profit Shifting and Tax Base Erosion in the Twenty-First Century". The CEE-EU tax systems are relatively young, as they were completely redrafted after independence was regained in the early 1990s, and the transition from totalitarianism to democracy and from a centrally planned economy to a market economy played a role. The second important tax reform took place when individual countries entered the EU as new member states[51] with the aim of implementing EU directives.

---

[48]See above.

[49]European Commission, Brussels, 21.9.2017, COM(2017) 547 final. Communication from the Commission to the European Parliament and the Council: A Fair and Efficient Tax System in the European Union for the Digital Single Market, available at: https://ec.europa.eu/taxation_customs/sites/taxation/files/communication_taxation_digital_single_market_en.pdf.

[50]Brussels, 21.3.2018, COM(2018) 147 final. The proposal for a council directive laying down rules relating to the corporate taxation of a significant digital presence {SWD(2018) 81 final} - {SWD(2018) 82 final} is available at https://ec.europa.eu/taxation_customs/sites/taxation/files/proposal_significant_digital_presence_21032018_en.pdf, and Brussels, 21.3.2018, COM(2018) 148 final. The proposal for a council directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services {SWD(2018) 81} - {SWD(2018) 82} is available at https://ec.europa.eu/taxation_customs/sites/taxation/files/proposal_common_system_digital_services_tax_21032018_en.pdf. For more details, see https://ec.europa.eu/taxation_customs/business/company-tax/fair-taxation-digital-economy_en.

[51]The Czech Republic, the Slovak Republic, Estonia, Lithuania, Latvia, Hungary, Poland and Slovenia entered into the EU via the fifth enlargement of the EU—called the Eastern—on 1st May 2004. Romania and Bulgaria entered into the EU via the sixth enlargement of the EU on 1st January 2007. Croatia was the last country from the CEE-EU countries to enter into the EU; it did so via the seventh enlargement of the EU on 1st July 2013.

5.1 Current Situation and Future Development

According to the BEPS recommendations (OECD 2015a) and the introduction of minimum standards in the form of the ATAD, we are able to evaluate the development in the CEE-EU countries. For this issue, we will focus first on the five anti-avoidance minimum-standard rules, then on the exchange of information together with CbCR, and finally on multilateral instruments (MLIs).

Regarding the interest deduction limitation rule (the EBITDA rule), which is one of the five anti-avoidance rules, the implementation deadline was 31 December 2018. However, for member states applying rules as effective as the proposed rule, the next implementation deadline is 31 December 2023. Slovenia and the Slovak Republic decided to use this option. As of 1 June 2020, the EBITDA rule was not being applied in Slovenia, and in the Slovak Republic (the 25% EBITDA rule was being applied). Furthermore, out of all the CEE-EU countries, only the Slovak Republic decided to not use the *de minimis* threshold, and Romania and Poland choose to apply *the minimum* threshold, which is lower than EUR 3 mil. The rest of the CEE-EU countries apply the interest limitation rule in the form of 30% of the EBITDA (see Fig. 11).

Only Latvia and Bulgaria were already applying the exit taxation rule, and the rest of the CEE-EU countries were not. Furthermore, in Latvia, Romania and the Slovak Republic, the exit taxation rule was implemented at the beginning, on 1 January 2018; it was implemented by Poland on 1 January 2019. The rest of the CEE-EU countries introduced the rule later, to be in force on 1 January 2020. However, all 11 CEE-EU countries implemented the form of the exit taxation rules suggested by the ATAD (see Fig. 12).

According to the ATAD, EU Member States had to implement a GAAR by 31 December 2018. However, the CEE-EU countries, except Slovenia, had already introduced GAARs in their legal frameworks before the deadline. Furthermore, except for Latvia, Croatia and Bulgaria, all the remaining CEE-EU countries implemented GAARs as suggested by the ATAD (see Fig. 13).

Regarding the CFC rules, only Romania and Poland have had such rules in force since 1 January 2018, i.e., one year before the proposed deadline. The rest of the CEE-EU countries have applied CFC rules since 1 January 2019, in the form suggested by the ATAD (see Fig. 14).

With respect to the last of the five types of anti-avoidance rules, the anti-hybrid rules, all CEE-EU countries except Poland have implemented these rules. However, the Czech Republic decided not to introduce all six of the anti-hybrid rules, particularly the rules on tax residency mismatches and hybrid transfers. Furthermore, a new anti-hybrid rule, namely, reverse hybrid mismatches, must be implemented by 31 December 2021. However, as of June 2020, the rule had been introduced in Croatia, Estonia and Latvia, and it will be in force as of 2022; in Romania, it is in force as of 2020 (see Fig. 15).

Transparency requires cooperation, and cooperation requires transparency. To improve transparency in the area of taxation, sufficient information is needed.

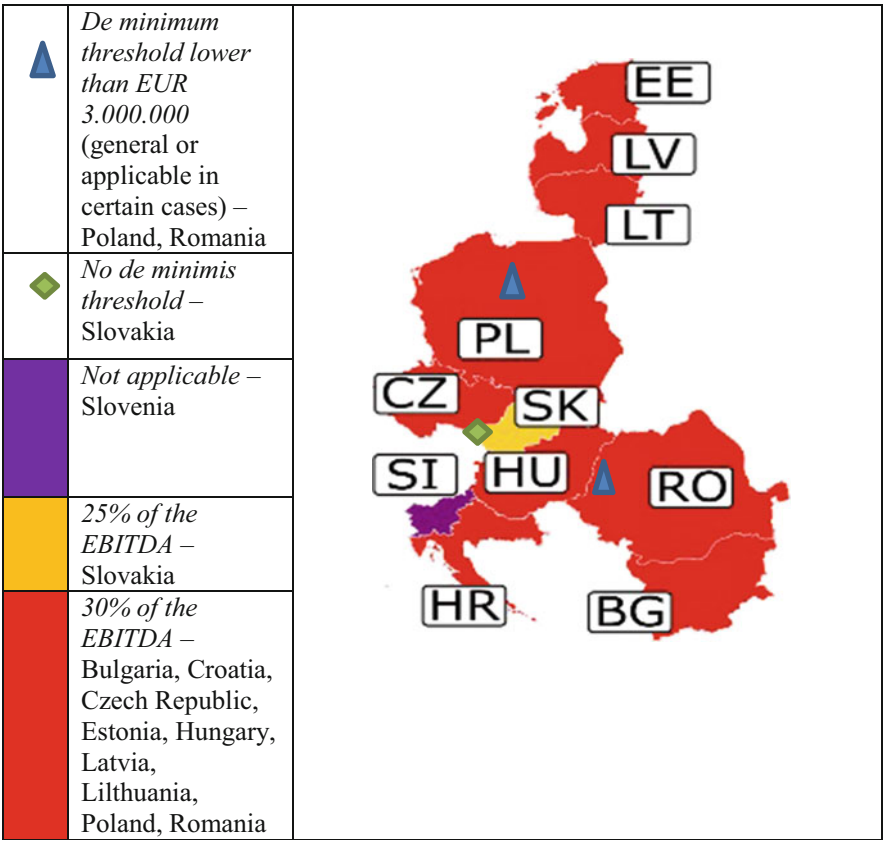

Fig. 11 Implementation of the interest deduction limitation rule (the EBITDA rule)

Therefore, the automatic exchange of information together with CbCR and the Ultimate Beneficial Owner (UBO) Register are considered the most important changes in the area of international taxation in the last decade.

All 11 CEE-EU countries have established a UBO register and fulfilled their obligations under European Directive (EU) 2015/849 on preventing the use of the financial system for money laundering or terrorist financing (known as the fourth anti-money laundering directive[52]), particularly Article 30 and its amendment via

[52]Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC (Text with EEA relevance), available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L0849.

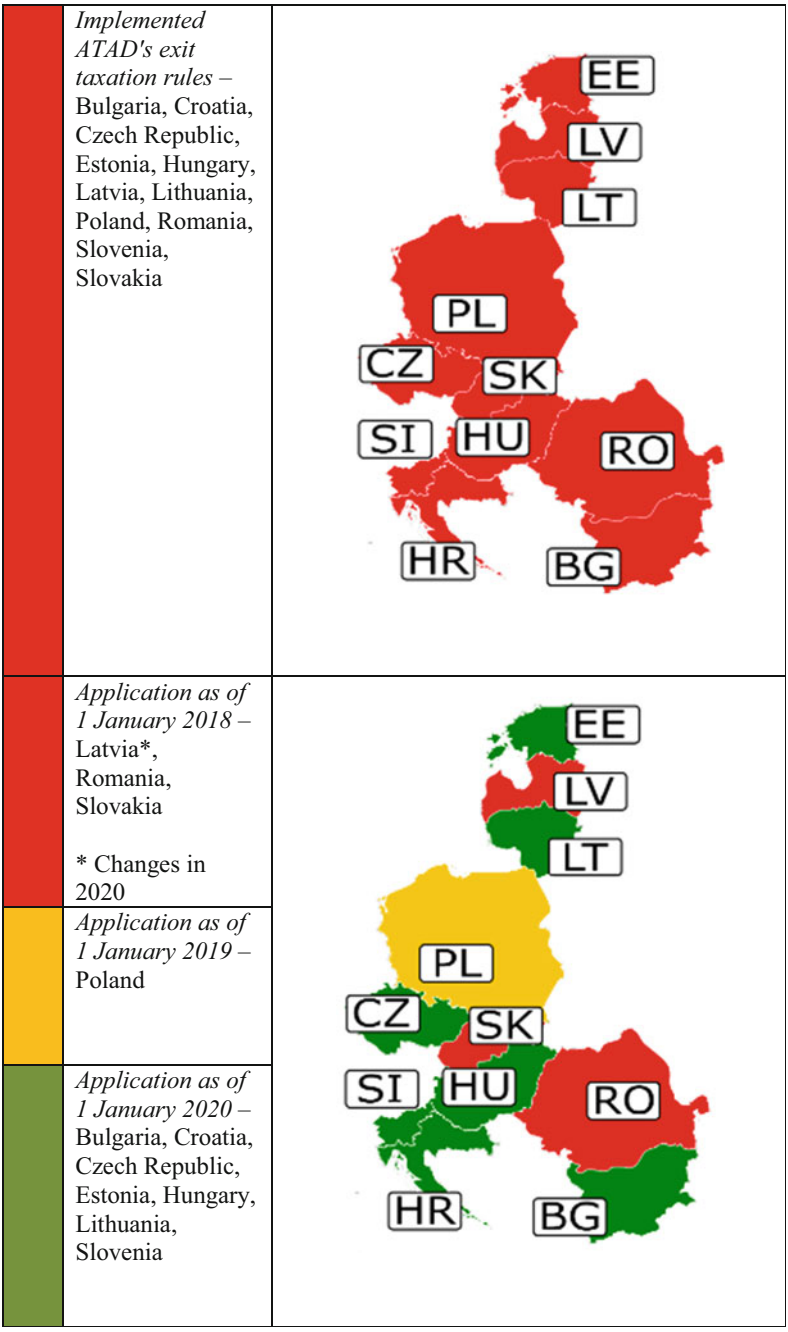

Fig. 12 Implementation of the Exit taxation rules. Note: Member states were required to introduce exit taxation rules or amend their existing ones by 31 December 2019

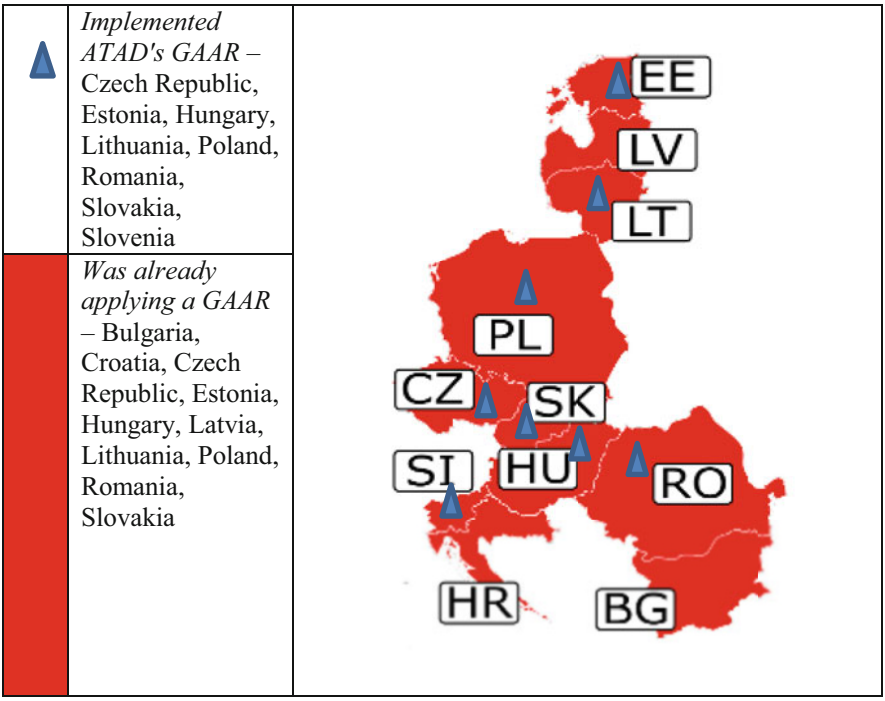

Fig. 13 Implementation of the General Anti-Avoidance Rule. Note: Member states had to implement a GAAR by 31 December 2018

Directive (EU) 2018/843, known as the fifth anti-money laundering directive,[53] which had to be implemented by 10 January 2020. However, each state from the CEE-EU region took on a new duty in its own way. The Slovak Republic was the first country of the EU and CEE-EU countries to implement a UBO register. It was implemented on first November 2015, and since February 2017, it has been replaced by the Register of Partners of the Public Sector. Latvia was the second country from the CEE-EU region to implement a UBO register; the new obligation came into force on 1 December 2017, although already-registered companies had to fulfil it by 1 March 2018. Latvia was followed by Slovenia, where the requirement to establish, maintain and manage a UBO register came into force on 24 November 2017; all legal entities were required to register their beneficial owners no later than 19 January 2018. In the Czech Republic, with an effective date of 1 January 2018, a new obligation for both legal persons and trusts to enter their beneficial owners in the

[53]Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing and amending Directives 2009/138/EC and 2013/36/EU, is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0843.

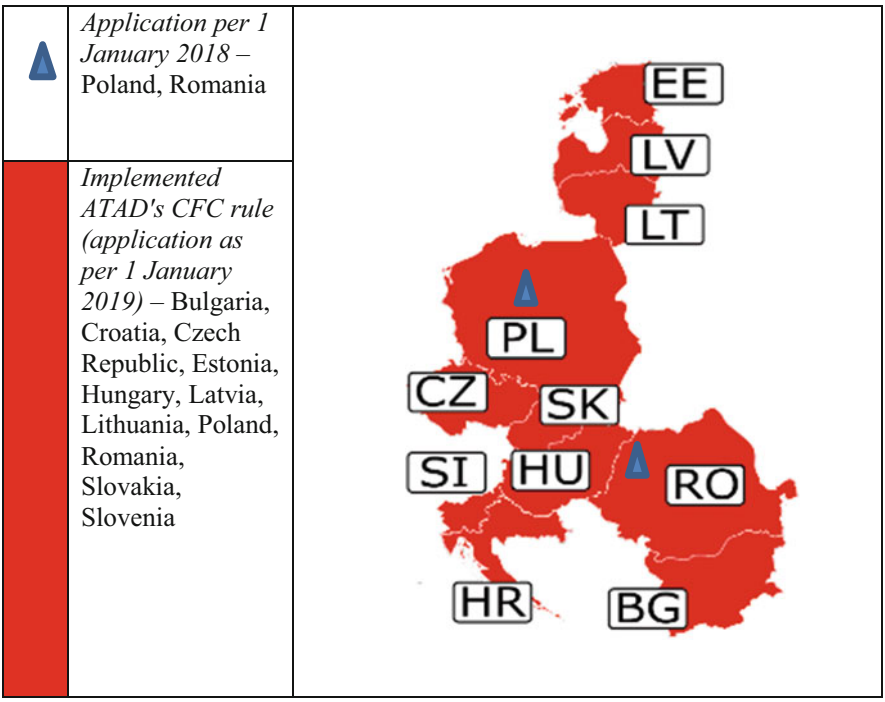

Fig. 14 Implementation of the Controlled Foreign Company rules. Note: Member states were required to implement the ATAD's CFC rules by 31 December 2018. Member states already applying the CFC rules were required to adjust them to align with those of the ATAD. In the same manner, member states that were not applying the CFC rules were required to introduce the ATAD's CFC rules into their tax legislation

public register was introduced; however, are only required to register their beneficial owners in the private section of the register, i.e., where the records of beneficial owners are not public and cannot be generally looked into or searched. Legal persons registered in the Czech Commercial Register had to register their beneficial owners by 1 January 2019, and other legal persons registered in other public registers, such as registers of trusts, are required to register their beneficial owners by 1 January 2021. A similar situation is also found in Lithuania, where a duty to collect information on UBOs has existed since 1 January 2019, but without the obligation to register them, as the Lithuanian information system (JADIS) is not able to do so, i.e., there is no technical means (it should be solved by the end 2020). A related situation also exists in Poland, where UBO registers are open and free but almost empty, although the new obligation was introduced on 13 October 2018. Due to the COVID-19 pandemic, the mandatory registration deadline was postponed until 13 July 2020. Estonia, the last Baltic country from the CEE-EU region, introduced the obligation to collect and disclose beneficial owners on 1 September 2018 (the date the law came into force), and legal entities had to submit the required information to the Commercial Register by first November. In Hungary, the obligation to

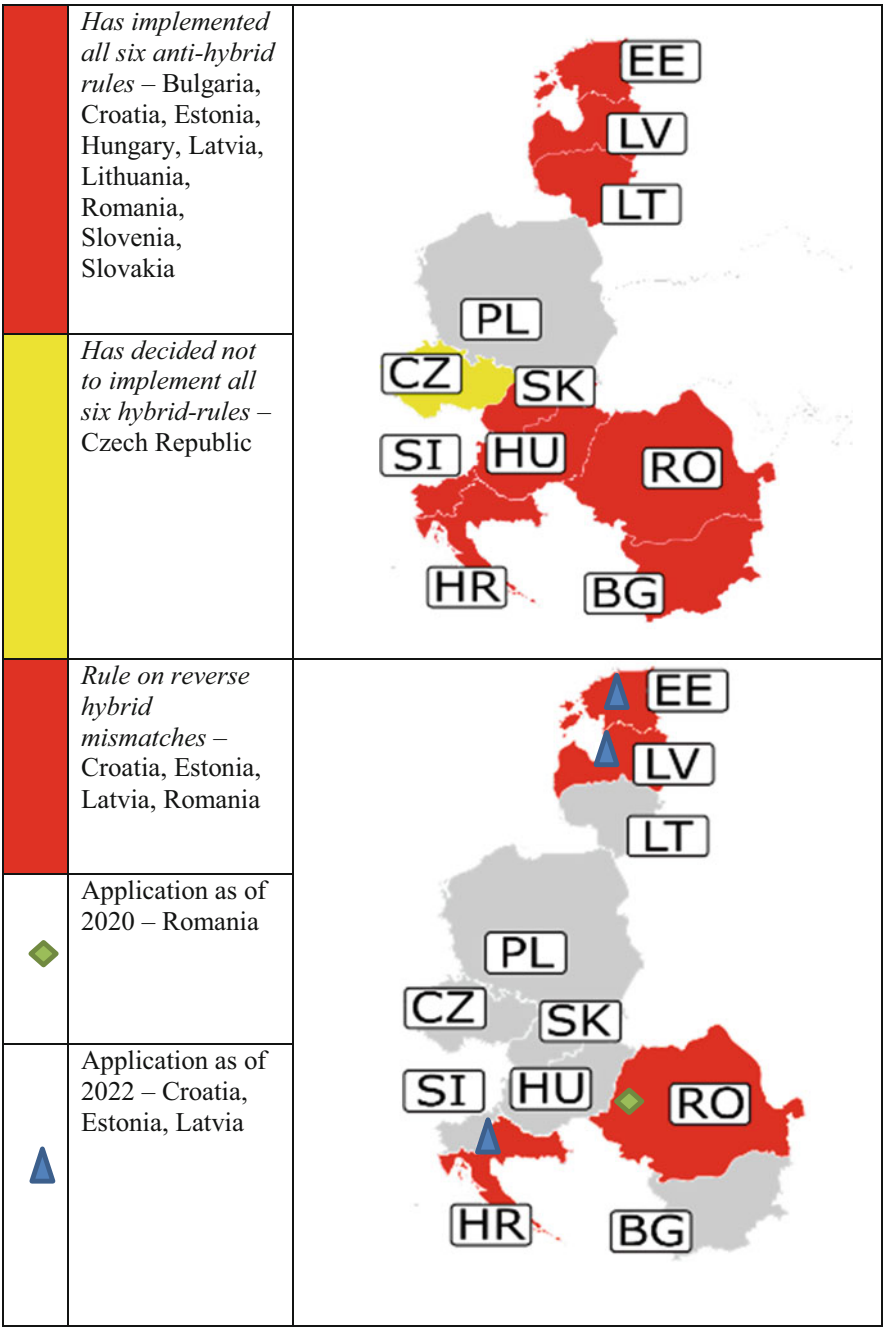

Fig. 15 Implementation of the Anti-hybrid rules. Note: Most member states are required to introduce anti-hybrid rules on hybrid entities, hybrid instruments, imported mismatches, tax residency mismatches and hybrid transfers. Member states must introduce a reverse hybrid rule by 31 December 2021

establish a central UBO register entered into force on 26 June 2017; however, the Hungarian government set a deadline of 1 January 2019 to start the register. Currently, similar to Poland, the register is almost empty. Further, until 31 May 2019, all legal Bulgarian entities or other Bulgarian legal formations had to disclose their beneficial owners to the Commercial Register, the Register of non-profit legal entities, and the Bulstat Register. In Croatia, the UBO register was established on 24 May 2019, and all legal entities and trustees were required to enter information on their ultimate beneficial owners into the register by 31 December 2019. In the last country from the CEE-EU region, Romania, the new obligation to file a statement regarding the beneficial owners of legal entities went into force on 21 July 2019 and, after being amended, had an effective date of 9 July 2020.

With respect to the automatic exchange of information (AEOI[54]) as a new international standard in the global fight against tax evasion, base erosion and profit shifting, we can highlight that all CEE-EU countries engaged in AEOI currently have satisfactory legal frameworks in place (including Bulgaria[55]). Furthermore, as is obvious in Table 10, the number of partners to which the data are sent is increasing in all CEE-EU countries. However, the number of partners to which the data relating to 2019 would be sent in 2020 is not yet available, as the Global Forum extended the deadline (to the end of December 2020) due to the COVID-19 pandemic. Furthermore, all 11 CEE-EU countries fulfilled their commitment to commence the AEOI and the exchange of financial account information in tax matters.

The legal framework of the OECD AEOI Standard consists of the CRS MCAA and the multilateral Convention on Mutual Administrative Assistance in Tax Matters (CMAA); therefore, all 11 CEE-EU countries signed the convention,[56] and in time for the first exchanges in 2017, all of them were a party to the CMAA and had activated the associated CRS MCAA. Moreover, as EU Member States, they also implemented DAC1[57] and its subsequent amendments, DAC 2–6.[58] Further, all of them signed the U.S. Foreign Account Tax Compliance Act (FATCA[59]) with the aim of improving international tax compliance. Moreover, all 11 CEE-EU countries

[54]The AEOI provides for the automatic exchange of a predefined set of financial account information between tax authorities on an annual basis in order to assist them in ensuring the correct amount of tax is paid.

[55]According to the initial Global Forum peer review, the Bulgarian legal framework put in place to implement the AEOI Standard was not sufficient. Therefore, Bulgaria amended its legislative framework to address the issue that had been identified; as a result, there is no data for Bulgaria's exchanges relating to 2018. Based on the Global Forum peer review published in December 2020, Bulgaria's legal framework implementing the AEOI Standard is currently in place and is consistent with the requirements of the AEOI Terms of Reference. For more details, see the OECD (2020c).

[56]For example, the convention was signed by Czech and Romanian representatives in 2012 and by Croatian, Hungarian and Bulgarian representatives in 2014.

[57]See Note 36 above.

[58]See Note 33, Note 46 and Table 7.

[59]Specifically, Poland, Hungary, Latvia, Lithuania, Slovenia, Bulgaria, the Czech Republic and Estonia signed it in 2014; Croatia, the Slovak Republic and Romania signed it in 2015.

Table 10 Details of the exchanges in 2018 and 2019 across the CEE-EU countries (OECD 2020c)

Jurisdiction	Year of commitment to first exchanges	Number of partners to which the data relating to 2017 was sent in 2018	Number of partners to which the data relating to 2018 was sent in 2019
18. Bulgaria[a]	2017	60	–
26. Croatia	2017	60	65
29. Czech Republic	2017	60	60
31. Estonia	2017	62	66
43. Hungary	2017	57	66
55. Latvia	2017	56	66
58. Lithuania	2017	63	66
74. Poland	2017	66	69
77. Romania	2017	59	65
87. Slovak Republic	2017	62	67
88. Slovenia	2017	64	69

[a]Bulgaria temporarily suspended exchanges while it strengthened its confidentiality and data safeguarding frameworks

have European Union agreements in place with five European third countries, namely Andorra, Liechtenstein, Monaco, San Marino and Switzerland. Further, the Baltic countries from the CEE-EU region entered into CRS MCAAs with other non-EU countries, particularly Latvia, which entered into three bilateral agreements with Qatar and Turkey, and Lithuania, which entered into a bilateral agreement with Singapore, as did also Estonia. In addition, according to BEPS Action 13 and the related recommendations, all 11 CEE-EU countries exchange CbCR automatically based on the CbC MCAA[60] or DAC 4.[61] However, it is worth highlighting that BEPS recommendations, similar to OECD recommendations, are voluntary; therefore, the EU introduced DACs 2–6, which were implemented across the EU. Moreover, to minimise costs and the administrative burden, the CbCR established in DAC 4 is in line with the OECD version related to BEPS Action 13 and its recommendations.

[60]For example, the agreement was signed by Bulgarian representatives in 2015. In Romania, CbCR was introduced in 2017.

[61]See Note 46 above.

As a result of that obligation, in 2018, for the first time, tax authorities received CbCR[62] from all eligible corporate groups with total consolidated group revenue of at least EUR 750 million. Instead of CbC MCAA or DAC 4, it is possible to exchange CbCR based on the double-tax convention or the final Tax Information Exchange Agreement (TIEA) allowing the AEOI. Regarding the CbCR in CEE-EU countries, Table 4 presents the results of peer reviews relating to the CbCR and its sufficient implementation. As is obvious, eight CEE-EU countries received positive peer reviews finding that they met all applicable terms, and only three countries (Bulgaria,[63] Latvia[64] and Romania[65]) received recommendations to improve some aspects of their legal frameworks related to CbCR. Furthermore, the number of partners to which the CbCR information was sent was similar (slightly higher) to the number of partners to which the AEOI data were sent in 2019.

The BEPS Associates committed (all CEE-EU countries are members[66]) to the four minimum standards, namely, countering harmful tax practices (Action 5—taking into account transparency and substance and, therefore, engaging in activities based on the framework for improving transparency in relation to rulings), countering tax treaty abuse (Action 6—focusing on treaty shopping and its elimination), documenting transfer pricing and CbC reporting (Action 13), and improving dispute resolution mechanisms (Action 14). The Inclusive Framework, which already has 137 members, monitors and peer reviews the implementation of the minimum standards. The results of the monitoring are presented in Table 11 for the CEE-EU countries. As is obvious, only three countries (Lithuania, Latvia and Hungary) have fully implemented legislation for improving transparency in relation to rulings. The Slovak Republic has planned to do so fully, and other countries have implemented the framework only partially. With respect to Action 6, the minimum standard is implemented through the inclusion of the preamble statement and the principal purposes test (PPT); nine CEE-EU countries follow this method, and two of them (Bulgaria and the Slovak Republic) supplement the PPT with a limitation on benefits

[62]Currently, there are 131 jurisdictions in the world that provide legislation and/or information relating to the implementation of CbC reporting. Further, over 90 jurisdictions have now introduced an obligation of CbCR for eligible MNEs in their domestic legal frameworks.

[63]Bulgaria should take steps to align its local filing implementation with that required by the Action 13 minimum standard.

[64]Latvia should amend the calculation rule related to the annual consolidated group revenue threshold or clarify that it is to be applied in a manner consistent with the OECD guidance, particularly in cases of currency fluctuations where the ultimate parent entity of an MNE is located in a jurisdiction other than Latvia.

[65]First, it is important to highlight that Romania is not an OECD member state; however, it is a member of the Global Forum, and therefore, it follows related recommendations. However, like Bulgaria, Romania should take steps to align its local filing implementation with that required by the Action 13 minimum standard. Further, prior to the first exchanges of information, Romania should take steps to implement processes to ensure that the information exchanges are conducted in a manner consistent with the terms relating to the exchange of information framework and that the appropriate use condition is met.

[66]For more also see Procházka (2019).

Table 11 BEPS monitoring (minimum standard) across the CEE-EU countries (Action 5, 13 and 14—IBFD (2020), BEPS Country Monitor. Action 6—OECD (2020e))

Country	Action 5	Action 6	Action 13	Action 14
Czech Republic	✓	The Czech Republic is implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓ Without legislation that provides for delivery of a Master and Local File. However, domestic rules impose similar documentation requirements.	✓
Estonia	✓	Estonia is generally implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓	✓ Without legislation or practices in place to ensure that administrative processes that promote the prevention and timely resolution of treaty-related disputes are implemented
Romania	✓	Romania is implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓ Without legislation that provides for delivery of a Master and Local File	✓
Poland	✓ IP regime—yes	Poland is implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓	✓
Slovenia	✓	Slovenia is implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓ Without legislation that provides for delivery of a Master and Local File	✓
Bulgaria	✓	Bulgaria is implementing the minimum standard through the inclusion of the preamble statement and the PPT combined with the LOB via MLI	✓	✓
Croatia	✓	Croatia is implementing the	✓	✓

(continued)

Table 11 (continued)

Country	Action 5	Action 6	Action 13	Action 14
		minimum standard through the inclusion of the preamble statement and the PPT via MLI.		
Slovak Republic	✓IP regime—yes[a]	The Slovak Republic is implementing the minimum standard through the inclusion of the preamble statement and the PPT, combined with the LOB via MLI.	✓	✓
Latvia	✓[a]	Latvia is generally implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓	✓
Lithuania	✓[a]	Lithuania is generally implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓	✓
Hungary	✓IP regime—yes[a]	Hungary is implementing the minimum standard through the inclusion of the preamble statement and the PPT via MLI.	✓	✓

[a]These countries have implemented legislation that provides for the spontaneous exchange of information with respect to rulings; their legislation covers rulings related to preferential regimes and unilateral APAs, other cross-border unilateral rulings related to transfer pricing, cross-border rulings providing for a downward adjustment of taxable profits, permanent establishment (PE) rulings, related party conduit rulings, and any other type of ruling agreed upon by the FHTP that, in the absence of spontaneous information exchange, gives rise to BEPS concerns. In the Slovak Republic, some of the mentioned legislation is planned

(LOB) provision. However, to foster the implementation of the minimum standard and other BEPS treaty-related measures in the global tax treaty network, a new multilateral instrument (the MLI[67]) is applied. Regarding Action 13, the minimum

[67]For more details about the MLI, see Tables 13 and 14.

Table 12 Peer review of the CbCR[a] across the CEE-EU countries (OECD 2020b)

Country	CbCR	On 31 March 2020
Bulgaria	Meets all applicable terms, one recommendation given	62 bilateral relationships in place, including those activated under the CbC MCAA and under the DAC 4
Croatia	Meets all applicable terms	67 bilateral relationships in place, including those activated under the CbC MCAA, bilateral Qualifying Competent Authority Agreements (QCAAs) and under the DAC 4
Czech Republic	Meets all applicable terms	68 bilateral relationships in place for the exchange of CbC reports, including those activated under the CbC MCAA, under bilateral Competent Authority Agreements (CAAs) and under the DAC 4
Estonia	Meets all applicable terms	67 bilateral relationships in place, including those activated under the CbC MCAA, under bilateral CAAs and under the DAC 4
Hungary	Meets all applicable terms	64 bilateral relationships in place, including those activated under the CbC MCAA, under bilateral CAAs and under the DAC 4
Latvia	Meets all applicable terms, one recommendation given	75 bilateral relationships in place, including those activated under the CbC MCAA, under bilateral CAAs and under the DAC 4
Lithuania	Meets all applicable terms	75 bilateral relationships in place, including those activated under the CbC MCAA, bilateral CAAs and under the DAC 4
Poland	Meets all applicable terms	75 bilateral relationships, including those activated under the CbC MCAA, under bilateral CAAs and under the DAC 4
Romania	Meets all applicable terms, 3 recommendations given	62 bilateral relationships activated under the CbC MCAA and the DAC 4
Slovakia	Meets all applicable terms	67 bilateral relationships in place for the exchange of CbC reports, including those activated under the CbC MCAA, under bilateral CAAs and under the DAC 4
Slovenia	Meets all applicable terms	75 bilateral relationships in place, including those activated under the CbC MCAA, under bilateral CAAs and under the DAC 4

[a]The peer review report contains the findings of the third annual peer review process ("phase three"), undertaken by the Ad Hoc Joint Working Party 6/Working Party 10 sub-group referred to as the "CbC Reporting Group". The report focuses on each jurisdiction's domestic legal and administrative framework, its exchange-of-information network, and its measures to ensure the confidentiality and appropriate use of CbC reports. For more details, see OECD (2020b)

standard covers the implementation of legislation for the delivery of Master and Local files, and the automatic exchange of CbCR (for details about CbCR, see Table 12). As can be seen, only Romania and Slovenia have not yet implemented legislation that provides for the delivery of master and local files. The final minimum standard relates to the Action 14 Mutual agreement procedure (MAP) and dispute resolution; regarding that standard, all countries have transposed the EU Directive on

Tax Dispute Resolution Mechanisms[68] into their domestic legislation. Further, all countries have introduced legislation or practices ensuring that treaty obligations related to the MAP procedure are fully implemented in good faith and providing for the timely resolution of MAP cases if disputes occur. Further, all countries (except Estonia) have introduced legislation or practices ensuring that administrative processes that promote the prevention and timely resolution of treaty-related disputes are implemented. Finally, all countries have introduced legislation or practices ensuring that taxpayers can access the MAP; for more details, see Table 11.

The multilateral instrument ensures the implementation of the BEPS treaty-related measures in the global tax treaty network and consequently fosters practical application; without this instrument, all changes/measures would take a long time to implement, and perhaps they would have been lost in oblivion. Currently, over 90 jurisdictions are covered by the MLI; all of the CEE-EU countries are covered. Tables 13 and 14 present summaries of the reservations and optional provision choices in the MLI (i.e., it covers Article 3 to Article 17). As can be seen, Bulgaria, Croatia, Estonia, Hungary and Romania still do not have their MLIs in force; therefore, their status is provisional, contrary to the rest of the CEE-EU countries (Latvia, Lithuania, the Czech Republic, the Slovak Republic, Slovenia and Poland), which have their MLIs in force and whose status is definitive.

6 Policy Recommendations

From a general point of view, fair taxation requires transparency, and transparency requires cooperation. In the last two decades, the rapid development of the area of international taxation and consequently of domestic legal tax frameworks has been incredible. Many activities, including the following, should be mentioned: global efforts to eliminate harmful tax competition, tax evasion and aggressive tax planning; global efforts to improve transparency and eliminate tax treaty abuse; global cooperation on the exchange of information; mutual assistance in tax collection; simultaneous and joint audits; and greater disclosure by taxpayers via mandatory reporting regimes (CbCRs).

The positions of individual CEE-EU countries before the economic and financial crisis in 2008–2009 (2010) and before the BEPS project started were similar to those in many other countries, namely, post-communist countries. Almost all CEE-EU countries were used in ATPSs via debt channels, transfer pricing channels and/or IP profit-shifting channels.[69] The public opinion on tax evasion or aggressive tax planning was not as strict and negative as is usual in countries with traditionally high tax morale. However, the fiscal deficit of state budgets after the financial crisis

[68]Council Directive (EU) 2017/1852 of 10 October 2017, on tax dispute resolution mechanisms in the European Union, is available at https://eur-lex.europa.eu/eli/dir/2017/1852/oj.

[69]For more details, see chapter "Profit Shifting and Tax Base Erosion in the twenty-First Century".

Table 13 Reservations and choices of optional provisions in the MLI—provisional status (OECD 2020d)

Reservations and choices of optional provisions		Jurisdictions	Bulgaria	Croatia	Estonia	Hungary	Romania
Article	Paragraph	Subparagraph	Provisional				
3—Transparent Entities	5	a—Opting out of Article 3 for all CTAs	x	x	x	x	
4—Dual Resident Entities	3	a—Opting out of Article 4 for all CTAs	x	x	x	x	
		d—Opting out of Article 4 for specific CTAs					x
5—Application for methods for Elimination of Double Taxation	8	Opting out of Article 5 for identified CTAs	x	x		x	
	9	Opting out of Option C for identified CTAs			x		
	10	Choice of Option A, B or C Notification of existing provisions			A		C
6—Preamble-Purpose of a Covered Tax Agreement	4	Opting out of Article 6(1) for specific CTAs	x				
	6	Choice of Article 6(3) Notification of CTAs		x		x	x
7—PPT/S-LOB Prevention of Treaty Abuse	15	c—Opting out of S-LOB for specific CTAs	x				
	17	b—Choice of Article 7(4)				x	
		c—Choice of S-LOB Notification of existing provisions—S-LOB	x				
8—Dividends	3	a—Opting out of Article 8 for all CTAs	x	x	x	x	
9—Capital Gains—from Alienation of Shares or Interests of Entities Deriving their Value Principally from Immovable Property	6	a—Opting out of Article 9(1) for all CTAs	x	x		x	x
	8	Choice of Article 9(4) Notification of existing provisions		x	x		

(continued)

Table 13 (continued)

Reservations and choices of optional provisions		Jurisdictions	Bulgaria	Croatia	Estonia	Hungary	Romania
Article	Paragraph	Subparagraph	Provisional				
10—PE in 3rd—Anti-abuse Rule for Permanent Establishments Situated in Third Jurisdictions	5	a—Opting out of Article 10 for all CTAs	x	x	x	x	
11—Saving Clause—Application of Tax Agreements to Restrict a Party's Right to Tax its Own Residents	3	a—Opting out of Article 11 for all CTAs	x	x	x	x	
12—(PE) Artificial Avoidance of Permanent Establishment Status through Commissionnaire Arrangements and Similar Strategies	4	Opting out of Article 12 for all CTAs	x		x	x	
13—(PE) Artificial Avoidance of Permanent Establishment Status through the Specific Activity Exemptions	6	a—Opting out of Article 13 for all CTAs	x		x	x	
	7	Choice of Option A or B Notification of existing provisions		A			A
14—(PE) Splitting-up of Contracts	3	a—Opting out of Article 14 for all CTAs	x	x	x	x	
15—(PE) Definition of a Person Closely Related to an Enterprise	2	Opting out of Article 15 for specific CTAs	x		x	x	
16—MAP	5	a—Conditional opting out of Article 16(1), first sentence for all CTAs		x		x	x
17—CorrespondingAdjustments	3	a—Opting out of Article 17 for specific CTAs	x	x	x	x	x
35—Entry into Effect MLI	3	Modification of Article 35(1) (b) and (5)(b)	x	x	x	x	x
	6	Opting out of Article 35(4) for all CTAs	x	x		x	x
	7	a—Entry into effect depending on completion of internal procedures			x		x

Table 14 Reservations and choices of optional provisions in the MLI—definitive status (OECD 2020d)

Reservations and choices of optional provisions		Jurisdictions	Latvia	Czech Republic	Slovak Republic	Lithuania	Poland	Slovenia
Article	Paragraph	Subparagraph	Definitive					
3—Transparent Entities	5	a—Opting out of Article 3 for all CTAs	x	x		x		x
4—Dual Resident Entities	3	a—Opting out of Article 4 for all CTAs	x	x		x		
5—Application for methods for Elimination of Double Taxation	8	Opting out of Article 5 for identified CTAs	x	x				
	10	Choice of Option A, B or C Notification of existing provisions			C		C	
6—Preamble-Purpose of a Covered Tax Agreement	6	Choice of Article 6(3) Notification of CTAs			x			x
7—PPT/S-LOB Prevention of Treaty Abuse	17	a—Statement of acceptance of PPT Notification of existing provisions—PPT					x	
		b—Choice of Article 7(4)		x		x		
		c—Choice of S-LOB Notification of existing provisions—S-LOB			x			
8—Dividends	3	a—Opting out of Article 8 for all CTAs	x	x		x		
		b (i)—Opting out of Article 8 for specific provisions					x	
		b (iii)— Opting out of Article 8 for specific provisions			x			

(continued)

Table 14 (continued)

Reservations and choices of optional provisions		Jurisdictions	Latvia	Czech Republic	Slovak Republic	Lithuania	Poland	Slovenia
Article	Paragraph	Subparagraph	Definitive					
9—Capital Gains—from Alienation of Shares or Interests of Entities Deriving their Value Principally from Immovable Property	6	a—Opting out of Article 9 (1) for all CTAs	x	x		x		
		e—Opting out of Article 9(1) (b) for specific CTAs						x
	8	Choice of Article 9(4) Notification of existing provisions			x		x	x
10—PE in 3rd—Anti-abuse Rule for Permanent Establishments Situated in Third Jurisdictions	5	a—Opting out of Article 10 for all CTAs	x	x		x	x	
11—Saving Clause—Application of Tax Agreements to Restrict a Party's Right to Tax its Own Residents	3	a—Opting out of Article 11 for all CTAs	x	x		x		x
12—(PE) Artificial Avoidance of Permanent Establishment Status through Commissionnaire Arrangements and Similar Strategies	4	Opting out of Article 12 for all CTAs	x	x			x	
13—(PE) Artificial Avoidance of Permanent Establishment Status through the Specific Activity Exemptions	6	a—Opting out of Article 13 for all CTAs	x	x			x	
	7	Choice of Option A or B Notification of existing provisions			A	B		A
14—(PE) Splitting-up of Contracts	3	a—Opting out of Article 14 for all CTAs	x	x			x	x
		b—Opting out of Article 14 for specific provisions				x		

15—(PE) Definition of a Person Closely Related to an Enterprise	2	Opting out of Article 15 for specific CTAs	x	x			x	
16—MAP	5	a—Conditional opting out of Article 16(1), first sentence for all CTAs	x		x		x	x
17—Corresponding Adjustments	3	a—Opting out of Article 17 for specific CTAs	x		x		x	x
		b (i), (ii) Conditional opting out of Article 17 for all CTAs	x	x				
			x	x				
18—General applicability of Part VI (Arbitration)		Choice of Part VI						x
19—Mandatory Binding Arbitration	11	Modification of Article 19(1)(b)						x
	12	Application of rules in Article 19(12)						x
23—Type of Arbitration Process	2	Opting out of Article 23(1) for all CTAs						x
	4	Choice of Article 23(5)						x
24—Agreement on a Different Resolution (Arbitration)	1	Choice of Article 24(2)						x
28—Reservations on the scope (Arbitration)	2	a—Free form reservation for scope of arbitration Objection to formulated reservation						x
36—Entry into Effect (part VI)	2	Retroactive application of Part VI						x

and many large cases related to the aggressive tax planning/tax evasion of MNEs absolutely changed it and increased pressure in public discussion and by relevant shareholders to reduce the tax gap and decrease the amount of tax evasion and aggressive tax planning.

Furthermore, there are few studies and/or analyses related to evidence of profit shifting, tax base erosion or aggressive tax planning and tax revenue losses occurring via these activities in CEE-EU countries. The available studies[70] relate to the Czech Republic, Hungary, the Slovak Republic and Poland.

According to our research and economic analyses from the macro and micro perspectives,[71] we estimated the profit shifting and tax base erosion and related corporate tax revenue losses in the CEE-EU countries. From the macro perspective, we estimated, on average, the extent of profit shifting to be 0.2% of GDP and the extent of corporate tax revenue losses to be 0.05% of GDP in the CEE-EU countries (not including Croatia) based on an analysis of FDI, cross-border interest payments, royalty payments and consulting service payments. From the micro perspective, we proved that CEE-EU entities (at the entity-subsidiary level) clearly play a role in ATPSs, e.g., as target entities or lower-tax entities. Through a methodological approach involving an analysis of discrepancies between financial indicators, we estimated the total maximum amount of profit shifting and tax base erosion at EUR 26.2 billion (annually, on average), of which EUR 10.6 billion are at the EBIT level and are related to transfer-pricing channels and IP profit-shifting channels. The annual base erosion related to debt channels was estimated at a maximum of almost EUR 17 billion. The overall tax revenue losses related to ATPSs were estimated at EUR 4.2 billion (annually, on average), of which EUR 2.7 billion are related to debt channels. Furthermore, through a methodological approach via tax differentials, we estimated that the amount of profits shifted from the CEE EU countries to tax havens is, on average, EUR 8.9 billion per year (i.e., an annual CIT revenue loss of EUR 1.74 billion in the CEE EU countries). However, we also estimated inward profit shifting to CEE-EU countries at close to EUR 7.8 billion (i.e., an annual average CIT revenue gain of 1.37 billion EUR when the statutory CIT rate is used). As is obvious, the estimated corporate tax revenue losses are very significant, and the estimated amounts differ according to the methodology and data used.[72] Because we used data from the period 2009–2017 or a partial period inside of this period (based on data availability), the results represent the situation before the introductions of important

[70]For the Czech Republic, there are studies by Janský and Kokeš (2015, 2016), Janský (2018), and Moravec et al. (2019). For the Slovak Republic, there are studies by Ištok and Kanderová (2019a, b) and Khouri et al. (2019). For Hungary, there is only a study performed by the World Bank, 2014, specifically by Khwaja and Iyer (2014) estimating the overall tax gap. For the Visegrad countries, there is a study by Nerudová et al. (2020). Further, see the note below.

[71]For more details, see chapters "Economic Analysis from the Macro Perspective" and "Economic Analysis from the Micro-Perspective".

[72]For more details about the methodological approaches and current methodology used for macro-economic analysis and micro-economic analysis, see chapter "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion".

law changes based on the BEPS recommendations and new EU directives. How the situation will change after the important implementations will be a subject of future research, as the necessary data were not available at the time of preparing this book.

Based on this research, we are able to suggest a few recommendations regarding how to improve the current situation and reach fairer taxation without significant corporate tax revenue losses via profit shifting, tax base erosion and/or aggressive tax planning. As mentioned before, globalisation and global issues require global solutions, global dialogue and global cooperation.

1. Based on the research carried out and presented in chapters "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion", "Economic Analysis from the Macro Perspective", and "Economic Analysis from the Micro-Perspective", the possibility of using specific tax regimes for select corporate income that is risky (typically, copyright revenue, revenue associated with specific management and consulting services, digital services, etc.) may be limited, especially in terms of the difficulty of capturing real economic processes.
2. In general, digital business taxation focuses more on and finds global solutions. It has become increasingly clear that with the growing importance of digital cross-border transactions, the tax-related problems caused by the physical absence of a company in the jurisdiction where it generates revenues/profits may be difficult problems to solve. In this respect, it is possible to recommend the mutual implementation of modified international rules for the taxation of sales, especially for digital companies, although it is necessary to consider a violation of the existing general arm's length principle.[73]
3. The concept of not imposing withholding tax on interest payments[74] (absent under domestic law) proves to be significant in the intensity of international aggressive tax planning. Therefore, it is recommended that in places where this system does not exist, its introduction should be combined with the requirements of proper proof of the country of the beneficial owner and the international exchange of information in this field. Moreover, a similar recommendation is given in the case of royalty payments and dividend payments.
4. Nevertheless, there are UBO registers available in all 11 CEE-EU countries, but not all of them are currently available to the public. To improve transparency, it is recommended that the private registers be changed to public registers. Moreover,

[73]The arm's length principle is considered the key pillar of the transfer-pricing rules and was established as a rule against manipulating transfer prices for the purpose of manipulating the volume of the tax base. Its definition is stated in Article 9 of the OECD Model Convention. For more details, see https://www.oecd.org/tax/treaties/model-tax-convention-on-income-and-on-capital-condensed-version-20745419.htm.

[74]Interest payments and the related debt channels were proved to be significant tools for aggressive tax planning. For more details, see chapters "Methodological Approaches to the Measurement of Profit Shifting and Tax Base Erosion", "Economic Analysis from the Macro Perspective", and "Economic Analysis from the Micro-Perspective" and the following European Commission (2017) and UNCTAD (2015).

some UBO registers lack sufficient data-filling and are almost empty therefore some legal instrument (such as penalty) should be considered to increase data-filling.

5. Another similar recommendation, but with respect to CbCR and improving transparency, is to make private CbCR reports available to the public, at least in an aggregated form.

All 11 CEE-EU countries are very active in this field of interest; they have very large DTT networks and are also increasing their networks of TIEAs. Furthermore, they are attractive FDI locations in Europe. All of them are members of the Global Forum on Transparency and Exchange of Information for Tax Purposes; all of them signed the FATCA; all of them joined the Inclusive Framework on BEPS, with the aim of introducing minimum standards into their legal frameworks; all of them introduced the MLI and joined the MLI beyond the BEPS minimum standards; and, finally, all of them implemented DAC 1–6 and the ATAD.

7 Conclusion

This chapter focused on tax policies in relation to fair corporate taxation; the evaluation of tax systems and their development in the last two decades; an explanation of the concept of fair taxation that highlighted possible areas for strengthening fair taxation; the digital society and related taxation issues; international efforts aiming to eliminate profit shifting, tax base erosion, aggressive tax planning and tax treaty abuse; and an evaluation of the situations in the CEE-EU countries.

The dynamic advent of digitisation and the development of new business models by globally operating companies in the last decade have raised questions regarding reforms of the global rules related to income taxation and the allocation of taxation rights between countries and reforms of national tax policies. Consensus within the OECD, G20 and EU on the necessity of global solutions and global cooperation prompted the initiation of the BEPS project and its 15 actions that aim to improve many aspects of international taxation through, for example, transparency; cooperation; the prevention of money laundering, tax evasion, and tax treaty abuse; and increased transparency in financial systems. In 2015, the OECD, via the BEPS project, introduced final recommendations and minimum standards that should be introduced globally.

Despite the increase in the intensity of the discussions and work on tax reforms aimed at limiting the possibilities of international aggressive tax planning and tax evasion, corporate tax revenue has increased over the last decades: since 1995, the rate has actually grown by 1.9 percentage points to 10.0% of total tax revenues (at 3.1% of GDP), and since 1965, it has risen by 1.2 percentage points. The IMF Government Finance Statistics show a similar picture: the share of revenue payable by corporations and other enterprises reached 3.1% of GDP and fluctuated over the past two decades by approximately 3% of GDP.

However, individual countries' approaches to corporate taxation are highly diverse. According to the OECD (2020a, m), some countries have reduced the significance of corporate taxes by almost half or more, while others have dramatically increased the importance of these taxes. Moreover, similar to the countries monitored by the OECD, the average corporate statutory tax rates in the EU have been declining over the last 15 years, despite a dramatic deterioration of the fiscal situation of most governments as a result of the 2008–2010 crisis. However, due to the broadening of tax bases, the introduction of new taxes, growth in corporate profitability, the substitution of firms for individual entrepreneurs and other reasons, the ratio of corporate tax revenue to GDP has not declined over the long-run.

Moreover, many countries are used in ATPSs, and in those countries, many entities from MNE groups play specific roles in ATPSs, e.g., as target entities, lower-tax entities or conduit entities, with the aim of reducing the effective tax burden on the MNE groups, as these countries offer harmful tax competition, preferential tax regimes and/or offshore secrecy, which help erode the tax base of taxpayers from other jurisdictions. Identifying the jurisdictions that make these activities their business and changing their tax policy/tax systems will help to ensure fairer taxation. Therefore, global cooperation on the exchange of information, global efforts to improve transparency and eliminate tax treaty abuse, mutual assistance in tax collection, simultaneous and joint audits, greater disclosure by taxpayers via mandatory reporting regimes (CbCR) and many other activities are important changes that will help to ensure fairer taxation.

Fair taxation is based on a sense of neutrality, the legitimacy of taxation, the payment of appropriate amounts of taxes based on horizontal and vertical equity, the appropriate design of tax systems to ensure fair levels of taxation and the fair allocation of tax rights between taxpayers and/or countries based on international equity. The possible areas for strengthening fair taxation include the financial sector, the service sector (namely, digital services) and all economic sectors with respect to the elimination of tax evasion, base erosion and aggressive tax planning; the improvement of environmental taxation; and the allocation of taxation rights. However, in all aspects, a global solution is necessary.

All 11 CEE-EU countries are very active in this field of interest, and all of them are members of the Global Forum on Transparency and Exchange of Information for Tax Purposes. All of them signed the FATCA. All of them joined the Inclusive Framework on BEPS, with the aim of introducing minimum standards into their legal frameworks. All of them introduced the MLI and joined the MLI beyond the BEPS minimum standards, and, finally, all of them implemented DAC 1–6 and the ATAD.

Acknowledgement This chapter is the result of GA ČR no. 18-14082S "Fair corporate taxation: Measurement of the impact of corporate profit shifting on the budget of the Czech Republic".

References

Asen E (2020) What European OECD countries are doing about digital services taxes. The Tax Foundation. https://taxfoundation.org/digital-tax-europe-2020/. Accessed 1 Dec 2020

Bento A, Parry I (1999) Tax deductions, environmental policy, and the double dividend hypothesis. In: Policy research working papers, 21 Jun 2013. https://doi.org/10.1596/1813-9450-2119

Blaschke M, Cigaina M, Riss UV, Shoshan I (2017) Designing business models for the digital economy. In: Oswald G, Kleinemeier M (eds) Shaping the digital enterprise. Springer, Cham. https://doi.org/10.1007/978-3-319-40967-2_6

Brousseau E, Penard T (2007) The economics of digital business models: a framework for analyzing the economics of platforms. Rev Netw Econ 6(2):81–114. https://doi.org/10.2202/1446-9022.1112

Chiroleu-Assouline M, Fodha M (2006) Double dividend hypothesis, golden rule and welfare distribution. J Environ Econ Manag 51(3):323–335. https://doi.org/10.1016/j.jeem.2005.09.007

Choi JP, Ishikawa J, Okoshi H (2020) Transfer pricing of intangible assets with the arm's length principle, https://voxeu.org/article/transfer-pricing-intangible-assets-arm-s-length-principle. Accessed 1 Dec 2020

EU (2020a) European council, taxation: EU list of non-cooperative jurisdictions. https://www.consilium.europa.eu/en/policies/eu-list-of-non-cooperative-jurisdictions/#. Accessed 4 Dec 2020

EU (2020b) Taxation trends in the European Union. Data for the EU Member States, Iceland and Norway: 2020 edition. https://ec.europa.eu/taxation_customs/business/economic-analysis-taxation/taxation-trends-eu-union_en. Accessed 3 Dec 2020

European Commission (2017) Aggressive tax planning indicators. Final report. Taxation papers, WP no. 71–2017. https://doi.org/10.2778/847061

European Commission (2020) EU policies. https://ec.europa.eu/info/policies_en. Accessed 10 Dec 2020

European Commission (n.d.) Administrative cooperation in (direct) taxation in the EU, DAC1-6. https://ec.europa.eu/taxation_customs/business/tax-cooperation-control/administrative-cooperation/enhanced-administrative-cooperation-field-direct-taxation_en. Accessed 10 Dec 2020

Goodstein E (2003) The death of the pigovian tax? policy implications from the double-dividend debate. Land Econ 79(3):402–414. https://doi.org/10.2307/3147025

Hongler P, Pistone P (2015) Blueprints for a new PE nexus to tax business income in the era of the digital economy (January 1, 2015). https://ssrn.com/abstract=2586196, https://doi.org/10.2139/ssrn.2586196. Accessed 4 Dec 2020

IBFD (2020) BEPS country monitor, Action 5, 13 and 14, Tax Research Platform. https://www.ibfd.org/. Accessed 14 Dec 2020

IMF (2019) Corporate taxation in the global economy. *Fiscal Affairs Department Policy Paper No. 19/007*, March 10, 2019. https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/03/08/Corporate-Taxation-in-the-Global-Economy-46650. Accessed 5 Dec 2020

IMF (2020) Government Finance Statistics (GFS): revenue, taxes payable by corporations and other enterprises. https://data.imf.org/?sk=a0867067-d23c-4ebc-ad23-d3b015045405. Accessed 4 Dec 2020

Ištok M, Kanderová M (2019a) Debt/asset ratio as evidence of profit-shifting behaviour in the Slovak Republic. Technol Econ Dev Econ 25(6):1293–1308. https://doi.org/10.3846/tede.2019.11338

Ištok M, Kanderová M (2019b) Interest expenses as a technique of profit shifting used by Slovak companies. In Proceedings of the international scientific conference HED 2019, Hradec Kralove, Czech Republic, 5–6 February 2019, 9:292–304. https://uni.uhk.cz/hed/site/assets/files/1073/proceedings_2019_1.pdf. Accessed 10 Nov 2020

Janský P (2018) Estimating the revenue losses of international corporate tax avoidance: the case of the Czech Republic. Post-Communist Econ 30(5):617–635

Janský P, Kokeš O (2015) Corporate tax base erosion and profit shifting out of the Czech Republic. Post-Communist Econ 27(4):537–546. https://doi.org/10.1080/14631377.2015.1084733
Janský P, Kokeš O (2016) Profit-shifting from the Czech multinational companies to European tax havens. Appl Econ Lett 23(16):1130–1133. https://doi.org/10.1080/13504851.2015.1137543
Johannes B, Fuest C (2012) The nexus of corporate income taxation and multinational activity. FinanzArchiv/Public Finance Analysis 2012, 68(3):231–251. www.jstor.org/stable/23272571. Accessed 22 Dec 2020
Khouri S, Elexa L, Ištok M, Rosová A (2019) A study from Slovakia on the transfer of Slovak companies to tax havens and their impact on the sustainability of the status of a business entity. Sustainability 11:2803
Khwaja MS, Iyer I (2014) Revenue potential, tax space, and tax gap: a comparative analysis. Policy Research Working Paper, at 25. World Bank, 2014
Kraus S, Palmer C, Kailer N, Kallinger FL, Spitzer J (2018) Digital entrepreneurship: a research agenda on new business models for the twenty-first century. Int J Entrep Behav Res. https://doi.org/10.1108/IJEBR-06-2018-0425
Li J (2018) Protecting the tax base in a digital economy. United Nations handbook on selected issues in protecting the tax base of developing countries, June 2015, ISBN: 978-92-1-159109-5, Osgoode Legal Studies Research Paper No. 78. https://ssrn.com/abstract=3164995. Accessed 1 Dec 2020
Losada SR (2019) A new nexus based on the concept of significant economic presence: the digital permanent establishment. In: Hulkó G, Vybíral R (eds) European financial law in times of crisis of the European Union. Dialóg Campus, Budapest, pp 377–389. https://doi.org/10.36250/00749.36
Moravec L, Rohan J, Hinke J (2019) Estimation of international tax planning impact on corporate tax gap in the Czech Republic. E&M Ekonomie a Management 22(1):157–170. https://doi.org/10.15240/tul/001/2019-1-011
Nerudová D, Dobranschi M (2016) Pigouvian carbon tax rate: can it help the European union achieve sustainability? In: Huber P, Nerudová D, Rozmahel P (eds) Competitiveness, social inclusion and sustainability in a diverse European Union. Springer, Cham. https://doi.org/10.1007/978-3-319-17299-6_8
Nerudová D, Solilová V (2020) Business models. In: A Bakker. Transfer pricing and business restructurings streamlining all the way, online updates. IBFD, Amsterdam. Accessed 1 Dec 2020
Nerudová D, Dobranschi M, Solilová V, Litzman M (2020) Profit shifting to onshore and offshore tax havens: the case of Visegrad countries. Post-Communist Econ 32(7):904–946. https://doi.org/10.1080/14631377.2019.1705083
Neve L (2017) The peer review process of the global forum on transparency and exchange of information for tax purposes: a critical assessment on authority and legitimacy. Erasmus Law Rev 10(2):89–105. https://doi.org/10.5553/ELR.000086
OECD (1998) Harmful tax competition: an emerging global issue. Paris, OECD Publishing. https://www.oecd-ilibrary.org/taxation/harmful-tax-competition_9789264162945-en. Accessed 18 Feb 2019
OECD (2001) Taxation and electronic commerce: implementing the Ottawa taxation framework conditions. OECD Publishing, Paris. https://doi.org/10.1787/9789264189799-en
OECD (2013) Action plan on base erosion and profit shifting. OECD, Paris
OECD (2015a) OECD/G20 base erosion and profit shifting project 2015 final reports. OECD, Paris
OECD (2015b) BEPS action 1 tax challenges arising from digitalisation. https://www.oecd.org/tax/beps/beps-actions/action1/. Accessed 14 Nov 2020
OECD (2015c) BEPS action 5 harmful tax practices. https://www.oecd.org/tax/beps/beps-actions/action5/. Accessed 14 Nov 2020
OECD (2015d) BEPS action 6 prevention of tax treaty abuse. https://www.oecd.org/tax/beps/beps-actions/action6/. Accessed 14 Nov 2020

OECD (2015e) BEPS action 12 mandatory disclosure rules. https://www.oecd.org/tax/beps/beps-actions/action12/. Accessed 14 Nov 2020
OECD (2015f) BEPS action 13 country-by-country reporting. https://www.oecd.org/tax/beps/beps-actions/action13/. Accessed 14 Nov 2020
OECD (2019) The role of digital platforms in the collection of VAT/GST on online sales. OECD Publishing, Paris. https://doi.org/10.1787/e0e2dd2d-en
OECD (2020a) OECD tax database. https://www.oecd.org/tax/tax-policy/tax-database/. Accessed 10 Dec 2020
OECD (2020b) Country-by-country reporting – compilation of peer review reports (phase 3): inclusive framework on BEPS: action 13, OECD/G20 base erosion and profit shifting project. OECD Publishing, Paris. https://doi.org/10.1787/fa6d31d7-en. https://www.oecd-ilibrary.org/docserver/fa6d31d7-en.pdf?expires=1609021641&id=id&accname=guest&checksum=019EB3DDD09D097588E1C21BE320D944. Accessed 14 Dec 2020
OECD (2020c) Peer review of the automatic exchange of financial account information 2020. OECD Publishing, Paris. https://doi.org/10.1787/175eeff4-en
OECD (2020d) MLI database. https://www.oecd.org/tax/treaties/mli-database-matrix-options-and-reservations.htm. Accessed 14 Dec 2020
OECD (2020e) Prevention of treaty abuse – second peer review report on treaty shopping, OECD, Paris. wwwoecdorg/tax/beps/prevention-of-treaty-abuse-second-peer-review-report-on-treaty-shoppingpdf Accessed 14 Dec 2020
OECD (2020f) OECD statistics: global revenue statistics database. Accessed 1 Dec 2020
OECD (2020g) OECD statistics: revenue statistics - OECD countries: comparative tables. Accessed 1 Dec 2020
OECD (2020h) OECD centre for tax policy and administration and the global forum on transparency and exchange of information for tax purposes: country monitoring. http://www.oecd.org/tax/transparency/country-monitoring/. Accessed 10 Dec 2020
OECD (2020i) OECD centre for tax policy and administration and the global forum on transparency and exchange of information for tax purposes: global forum membership, current status and mutual administrative assistance convention, current status. http://www.oecd.org/tax/transparency/country-monitoring/. Accessed 10 Dec 2020
OECD (2020j) OECD centre for tax policy and administration and the global forum on transparency and exchange of information for tax purposes: automatic exchange portal. http://www.oecd.org/tax/automatic-exchange/international-framework-for-the-crs/exchange-relationships. Accessed 13 Feb 2021
OECD (2020k) The main OECD policies (topics). https://www.oecd.org/#. Accessed 1 Dec 2020
OECD (2020l) Taxing virtual currencies: an overview of tax treatments and emerging tax policy issues. https://www.oecd.org/tax/tax-policy/taxing-virtual-currencies-an-overview-of-tax-treatments-and-emerging-tax-policy-issues.pdf. Accessed 1 Dec 2020
OECD (2020m) Table II.1. Statutory corporate income tax rate. https://stats.oecd.org/Index.aspx?QueryId=78166. Accessed 1 Dec 2020
OECD (2020n) Digital government index: 2019 results. OECD public governance policy papers, no. 03. OECD Publishing, Paris. https://doi.org/10.1787/4de9f5bb-en
Ok E (1995) On the principle of equal sacrifice in income taxation. J Public Econ 58(3):453–467. https://doi.org/10.1016/0047-2727(94)01481-3
Pankiv M (2016) Post-BEPS application of the arm's length principle to intangibles structures. Int Transfer Pricing J, November/December 2016, 463–476
Procházka P (2019) BEPS (Base erosion and profit shifting) action plan initiated by OECD/G20: implementation status in Czechia and other CEE countries. Central and Eastern Europe in the changing business environment, 286
Remane G, Hanelt A, Nickerson RC, Kolbe LM (2017) Discovering digital business models in traditional industries. J Bus Strateg 38(2):41–51. https://doi.org/10.1108/JBS-10-2016-0127

Schmidt-Faber C (2004) An implicit tax rate for non-financial corporations: definition and comparison with other tax indicators. *EC Taxation Papers No 5*, Directorate General Taxation and Customs Union, European Commission. https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/implicit_tax_rate_non_financial_corporations.pdf. Accessed 10 Nov 2020

Solilová V, Nerudová D (2019) Transfer pricing rules for SMEs in the EU. In: Solilová V, Nerudová D (eds) Transfer pricing in SMEs critical analysis and practical solutions. Springer

Spengel C, Schmidt F, Heckemeyer J, Nicolay K (2019) Effective tax levels using the Devereux/Griffith methodology. Project for the EU Commission TAXUD/2019/DE/312: final report 2019, ZEW-Gutachten und Forschungsberichte, ZEW - Leibniz-Zentrum für Europäische Wirtschaftsforschung, Mannheim

Spinosa L, Chand V (2018) A long-term solution for taxing digitalized business models: should the permanent establishment definition be modified to resolve the issue or should the focus be on a shared taxing rights mechanism? INTERTAX 46(6–7):476–494

Tax Justice Network (2020) Financial secrecy index - 2020 results. https://fsi.taxjustice.net/en/introduction/fsi-results. Accessed 10 Dec 2020

UNCTAD (2015) World investment report (2015) Reforming international investment governance. United Nations publications customer service, 253. New York and Geneva: UNCTAD NATIONS. https://doi.org/10.18356/293b1525-en. https://unctad.org/system/files/official-document/wir2015_en.pdf. Accessed 10 Feb 2020

Vendrell-Herrero F, Parry G, Bustinza OF, Gomes E (2018) Digital business models: taxonomy and future research avenues. Special Issue: Digital Business Models 27(2):83–180. https://doi.org/10.1002/jsc.2183

Conclusion

Veronika Solilová, Danuše Nerudová, and Marian Dobranschi

Abstract Profit shifting is defined as the strategic actions taken by MNEs to report lower profits in high-tax countries and more income in low- or no-tax jurisdictions via using target entities, lower-tax entities and/or conduit entities in specific aggressive tax planning structures. As a result, the profits are reported in a jurisdiction different from where the economic value is created, and the tax base of the jurisdiction of origin is eroded with corporate tax revenue losses. The main factors or drivers of profit shifting and tax base erosion are the loopholes in the tax laws of different countries, international mismatches in entities, preferential tax regimes, great difficulty establishing the true value of intellectual property, the artificial splitting of ownership of assets, mispricing related to transfer pricing and significant tax differentials between world countries. Since there are different tax policies regarding corporate income tax, low effectiveness or nonexistence of anti-avoidance measures, different treatments of CFC and thin capitalization rules, these factors create opportunities for MNEs to exploit the inconsistencies between different jurisdictions in order to shift profits and avoid taxation.

Profit shifting is defined as the strategic actions taken by MNEs to report lower profits in high-tax countries and more income in low- or no-tax jurisdictions via using target entities, lower-tax entities and/or conduit entities in specific aggressive tax planning structures.[1] As a result, the profits are reported in a jurisdiction different from where the economic value is created, and the tax base of the jurisdiction of origin is eroded with corporate tax revenue losses. The main factors or drivers of profit shifting and tax base erosion are the loopholes in the tax laws of different countries, international mismatches in entities, preferential tax regimes, great difficulty establishing the true value of intellectual property, the artificial splitting of

[1] See more in Dyreng (2015).

V. Solilová (✉) · D. Nerudová · M. Dobranschi
Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic
e-mail: veronika.solilova@mendelu.cz; danuse.nerudova@mendelu.cz; marian.dobranschi@mendelu.cz

D. Nerudová, J. Pavel (eds.), *Profit Shifting and Tax Base Erosion*, Contributions to Finance and Accounting, https://doi.org/10.1007/978-3-030-74962-0_7

ownership of assets, mispricing related to transfer pricing and significant tax differentials between world countries. Since there are different tax policies regarding corporate income tax, low effectiveness or nonexistence of anti-avoidance measures, different treatments of CFC and thin capitalization rules, these factors create opportunities for MNEs to exploit the inconsistencies between different jurisdictions in order to shift profits and avoid taxation.

Current profit shifting and tax base erosion techniques are very diverse between MNEs. MNEs can apply different ATP strategies and ATPS. To achieve this purpose, MNEs can use earning stripping via debt instruments; modified prices of transfer goods/products, services, property, etc., which abuse the arm's length principle; IP transfers and related royalty payments; check-the-box practice; cross crediting; exemptions or deferrals of profits; intra-financing; the centralization of overheads and costs to the parent company; the establishment of shell companies in ATPS; the inversion of headquarters; the shift-to-loss strategy; and many other strategies. Moreover, according to the type of amendments in the corporate tax system, we are able to distinguish the responses of MNEs. Specifically, if the CIT rate is changed, the responses of MNEs are real in the form of the movement of assets, employment and economic activities, as there is strong sensitivity to CIT rate changes. However, if there are amendments in the taxation of corporate income, the responses of MNEs are through financial tools via transfer pricing, the location of royalties, intangibles, etc. Therefore, according to the categorization of profit shifting techniques, different channels through which MNEs can shift taxable profits to gain tax advantages can be distinguished. Among these channels are typically the rank channel, debt channel, transfer pricing channel and IP profit shifting channel.

Regarding profit shifting, tax base erosion, aggressive tax planning and tax evasion, there are important tax havens, offshore centres, offshore financial centres and countries with high financial secrecy indexes that generally offer advantageous tax conditions to MNEs. The contribution of those entities to profit shifting has been extensively analysed. For example, the GAO (2008) states that most of the top 100 US MNEs have subsidiaries in countries labelled as tax havens. However, the current literature tends to highlight that the label of tax haven countries is outdated and that these countries should be labelled as financial secrecy jurisdictions or offshore financial centres, which are more appropriate than tax havens.

Another aspect of profit shifting is that it could harm the overall voluntary tax compliance of all taxpayers if there is a broad perception that MNEs can legally avoid taxation. The World Values Survey (2004) also proved that there is a significant correlation between tax morale and tax compliance in both developing and developed countries.[2] Tax morale is usually understood as an internalized social

[2]The WVS is an international database including worldwide investigations of sociocultural, sociodemographic and political change; and it includes comparative data on the values, personal attitudes and belief systems among people. Regarding tax morale, there is a question: "Do you justify cheating on taxes if you have the chance?" For more details see: http://www.worldvaluessurvey.org/WVSOnline.jsp?WAVE=4&COUNTRY=487. OECD (2013b) and Luttmer and Singhal (2014) conduct similar studies.

norm and a moral obligation to pay taxes.[3] The more individuals and/or corporations deviate from this social norm and evade taxes, the less attractive it is to follow this social norm, resulting in more tax evasion.[4] Tax morale is therefore an important determinant of the shadow economy.

The OECD (2013a) also underlines that tax base erosion and profit shifting pose risks to tax revenues, tax sovereignty and tax fairness in OECD countries and non-OECD countries alike. Therefore, in 2013, the OECD introduced the BEPS project focusing on 15 different actions with the aim to equip governments with the domestic and international instruments needed to tackle base erosion and profit shifting.

Additionally, several empirical studies have estimated the seriousness of corporate tax revenue losses due to profit shifting and tax base erosion. The most important contributors to the study of profit shifting techniques are Hines and Rice (1994) and Grubert and Mutti (1991), who first focused on the determination of profit shifting and tax base erosion. The OECD (2015) underlines that the overall BEPS magnitude, which translates into annual losses of 4–10% of CIT revenues[5] or USD 100 to 240 billion, is significant. The European Parliamentary Research Service (2015) quantified the loss of tax revenue as either EUR 50–70 billion or EUR 160–190 billion per annum, if other tax regime issues, inefficiencies in collection and other practices are taken into account. UNCTAD (2015) found that an average USD 450 billion is shifted from developing countries to offshore investment centres, which leads to a yearly tax revenue loss of USD 90 billion. Another research study based on FDI data estimates that the total annual revenue losses range from USD 90 billion to USD 280 billion,[6] but Crivelli et al. (2016) found that losses due to base erosion and profit shifting worldwide amounted to USD 650 billion annually. However, different ATP strategies have to be researched using appropriate data sets. Therefore, data availability greatly predetermines the methodology used rather than developing new methods for examining profit shifting.

A substantial number of macroeconomic data-based BEPS analyses use FDI statistics when models consider the relation of FDI to taxes resulting in stating FDI tax (semi) elasticities. In the area of micro-based data, landmark research is presented by Hines and Rice (1994), who estimated profit shifting and tax base erosion according to "true" and "shifted" income through tax differentials. Another methodological approach introduced by Grubert and Mutti (1991) is presented through discrepancy by comparing the selected financial indicators of MNEs with

[3]See more in Schwartz and Orleans (1967), Lewis (1982), Alm et al. (1992, 1999), Frey (2003), Feld and Frey (2002, 2004), Torgler (2003, 2007), Torgler and Schneider (2007, 2009), Lago-Peñas and Lago-Peñas (2010), Molero and Pujol (2012), Lisi (2019), Luttmer and Singhal (2014).

[4]See more in Gordon (1989) and Sandmo (2005).

[5]Clausing (2016) adds that it is over 30% of U.S. corporate income tax revenues with respect to the USA.

[6]Janský and Palanský (2019), Tørsløv et al. (2018), Cobham and Janský (2018), Clausing (2016).

a peer group not having any link with tax havens or with preferential tax regimes. This approach was further developed by Fuest and Riedel (2012).

The positions of individual CEE-EU countries before the economic and financial crisis in 2008–2009 (2010) and before the BEPS project started were similar to those in many other countries, namely, post-communist countries. Almost all CEE-EU countries were used in ATPS via debt channels, transfer pricing channels and/or IP profit shifting channels. Opinions on tax evasion or aggressive tax planning were not as strict and negative as is usual in countries with traditionally high tax morale. However, the fiscal deficit of state budgets after the financial crisis and many large cases related to aggressive tax planning/tax evasion of MNEs absolutely changed the opinions and increased the pressure from public discussion and to relevant shareholders with the aim to reduce the tax gap, tax evasion and aggressive tax planning. Regarding the roles of the entities included in ATP structures, using debt channels, transfer pricing channels and IP profit shifting channels, it is possible to distinguish the individual roles of entities in ATP structures, such as target entities, lower-tax entities and conduit entities. Many entities based in CEE-EU countries are used as target entities and lower-tax entities depending on the ATPS applied. Furthermore, the majority of CEE-EU countries allow too generous of tax exemptions of dividends received together with no beneficial-owner test for the reduction of the withholding tax on dividends or no withholding tax on dividends paid under domestic law, half of the CEE-EU countries allow tax deductions for intragroup royalty costs in combination with no beneficial-test for the reduction of the withholding tax on royalties or no withholding tax on royalty payments under domestic law, and all CEE-EU countries allow the general deductibility of interest costs without making it conditional on the creditor being taxed on interest income.[7]

Based on the economic analysis from the macro perspective (via the balances of payments and investment positions of individual countries), we proved profit shifting from CEE-EU countries to some other EU countries (mainly Cyprus, Malta, Luxembourg, and the Netherlands), which is also reflected by a higher volume of interest payments, royalties and management consulting services flows to these countries. The undertaken analysis also showed that in terms of their origin, foreign direct investments in CEE-EU countries are biased in favour of the abovementioned countries. Furthermore, the rates of return on foreign direct investment from these countries are also lower than those of the investments from other countries. This confirms the hypothesis of their use for the purposes of aggressive tax planning. Further, the average extent of the estimated profit shifts from CEE-EU countries to other EU Member States is approximately 0.35% of GDP with significantly higher values estimated for the Czech Republic (more than 0.9% of GDP) and Hungary (0.8% of GDP). On the other hand, Slovenia (only 0.05% of GDP) and Romania (0.12% of GDP) rank as the countries with the lowest estimated profit shifts. A similar conclusion has also reached when analysing the extent of cross-border interest payments, royalties, and consulting services. As a key channel for

[7]For more details see European Commissions (2015, 2017).

profit shifting, we considered interest payments and royalties, although the importance of payments for consulting services is relatively limited. In the case of the Baltic States, the profit shifting issue is found to be relatively insignificant since our estimates point to a shift of only approximately 0.1% of GDP. For other countries, however, the estimated extent of relocation is more than double. Our model estimates the highest values for Hungary, where the figure stands at more than 0.45% of GDP; and another country with an estimate significantly above the average is Bulgaria (0.38% of GDP). In both countries, the most important channel for the outflow of profits is that of interest payments. This is probably because the tax systems in both countries also allow tax base deductions of the usual interest on interest-free loans. This policy is not present in the tax systems of other countries. The estimation of the corporate tax revenue loss is determined to be approximately 0.05% of GDP on average. Significantly higher values are reported by Hungary and the Czech Republic. Further, in most countries, this loss amounts to no more than 3% of the total revenues. Compared to the existing studies, the presented results of the estimate are lower. However, most of the analyses performed so far use a wider set of states and are not limited to post-communist states. Moreover, we have used only investor countries from the EU.

Based on the economic analysis from the micro perspective, we also proved profit shifting and tax base erosion. We applied two approaches: first, the pretax income sensitivity to tax differentials, which represents an indirect method to research the occurrence of profit shifting; and second, the discrepancy between selected financial indicators. Via the first methodologic approach, we find that the profits before taxation are highly sensitive to tax differentials and consequently that profit shifting occurs, where the profits before taxation reported by foreign owned companies based in CEE EU countries are negatively affected by tax differentials. Further, we determined that a one-unit increase in the tax differential will decrease profits before taxation by 0.37% (semi-elasticity). Our semi-elasticity is lower than that of other primary research; however, the CEE EU countries hold a tax advantageous position when compared with other EU24 member states as the average statutory CIT rate is more than 5% lower than the average CIT rate in the rest of the EU countries. In this context, the semielasticity of pretax income to tax differentials tends to be less sensitive. Regarding the amount of profit shifting, we estimated that profits shifted from CEE EU countries to tax havens are on average EUR 8.9 billion per year. This produces an annual CIT revenue loss of EUR 1.74 billion in CEE EU countries. Conversely, since the statutory CIT rate in the CEE EU is smaller than that in the rest of the EU24 countries, we found that inward profit shifting occurs when the tax differential to the EU24 is considered. We estimate that close to EUR 7.8 billion are shifted towards the CEE EU from sister companies from EU24 countries, which leads to an annual average CIT revenue gain of EUR 1.37 billion when the statutory CIT rate is used. Via the second methodologic approach, according to the Grubert and Mutti's (1991) and Fuest and Riedel's (2012) approaches, we amended the multi-criteria model proposed by the European Commission (2017); and similar to the study of the EC (2017), we distinguished three types of entities within MNE groups that can be included in the ATPS (i.e., target entities, lower-tax entities and

conduit entities). We find that the effects of ATPS via the transfer pricing channel, IP profit shifting channel and debt channel are noticeable at the profit level. Our results demonstrate that MNEs are able to more effectively manipulate their operating profitability and/or pretax profitability in the ATPS than the peer group (domestic entities). Moreover, MNEs have significantly higher indebtedness, higher use of long-term debt and higher interest payments relative to total assets. At the entity-subsidiary level, the CEE-EU entities, such as target entities and lower-tax entities, clearly play a role in ATPS. Target entities seek to decrease their tax base as much as possible; thus, these identified entities generate the highest interest payment ratio and debt share ratio, and they make extensive use of long-term debt together with the combination of related-party debt, resulting in very high financial losses. In addition, their operating profitability (loss) or pretax profitability (loss) and EATRs are significantly lower than those of domestic entities. Lower-tax entities seek to effectively increase their tax base and make it subject to a lower tax rate; thus, identified entities generate positive operating profitability, pretax profitability and EATRs, but these are still significantly lower than those of the peer group. Regarding the amount of profit shifting, we estimated that the total maximum amount of profit shifting and tax base erosion is EUR 26.2 billion (annually on average), of which EUR 10.6 billion is on the EBIT level and related to the transfer pricing channel and IP profit shifting channel. The annual base erosion related to the debt channel is estimated as a maximum of almost EUR 17 billion. Finally, the overall corporate tax revenue losses related to ATPS are estimated to be EUR 4.2 billion (annually on average), of which EUR 2.7 billion is related to the debt channel.

Obviously, the estimated corporate tax revenue losses are very significant, and the estimated amounts differ according to the methodology and data used. The CEE-EU countries are aware of the gravity of the situation and therefore actively combat profit shifting, tax base erosion and tax evasion/fraud; they have extensive DTT networks and are actively increasing networks of TIEAs. All of them are members of the Global Forum on the Transparency and Exchange of Information for Tax Purposes, all of them signed the FATCA, all of them joined the Inclusive Framework on BEPS with aim to introduce minimum standards in their legal frameworks, all of them introduced MLI and joined the MLI beyond the BEPS minimum standards, and finally, all of them implemented DAC 1-6 and the ATAD Directives. Since we use data from the 2009–2017 period or the partial period inside of this period (based on the data availability), the results represent the situation before introductions of those important law changes based on the BEPS recommendations and new EU directives. How the situation will change after the important implementations will be a subject of future research, as the necessary data were not available at the time of preparing this book.

Fair taxation is based on the sense of neutrality, on the legitimacy of taxation, on paying appropriate taxes related to horizontal and vertical equity, and on the appropriate design of a tax system that ensures a fair level of taxation and the fair allocation of taxation rights between taxpayers and/or countries related to internation equity. The possible areas of strengthening fair taxation are the financial sector, the service sector (namely, digital services) and all economic sectors in respect of

elimination of tax evasion, base erosion and aggressive tax planning, and improving of environmental taxation and allocation of taxation rights. However, in all aspects, global issues require global solutions, fair taxation requires transparency, and transparency requires cooperation.

In the last two decades, rapid developments in the area of international taxation and consequently in domestic legal tax frameworks have been incredible. Global efforts to eliminate harmful tax competition, tax evasion and aggressive tax planning; global efforts to improve transparency and eliminate tax treaty abuse; global cooperation on the exchange of information, mutual assistance in tax collection, and simultaneous and joint audits; greater disclosure by taxpayers via mandatory reporting regimes (CbCR) and many other activities should be mentioned and can rightly be considered important changes that help to ensure fairer taxation.

Finally, based on this research, we are able to suggest a few recommendations on how to improve the current situation in CEE-EU countries and achieve fairer taxation without significant corporate tax revenue losses via profit shifting, tax base erosion and/or aggressive tax planning. We recommend eliminating the ability to use specific tax regimes for selected corporate income that is risky, especially in terms of the difficulty of capturing real economic processes (typically copyright revenues, revenues associated with specific management and consulting services and digital services, etc.). Further, we recommend focusing on digital business taxation and finding a global solution, such as modified international rules for sales taxes, although it is necessary to consider a violation of the existing general arm's length principle. We also recommend the introduction of withholding taxes on interest payments combined with proper proof of the country of the beneficial owner and the international exchange of information in this field. Similar recommendations are made in case of royalty payments and dividend payments, and a beneficial-owner test should be needed to reduce withholding taxes. Further, a proper international exchange of information in this field is also recommended. Then, we recommend considering the transfer of private UBO registers to public registers with the aim to improve transparency and strengthen their practical application, as some of them are almost empty in CEE-EU countries. The last recommendation is similar to the previous recommendation and is to transfer private CbCR to public CbCR reports, at least overall.

Acknowledgement This chapter is the result of GA ČR No. 18-14082S "Fair corporate taxation: Measurement of the impact of corporate profit shifting on the budget of the Czech Republic".

References

Alm J, McClelland GH, Schulze WD (1992) Why do people pay taxes? J Public Econ 48:21–48

Alm J, McClelland GH, Schulze WD (1999) Changing the social norm of tax compliance by voting. Kyklos 52(2):141–171

Clausing KA (2016) The effect of profit shifting on the corporate tax base in the United States and beyond. Natl Tax J 69(4):905–934. https://doi.org/10.17310/ntj.2016.4.09

Cobham A, Janský P (2018) Global distribution of revenue loss from tax avoidance: re-estimation and country results. J Int Dev, Special Issue: Fiscal Policy, State Building and Economic Development 30(2):206–232. https://doi.org/10.1002/jid.3348

Crivelli E, De Mooij R, Keen M (2016) Base erosion, profit shifting and developing countries. FinanzArchiv: Public Finance Anal 72(3):268–301. https://doi.org/10.1628/001522116X14646834385460

Dyreng S (2015) Making sense of profit shifting: Scott Dyreng. Tax Foundation Forum Series

European Commission (2015) Study on structures of aggressive tax planning and indicators. Final report. Taxation papers – working paper N. 61 – 2015. doi:https://doi.org/10.2778/59284 (PDF)

European Commission (2017) Aggressive tax planning indicators, Final report. Taxation papers – Working Paper N. 71 – 2017. doi:https://doi.org/10.2778/847061 (PDF). https://ec.europa.eu/taxation_customs/sites/taxation/files/taxation_papers_71_atp_.pdf. Accessed 20 Feb 2020

European Parliamentary Research Service (2015) Bringing transparency, coordination and convergence to corporate tax policies in the European Union, I - Assessment of the magnitude of aggressive corporate tax planning. Research paper by Dover R, Ferrett B, Gravino D, Jones E, Merler S. https://www.europarl.europa.eu/RegData/etudes/STUD/2015/558773/EPRS_STU%282015%29558773_EN.pdf. Accesses 20 Feb 2020

Feld LP, Frey BS (2002) Trust breeds trust: how taxpayers are treated. Econ Gov 3(2):87–99

Feld LP, Frey BS (2004) Illegal, immoral, fattening or what? How deterrence and responsive regulation shape tax morale. Marburg working papers on economics 200426, Faculty of Business Administration and Economics, Department of Economics, Philipps-Universität Marburg, Marburg

Frey BS (2003) The role of deterrence and tax morale in taxation in the European Union, Jelle Zijlstra Lecture, Netherlands Institute for Advanced Study in the Humanities and Social Sciences (NIAS)

Fuest C, Riedel N (2012) Tax evasion and tax avoidance: the role of international profit shifting. In: Reuter P (ed) Draining development? Controlling flows of illicit funds from developing countries (pp 109–142). https://openknowledge.worldbank.org/handle/10986/2242. Accessed 23 May 2019

GAO – U.S. Government Accountability Office (2008) Large US corporations and federal contractors with subsidiaries in jurisdictions listed as tax havens or financial privacy jurisdictions (Report to congressional requestors GAO-09-157). https://www.gao.gov/new.items/d09157.pdf. Accessed 10 Feb 2020

Gordon JP (1989) Individual morality and reputation costs as deterrents to tax evasion. Eur Econ Rev 33(4):797–805

Grubert H, Mutti J (1991) Taxes, tariffs and transfer pricing in multinational corporate decision making. Rev Econ Stat 80:365–373

Hines JR Jr, Rice EM (1994) Fiscal paradise: foreign tax havens and American business. Q J Econ 109(1):149–182

Janský P, Palanský M (2019) Estimating the scale of profit shifting and tax revenue losses related to foreign direct investment. Int Tax Public Financ 26(5):1048–1103

Lago-Peñas I, Lago-Peñas S (2010) The determinants of tax morale in comparative perspective: evidence from European countries. Eur J Polit Econ 26(4):441–453

Lewis A (1982) The psychology of taxation. Martin Robertson, Oxford

Lisi G (2019) Slippery slope framework, tax morale and tax compliance: a theoretical integration and an empirical assessment. Discussion Papers in Economic Behaviour, DPEB 02/19. www.erices.es. Accessed 10 March 2020

Luttmer EFP, Singhal M (2014) Tax morale. J Econ Perspect 28(4):149–168

Molero JC, Pujol F (2012) Walking inside the potential tax evader's mind: tax morale does matter. J Bus Ethics 105(2):151–162

OECD (2013a) Addressing base erosion and profit shifting. OECD, Paris

OECD (2013b) What drives tax morale? http://www.oecd.org/tax/tax-global/what-drives-tax-morale.pdf. Accessed 24 Feb 2020

OECD (2015) OECD/G20 base erosion and profit shifting project 2015 final reports. OECD, Paris
Sandmo A (2005) The theory of tax evasion: a retrospective view. Natl Tax J 58(4):643–663
Schwartz RD, Orleans S (1967) On legal sanctions. University of Chicago. Law Rev 34:282–300
Torgler B (2003) Tax morale in transition countries. Post-Communist Econ 15:357–381
Torgler B (2007) Tax compliance and tax morale: a theoretical and empirical analysis. Edward Elgar, Cheltenham
Torgler B, Schneider F (2007) What shapes attitudes toward paying taxes? Evidence from multicultural European countries. Soc Sci Q 88(2):443–470
Torgler B, Schneider F (2009) The impact of tax morale and institutional quality on the shadow economy. J Econ Psychol 30(2):228–245
Tørsløv TR, Wier LS, Zucman G (2018) The missing profits of nations. Working paper 24701, NBER working paper series. http://www.nber.org/papers/w24701. Accessed 10 March 2020
UNCTAD (2015) World investment report 2015: reforming international investment governance. United Nations Publications Customer Service, 253. New York and Geneva: UNCTAD NATIONS. doi:https://doi.org/10.18356/293b1525-en. https://worldinvestmentreport.unctad.org/wir2015/wir2015-ch5-international-tax-and-investment-policy-coherence/. Accessed 10 Feb 2020
World Values Survey (2004) World values survey wave 4: 2000-2004: V206 – justifiable: cheating on taxes. http://www.worldvaluessurvey.org/WVSOnline.jsp?WAVE=4&COUNTRY=487. Accessed 10 July 2020