UNIWERSYTET EKONOMICZNY W POZNANIU

Anna Siwiec

The fiscal effects of minimum CIT rate harmonisation for the selected states of the European Union

Skutki fiskalne harmonizacji minimalnej stawki CIT dla wybranych państw Unii Europejskiej

Doctoral dissertation

PhD Supervisor: dr hab. Edyta Małecka-Ziembińska, prof. UEP
Date of submission: ……

Supervisor's signature

Poznań 2024

The author would like to express her gratitude
to Professor Małecka-Ziembińska
for helpful attentiveness and precious suggestions and
to a Friend for the invaluable support

Table of Contents

Introduction

"Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice; all the rest being brought about by the natural course of things" (Smith, 1776).

Corporate income tax (hereinafter: CIT) is one of the most relevant sources of income for the budget of each state in the European Union (hereinafter: the EU). In the EU being an area of high level of fiscalism[1], the average nominal CIT rate in 2019 was 21.7% and the average share of CIT revenue in the average EU GDP was 2.7% (European Commission, 2021a). At the same time CIT is one of the most difficult taxes to be collected. The reason for that is in a very high CIT differentiation and tax competition between EU Member States which in turn enables tax optimisation carried out by the biggest CIT payers – multinational enterprises (hereinafter: MNEs, used interchangeably with transnational corporations, TNCs).

The most visible manifestation of CIT differentiation are the basic nominal or statutory tax rates (hereinafter: STRs or STR) ranging from 9% in Hungary to 35% in Malta. It should be noted, however, that the key role in corporate taxation in the EU is played not by nominal but effective tax rates (hereinafter: ETRs or ETR). They show the real CIT burden borne by companies in each EU state after deduction of all allowances and exemptions (Abbas & Klemm, 2013). A high nominal but low effective tax rate may suggest either a low effectiveness of the tax administration in tax collection and the existence of a tax gap in a given state, the fact that a state is a tax haven or the fact that a country puts a lot of emphasis on the stimulus policy and the tax breaks. Tax gap may be defined as the difference between the taxes due to the state and paid to the state budget (ATI, 2024) or the difference between the potential revenues resulting from the economic tax base and the actual revenues collected by the state (Barra et al., 2023). In turn tax haven is understood as the jurisdiction offering taxpayers minimal or no tax liability (Caleb et. al. 2024).

[1] According to Taxation Trends 2021 the share of tax revenues in the EU's GDP in 2018 was 40.3%.

CIT differentiation in the EU is used by TNCs conducting aggressive tax optimisation. Optimisation is either tax avoidance which means reducing tax liabilities using legal provisions or loopholes in the tax law or tax evasion which is illegal and stands for tax fraud. Taking into account that there are around 140.000 multinationals operating in the EU and that a significant number of them operate in several countries, it is worth considering the scale of the problem of tax avoidance or evasion (EuroGroups Register, 2020).

Since 2008, the EU Member States have been trying to estimate their budget losses caused by non-payment or under-payment of CIT and Value Added Tax (hereinafter: VAT) (Barra et. al., 2023). Such estimates are prepared by International Monetary Fund (hereinafter: IMF). Due to the lack of sufficient data, these estimates are very imprecise and no country can give an exact value of its budget losses (Barra et. al., 2023). Numerous steps have also been taken to reduce the tax gap. An example of such measure is the obligation of MNEs to submit and publish financial statements and settlements with tax authorities by electronic means according to *Directive (EU) 2021/2101 of the European Parliament and of the Council of 24 November 2021 amending Directive 2013/34/EU as regards disclosure of income tax information by certain undertakings and branches* (hereinafter: Directive CbCR).

It is worth mentioning that a certain scope of financial information of taxpayers (enterprises and individuals) was already CbC reported based on *the EU Council Directive 2016/881 amending Directive 2011/16/EU as regards mandatory exchange of information in the field of taxation* (hereinafter: Directive 2016/881). These data were not publicly available and were only exchanged between the tax administrations of particular EU countries. Based on Directive CbCR, data resulting from MNEs financial statements are to be publicly available (KPMG, 2023). The rules will apply at the latest from the start of the first financial year starting 22 June 2024. However, individual EU countries could implement such rules earlier. Currently, each EU country acts largely on its own when it comes to improving the efficiency of its tax administration in CIT collection and thus reducing the tax gap. It is worth noting that a special role is played by the European Commission (hereinafter: the Commission) which tries to coordinate the struggle with the growing tax gap and strives to develop a common EU position on combating harmful tax competition.

International tax competition results from the efforts of each state to attract and maintain investors by offering them tax conditions more attractive (lower tax rates, higher tax allowances) than those offered by the competitors. The phenomenon of tax competition

in the EU took the form of fiscal dumping (Legrenzi & Talamona, 2001) which intensified in 2004 with the fifth and biggest EU enlargement, when ten following countries joined the EU: Cyprus, the Czech Republic, Estonia, Lithuania, Latvia, Malta, Poland, Slovakia, Slovenia and Hungary (hereinafter: EU-10). Majority of new EU Members lowered their nominal CIT rates, which was to improve their competitive position in attracting investors. The countries that were EU Members before 2004, i.e. Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Greece, Ireland, Italy, Luxembourg, Netherlands, Spain, Portugal and Sweden (hereinafter: EU-15) also reacted in most cases by lowering their STRs, thus causing the phenomenon of *the race to the bottom* which means tax rates race downward. It is worth mentioning that the finance ministers of France and Germany submitted then an initiative to the Commission to standardise the basis for calculating CIT with establishing the minimum rate of this tax (Owsiak, 2008). The solution proposed by the Commission has been CIT harmonisation in the EU. The need for CIT harmonisation had arisen earlier, along with the increasing mobility of capital and the tightening of economic integration of the EU Member States. Strong differentiation of corporate tax systems causes difficulties in the taxation of the income in the EU, especially that coming from the cross-border transactions. Such situation adversely affects the further development and functioning of the single market. According to the Commission the harmonisation of corporate taxation would not only ease tax competition and reduce the operating and compliance costs of multinationals but also reduce the existing tax gap through introducing similar tax conditions and tightening administrative tax cooperation between EU countries (European Commission, 2021b).

Works on CIT harmonisation attempts have been underway for over 60 years but remained ineffective, due to the different political and economic interests of the Member States (hereinafter: EU Members) that could not agree on its most advantageous scope. The very concept of the *tax harmonisation* has not been specified anywhere, while documents prepared by the Commission and The Organisation for the Economic Cooperation and Development (hereinafter: the OECD) show that two harmonisation variants were seriously considered. The first one assumed the unification of the rules for determining CIT base, specifying what could be classified as revenues, costs, income and tax reliefs (European Commission, 2016). The second option concerned determination of the common minimum CIT rate below which Member States could not come down (European Commission, 2021b).

EU Members acknowledged that harmonisation was needed, but due to the wide variety of tax policies and different political and economic interests could not agree which option to introduce. EU Members with high CIT rates and fiscal needs related to increased social spending (e.g. Germany or France) strived to harmonise and set a minimum CIT rate of at least 30%. Countries with lower rates (e.g. Cyprus, Ireland, Bulgaria, Poland), accused of applying tax dumping, because of using lower tax rates to attract foreign investments, were interested in the harmonisation of CIT base or in lower common rate. The split line ran not only between EU-15 and EU-10 but also within the EU-15 group (Owsiak, 2008). The main reason given by the states was the fact that tax harmonisation meant the surrender of a part of their fiscal sovereignty (Conseil d'Analyse Économique, 2014).

The issue of CIT harmonisation is very complex, it will have an impact on the budgets of EU Members, as well as on many other, sometimes difficult to predict economic and social phenomena, for example: competition between states, the shadow economy, tax gap, foreign investment or unemployment in EU countries. The considerations on the consequences of CIT harmonisation have been narrowed in this work to its fiscal effects resulting from the *Council Directive (EU) 2022/2523 of 14 December 2022 on ensuring a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the Union* (hereinafter: the Directive 2022/2523) for the budgets of the selected EU Member States — namely: Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovenia, Slovakia, Bulgaria and Romania. The reason for narrowing down the analysis to nine out of twenty-seven EU countries was primarily due to the fact that the analysed countries are from the same part of Europe, joined the EU at the same time and had a similar period to adapt to the Union law (2004-2007). Moreover, they are all located adjacent to each other in the Central and Eastern Europe. The second reason for the limitation was the fact that for those countries there was a good coverage of the data needed for the study. Due to the lack of sufficient data, the author had to resign from analysing information concerning Cypriot and Maltese companies and due to a separate method of settling CIT also Estonian enterprises were omitted. For this reason, the scope of the work was narrowed to the fiscal effects of CIT harmonisation in only nine mentioned EU countries. The author obtained the financial data of companies from these countries mainly from the EMIS database (hereinafter: EMIS) that is why she will continue to use the collective name EM countries for them standing for *emerging markets* in EMIS database. It

should be noted, however, that this is a conventional name adopted by the author only to emphasize the origin of the data from the EMIS database, without referring to the definition of *emerging markets and developing economies* used by the World Bank or based on IMF indicators. The analysis was also limited only to harmonisation under the Income Inclusion Rule and a qualified domestic top-up tax resulting from the Directive 2022/2523 based on the *Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy* on October 8, (OECD, 2021) (hereinafter: Pillar II) i.e. the project of a common global minimum effective CIT rate of 15%. The author does not analyse Pillar I, which has not been implemented in the Directive. It should be emphasized once again that, in addition to fiscal effects, harmonising theoretically one element, which is the ETR, will entail other economic and legal effects on a macro and microeconomic scale in the EU and non-EU countries.

The work refers to the OECD estimates and some of the latest research based on them (Baraké et al., 2021b; Baraké et al., 2023; Reitz, 2023). It partly relies on them but also adds additional value based on conducting research on the initial microeconomic data of companies belonging to the largest MNEs in the EM countries, and then aggregated by the author. Microeconomic data comes from available to the author EMIS and from Eikon Refinitiv database, a different sources from that commonly used in this area, i.e. the ORBIS database, to which the author did not have access. The scope of the data coverage of the analysed companies in selected countries, although not 100%, is assessed by the author as sufficient.

The author conducts a medium-term simulation of budget revenues from top-up tax and examines the dependence of their amount on the selected factors not directly related to the CIT structure such as selected countries' level of digitalisation (DESI), the level of the shadow economy or research & development (R&D) expenditures made by EU governments.

The research problem undertaken in this work concerns the fiscal effects of CIT harmonisation for the budgets of the selected EU Member States (namely EM countries). The main purpose of the dissertation is to estimate and assess the impact of the harmonisation of minimum effective CIT rate on the amount of budget revenues from corporate top-up tax in the selected EU countries which joined the EU in 2004-2007. The following specific objectives have been assigned to the main goal:

1. Comparison of CIT structures in EU countries and of the amounts of budget revenues from this tax in relation to GDP (Chapter II).

2. Determination of the scope of the current CIT harmonisation (Chapter III).

3. An overview of the factors that influence the amount of tax revenues and the selection of those that may affect the amount of revenue from top-up tax (Chapter IV).

4. Obtaining an answer to the question: which states' budgets of the nine analysed countries will benefit from minimum CIT rate harmonisation and which ones may lose (Chapter V).

5. Examining the correlation between selected *non-tax factors* that may affect the amount of top-up tax (Chapter V).

Chapter I is an introduction facilitating understanding the issue of harmonisation and the historical and literary background of the entire considerations. After reviewing the literature and formulating the aim of the dissertation, the author has formulated the following main hypothesis:

The application of the Income Inclusion Rule for the collection of top-up tax will result in a decrease in potential CIT revenues in EM countries.

Additionally, the following specific hypotheses were formulated regarding the explanatory variables and the relationship between the amount of the top-up tax and non-tax factors:

1. There is a positive relationship between the level of digitalisation of EM countries and their top-up tax revenues.

2. There is a positive relationship between the value of R&D expenditures in EM countries and their top-up tax revenues.

3. There is a negative relationship between the level of shadow economy in EM countries and the amount of revenues from top-up tax.

4. There is a positive relationship between the access to broadband Internet in EM countries and the amount of revenues from top-up tax.

5. There is a positive relationship between the level of fiscalism in EM countries and the amount of revenues from top-up tax.

6. There is a positive relationship between the number of MNEs in EM countries and the amount of revenues from top-up tax.

The work is divided into three parts. Part I is theoretical and based on a historical and literature review in the field of tax harmonisation, with particular emphasis on EU countries tax diversification, tax competition between governments and tax optimisation used by MNEs (Chapter I). This part outlines the historical framework of tax harmonisation in the Community and next Union soft law acts relating to corporate tax harmonisation. The purpose of this part is not only to show the evolution of the tax harmonisation process but also the arguments of its supporters and opponents, where the main threads concerned the harmonisation of the tax rate or base. The author presents both ideas.

Part II (Chapter II to Chapter IV) contains a comparison of legal solutions concerning corporate income tax regulations in EU countries. The subject of comparison were structural elements of the tax like tax base, taxpayers, rates and related basic tax incentives. The result of the analysis shows not only the differentiation of the tax burden in particular EU Member States, but above all the identification of solutions in the field of CIT that are the most diverse and those that are the closest as a field for possible further harmonisation (Chapter II). This part also includes considerations on the current level of corporate taxation already harmonised in the EU including the Directive 2022/2523 (Chapter III).

The purpose of the part II is to show not only the differentiation of CIT in the EU and the degree of harmonisation of this tax achieved so far, but above all to derive the variables to the econometric model. Chapter IV contains the identification of factors potentially affecting the amount of CIT collection and revenues and their classification made by the author based on literature review. Since this chapter contains a selection of explanatory variables for the panel model, it is also an introduction to the last chapter.

Part III including Chapter V has empirical character and consists of two studies: a simulation in Excel of potential top-up tax revenues and estimation of potentially lost revenues from this tax in the selected EU countries and the panel data analysis made in Gretl, regarding the potential correlation of revenues from this tax with non-tax variables.

The theoretical, legal and empirical parts are related and organised in a logical way. They are united by the leitmotif of CIT differentiation in the EU and the need for its harmonisation. Part I is the theoretical foundation and explains the rationale for harmonisation, part II presents its current legal status, while part III shows the fiscal effects of harmonisation in the form of changes in the amount of CIT revenues to nine EU Members' budgets.

Chapter I The essence and main assumptions of corporate income tax harmonisation in the European Union

1. The concept and main premises of tax harmonisation deriving from different national tax polices

Taxes and tax policy in a union of states. The EU is the economic and political union of states based on the idea of a single market with free movement of goods, capital, labour and services. The functioning of the single market is possible due to the economic policy coordinated at the EU level. Two pillars of the EU economic policy are the monetary and fiscal policies, but these pillars are not equally strong. The advancement of the common monetary policy is greater than of the fiscal one.

Due to the Economic and Monetary Union (EMU) created in 1992 by the Treaty of Maastricht, it was possible to adopt euro as a common European currency and to establish the common monetary policy. The main goal of EU monetary policy is price stability, reduction of unemployment and the EU's economic growth. This goal is ensured by the European System of Central Banks (ESCB). An economic union extends the single market with common rules for products and a monetary union with a common currency. All EU Member States take part in the economic union but only twenty of them have already adopted euro (the euro zone or euro area includes also non-EU States). The adoption of a common economic and monetary policy has its legal basis in the Treaty on the Functioning of the European Union (TFEU, 2012).

Fiscal policy is, next to monetary policy, one of the main macroeconomic policies. It is also the strongest instrument having impact on the economy, especially in the countries which, through their Membership in the euro area, resigned from influencing their economies through national monetary instruments. Therefore, countries' own fiscal policy is an expression of their financial sovereignty.

The term *fiscal* comes from the term *fiscus* used in Ancient Rome, meant literally *a basket* or *a purse* and described the revenues collected from the Roman imperial provinces. Later Latin word *fiscal* means *a fund* or *a treasury.* Such a state's fund is called *a state budget.* This term comes also from the Latin *bulga* meaning a leather purse designed to collect income (Collins Dictionary, 2024). The fiscal policy can be defined then as the activity of the state

consisting of the use of various, mainly fiscal instruments and tools to influence the state budget (funds collection and expenditure) and to achieve specific fiscal and non-fiscal goals. These instruments include taxes and other public levies but also the use of the budget deficit, guarantees and securities for loans for business entities and public debt (Owsiak, 2020). The goals set in the fiscal policy, i.e. the planned expenses, determine the necessary amount and structure of funds to be collected and delivered to the state budget. Therefore, fiscal policy is of key importance for determining the amount of public levies to be collected and delivered to the state budget and the manner of their distribution. Fiscal targets are fundamental for the fiscal policy. They are to satisfy the state's demand for money. This goal is achieved through taking over part of the income from households and enterprises, i.e. mainly through the taxation. The state may also use another method of financing public expenditure, namely by borrowing money. The latter method is easier and less criticised by the taxpayers, but it may result in an excessive state indebtedness. Raising taxes is less politically correct and may lead to the lack of investment, reduced consumption and finally to the economic stagnation. However, given the widening tax gaps in most countries, a reasonable solution for increasing tax revenues is to improve efficiency in tax collection and not necessarily raising the tax rate.

Most countries' budgets are fed with taxes, duties and other charges of which taxes cover major public expenditure exceeding income from other sources. Taxes are then the main tool used by fiscal policy. They constitute a significant source of budgetary revenues in most countries thus enabling them financing of states' activities. Already Cicero, in his work *De Officiis*, noticed that taxes are *the spring of the state* (Cicero, 44BC).

According to the *OECD Revenue Statistics* taxes are defined as compulsory unrequited payments to government. Taxes are unrequited in the sense that benefits provided by government to taxpayers are not proportional to their payments. Taxes do not include fines, penalties and compulsory loans paid to government, but compulsory social security contributions are treated by OECD as tax revenues (OECD, 2018a). Polish *Tax Ordinance* of August 29, 1997 defines tax as a public, gratuitous, compulsory and non-refundable cash benefit resulting from the tax act and paid to the State Treasury, voivodeship, county or commune (Act, 1997, art.6).

There are many possible ways of taxes classification but one of the basic divisions assumes their break-up into direct and indirect ones. This division depends on the possibility

of shifting the tax burden to another entity. The tax burden in the legal meaning is the sum of tax liabilities and settlement costs of taxes (Adamczyk & Franek, 2017), in economic terms, it is the amount of the taxpayer's reduced income or wealth. As a rule, the direct tax burden is related to the entity on which the tax obligation was imposed by the legislator. Direct taxation means taxes on income, wealth and capital and concerns directly a legal or natural person, e.g. personal income tax (PIT), corporate income tax (CIT) or wealth tax. Taxpayers in direct taxation are tax-bearers not only in the legal but also in the economic sense. They are expected to bear the tax burden and theoretically may not shift it to another person. However, there is a second group – the indirect taxes in which it is possible to shift the economic tax burden from an entity on which the tax obligation was imposed by the legislator to an entity that is not a taxpayer in the legal sense. Indirect taxes (e.g. VAT or excise duty) are levied on a material or legal event of accidental or temporary nature and upon a legal or natural person that can often be an intermediate and not the person responsible for this event (European Commission, 2020b). Another division depends on what is taxed and distinguishes: taxes on labour, consumption and capital. Considering the subject of taxation, one can distinguish taxes levied on natural or legal persons and other persons equivalent to legal persons.

Change in taxes means reduction or the increase of the tax burden of the concerned subjects, then the wealth and income of taxpayers, as well as shifting income between different groups of society. The dissertation concerns corporate income tax, which is a direct tax, so when writing about the tax burden, the author means the income and the tax burden on the taxpayer in the legal and economic sense. Cutting taxes may have a variety of effects. According to supply-side fiscal policy following liberal school of economics represented by A. Smith, D. Ricardo, J.B. Say, J.S. Mill, R. Mundell lowering tax burden may be conducive to economic growth, provided it does not create an excessive burden on public finances (Smith, 1776). The initial lower budget revenues should be compensated over time by stimulating the growth of production, sales and employment what consequently shall result in higher tax revenues (Goodwin et al., 2020). According to the supporters of the supply-side fiscal policy, this phenomenon is good because the expenditure of private entities has a more favourable impact on economic growth than the public one. The opponents of tax cuts representing the demand-side fiscal policy and following Keynesian theory, question the positive direct impact of low taxes on the development of enterprises and point to the potential damage

that may be caused by reduced tax revenues, for example under-financing of education, hospitals, judiciary, infrastructure, police (Keynes, 1936). Moreover, the potential positive effects of tax cuts may only be visible in the long run, and the damage from under-financing is immediate.

The effects of increasing tax rates may but not necessarily must result in higher budget revenues. According to the concept of the Laffer curve being a theoretical underpinning of supply-side economics, budget tax revenues grow up only to a certain point with the tax rate increase. After exceeding a certain level of the tax rate, these revenues decrease because people do not want to work to only pay higher taxes (Laffer, 1981). The supply-side school of economic thought based on the Laffer curve argues that the introduction of a single, low tax rate and tax reliefs for companies conducting investments will have a positive impact on the economic development of the country and that the optimum and low tax rate would maximise total tax revenue (Gandhi, 1987).

One of the main challenges in national tax policies is then to determine the tax policy, especially tax rate that maximises budget revenues to the saturation point but without ruining sources of income. The states are autonomous in this matter and set tax rates guided by their national fiscal policy. If raised, taxes may create additional budget revenues, what often generates public expenditure of a permanent nature, difficult to lower without prejudice to interests of different social groups (co-financing of public transportation, healthcare, co-financing of specific social groups, e.g. the unemployed or the disabled).

Therefore, the fiscal and tax policies play a particularly important role in state's economic strategy. Each state has its own tax strategy and determines its own tax policy counterbalancing the satisfaction of the need for social justice by levelling income disparities in society and preventing excessive budget deficit.

Tax policy is a part of both budget and fiscal policy and performs four basic functions: fiscal, regulatory, stimulus and information. The fiscal function is one of the oldest and primary. It serves the state to shape tax burden in such a way as to ensure the highest possible tax revenues for the state budget. By *possible tax revenue*, the author understands such income to which the state has the appropriate possibilities of the tax administration in terms of costs incurred and its workload, as well as the acceptance of the society for a specific tax burden that is to generate a sufficiently high income. Therefore, the number of taxpayers of a given tax in the country, the width of the tax base, tax reliefs and rates should

be considered. The fiscal function of the tax policy consists in providing the state budget with the tax income needed to conduct public tasks. Ensuring that budgetary needs are financed is the primary objective of taxation. If the purpose of taxing is not to generate income in the first place, but to stimulate or redistribute it, then this can be, indirectly, a sign of a flaw in the tax system. The second basic function of the tax policy is regulatory (redistribution) – consisting of shaping the amount of income and assets at the disposal of taxpayers and on redistribution of budget revenues and of national assets among the taxpayers (direct transfers or public services to citizens and for the other government expenses. Since tax regulations should not be changed too often, it would seem reasonable to assume that the allocation function is successive to the fiscal one. The implementation of specific public tasks and the allocation of funds between specific social groups should result from the received budget tax and non-tax revenues.

Increasing taxes seems justified only when the implementation of public tasks, such as financing primary healthcare or basic social benefits is repeatedly unfeasible because of too low budget revenues and not because of their mismanagement. A tax increase is also needed to meet the ambitious new goals planned by the government. However, it is important that the tax policy does not change with the change of government, but is a consistent program implemented by the political successors.

An important function of the tax policy is the stimulus function which aims to ensure the best possible efficiency in the economic activity. It consists in exerting certain reactions on taxpayers to stimulate or slow down the economic growth. It is carried out by setting different tax rates for entities with different incomes or for different goods. The state may also use a system of tax reliefs and exemptions to steer taxpayers' choices, e.g. in terms of economic investment, achieving environmental goals, expanding exports or locating business activities. In this way, the government may pursue specific economic or social goals assumed in the adopted tax policy.

One of the goals of fiscal policy is to perform a stabilising function, i.e. stabilising the economy and stimulating economic activity. The implementation of higher taxation is intended to discourage taxpayers from certain behaviour (e.g. higher excise duty on cigarettes is intended to discourage taxpayers from smoking, in turn the application of tax reliefs and exemptions is intended to stimulate the economy and encourage taxpayers to engage in a specific behaviour, for example to conduct R&D activities. Then the use of tax

reliefs and exemptions may have a positive impact on taxpayers' behaviour but may negatively (at least in the shorter term) affect the amount of state budget revenues (limiting the fiscal function). The information function serves to provide information on the current course of state's economic processes, on income division and economic exchange. If the state has transparent structures and provides citizens with the access to statistics on tax collection and expenditure (the scope of realised tasks), it affects the effectiveness of the tax system. Wyszkowski (2010) draws attention to the informational role of fiscal policy when considering the issue of tax expenditures, i.e. documenting the spending of public funds. According to the author, they should be published as an annex to the Budget Act, which will ensure better control of government expenditure (Wyszkowski, 2010). It is hard to disagree with this statement, people agree to pay taxes when they see their rational and fair distribution and information function plays here a crucial role (Torgler, 2003).

By using its specific functions, tax policy serves the achievement of the three specific goals. First of them is the fiscal goal of delivering the highest possible income at the lowest collection costs and not causing negative side effects. The fiscal target is primary because taxes cannot be replaced as budget revenues. Therefore, without meeting the fiscal target, the other two cannot be achieved. The second – is the economic goal which serves to ensure the best economic development while maintaining certain level of tax revenues to the state budget. The third goal – the social one - serves to provide the society with appropriate living conditions while maintaining certain tax revenues to the state budget. Stimulation of economic growth and meeting the needs of the society depends on the amount of budget revenues obtained. All these rules apply to national tax policy. It should be noted that not all countries apply such an approach. According to Mutascu (2015), nexus discrepancies between tax revenues and government expenditures occur even between countries with common economic characteristics or neighbouring. Some of them (e.g. Greece, Italy) use the tax-spend approach, which means that the amount of taxes collected determines the limit of government expenditures. However, in some countries (e.g. Portugal), it is the planned government expenditure that determines what the tax burden will look like (Mutascu, 2015). It also happens that there is no long-run relationship between taxes and government spending which may suggest that the fiscal policy is unsustainable (Richter & Paparas, 2013). However, priorities may be different in the case of the need to agree tax policy with other countries and cooperate on an international scale as is the case of the EU.

The level of complexity in determining tax policy is higher today due to the ongoing process of globalisation of the world economy. A shift to a globalised economy is inextricably linked with the liberalisation of markets, growing capital mobility and such proliferation of MNEs (called also TNCs standing for Transnational Corporations) that since the second half of the past century, they reached in 2000 51% of world's top economic entities (Anderson & Cavanagh, 2000). Globalisation had been intensifying since the 1980s and became a key phenomenon for setting tax policy of most countries. The opening-up of the economies of most countries through the lifting or lowering of customs barriers, with falling transportation costs, growing ties between national economies and high activity of transnational corporations looking for additional opportunities to increase the efficiency of their activities. On the one hand, this opened the possibility for MNEs to allocate and use capital abroad, based on achieving its higher efficiency there than in the country of origin. On the other hand, the increasing mobility of capital was conducive to the growth of international tax rivalry. The MNEs started to pursue a tax optimisation policy and to select for investment countries with a more favourable tax policy and use the phenomenon of tax competition between governments. The high mobility of capital has been one of the reasons for reducing its taxation. Governments hosting investors must take into account that they can easily relocate their investment to a more favourable tax jurisdiction.

The process of globalisation based on a closer economic integration has contributed to a change in the way countries shape their tax policies. National tax systems and structures are noticeably not suited to the current economic situation because they were designed for less integrated countries. Today, due to globalisation, digitalisation, tax competition and market integration, national tax policies are significantly influenced by the taxation rules adopted in the adjacent countries, particularly when the countries are economically integrated (Małecka-Ziembińska, 2010). The EU composed of twenty-seven countries is the area of high and differentiated taxes. Its economic integration has not been followed by the equally advanced tax integration which causes distortions in the single market. The source of serious problems in the EU is the high differentiation of corporate income tax. This is due to the scale of turnover and revenues generated and hidden from taxation by the transnational corporations. As a result of the tax reform, harmonised CIT may play a unique role in shaping the tax revenues of the EU countries.

CIT payers are corporations, a lot of them are multinationals generating highest incomes. At the same time, they are the highest contributors to the tax gap. These taxpayers have staffs of lawyers and tax advisors employed to protect their income from taxation and while the tax optimisation itself is understandable from an economic point of view, its illegal forms constitute a crime and a significant detriment to the public finances of most EU countries. Solving the problem would require a common EU position on this issue. Such a common standing has been achieved by the EU in the field of indirect taxes (VAT, excise duty) through their approximation (harmonisation). This approximation of tax solutions, possible due to the direct legal mandate provided by the EU treaties, has contributed to reducing the possibility of fraud in indirect taxes. The situation was different in the case of direct taxes which remained the sole responsibility of the Member States because of no direct legal basis for EU intervention to harmonise them. This status has changed with the Directive introducing the common minimum CIT rate. However, this does not change the fact that EU countries are very diverse in terms of CIT. The taxation of corporate income in the EU varies then in many ways. Member States use different nominal tax rates and different bases. The share of CIT revenues in the budget of each country is also different. Different structures of tax revenues depend not only on the number of taxpayers in each country but also on states taxation policy and tax conditions offered to the taxpayers. Within the EU, there are countries where budgetary tax revenues are dominated by direct (e.g. Denmark, Ireland, Malta), indirect taxes (Croatia, Sweden, Bulgaria, Hungary, Poland) or social security contributions (Slovakia, Czechia, Lithuania, Slovenia, Romania).

Despite, or mainly due to, the diversity of CIT, EU countries have three main and common problems. The first one concerns growing tax gap caused mainly by the erosion of the tax base stemming from aggressive tax optimisation applied by MNEs. The second problem is a still limited tax cooperation in the EU manifested in disputes over the issues of double or non-taxation and finally — the third problem is international harmful tax competition. Therefore, these problems relate to all functions fulfilled by the tax policy and the problem of a fiscal nature is of fundamental importance in this respect. The reduced revenues from CIT (fiscal function) mean that in most countries there are less funds to be divided among citizens (allocation function), which undoubtedly has an impact on economic growth (stimulating function). Limited tax cooperation in disclosing the application of the rules of tax havens by states (information function) is not without significance. Therefore, the

priorities of EU tax policy are also common but the methods of problems disentangling, combating tax evasion used by states are not always compatible. The answer invariably suggested by the Council and the European Commission has been CIT harmonisation. The solution has been consistently proposed for almost 70 years, but due to the objections of the EU Members, the versions of the proposed harmonisation were subject to modifications for many years until 2022.

Linking tax harmonisation with federalism. Searching for the reasons for objections to the proposed versions of harmonisation, it can be concluded that their common denominator is the sovereignty of states, especially in determining the amount of taxation. Tax harmonisation is often juxtaposed by its opponents with the concept of *federalism*, which appeared as one of the main arguments against introducing CIT harmonisation in the EU. That is true that law harmonisation problem is typical for the federal states (federations) or union of states (confederations) with differentiated taxation. The example of such a union of states is the EU (Elazar, 1998). The need to harmonise tax law noticed in the EU is not something new. Previously, it was reported in many federal states based on political and economic integration such as the United States or Canada, Australia, Germany or Switzerland. The EU is not a federation, but a union of nations integrated politically and economically. It resulted from a deliberate decision of sovereign states to remove borders in trade to strengthen regional economic cooperation. Nevertheless, the EU can learn a lot from the experience of attempts to harmonise corporate taxes in federal states. The example of federal states shows that a natural consequence of decisions on economic and political integration is the need to introduce common legal regulations, especially in the field of taxes. These common solutions should have a harmonising effect on national legal systems. Theoretically, the stronger the economic and political integration, the wider should be the area of harmonised law. The same example of federal states shows that harmonising taxes, although desired, is also exceedingly difficult. In some regions this was partially achieved in indirect, consumption taxes (part of Canada provinces, the European Union). In the case of direct taxes, such harmonisation has never been achieved before. The fact that the need for tax harmonisation was first noticed in federal countries is due to the essence of the tax harmonisation which is inseparable from the integration and implementation of the idea of the common market, including economic integration without simultaneous legal (or tax) integration. The long-lasting failure of the EU harmonisation process of direct taxes was

mainly due to the need for agreement on common goals and solutions by all EU Members leading independent and divergent tax policies. It is also important that although the wide interest in corporate tax harmonisation, it has not resulted in its uniform definition (Andenas & Andersen, 2011).

Corporate income taxation has been a crucial point in discussions between EU Member States since the 1960s (The Neumark Report, 1963), but has become even more pressing issue in the last decade just because of the tax avoidance and evasion possible due to the globalisation, digitalisation and greater activity and turnover generated by transnational corporations. Both, the scale of corporate income and the growing tax gap have moved the matter of corporate taxation reform in the EU to one of the first places. An additional important problem for all EU governments is the fact of the over-indebtedness due to repeating economic crises (e.g. caused by the COVID-19 pandemic or war in Ukraine) and the financing of public services and the needs of the ageing society.

A proposal put forward by the European Commission in 2001, repeated in 2011 and 2016 based on the harmonisation of corporate income tax through approximating CIT bases was blocked by the EU Members. Reducing the harmonisation area to a common minimum CIT rate made it easier to obtain the consent of all EU countries to carry it out. Moreover, the Directive is in line with the OECD's proposal supported by almost 140 countries to reform the taxation of multinationals. It is worth mentioning that the EU is considering a change in voting in tax matters from unanimous to majority voting, which shall enable quicker decisions and further approach in EU taxation.

CIT harmonisation is supposed to respond to the basic problems of the EU, such as: tax avoidance and evasion, widening of tax gaps, lack of tax transparency in the EU, curbing unfair tax competition and high compliance costs of transnational corporations operating in the EU. Harmonisation of direct taxes in the EU, with particular emphasis on corporate income tax is also one of the key issues determining the further process of the European integration. Contrary to the common economic (and partly monetary) policy, the fiscal policy and tax governance fall within the competence of EU Member States. Since those countries want to maintain sovereignty over tax decisions, they have granted the EU only limited permissions in this regard. Thus, the Union may intervene in national tax policies just in the case they hamper proper functioning of the single market and when they distort the competition.

The priorities adopted for general EU tax policy are to ensure the smooth functioning of the single market, combat harmful tax evasion, tax avoidance and elimination of double taxation. The limitation of EU interference in national tax policies is due to the principle of subsidiarity set out in the Article 5 of the *Consolidated version of the Treaty on European Union* (TEU, 2012) which says that the Community may interfere in integration matters when individual countries are unable to achieve the goals on their own. According to Art. 113 of *Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007 (OJ 2007, 306/1)* (Treaty of Lisbon, 2007), EU intervention in tax matters requires prior unanimous voting of all EU Member States in the Council.

The subsidiarity principle that common regulations should not exceed what is necessary for the proper functioning of the internal market, is essential in the EU. Its observance is also applicable in the case of the unanimity rule when making tax decisions. The implication of such reasoning is the harmonisation of corporate taxes, understood as ensuring a certain necessary consistency of these systems with each other and with the objectives of integration in the Community set out in the Treaty. The aim of harmonisation is then not to unify CIT.

The recurring financial crises, the COVID-19 pandemic and the increasingly ageing EU population mean that the EU needs deep tax restructuring. It should primarily lead to an increase in budget revenues by stimulating economic growth. The following could be achieved by, inter alia, broadening the tax bases, sealing tax gaps and through more effective tax collection and not necessarily through increasing the minimum effective tax rate. The CIT reform across the EU is particularly important in this regard due to the scale of turnover generated by MNEs and the scale of tax evasion. The precondition for the success of such a reform is simultaneous and consistent implementation of the same main corporate taxation principles in all EU countries. Even large-scale reforms conducted individually by EU countries (e.g. CIT base increase reform in 2019 in Belgium and Bulgaria) will not bring sufficient results. International tax competition in the EU, the differentiation of rates and methods of determining the tax base in the Member States give transnational corporations the possibility of manoeuvring and of tax avoidance or evasion.

Corporate taxes have influence on attracting investors and creating new jobs. They are then the driving force for the economy. Different corporate taxation opening ways for tax evasion may be eliminated through the tax harmonisation (Andrejovská & Puliková, 2018).

Not forgetting governments' fear of losing their fiscal independence, it should be assumed that the effects of tax harmonisation will be of key importance for further integration and strengthening the position of the European Union. The expected fiscal effects, especially in view of the enormous debt of national budgets because of COVID-19, are currently of fundamental importance. They can be a convincing argument with the CIT harmonisation in the EU. The more, during the pandemic, common solutions have emerged, aimed at not supporting corporations (*the anti-crisis shields*) if they transfer profits to tax havens. CIT harmonisation which could not take place for almost seventy years, has lately accelerated in the face of the unprecedented economic crisis caused by the pandemic and the war in Ukraine. The result of its profitability will be of key importance for the EU, i.e. first of all the amount of budgetary revenues of EU Member States. CIT harmonisation would be accepted faster if it resulted in an increase or, at least, no loss of budget revenues of all EU Member States.

2. Various approaches to tax harmonisation in the literature

Discrepancies in defining tax harmonisation. Tax harmonisation has been one of the leading topics in the European Union for almost seventy years. This is one of the issue recurring and intensely involving EU authorities. Value added tax and excise duties have been harmonised, but corporate tax harmonisation could not have been achieved for over sixty years though it had been proposed many times by the European Commission as a panacea for corporate taxation problems.

What does harmonisation mean and why harmonising CIT should be proper for the EU? The term *harmonise* is derived from Greek *harmony* and means *compatibility.* The online Webster Dictionary defines harmony as ”*the just adaptation of parts to each other in any system or combination of things or in things, or things intended to form a connected whole; such an agreement between the different parts of a design or composition as to produce unity of effect”* (Webster Dictionary, n.d.). In turn, the online Cambridge Dictionary describes harmonisation in general as the act of making something different suitable for each other or

as a result of such action. In a more narrow business and legal sense, the Dictionary defines harmonisation as *"the act of making systems or laws the same or similar in different companies, countries, etc. so that they can work together more easily" (Cambridge Dictionary, 2020).* An intuitive understanding of the word *harmonise* could be *an adoption of agreed solutions to achieve common goals*.

While the general understanding of harmonisation is quite consistent, in the field of tax harmonisation there is no such convergence. From the linguistic point of view *tax harmonisation* could be defined as an agreed alignment of specific national taxes by removing incompatibilities which prevent the proper functioning of the common market, and which distort competition (Pîrvu, 2012). This adjustment should lead to the compatible coexistence and even cooperation of national taxes within one structure, for example the European Union. The term *tax harmonisation* has been in use for years in several regions of the world which tried to introduce it on a national scale. However, it is worth noting that this concept has started to be used and discussed on a supranational scale in the context of the European integration. Tax harmonisation has been initially defined as advanced fiscal coordination (Dosser, 1967; Zodrow, 2003), desired taxes approximation (James & Oats, 1998), tax rates convergence (Kanbur & Keen, 1993) or cooperation among states (Prest, 1979; Baldwin & Krugman, 2004). It should be noted that tax harmonisation is something more than just tax coordination, convergence or cooperation.

Bénassy-Quéré et al. (2014) states that *tax cooperation* means collaboration in the field of taxes for joint optimisation and that an example of such tax cooperation is the case when countries jointly determine the tax bases and rates so as to maximise some common social objective and that in the EU the example of a cooperation is the common external tariff policy (Bénassy-Quéré et al., 2014). In turn, *tax coordination*, according to the same authors, is a reciprocal commitment to a specific behaviour. *Tax coordination* seeks to avoid tax inequities and inefficiencies arising from cross-border activities and exposed to multiple tax jurisdictions but does not necessarily mean common tax bases and rates (Conceição & Kaul, 2006). An example of such coordination can be *the Code of conduct Group* on business taxation (ECOFIN, 1998). By adopting this non-legally binding act, the EU Member States undertake to eliminate harmful tax practices from their activities. As for the tax convergence, it can result from both coordination and tax competition. It means narrowing down the differences between individual taxes, e.g. differences in rates. Such tax

convergence is noticeable in the EU (Bénassy-Quéré et al., 2014). All these three terms mean the states' co-response in tax matters. They do not have to lead to corporate income tax harmonisation but certainly may initiate such a process being its preliminary stage.

Tax harmonisation does not also mean tax standardisation or unification. The harmonisation process may happen using various mechanisms and means, e.g. by making tax solutions similar through standardisation (use of standards, patterns or templates) but it does not mean the standardisation *sensu stricto*. It is not possible to copy one-to-one all specific tax solutions from one country to another. Taxes are a part of each country's tax system which is a collection of all taxes operating in each country simultaneously and forming a whole in the legal and economic sense.

The tax system, apart from the tax legislation and the principles of its own functioning includes also the taxpayers determining the amount of tax revenues, conditions of taxes payment, collection and control. It is worth remembering that the tax system is a result of many years of shaping by country's tradition, history, specific needs and the preferences of its citizens. Therefore, tax harmonization is rather more about adapting a specific tax or its elements, regulated differently in different countries, than replacing national solutions with a uniform tax. Tax harmonisation concerns only taxes and not whole tax systems. As it was mentioned earlier tax system include, apart from the tax legislation, also the organisation of the fiscal apparatus, the manner of tax collection, procedures of tax authorities and many other elements specific for each country. In author's opinion, tax harmonisation does not rather mean harmonisation of tax policies as suggested by Kozuharov, Ristovska, Ilieva (Kozuharov et al., 2015). Broadly defined tax policy understood as a part of budget policy and as an integral part of fiscal policy, covers all taxes levied on citizens and businesses as well as the tax strategy. Based on the harmonisation of indirect taxes, it can be concluded that tax harmonisation does not cover such a wide area and concerns only particular tax law solutions.

Pîrvu (2012) has stated that tax harmonisation means the adjustment of national fiscal policies needed for appropriate functioning of the single market (Pîrvu, 2012). According to the author of this dissertation, the definition should even be narrowed to the adjustment of taxes as the element of fiscal policies. Tax harmonisation is to apply to tax law and not to the entire tax systems or policies of EU Member States. One may even be tempted to state that tax harmonisation concerns the arrangement of divergent elements of a given tax, in this

case CIT, in such a way that they accordingly work together. Obviously, it cannot be forgotten that although the assumed corporate income tax harmonisation scope covers tax law, it will affect many areas of life, ranging from fiscal policies and budget revenues to wages and the volume of consumption by the households in the EU.

Defining tax harmonisation requires understanding its causes, essence and objectives. The reasons for tax harmonisation should be seen in the need to adapt legal tax regulations to the situation of an economically integrated single market. Legal tax regulations are mismatched with the highly integrated single market what causes the negative consequences. The conditions for the functioning of market participants (and taxpayers) are not identical. Diversified CIT creates their different situation depending on which EU country they operate in. Such a mismatch opens scope for numerous abuses, especially in the field of corporate taxes. The problem concerns unfair behaviour of state governments competing for capital and the use of tax dumping, tax discrimination or protectionism in relation to domestic companies (EPP, 2020). It is also the problem of unfair behaviour of transnational corporations applying an aggressive tax policy, shifting profits to low-tax jurisdictions or costs to high-tax countries and thus contributing to the increase of tax gap in states budgets.

The problem of tax harmonisation usually appears in the context of international or national economic integration of markets by countries or regions that pursue a more or less independent tax policy (Kirchgässner & Pommerehne 1996). Such integration takes place with federations like the US or Canada but also in the case of the political and economic union such as the European Union. The EU is based on the internal market and four freedoms to ensure undisturbed movement of people, services, goods and capital. The EU sets also its common duties and trade policy. Free trade and fair competition are however distorted by the differentiation of national tax systems. Taxes have indirect influence on costs of production and in consequence on prices and wages. Different tax burden in particular EU Member States breaches the principle of fair competition in the single market. It was already noticed in 1962 that different legal solutions in the European Community did not harmonise with each other and needed some kind of convergence (The Neumark Report, 1963). The initial concept of corporate income tax harmonisation identified with the convergence of the initially non-cooperative tax rates (Sinn, 1990; Kanbur & Keen, 1993; Baldwin & Krugman, 2004) gradually evolved to the approximation of the tax bases. Admittedly Sinn noticed that non-tuned tax rates were the reason for the market distortions

and for the inefficiency in international capital allocation. However, he also stated that companies with high financial flexibility (and MNEs have such flexibility) could overcome this problem (Sinn, 1990).

CIT harmonisation and tax competition. CIT harmonisation has been analysed from many different angles. Relatively much space in the literature has been devoted to the analysis of how the harmonisation of direct taxes can affect tax competition. Estimation of such an impact depends strongly on how the tax competition is perceived. Usually, competition is seen as an integral part of the market game, a phenomenon which is desired in the economy and beneficial for the customers. It allows recipients of goods or services to choose and acquire them at a lower price and higher quality. It is also seen as a necessary condition for economic development because it leads to innovations (Mieszkowski & Zodrow, 1986; Wilson, 1986). Such an unequivocally positive assessment cannot be formulated in relation to the tax competition and the role of governments. The EU Members belonging to the same common market have independent and highly differentiated corporate income tax systems (Bond et al., 2000; Cnossen, 2018; Devereux et al., 2002; Gorter & De Mooij, 2001; Radaelli, 1999) and compete with each other within the taxation (OECD, 1998; Zodrow, 2003). Tax competition manifests itself in the strategic use of tax policies by countries competing for a mobile tax base (Winner, 2005). In other words, governments struggle for limited capital resources using reduced tax rates and public expenditure levels (Wildasin, 1988). To obtain direct foreign investments competing countries use not only lower tax rates but also offer investors a system of individually granted tax reliefs and exemptions. Different tax jurisdictions respond to their neighbours' tax policies by adjusting their own tax policy (Brueckner & Saavedra, 2001; Małecka-Ziembińska, 2010) like in the yardstick competition (Besley & Case, 1995) and taxes on mobile factors are more reactive than those on less mobile factors (Besley et al., 2001). Such competition may take the form of Stackelberg's leadership where one large state plays a role of a leader (e.g. introducing tax reforms) and the other countries follow the leader and compete among themselves in a Nash way (Altshuler & Goodspeed, 2014).

Devereux et al. (2002, 2008) suggest that intensified tax competition is due to the relaxation of capital controls. If one of neighbouring countries functions well with low tax rates, the citizens of a second country may demand the same from their government. The purpose of tax harmonisation is, in that case, to restrict countries from offering too

hospitable tax climates to foreign direct investments (FDI) (Edwards & De Rugy, 2002). Harmonisation is seen as a defensive response to such tax externalities and tax competition game which leads to the equation with tax rates down known as a *race to the bottom*.

Sanz-Cordoba (2020) notes that corporate tax competition is greater between geographically close countries with similar infrastructure investments.

The possible consequences of tax competition may mean: the under-provision of public services (Wilson, 1986; Zodrow & Mieszkowski, 1986; Zodrow, 2003), shift of tax burden from capital to labour and consumption (Bretschger & Hettich, 2002; Razin & Sadka, 1991; Zodrow, 2003) resulting, inter alia, in the increase of unemployment (Commission, 1997). Corporate tax harmonisation might mitigate these effects (Sinn, 1997) and though may result in worse conditions for the taxpayers within the scope of capital taxation but may also result in better provision of public services. Then the central message of the basic tax competition model is that corporate tax harmonisation is desirable because it would reduce inefficient under-provision of public services and bring some efficiency gains because of improved capital allocation in the European Community (Zodrow & Mieszkowski, 1986; Zodrow, 2003). Sørensen (2004) views tax harmonisation as the creation of a level playing field for business competition which is a basic goal for the EU common market while McGee considers this argument as inappropriate for the economic analysis but rather for sports zero-sum competition game (McGee, 2004).

Some authors have raised an issue of increasing levels of European tax competition because of corporate tax rates differentiation (Altshuler & Grubert, 2004; Bovenberg & Tanzi, 1990; Chennells & Griffith, 1997; Devereux et. al., 2002; Sinn, 1990), which was considered the main (Bettendorf et al., 2010) but not the only (Sinn, 1990) reason of EU market disruption. The proposed solution was corporate tax rates harmonisation to be realised by the European Community states through the collective agreement (Sinn, 1990) or implementation of the Nordic model of dual income tax (Cnossen, 2000; Nielsen & Sørensen, 1997; Sørensen, 1994). The latter proposition was based on assuming low corporate tax rates different in different states. There was also an idea of tax bases harmonisation (European Commission, 2001, 2011, 2016) which was presented as a solution for other disruptions in the single market. Due to the lack of international loss consolidation, smaller companies although effective, could not afford foreign expansion and foreign companies were discriminated against home companies. It was stated that the corporate tax

harmonisation should limit that kind of discriminatory treatments. It was also assumed that tax harmonisation could prevent tax competition in the form of applying preferential solutions to its citizens at the expense of foreign entrepreneurs (Devereux & Loretz, 2010), e.g. by exporting the tax. In that way, tax harmonisation might eliminate basic distortions in the functioning of the single market.

Many researchers perceive positive aspects of tax competition arguing that governments compete with each other by offering attractive tax conditions to businesses (McGee, 2004; Persson & Tabellini, 1992; Tiebout, 1956) and that the decline in capital taxation rates is beneficial for the taxpayers. However, the supporters of corporate tax harmonisation indicate that tax competition and capital mobility lead to ineffective capital allocation in low-tax jurisdictions and the investment move depending on tax conditions. Therefore, these conditions are not neutral, and the investment depends on taxes rather on the other factors. The suggested solution was tax rates (Sinn, 1990) or tax bases concerted harmonisation (Tanzi & Bovenberg, 1990).

Basing on the second Taylor's approximation theorem and differentiation of CIT rates, Hines (2022) noted that there are many reasons why business tax rates vary from country to country. While tax coordination can counteract downward pressure from tax competition, this is not necessarily in line with national government policies. In the author's opinion, the search for a common rate that would satisfy individual governments must be based on the standard deviation of the CIT rates of the analysed countries, as well as the average rate of this tax resulting from the pressure of tax competition (Hines, 2022).

Some scientists paid attention to the fact that international tax competition forces an increase in the efficiency of the public sector enabling better provision of public goods (Bénassy-Quéré et al., 2005b) and could provide incentives for governments to raise public sector efficiency by reducing public expenditures or make them more efficient. In that sense one could find an analogy between international tax competition and yardstick competition (Besley & Case, 1995), see it as an effective tool to tame the revenue-maximising Leviathan government and stop it from raising taxes (Brennan & Buchanan, 1980; Edwards & Keen, 1996; Wrede, 2001; Zodrow, 2003). In that case tax harmonisation leading to approaching of tax conditions may be assessed as curtailing competition to the detriment of the enterprises. Many researchers consider that tax competition may be beneficial and have salutary effect because it encourages structural tax reforms (McLure, 1986; Razin & Sadka, 1991; Zodrow,

2003) but in fact the tax harmonisation is itself a large-scale tax reform. Some researchers argue that tax harmonisation may destroy tax competition but some of them have also noticed that partial harmonisation i.e. of tax bases, should not hamper tax competition in the EU but might lead to further divergence in tax rates across the EU Member States (Bettendorf et al., 2010; De Mooij et al., 2019).

The size of the country was indicated initially as giving the competition advantage. It was assumed that bigger countries might have an impact on the world equilibrium post-tax return (Wildasin, 1988; Laussel & Le Breton, 1998). According to Bukovetsky (1991b) and Bukovetsky & Wilson (1991a) the competition between small and big regions (countries) is asymmetric. Smaller regions show bigger inclination to lower tax rates comparing to larger regions with higher equilibrium tax rates and capital elasticities. On the one hand, this asymmetry causes capital misallocation from larger to smaller jurisdictions which could be eliminated by the tax harmonisation (Bukovetsky & Wilson, 1991), on the other hand, it was stated that tax harmonisation between regions of different sizes would prevent countries with lower tax rates from competing with larger countries. Similar conclusion was drawn by Wilson (1999) and Lockwood (2000). Wilson & Wildasin also noticed that asymmetry in competition caused fiscal externalities such as inefficient companies' location what is visible in case of asymmetrically integrated EU countries (Wilson & Wildasin, 2004).

Keen & Kanbur (1993) noted the impact of the different sizes of the integrating countries on the failure of the tax harmonisation process. Haufler & Wooton (2002) considered that larger countries won the competition because of offering companies access to bigger markets and lower transportation costs.

CIT harmonisation and agglomeration. The latter statement is convergent with the new economic geography models (Andersson & Forslid, 1999; Baldwin & Krugman, 2004; Borck & Pflüger, 2006; Krugman, 1991; Ludema & Wooton, 2002). It was noted that investors tend to concentrate their activities in particular regions – rich, with big markets, manufactory concentration and centrally-located (Krugman & Venables, 1995; Krugman & Venables, 1996). Such industrial clusters like *Blue Banana* in Europe or manufacturing belt in the United States are durable due to the demand and supply linkages (Hospers, 2002) and because of the increasing returns to scale and low transportation costs (Andersson & Forslid, 1999). This tendency depends not on the tax conditions but on the importance of agglomerative forces and transportation costs. The reduced transport costs increase

investors mobility to more agglomerated countries and the more attractive the location of the agglomeration, the higher may be the equilibrium for the taxation (Baldwin & Krugman, 2004; Kind et al., 2000; Ludema & Wooton, 2002).

Borck & Pflüger (2006), showed that also the partial agglomeration without agglomeration rent may cause the tax differentials between countries. This differential would be an equilibrium of the tax game. The EU is a good example of such economies differentiation. Divided on rich and poor countries called *the core* and *the periphery*, it illustrates well the existence of agglomeration forces. Here taxation diversity is justified by the geographical diversity. Centrally based, more agglomerated countries may keep their capital tax rates above those fixed by peripheral countries (taxable agglomeration rent). These high tax rates may be in that case supported by their residents due to their demand for high levels of public services (Andersson & Forslid, 1999). In that case tax harmonisation is undesirable. The core countries have public expenditures higher than the peripheries and are not interested in harmonising tax rates downwards. The peripheries can compete with the core only with lower tax rates so will not accept the harmonisation rates upwards (Zodrow, 2003; Baldwin & Krugman, 2004). In that case the sense of tax harmonisation understood as rates unification is questioned as well as its limiting impact over tax competition (Baldwin & Krugman, 2004). Zodrow is also sceptical about tax rates harmonisation but thinks that the benefits resulting from corporate tax base unification, especially the reduction in compliance costs, deserve serious consideration (Zodrow, 2003).

It is worth mentioning that some high-tax jurisdictions, usually more agglomerated or centrally located, might be interested in neighbourhood of low-tax countries. Such *tax complementarity* may also be profitable for the high-tax jurisdictions as it does not rule out their possibility of keeping higher tax rates. What is more, very often the phenomenon of profit shifting to low-tax jurisdictions is accompanied by higher sales and investments in neighbouring wealthier countries, i.e. high-tax jurisdictions (Barry, 2010; Bénassy-Quéré et al., 2005a).

Tax harmonisation, optimisation and fraud. Companies' decisions on their locations for investments are depending not only on the level of the provision of public goods in host countries (Tiebout, 1956), on their market size (Wolff, 2007) or on agglomeration forces (Andersson & Forslid, 1999; Baldwin & Krugman, 2004; Haufler & Wooton, 1999; Ludema & Wooton, 2002) but are largely tax-driven (Gordon & Hines, 2002). On the one hand, tax

differentials deriving from tax rates and incentives, compensate for the location rent and enhance investments (Bénassy-Quéré et al., 2005a). On the one hand, tax harmonisation, by equalising the conditions of taxation, could contribute to the allocation of resources dictated by purely economic considerations of the companies' activities , on the other hand, the problem of double taxation becomes more and more often a problem of double non-taxation (Bénassy-Quéré et al., 2014). The outflow of investment from a country can significantly erode its tax base, which in turn has a negative impact on that country's budget revenues (Gropp & Kostial, 2000).

According to OECD USD 240 billion are lost annually due to tax avoidance by multinational companies (OECD, 2019). Most transnational corporations are very sensitive to tax conditions when deciding on the place and scale of their investment. Assuming the comparability of non-tax conditions in different countries, tax aspects are the next factor taken into account by MNEs (Devereux & Griffith, 1998; Gorter & Parikh, 2003; Hajková et al., 2006).

According to Gorter & Parikh reduction of effective CIT rate by one EU country, provides an incentive to decrease investments in other Member States by about 4% (Gorter & Parikh, 2003). The entrepreneurs take into account nominal and effective rates, principles of shaping the tax base, methods of calculating income, scope of reliefs and exemptions, also the possibility of deferring tax payment. MNEs attach great importance to tax planning and try to conduct their activities in such a way as to minimize the tax burden. Their cross-border structure gives them opportunity of the effective use of many advanced tax planning instruments (Gajewski, 2017). Also, MNEs capital structures and debt-shifting policies reflect well the differences in countries income tax rates and in specific national characteristics of tax systems (Huizinga et al., 2008). The debt-shifting may depend upon company's ownership structure (Schindler & Schjelderup, 2012).

Jankowski notices that firms may use legal tax optimisation and commit illegal tax fraud. Legal optimisation named tax avoidance, consists in reducing company's taxable income by exploiting the tax law. It mainly comes down to adapting the appropriate structure and legal form of company's activity and to reducing tax liability by the use of legal tools like tax shelters. Tax fraud is always illegal, consisting in a direct breach of the tax law and taking form of tax evasion. The criterion for distinguishing tax avoidance from tax evasion is the punish ability of such taxpayer action. In the case of companies, tax negligence is rarer.

Negligence means that the taxpayer has not made a reasonable attempt to comply with the current tax laws, for example: made mistake in tax declaration (Jankowski, 2019). The harmonisation of CIT by approximating the terms of taxation of large companies in the EU may deprive them of the opportunity to take advantage of both tax avoidance and tax evasion between EU countries.

The core activity in tax evasion is profit and debt shifting limiting the tax burden. A typical manifestation of profit shifting is the use of transfer pricing. These are the prices at which goods, services and intangibles are provided by one part (usually the parent company) to another part of the enterprise. They are generally used to shift income within a given group of related entities from a country with higher taxation to a country with lower taxation. The price transfer comes down to shaping revenues and the costs of obtaining them in such a way that the income shown in a country with higher taxation is as low as possible, and sometimes it is even about not showing taxable income at all, i.e. generating a loss in tax terms. The use of transfer pricing is classified as a tax evasion method. Another forms of tax evasion is the abusive use of tax shelters (e.g. hiding income and assets from taxation or over-claiming tax deductions). It is worth considering that very often it is not the instrument but the way of its use that determines if the tax optimisation is legal or illegal. Often the boundaries between legal and illegal optimisation are blurred. The differentiation of tax law also means that the behaviour of a taxpayer in one country will still be counted as tax avoidance, while in another, it will be tax evasion. The legality of use of some offshore companies in tax havens or use of financial arrangements may be questionable and requires reference to the true purpose of the transaction or investment. The main effect of tax optimisation is the erosion of tax base and the profit shifting (BEPS).

Harmful tax competition and globalisation provide MNEs with more opportunities for the tax optimisation and fraud. These two phenomena are also based on a lack of harmonised tax law, no long-term policy of states aimed at counteracting international tax avoidance as well as insufficient knowledge and experience at various levels of tax administration in the field of highly advanced international tax engineering (Gajewski, 2017). The lack of harmonised CIT and of uniform fight against illegal tax optimisation has become a serious problem for the European Union.

Some scholars believe that tax coordination (or harmonisation) is not necessary because countries may individually combat tax avoidance through e.g. the use of Controlled Foreign

Corporation Rules (Clifford et al., 2019). However, tax policy of individual Member States and tax-avoidance regulations have proved to be ineffective and inefficient so far.

Jean Monnet's statement is true: "If the problem seems unsolvable, expand the context" (Monnet, 1976). Therefore, the last decade is a proliferation of anti-tax-avoidance rules: general (GAARs) and special (SAARs); international (BEPS, Base Erosion and Profit Shifting) and national. According to OECD, business avoids taxes and contributes to the erosion of the tax base due to possibility to operate internationally. The governments' response to tackle BEPS, also would have to be undertaken internationally. BEPS practices cost countries USD 100-240 billion in lost revenue annually, which is the equivalent to 4-10% of the global corporate income tax revenue (OECD, 2019).

Harmonisation of CIT bases in the EU. There have been disputes in the literature on the projects of harmonizing CIT bases in the EU. CIT harmonisation was analysed in two ways, by the teams of experts-practitioners hired by the European Commission and by scientists, at the level of literature. Commission analysed four different options: Home State Taxation (HST), European Corporate Income Tax (EUCIT), the Compulsory Harmonised Single Tax Base (CHSTB) and the Common Consolidated Corporate Base Taxation (CCCBT). First option known as a system of Home State Taxation assumed that the EU multinationals would calculate their EU-wide income according to the tax code of the residence country of the parent company. This system was supposed to be optional what meant that companies could choose whether they preferred national or common tax policy. The left choice was intended to be a kind of compromise between governments' taxation autonomy and the reduction of MNEs compliance costs.

Sørensen (2004) pointed out that this attractive flexibility of HST was also its main weakness. It is true that the existing differences across national tax systems might reduce the existing problems of transfer pricing but would continue to create further market distortions because of the maintained tax rates differentials (Sørensen, 2004). Similar conclusions were drawn by Mintz & Weiner (2003). They noticed that as long as states set their different CIT rates, the economic inefficiencies would continue to exist. With the provision that under HST the risk of inefficiencies would be even bigger due to the fact that countries might additionally reduce their tax rates to fight the incentives for companies relocation to jurisdictions with narrow tax bases. The idea of HST was criticised then mainly for the possibility of causing an additional incentive for countries to compete on tax bases,

increasing the dispersion of effective corporate tax rates across the EU and generating negative revenue spillovers. The advantage of this project was that it did not require tax harmonisation, but only mutual recognition by the participating states of the tax jurisdiction to which companies would be subject.

The second proposition — the European Union Company Tax (EUCIT) was supposed to imply one EU corporate tax base for all EU firms, international and domestic. The system was planned as a mandatory solution for all Member States and would mean the cease of national CIT rules.

The third alternative was the Compulsory Harmonised Single Tax Base (CHSTB). This system would mean, similarly to EUCIT, the single corporate tax base applied to all EU entities — domestic and international and loss of national tax autonomy. It would also replace domestic tax systems and eliminate CIT national tax administrations. Its main assumption was that after determining common tax base income, it would be distributed among the Member States according to their shares and at the national tax rate. In fact, CHSTB would mean lower compliance costs but as well the elimination of tax competition and optimisation. CHSTB would also most effectively eliminate administrative costs and fully ensure the comparability of tax burdens in individual Member States (Gajewski, 2015).

Sørensen paid attention that CHSTB could lead to larger cross-country variations in effective tax rates. He argued that states would try to compensate the effects of a common harmonised tax base by adjusting their already highly differentiated tax rates (Sørensen, 2004).

The fourth proposition called Common Consolidated Corporate Tax Base (CCCTB) was supposed to be optional. The consolidated tax base would give companies the possibility to offset losses in one Member state against profits in another one. EU multinationals opting for consolidation of their EU-wide profits would have to use common and harmonised tax base. Domestic companies and MNEs preferring national tax systems would stay under domestic rules. Such solution would eliminate tax base competition for corporate headquarters. Tax base harmonisation would, however, mean a partial loss of tax autonomy and discrimination of small companies against MNEs that could benefit from lower compliance and international consolidation. Similarly to HST, CCCTB would mean the co-existence of two different tax regimes — a potential field for tax distortions and fraud. The CCCTB project came down to the harmonisation of the corporate tax basis, leaving the

regulation of tax rates at the discretion of Member States. The idea of this project resulted from the need to regulate the issue of tax avoidance, double taxation and the reduction of corporate operating costs in the EU. The CCCTB assumptions were following unification of the rules for calculating the CIT base, simplification of reporting related to CIT payment, enabling the compensation of losses achieved by certain subsidiaries with the profits of other entities also operating in other EU countries. The proposal of the directive on Common Consolidated Corporate Tax Base (CCCTB), made by the European Commission several times, was analysed by scientists more thoroughly than other projects. Although it seemed to be a very compromise and balanced solution, it received many critical comments such as complicated or unfair formula apportionment (FA) favouring some countries over others, unjustified assignment of equal weights to all ingredients of the formula (Barry, 2010; Zagler, 2009). Another indicated caveats concerned no substantial welfare gains or unequal welfare distribution (Barry, 2010; Bettendorf et al., 2010; Van der Hoek, 2003).

In opposition to traditionally expressed arguments that tax harmonisation would destroy tax competition, some researchers noticed that partial harmonisation should even foster tax competition through further divergence in tax rates across EU Member States (Bettendorf et al., 2010; De Mooij et al., 2019). Sørensen (2004) pointed out that particular EU Members might lose out on CCCTB but the aggregate gain for the EU should slightly increase (by 0.1–0.2%) because of more efficient capital allocation. He also stated that the effects of tax harmonisation would strongly depend on the financial instruments used to balance states' budgets in the case of changes in effective CIT rates (Sørensen, 2004).

Devereux & Loretz (2010), in relation to CCCTB, took note of possible decrease in the dispersion of effective average tax rates (EATR) distribution and of reduction of CIT differences between domestic and international investments. Barry (2010) noticed that the introduction of CCCTB would induce problems with introducing the necessary changes in national legislation in the case they were needed due to the changing economic circumstances (Barry, 2010). On the other hand, it would mean greater legal and economic certainty for the taxpayers. Bénassy-Quéré et al. (2014) pointed out that CCCTB involving base harmonisation and consolidation, would make tax competition more transparent in which only tax rates would matter. Base harmonisation would allow Member States to minimize the distortion caused by the deductibility of interest payments. Base consolidation also would eliminate numerous ways of tax optimisation and fraud, improving the ability of

multinational firms to carry their losses incurred in one Member State by their offsetting with profits in another Member State. Moreover, CCCTB would also reduce MNEs' compliance costs, facilitate their cross-border activity and promote trade and investment (Bénassy-Quéré et al., 2014).

CIT harmonisation was quoted by its supporters as a solution to all problems resulting from the diversification of taxation conditions, especially in the EU. However, considering the breadth of this concept, the multiplicity of definitions of harmonisation, as well as its various scopes, the multitude of arguments of its supporters and opponents, as well as the enormity of CIT diversity in the EU, it turned out to be too complicated to be introduced in one of the four assumed forms. Therefore, the Commission returned to the idea of harmonising just one CIT element, namely its minimum effective tax rate which should affect such crucial element as budget revenues of the EU countries.

The issue of the harmonisation directive approved finally by EU Members will be discussed in more detail later in this work. It should be mentioned that the document applies only to a selected CIT element, namely its effective rate and the selected group of taxpayers - the largest domestic and international corporations with global revenues of EUR 750 million and more. Despite its seemingly very limited scope, harmonisation of the CIT rate may significantly affect the budget revenues of particular EU countries. However, before analysing the harmonisation directive, the author analyses the structural elements of CIT such as the tax base, statutory and effective rates, the taxpayers and selected reliefs in EU countries, as well as she compares the share of revenues from this tax in the GDP of EU Members. Such an analysis seems necessary because all these elements affect the amount of budget revenues from CIT in each EU country.

Chapter II, devoted to this analysis, shows the differences and similarities in corporate taxation in EU countries. CIT analysis is preceded by a short historical overview of the attempts to harmonise corporate taxation in the EU. It aims to show the sense of CIT harmonisation in the EU and the obstacles encountered by the EU legislator in the harmonisation process.

3. The historical background of CIT harmonisation in the EU

Taking into account the positive aspects of tax harmonisation and the fact that indirect taxes have already been harmonised in the EU, it can be considered why the CIT harmonisation process could not be completed for so long. The main reason for the failure of the direct tax harmonisation process has been the lack of direct EU legal mandate to carry out such harmonisation and its political overtone emerging from the Member States' fear of losing out on tax revenues. The main advocate of corporate tax harmonisation in the EU has been the Commission which outsourced a lot of research on the impact of different business taxation on the common market. Harmonisation milestones mainly has taken the form of reports (the main ones are: *Neumark Report* (1963), *Van den Tempel Report* (1970), *Ruding Report* (1992), Bolkestein Report (2000), non-legally binding papers, e.g. *White Paper on Completing the Internal Market* (Commission, 1985) and codes (*Code of Conduct*, 1997). The Commission has also made recommendations e.g. / prepared opinions, staff working documents and non-paper documents used to stimulate debates on particular issues. The most recently used document of the Commission in tax matters is the communication, e.g. *on more efficient decision-making and moving towards qualified majority voting* (Commission, 2019b, 2019c).

The concept of tax harmonisation in the EU however dates back to the 1960s. The need for direct taxes harmonisation was noticed almost immediately after the idea of creating the common market and more pronounced after the harmonisation of indirect taxes. After the creation of the European Economic Community (EEC), in the mid of 1950s, its priority was to remove the distortions caused by the trade barriers, hence — the approximation of indirect taxes. The need for harmonisation of direct taxes was perceived a little bit later, in 1960s, and was reflected in numerous taxation reports and European Commission's recommendations issued in the last sixty years.

Neumark Report. The Fiscal and Financial Committee (FFC, the Neumark committee 1962) was set up by the Commission of the EEC in 1960 and chaired by Professor Fritz Neumark. Committee's main aim was to examine the impact of disparities in public finance between EEC Member States on the establishment of the common market understood as internal market without tax frontiers. Second goal was to get an answer to the question if it would be possible to eliminate the differences potentially hindering the development and

the functioning of the common market. Public finance were considered at three following levels: economic and social policy, taxation and the instruments used in national economics and financial policies. Two years later the committee prepared and published The Neumark Report (official version released in 1963). The Committee stated that its aim was not to propose one uniform corporate tax system as the objective of the common market was not uniformity but the harmonisation of the taxation systems and financial policies of EEC Member States (Neumark Report, p. 102). The Neumark committee considered necessary harmonisation of income taxes between, at that time, six EEC states[2]. The uniformity was considered as impossible and undesirable because violating the competition. Harmonisation was then understood as a kind of rational compromise between maintaining the decision-making in public finance matters by EEC states and the necessity of eliminating or minimising the fiscal or financial disparities hindering the optimum functioning of the common market.

The objective of the harmonisation was removal of the discrimination based on national tax solutions (i.e. connected with tax domicile) and of the obstacles impeding free movement of workers, capital and business enterprises. Tax harmonisation was not intended to contradict tax competition but rather to level the competition principles to eliminate its distortion. FFC predicted possible political opposition to the common market and harmonisation because of the lack of developed solidarity between EEC Member States. The committee also foresaw the risk of ineffective capital allocations caused by differences in tax treatment. The Neumark committee forecasted that the common market might enforce EEC states to harmonise their tax and financial policies that is why it suggested earlier proper legislation on tax harmonisation and its introduction in few stages. The first stage would entail the reform of turnover taxes, second phase would introduce the harmonisation of company and personal income taxes. The third stage would mean the creation of a common court for resolving tax litigations. The committee underlined that the tax harmonisation does not mean the identity of tax systems and structures (static framework) but rather the similarity of their incidence and effects for the common market (dynamic perspective)[3]. The fiscal policies, namely the nature of public expenditures in each EEC states would be then more important than the differences in tax burdens. FFC emphasized the need for

[2] Germany, France, Belgium, Netherlands, Italy, Luxembourg.

[3] Broad definition of tax harmonisation given by prof. A. Barrere in Appendix E to the Neumark Report (1963).

continuous mutual adaptation and flexibility in fiscal policies and tax systems of EEC states. The committee noted that the harmonisation is a process, not a temporary action and that it goes beyond one-off regulation and legislation.

One of the FFC Committee, prof. B. Schendstok defined tax harmonisation as a compromise between the then tax solutions in each EEC state and the proposed common solutions. He underlined that tax harmonisation designed as a tool for solving problems of an international nature, must not lose the national context of each concerned country. National interests and international tax sharing were at that time the most important problems of the tax harmonisation. Schendstok underlined that in order to discuss them and seek solutions, one should rely on a uniform nomenclature (Panayi, 2013). FFC noticed that tax structures and terminology in EEC states differed so much that sometimes did not allow for an accurate comparison of the national tax systems that is why harmonisation process should start from unified taxation nomenclature.

The Segrè Report. Next committee was chaired by professor C. Segrè (the Segrè committee, 1966). The committee's aim was to examine what measures should be taken to develop a common European capital market and what implications it would have for the EC Member States. The Segrè report indicated that the national tax systems should become more similar and remain neutral in relation to decisions about locations and types of investments. States should offer equivalent tax incentives for various types of investments, direct or through an intermediary but the same types of incentives and of financing should be used by states to promote the same types of investments. The committee also recommended tax neutrality with respect to financing methods. The main tax obstacles to achieving integrated capital market mentioned in the report were double taxation, preferential treatment of investments made in the country of residence and different tax treatment of income paid to non-residents (Segrè, 1966).

Similarly to the Neumark Report, the Segrè committee suggested approximation of national tax systems. Concerning different treatment of income paid to non-residents, it indicated that taxation and supervision systems should be harmonised. Considered ways of tax harmonisation were abolition of withholding tax on bond interests or uniform tax rate for all states.

Program for the Harmonisation of Direct Taxes. Following Neumark and Segrè reports, the Commission of the European Communities (1967) prepared *The Programme for the*

harmonisation of direct taxes included in more general *Harmonisation Tax Programme*. The Program predicted harmonisation limited only to necessary scope which was defined as elimination of any tax discrimination on the common market. Harmonisation was to be achieved by the approximation of tax structures and certain approximation of tax rates but leaving the Member States sufficient room to manoeuvre. Predicting growing number of cross-border transactions, problems with double taxation and questions of allocating revenues between European Community Member States, the Program assumed a general system of offsetting arrangements that would facilitate harmonisation process and decrease the burden of tax authorities and enterprises. Approximation of tax legislation was to be accompanied by the harmonisation of tax inspection, verification and collection methods (Segrè, 1966, p.7). Apart from the harmonisation of indirect taxes, in long-term objectives of taxes approximation, the Program assumed introduction of the same type of corporation tax within the European Community, i.e. tax of the same structure, based on similar methods of assessment and similar rates and elimination of taxes levied on assets and discriminating against capital- intensive firms. The main problem was seen in using different calculation methods by the European Community states for reducing the double taxation of dividends. One method was based on reduction of corporate tax rate for distributed profits (used in Germany), the second assumed granting a shareholder a tax credit (Belgium), called also fiscal claim (France).

Using different methods might adversely affect the movements of capital that is why it was planned to introduce a single method for the whole European Community (Segrè, 1966, p. 10). To avoid the discrimination between non-resident and resident shareholders, it was suggested in the Program to extend the tax credit also to foreign dividends. It was stated that company tax harmonisation would not be enough to fix the problems of withholding taxes and double taxation so it should be accompanied by a special multilateral convention on double taxation. Similarly to the Neumark Report, the Program paid attention to the fact that corporate taxes approximation would mean common definition of company taxable profits and methods of their calculation what comes to common definition of tax base. It was underlined that the basis of assessment should be harmonised as much as possible and that the precision of harmonisation rules will depend on the scope of elements taken into account. In addition to the harmonisation considerations on double taxation and the calculation of the tax base, the Program was focused on another cross-border aspect. It was

about the harmonisation of tax arrangements applicable to parent companies and their subsidiaries and not making decisions on companies' takeovers, mergers and liquidations dependent mainly on taxation.

Van Den Tempel Report. The next study on tax harmonisation was carried out also at the request of the Commission by Professor Van den Tempel (1970). He pointed out that the consequences of divergent tax systems in EEC proceeded and had influence on capital movement. Professor noted the importance of differences in the manner of determining the tax base and in the corporation tax rates. In the Foreword to the Report, he noted that the tax harmonisation means alignment of taxes structures and the crucial question of the taxation of undistributed versus distributed corporate profits. The main aims of the study were to examine ways of mitigation of economic double taxation of dividends and the disadvantages resulting from the different corporation tax structures coexisting in the EEC before tax harmonisation occurs.

Professor Van del Tempel examined three main tax systems used at that time in the EEC, considered implications of applying each one of them for the whole Community. The analysed systems were the classic system (used in Netherlands and in Luxembourg), split-rate system (used then in the Western Germany) and the imputation or tax credit system (characteristic for France and Belgium) (Van Den Tempel, 1970, p. 3). Under the classic system the company and shareholders profits were taxed independently. In the tax credit system, a part of the corporation tax on distributed profits was credited against the income tax imputed to the shareholders. The split-rate system assumed lower taxation of profits distributed against profits retained. The classic and credit tax systems were assessed as having less influence on the decisions on the legal type of enterprises, less distorting competition (Van Den Tempel, 1970, p. 18) but more complex from the administrative point of view that is why Professor Van den Tempel suggested that the harmonised EEC tax system should be based on the classic version as the most convenient. Unfortunately, neither this, nor the earlier proposals have been implemented.

Commission's 1975 Proposal for a Council Directive concerning the harmonisation of systems of company taxation. In 1975, contrary to the recommendations of Professor Van den Tempel, in the issued *Proposal for a Council Directive concerning the harmonisation of systems of company taxation and of withholding taxes on dividends* (Commission, 1975), the Commission chosen a partial credit tax (imputation) system. The choice was justified by the

fact that the classic system did not relieve the economic double taxation of dividends discouraging in that way profits distribution. Additionally, Commission pointed that the classic system predicted deductibility of interests from loans issued by companies which would translate into favouring loans activities instead of capital increases through new shares issuance.

The credit tax system encouraged, in Commission's opinion, the capital distribution and equalised equity and loan financing. Moreover, the Commission indicated that by restricting distribution of profits and their investment into most profitable sectors, the classic system prevented good capital allocation. The Commission paid also attention to the fact that the imputation system was more neutral for the legal forms of undertakings and prevented tax avoidance through sheltering profits in a company by individual taxpayers (I Van Den Tempel, 1970, pp. 7-8).

Ruding Committee. In 1990 the Commission of EEC appointed a former Finance Minister of Netherlands — Onno Ruding to chair a committee of independent experts on taxation. The Committee's aim was to determine if the differences in tax burdens within the European Community caused major distortions in the functioning of the internal market. In the case of positive answer, the Committee was asked to propose remedial solutions and indication whether the Commission action was necessary. In the *Report of the Committee of Independent Experts on Company Taxation* (Ruding, 1992) issued in 1992 the Committee admittedly noticed independent states tax actions to attract the investments but did not assess such tax competition itself as harmful and leading to the erosion of the corporate tax revenues of the EC Member States.

However, the Report pointed that some of national tax rules were discriminatory and distorting the functioning of the internal market. When comparing differences in corporate taxation in the EU, the Report indicated three key elements to consider: tax systems, tax bases and tax rates. Moreover, the Committee noticed that the differences lied in such elements like divergent tax treatment of cross-border income flows (dividends, royalties, interest payments) and in using by governments different tax incentives. Even the basic definitions were different in different countries (e.g. definition of the corporate tax base, (Ruding, 1992, p. 19). Differences in the EC corporate taxation led, in the Committee's opinion, to companies' international tax planning, lack of fiscal transparency and tax rules' uncertainty due to frequent changes in tax legislation. It was also indicated in the Report

that tax systems divergence caused high companies compliance costs and that taxation distorted the investment due to different capital cost in different countries what in turn caused distortion in competition. Countries with higher capital costs were less competitive.

The Committee conducted a survey which confirmed that the location of investments is strongly dependent on tax issues. Forty-eight per cent of investor — respondents said that taxation was the main factor influencing such a decision. Taking into account that the differences were so wide, tax harmonisation was pointed by the Committee as a long-term objective. The Committee suggested removal of discriminatory tax arrangements by fixing common rules for the tax base, setting a minimum corporate tax rate at 30–40% and introducing transparency in tax incentives granted by the states. These proposals were to be implemented in three phases. Such a vast tax reform needed however the Commission's participation. The Commission, together with the EC Member States would have to establish the rules for the adjustment of transfer pricing and urge Member States to ratify the Arbitration Convention. In Phase II all Member States would have to introduce at national level full offsetting of losses within groups of enterprises. In Phase III such losses offset would have to be applied Community-wide. Concerning tax harmonisation, the Committee found that the systems of few EC Member States were converging but not due to the coordinated action but because of a desire to establish more neutral tax regimes, of general trend to cut statutory tax rates and reduce tax concessions (Ruding, 1992, pp. 10-22). Once again, experts' recommendations have not been implemented.

Tax package and the Code of conduct for business taxation. In 1996, the Commission consulted the Economic and Social Committee concerning the taxation within the EU and prepared the *Report of the development of tax systems* (Commission, 1996). Stabilization of fiscal system was presented by the Commission as one of the main issue and challenge for the EU. The next report was issued a year later. In Committee's opinion taxes were of EU-wide importance, changes in some national tax structures affected other EU Member States. It was also noted that the fiscal erosion did not decrease Member States tax revenues but the tax structures had changed. The tax burden had increased on labour but fallen on other factors of production (Economic and Social Committee, 1997). According to Commission's analysis the most mobile fiscal bases were subject to erosion, tax policy was lagging behind economic integration (Commission, 1997b). States' arguments concerning defence of their tax sovereignty caused in fact its gradual loss.

Within the scope of direct taxes, Commission stated that the tax burden was reduced by switching production and tax bases to low-tax jurisdictions and through transfer prices. The Committee suggested that the tax dumping and harmful tax competition would have to be eliminated. This did not mean eliminating fair competition creating favourable conditions for the market participants. The Committee noted that tax harmonisation was not an end in itself but it should protect the EU against a weakening within the scope of CIT base. The Committee also suggested the minimum harmonisation standards for determining corporate tax base and rate setting. Even then, the Committee noticed that the mere monitoring of state aid to economic entities was insufficient. The Committee also concluded that more serious distortions of competition might arise from the wide variety of taxes in the EU, not just from different country-specific tax incentives.

Analyses conducted over the years by the experts employed by the Commission indicated disruption of the functioning of the common market due to differences in corporate tax in EU countries. CIT harmonisation was suggested as a remedy. However, such harmonisation was not possible due to the applicable, resulting from the Community treaties, the principle of state sovereignty in tax matters, unanimity of voting in the EU Council and the lack of consent of all EU countries to a single harmonisation version.

Striving for harmonisation, the Commission assessed the principle of unanimity in voting on tax matters in the EU Council as a block to the progress of the common market and further tax integration. There was a Commission’s proposal that, in the event of failure to achieve the required unanimity in voting, qualified majority voting on the Commission's taxation motions should be taken into account. The legal basis that the Commission could rely on to harmonise (approximate) EU Members' corporate taxes was Art. 100 of the EU Treaty (1992) which states that the Council has the right to intervene by issuing directives in cases where Member States' laws affect (by implication: distort) the functioning of the common market. The Commission presented its future strategy concerning taxation in the EU. It was proposed to create an EU Forum to lead tax discussions between Member States and the Commission. Forum would deal with the most important issues of tax policy and would allow for closer tax cooperation between EU States (Commission, 1997b).

In December 1997 in its communication to the Council, Commission proposed a tax package to tackle harmful tax competition titled *Towards tax co-ordination in the European Union*. It was pointed out that an example of such competition could be state aid because

the final economic effect of taxes is similar to the use of subsidies, and any tax relief, remission or incentive may be treated as one of the types of state aid (Commission, 1997).

Three main areas of the tax package concern were: corporate taxation, savings taxation as well as the interest and royalty payments. The key document of the package was not having a legal nature the *Code of Conduct for business taxation* (1999). By accepting this document all Member States agreed to withdraw legislative, regulatory and administrative tax solutions harmful to competition and refrain from introducing the new ones with similar effects. The code included criteria for identifying potentially harmful measures such as: tax benefits reserved for non-residents or taxation lower than the general taxation in the concerned country, rules for the profit determination significantly deviating from the internationally accepted principles (e.g. OECD rules), tax incentives ring-fenced from the domestic market, incentives granted without real economic activity or even without actual economic presence in an EU State offering such incentives, finally the lack of transparency of tax provisions (Code, 1999, pp. 12-13; Council, 1999, p. 3).

In addition to the Code, at the initiative of the Commission, the package included a proposition of directive aimed at eliminating withholding taxes on interest and royalty payments between companies in different EU States. The Commission proposed also common system of taxation of interests paid to individuals. In turn, the Council stressed the importance of tax information exchange in the fight against tax avoidance and tax evasion (Commission, 1997). In 1998 the tax package was unanimously accepted by all Member States.

2001 Commission Report. In 2001 the Commission, with the support of two expert panels (academics and practitioners), prepared a report on *Company Taxation in the Internal Market* summarizing the achievements in the field of company taxation. The Commission's main tasks was to examine the differences in the effective level of corporate taxation in the EU (panel of academics) and to identify principal tax provisions that could obstruct cross-border economic activity in the Single Market. The analysis was to result in an assessment of the impact of taxation on the investment location. This report referred to the 1990 Ruding Report, the purpose of which had been to determine whether differences in corporate taxation and corporate tax burden in the EU States led to serious distortions affecting the functioning of the single market (Commission, 2001).

The report pointed out that taxes in XXI century are levied in the economic conditions significantly changed by the processes of globalisation. This in turn led to challenges for national corporate tax systems and required tighten international cooperation in the field of taxation. The report highlighted that businesses having to comply with different EU corporate tax systems, beared higher compliance costs and lost their economic effectiveness. Moreover, according to the Report 2001, dealing with many tax systems contributed to the lack of transparency. In turn, the internal market and the Economic and Monetary Union had a significant impact on the way the European companies conducted their business. They treated the Union as one market, not as a group of Member States. This approach required a joint EU dimension initiative on tax incentives, i.e. changes in national tax laws (Commission, 2001, pp. 20-22).

The Economic and Monetary Union not only increased the integration through the internal market but also highlighted many tax problems like: transfer pricing, double taxation being result of conflicting taxing rights and discriminatory dividend taxation (Commission, 2001, p.24). The Commission presented four solutions which could solve the problems caused by the tax obstacles. These solutions were mentioned and described earlier: Home State Taxation, Common Consolidated Corporate Tax Base, the European Union Corporate Income Tax (EUCIT) and a compulsory harmonised tax base in the EU. All these projects were based on the idea of a single corporate tax base which could, in Commission's opinion, reduce compliance costs for multinational companies operating in the EU (Commission, 2001, pp. 306-357). Finally, the Commission chose Common Consolidated Corporate Tax Base (CCCTB) and in 2001 presented its first project of the corporate tax harmonisation directive.

The Common Consolidated Corporate Tax Base. Since 2001, the harmonisation of corporate taxation was guided by a new goal — to remove tax obstacles for companies operating in the territory of more than one EU Member State. According to the Commission, this goal was to be achieved by introducing the CCCTB for companies operating in various EU countries. The unification of principles for establishing CIT base was to facilitate the operations of international corporations on the common market by reducing their expenditure on maintaining separate accounting systems in particular Member States and reducing the tax risk of operating in the EU. The CCCTB directive proposal was presented by the European Commission three times, in 2001, 2011 and 2016. Each time it provided for

slight changes, but in principle, it was about unifying the rules for determining the CIT base of multinational companies operating in more than one EU country.

The tax bases (revenues, costs of obtaining them, income) determined in the same way for each of the companies from the capital group operating in different EU countries would constitute one consolidated tax base. Then, the countries in which the companies operate would have a share in such a tax base determined according to a special apportionment key (formula apportionment) and would tax this part of the CCCTB group's income at their own CIT rate. The main advantages of the CCCTB project included the reduction of tax compliance costs due to the predicted unification of tax regulations, determining the basis and accounting for CIT, the possibility of determining the aggregate result, and in the event of loss of one company from the group, its settlement in the same tax period and compensation with the profit of other companies from the CCCTB group. In addition, the CCCTB was to ensure an increase in the transparency and comparability of tax systems and the elimination of the problem of double taxation.

One of the main drawbacks of the CCCTB was the loss of sovereignty in the conduct of fiscal policy by the EU Member States. The unification of the tax base would mean less flexibility of states in competing in the field of CIT in terms of the possibility of tax-deductible costs, granted allowances, tax exemptions or assistance provided, e.g. in special economic zones. The Commission turned its attention to the harmonisation of tax bases due to the failure to introduce the harmonisation of tax rates. The CCCTB was modified few times and consistently promoted by the Commission till 2021.

CCCTB's main assumption was establishing common rules for calculating CIT base in the same way in all EU countries but indirectly it also related to the issue of tax avoidance and solving cross-border problems resulting from the differentiation of CIT. It would mean that multinationals operating in the EU could treat it as a business activity led in a single market thereby calculate one common tax base and offset their losses in one EU Member State against profits made in another Member State within the group of related entities. Next, their income would have been assigned to the concerned Member States according to special criteria (Formula apportionment). These criteria were three equally weighted factors: labour, assets and sales by destination. CCCTB was to be obligatory for companies with a consolidated turnover above EUR 750 million but small and medium enterprises were supposed to have such choice and profit from the harmonisation. The latter Commission's

proposition consisting in tax bases harmonisation and leaving setting of corporate tax rates to the Member States discretion was thoroughly examined and discussed. Due to many analyses and suggestions, the CCCTB proposal was changed two times and in effect, the Commission presented its three versions in 2001, 2011 and 2016.

The researchers were analysing corporate tax harmonisation feasibility, its different scopes, gains and drawbacks of each project. The impact of CCCTB implementation was analysed not only by the academics but also by the Commission's working groups, the Joint Research Centre and the Centre for European Economic Research (ZEW). Introduction of this solution would have an impact on the amount of CIT revenues in each of the EU countries. Such an impact was analysed in two different models: the CORTAX model prepared by the Joint Research Centre and in the Tax Analyser Model used by ZEW.

The analysis concerned the effects of introducing the CCCTB for both: multinationals and all companies in the EU. The main economic variables in CORTAX were GDP, investment, employment and wages, as well as the tax revenues for, at that time, EU-28.

The results of the simulations indicated a positive effect on all key economic variables but a slight decrease in total tax revenues for EU-28 as a whole. That decrease of 0.08% of GDP corresponding to about EUR 11 billion was due to lower CIT revenues by about EUR 36 billion partly compensated by the increased revenues from the other taxes by about EUR 25 billion. It was pointed out that the reduction of compliance costs should translate into an increase in investment and employment which would translate into higher revenues from consumption and labour taxes (Devereux & Loretz, 2008). Some simulations results suggested that due to loss consolidation the sum of profits would decrease by 21% for the whole EU from EUR1,000 billion to less than EUR800 billion (Cobham et al., 2021) and the overall corporate income tax base would be reduced by about 12 per cent (Cobham & Loretz, 2014). Additionally, the simulation of Cobham et al. (2021) showed that in the case of some countries, e.g. Austria, the Netherlands or Luxembourg, the decline in tax bases due to loss consolidation would be around 50%. However, in the case of some smaller EU countries, such as Malta, Estonia and Slovenia, losses consolidation would lead to the tax base increase (Cobham et al., 2021, p. 41).

The ZEW model was dedicated to cross-border tax planning used by multinationals, to debt financing and research and development (R&D). The results suggested significant reduction of the effective taxation level due to MNEs tax planning, also debt bias on capital

cost and the underfunding of R&D. Therefore, the CCCTB providing tax reliefs for R&D and the equal deductions from debt and equity financing, were appraised positively by the ZEW researchers (Commission, 2019a).

The results included in the *Commission Staff Working Document on Impact assessment accompanying the document Proposals for a Council Directive on a Common Corporate Tax Base and a Common Consolidated Corporate Tax Base* (Commission, 2016a) suggested that CCCTB with an FA formed on assets, employment and turnover would have contributed to fair allocation of companies' income binding it to the place where it was generated. It was also noted that such an apportionment is more resistant to aggressive tax planning.

The results of the analysis showed also that companies' compliance costs should decrease by 62–67% (for new subsidiaries) and 8% (of recurring compliance costs) in the existing companies. The recurrent costs reduction, in the case the CCCTB was applied to all MNEs, would reach EUR 0.8 billion (Commission, 2016, p. 39). Therefore, the CCCTB increasing the tax fairness, would be also a very useful tool of supporting the economic growth. A thorough analysis of the CCCTB by the European Commission and scientists could give it a good chance of being implemented, but it turned out that the longer it was analysed, the more resistance it aroused on the part of the EU Member States.

Harmonisation as a solution to economic crises. Nearly seventy years of attempts to harmonise corporate taxation and of EU governments practice show that tax competition has been preferred to tax cooperation which would not have come to fruition without the top-down proposed Directives. Tax harmonisation has been effectively blocked. However, repeating economic crises, accelerating ageing of the society, inefficiency of tax systems in the terms of growing CIT gap and ineffectiveness of isolated national tax policies came down to ever-growing debt and to the economic slowdown. CIT harmonisation, which has been postponed for over sixty years, might prove to be a solution for the EU as a panacea for the growing tax gap. The fear of EU countries of losing tax revenues effectively inhibited the CIT harmonisation process until 2022. However, history has shown that the lack of harmonisation also means the loss of CIT budget revenues due to the tax optimisation of MNEs and the growing tax gap. On such fertile ground, the 2022 Directive could finally be adopted as the option that least interferes with the sovereignty of EU countries (compared to the CCCTB proposing harmonisation of the tax base) and at the same time is most adapted to the digital reality.

CIT harmonisation has never been assessed as an ideal solution for all EU Member States but rather as a compromise between economic imperatives resulting from a common market and the requirements of EU Member States' autonomy (Tulai and Serbu, 2005, p. 133). Many researchers have noticed the positive aspects of tax harmonisation (Sørensen, 2004; Bettendorf et. al., 2010) but its proposal has also met with strong criticism (McGee, 2004, Barry, 2010). The main weak points of CIT harmonisation pointed in the literature were: difficulty and high costs of its implementation, the requirement for EU states to depart from their preferred tax policy based on national preferences, a transfer of sovereignty and the uncertainty of its outcomes. The Directive adopted in 2022, which the author describes in more detail in Chapter III, is based mainly on one common element, namely the effective CIT rate. However, even this one change will have a broad impact on the change in budgetary revenues of EU countries. The problem is that this change may be positive for some countries, but not necessarily for others.

CIT harmonisation would be much more willingly accepted if each EU country was sure that it would contribute to an increase in its budget revenues, and ultimately that it would not lose on this solution. The CCCTB proposal for CIT harmonisation was maintained in the draft phase for so long (2001-2021) that many analyses of its individual elements and potential effects were carried out. Thorough analyses that were supposed to be an asset and convince EU States to harmonize turned out to be a reason for its criticism and eventually rejection.

The 2022 harmonisation Directive was approved by Member States after a year of negotiations since the Commission submitted the draft. Perhaps this is due to the more than 60-year history of attempts to harmonise CIT in the EU and the analysis of many options, perhaps from the fact that the tax gap is growing or from the fact that harmonisation of one CIT element seems to be a small concession on the part of EU Member States compared to the acceptance of the reform proposed in CCCTB.

Chapter II The Differentiation of CIT between EU countries as a premise of tax harmonisation

1. Differentiation criteria and the diversity of CIT payers

Although, the single market is giving rise to new requirements for information on the structure of enterprises, CIT payers are a wide range of entities which differ in many aspects, especially the legal definition, depending on the EU Member state.

Market participants and data users such as the European Commission require information on the concentration of production factors, takeovers, mergers, restructuring while rapid economic growth and internationalisation of enterprises spanning the boundaries in the EU makes the provision of such statistics much more difficult. An EU-wide approach in statistics is based on the *Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics, repealing 10 legal acts in the field of business statistics (Text with EEA relevance)* (2019) and establishes a common framework for business registers for statistical purposes. It makes three business units mandatory – the enterprise group, the enterprise and the local unit and the information on the legal units and their links to enterprises and enterprise groups. *Eurostat Business registers — Recommendations manual* suggests harmonisation of statistical units which should follow from harmonisation of the rules for maintaining national business registers (Eurostat, 2010).

In general, business registers should record all enterprises (also associated legal and local units), all multinationals and all-resident enterprise groups operating in the national economy and contributing to the gross domestic product (GDP). In practice, mainly for cost reasons, business registers do not meet the proposed standards and that is why international comparison of the legal forms of enterprises is significantly more difficult.

For the purpose of comparing CIT payers in EU countries, the author assumed that she compares certain companies with a specific legal form without going into the definition of a given form. Thus, despite the fact that a joint stock company in one country is defined slightly differently than in another one, it is treated uniformly as a joint stock company for the purposes of this study.

Company (or corporation) tax is paid by various types of entities, mainly corporation companies, co-operatives, clubs but also unincorporated associations, on the income from

their activities. The rules are set by national authorities and are differentiated for each EU state. CIT payers are thus companies and organisations registered as corporations or unincorporated precisely defined by the tax regulations of each country.

Etymologically, the word *corporation* comes from the Latin *corporatio* meaning *union,* or *union of parts.* Legal foundations of the corporate structure were shaped in ancient Rome. The then associations - corporations called *sodalitates, corpus, collegia* or *universitates* had legal capacity, their separate assets, and persons representing and managing them. Corporations were treated as legal entities separate from their members. Each of them was considered a legal entity (Kopaczyńska-Pieczniak 2019).

On the one hand, in the doctrine, corporate-type organisations are opposed to company-type organisations whose important element is the impersonal component (e.g. capital). On the other hand, in the sense, taken from the colloquial language, a *corporation*, contrary to doctrine, means *a capital company based on equity composed of shares*, usually a *large multinational.* In the latter sense, corporation is understood in the United States, where it means a *joint stock company, an enterprise*. In this sense corporation stands for a type of social organisation, usually with legal personality, of which its members (corporants) are an important element (substrate). Their Membership is governed by the internal law of the corporation. A corporation usually manages the affairs of its members to the extent that they act as members. Nowadays, we distinguish civil law corporations, such as associations, cooperatives, trade unions and public law corporations, e.g. municipalities. There can be distinguished various criteria for the division of the entities, such as, for example, legal personality, separation of capital in the unit and the main purpose of the activity. The first criterion implies the division of business units into those with or without legal personality, the second into capital companies and partnerships and the third division informs whether the entities' activity is of profit or non-profit nature. All types of these activities can be taxed with CIT, depending on which EU country they are registered in.

As CIT payers will be systematised in this chapter according to these three criteria, the author first introduces short definitions of these three concepts. Legal personality and separation of capital ownership in an economic entity are the main features of CIT payers.

Legal personality means having legal capacity and capacity to perform acts in law i.e. to enter into relationships in civil law with other entities. Legal capacity in civil law means the ability to be the subject of rights and obligations (legal subjectivity). It is an attribute of

natural persons, organisational units that are legal persons (e.g. the State Treasury) and non-legal persons, which are granted legal capacity by special provisions. Legal personality cannot be abandoned, deprived or limited. On the other hand, the capacity to perform acts in law is the ability to perform legal acts on one's own behalf. **Legal act** means a conventional act (constructed by a legal norm) of a legal entity, having contents that specifies the legal consequences of a legal event. In other words, it is the entirety of a legal event which includes at least one declaration of will.

Having legal personality by a capital company means that it is an independent entity of civil law. It has its own property, separate from the property of partners, acts as a subject of rights and obligations in legal transactions, has judicial and procedural capacity, i.e. the possibility of suing and being sued. The entity with legal personality also has restructuring and bankruptcy capacity as well as the management board dealing with the company's affairs and its representation. The acquisition of legal personality is inherently related to the formation of a legal entity. Pursuant to Art. 37 of the Polish Civil Code, legal persons, as a rule, acquire legal personality upon being entered in the relevant register. In the case of the Polish *Law of commercial companies*, it is an entry in the National Court Register (KRS).

Typical characteristics of a legal person include:

- having an organisational structure equipped with bodies acting for that legal person,
- separate property,
- the ability to be the subject of rights and obligations (including the right to act on his own behalf and on his own account),
- process capacity,
- responsibility with own property for liabilities.

The features of a legal person are, with few exceptions, the same as those of a corporation, but a legal person is a broader concept. Thus, every corporation will be a legal person, but not every income of a corporation with legal personality will be subject to CIT. For example, the income of a Polish commune resulting from its activities as a local government unit is exempt from CIT (Act, 1992, art. 6). For comparison, in Belgium both public corporations and inter-municipal associations are, with a few exceptions, liable for CIT. CIT in the EU, as a rule, applies to legal persons, such as capital companies, foundations and associations. The exception here are most often some partnerships which are CIT payers in some EU countries, but, as a rule, do not have legal personality.

The second criterion for the division of CIT taxpayers is the separation of the entity's assets from the assets of its shareholders, members or partners. Separation of the entity's capital from the personal property of its members takes place in capital companies, associations and foundations. This is in line with the division of taxpayers into those with and without legal personality. It is also logical. An entity with legal personality may, in its own name, acquire rights and incur liabilities, sue and be sued. It is also responsible for its obligations with all assets. Therefore, the separation in an entity of its property from the personal property of its members is, in principle, associated with the fact that it has legal personality (companies in organisation are an exception).

It should be noted that the possession of a legal personality by the entity does not always mean that it has separate capital. This is the case with associations which are, in principle, CIT payers, but in their case, there are numerous exemptions from this tax in particular EU countries, depending on what is the subject or purpose of their activity. Therefore, the third criterion - the purpose of the activity - will be of key importance in the case of the associations. This purpose should be clearly stated in the association's statutes. The dissimilarity of associations in comparison with capital companies and foundations is already visible at the stage of their establishment. As far as in the case of capital companies and foundations the contribution of capital is indispensable, in the case of associations, there is no such requirement.

Capital companies are the main group of CIT payers. The two main types of such companies present in all EU countries are joint stock company and limited liability company. Capital companies are also entities which, as a rule, implement the largest economic undertakings. Their characteristic feature is the separation of the company's assets from the personal assets of shareholders or partners, separation of the management from the ownership sphere, the lack of liability of partners or shareholders for the company's obligations, having the share capital, legal personality, and the established statute.

As a rule, capital companies are CIT payers in all EU countries. Continental legislation usually distinguishes two types of capital companies (including capital companies in organisation) such as: joint stock companies (S.A., simple S.A., European company) and limited liability companies (Ltd., LLC).

Anglo-American common law[4] binding, in the case of the ex-EU Member, the United Kingdom and in the case of Ireland distinguishes between public limited companies (PLC or Public Ltd) and private limited companies (Pvt Ltd). Both types of companies are capital companies that differ in many aspects, however the most characteristic difference in their case is the fact that one type of a company is listed on the stock exchange (PLC) and the other is not (Pvt Ltd). In this work, unless it is indicated that the text refers to the United Kingdom or Ireland, the author uses the continental nomenclature.

Capital companies are commercial law entities usually implementing the largest economic ventures and generating the highest income, especially if they form capital groups and operate as transnational corporations. In the legal structure of a capital company, the key role is played by the aforementioned separation of share capital, i.e. the accumulated property detached from the personal property of partners or shareholders. This separation of capital constitutes the essence of the functioning of a capital company. It means that the company's operations are not based on partners with a variable composition, but on the company's capital.

The main goal of a capital company is a profit-making goal, i.e. generating profit for shareholders. This goal is achieved by conducting a specific type of economic activity carried out in an organised and continuous manner (manufacturing, construction, commercial, services or consisting in searching for, identifying and extracting minerals from deposits).

The profit achieved is fully or partially distributed among the partners. Part of the profit generated may also be used for non-economic purposes, their implementation is not profitable, and often even require funding. This category includes aims of public interest, as well as cultural, charitable, research and scientific goals and can be tax deductible.

In addition to running a business, a capital company also obtains the capital necessary to perform its tasks by issuing shares (LLC) or stocks (S.A.). The buyer of such shares or stocks, by paying the capital towards their purchase, becomes at the same time a partner (shareholder or stockholder) of the company and has the right to make certain decisions and earn profits from the company's operations. The amount of profits to which he is entitled depends on the number and value of shares or stocks he holds and is paid, as a rule, as a

[4] Common law (judge-made law) present in the United Kingdom and Ireland, is based on precedent, i.e. previously issued court judgments, while continental law is statutory law based on regulations established by the legislator.

dividend. The purchase of shares thus constitutes the acquisition of rights to joint ownership of the company. As mentioned, most often, companies divide their profit into parts, one of which they pay out to shareholders in the form of dividends, while the other is invested in the company's development. Both parts of the profit are usually (except for a few countries) taxed with income tax, but the method of taxation differs from one EU country to another.

Most often, in the case of a dividend payment, income is taxed twice due to the capital transfer from the company to the shareholders. The first — corporate taxation occurs when the company pays the corporate income tax. Second — personal taxation occurs when shareholders receive dividends that come out of the company's after-tax profits. Thus, shareholders pay taxes first as owners of the earning company and then as individuals who have to pay income tax on their own dividend income. Shareholders also have the right to participate in the company's assets in the event of its liquidation. The consequence of the fact that a capital company has the separation of its assets from the personal property of its partners is also the separation of the company's and partners' liability. A capital company is responsible for its obligations with all its assets, while its partners are, as a rule, excluded from such liability. The consequence of separating the sphere of ownership from the sphere of management is usually the exclusion of partners from direct management of the company's affairs and its representation and management by its bodies. The rights and obligations of shareholders are regulated by the articles of association (in the case of S.A. – by its statute).

One of the most important features of a capital company, regardless of the country in which it is registered, is its legal personality. It is worth mentioning about the special legal status of capital companies in the organisation. A capital company in the organisation, which is established at the time of its formation, does not have legal personality but is a separate unit in terms of assets and organisation. In Polish law, its establishing comes down to the conclusion of a founding agreement by the partners and covering all contributions (in the case of a limited liability company) or creating a statute and covering at least 25% of the nominal value of the acquired shares. Until such a company is entered in the National Court Register, it does not have legal personality, but it has legal capacity i.e. it may acquire rights,

incur liabilities, sue and be sued on its own behalf[5]. The fact that a capital company in organisation can perform important legal transactions in economic turnover, and thus *in facto* conduct business activity, obtain revenues and bear the costs of obtaining them, makes it also a CIT payer.

The largest capital companies are usually organised in the form of joint stock companies, but the most widespread in the EU is the second type of capital company which is limited liability company. In December 2020, there were over 19 million limited liability companies in the European Union, which accounted for 80% of all companies operating in the EU (European Parliament, 2020). In Poland, according to the Central Statistical Office, at the end of 2019, almost 430 000 companies were registered as limited liability companies and there were just over 10 000 joint stock companies (GUS, 2019).

The EU has developed a wide range of legal regulations regarding capital companies. These entities have been regulated in terms of cross-border conversions, mergers and divisions by the *Directive 2017/1132 of the European Parliament and of the Council of 14 June 2017 relating to certain aspects of company law (codification)* (2017) and the *Directive 2019/2121 of the European Parliament and of the Council of 27 November 2019 amending Directive (EU) 2017/1132 as regards cross-border conversions, mergers and divisions* (2021). Those two directives constitute a kind of codification and harmonisation of rules. However, as far as the definitions of capital companies are concerned, both of these legal acts refer to the definitions of such companies in the commercial law of the particular EU Member States.

Cooperatives. The ownership of shares in the capital by individual Members is also characteristic of a cooperative. However, the share in the capital of a capital company and a cooperative is quite different. The ownership of the cooperative is limited to its users. Persons who do not use the services of a cooperative may not be its members, and the cooperative's shares may not be traded on a stock exchange for sale to any equity investor. The cooperatives' shares therefore have no sales market. The cooperative redeems its shares at their nominal or purchase value when a member withdraws from the active use of

[5] Polish capital companies in organisation are considered" handicapped legal persons", i.e. they do not have legal personality. However, they can be the subject of rights and obligations in economic turnover, they can act independently, i.e. on their own behalf and for their own account. Thus, they have legal capacity, capacity to act in law and judicial capacity - both passive (the possibility of being sued) and active (the possibility of suing).

the cooperative. The inability to sell Members' shares deprives a member of the right to use his share as a means to raise capital gain and therefore discourages capital attraction by the cooperative. The investor-owner of a cooperative does not obtain similar benefits from the capital investment in the cooperative as in the enterprise owned by the investor.

A cooperative is a member-owned business structure, having a legal personality. Its main purpose is to meet the needs of its shareholders. It may serve as a tool to meet the economic or social needs of those shareholders. This way of doing business may have different size and is present in every sector and in every EU country but only in particular countries is liable to CIT. Each EU country has different legal regulations relating to the cooperative company, starting from the minimum number of partners (e.g. three in Belgium, seven in Bulgaria) through its functioning, solution and regulation in different legal codes (commercial, like in Czechia or cooperative society code- like in Bulgaria).

According to *International Cooperative Alliance* (n.d.), cooperatives are democratic organisations controlled by their members. The partnership in cooperative is open and voluntary. Each member may actively participate in setting cooperation's policies and making decisions. Just as the status of cooperatives is regulated in different ways in particular EU countries, the profit earned and paid to its members by the cooperatives is also treated differently. It may be paid to its members in proportion to their equity interest or to their participation in the cooperative's operations throughout the year. Such a payment will also be taxed differently from one EU country to another. In some EU countries payments made in proportion to the operations of Members with the cooperative are considered tax-deductible expenses but payments to its members in proportion to their equity interest are non-deductible for tax purposes. In other EU Member States, it is the payments in proportion to capital that are tax-deductible while the payments made in proportion to operations with the cooperative are not tax-deductible.

Associations and foundations. Another type of corporate CIT payers in the EU are associations and foundations. The doctrine indicates that the difference between a foundation and an association is related to the division of legal entities into establishments, the basic example of which is the foundation and the corporations to which belong associations. Corporations are a group of natural persons related to a legal person through membership, which pursues a common goal. The establishments, on the other hand, satisfy the needs of natural persons who are not their members. It should be emphasized that the

substrate of the corporation are people and the plant - its assets. The most important issue for a foundation is its founder and a fund. The founder decides about the goals and directions of the company's operations, he also determines the method of appointing the bodies of the legal entity, while in the corporation it is its members that decide about the goals and activities of the corporation.

Associations and foundations are the most common legal forms for non-profit organisations. They are present in all EU jurisdictions and are subject to specific legal regulations that vary widely from country to country. The main differences between them result from the application of different legal solutions for associations and foundations in particular EU countries. The differences are already visible in the types of legal acts regulating these corporations. For example, in Germany and Italy it is the Civil Code, in France it is special laws, and in Belgium it is the Code where they co-exist with companies and other types of organisations.

Thus, despite the lack of common definitions of association and foundations among EU countries (Italy does not define them at all), there is their common basic concept and having legal personality. The association may but does not have to conduct economic activity. In principle, it is a corporation of two or more natural and/ or legal persons, established for the purpose other than the distribution of potential profits from economic activity (European Parliament, 2021, p. 56) although it may promote the commercial or professional interests of its members whose participation in the association is voluntary (European Commission, n.d.). Associations are mainly providers of healthcare, care for children and the elderly and of other social services.

There is no capital contribution to the associations, but membership fees apply. The source of income for the association may be membership fees, subsidies, donations, paid statutory activities, bank interest, etc., as well as the value of items received by the organisation in connection with its activities. Association costs are expenses incurred over a period to achieve, maintain or secure a source of income. Revenues less costs give income that, apart from the exceptions mentioned by the national legislators, is subject to CIT. Such an exception may be Membership fees, which, depending on their destination, may or may not be subject to taxation. Thus, in the case of associations established in Poland, Membership fees allocated to the statutory activity of the association are exempt from income tax. The contributions for economic purposes will not benefit from this exemption.

The income from association's activity is used to pursue its statutory goals, and not to be distributed among its members. While associations usually promote trading or professional (like advocacy representation services) interests of their members, foundations allocate their resources to projects or activities for the public benefit. They may finance the research, voluntary work, healthcare and care for the elderly but also provide grants for individuals. Foundations are run by appointed trustees and their capital is supplied through donations and gifts as opposed to associations funded mainly with membership fees.

The subject of CIT taxation by associations and foundations depends on the legal regulations in particular EU countries. In France, for example, it depends on whether the association or foundation in question carries out profit-making activity and if this activity is predominant and not marginal (European Parliament, 2021, p. 30). The entity's business profile in terms of taxation also plays a major role in Germany. Regardless of the legal form of incorporation, an entity is subject to CIT if it makes a profit and is not a public benefit organisation (PBO). Obtaining the status of PBO requires that it conducts a specific type of altruistic, spiritual, moral or similar non-profit activity serving the entire society. Thus, organisations that carry out non-profit activities in the field of science and research, religion, art and culture are exempt from CIT (European Parliament, 2021, p. 35). The situation is different in Italy, where associations and foundations are, in principle, subject to CIT. However, as non-commercial entities (opposed to commercial entities) they benefit from specific provisions that may fully or partially lead to tax exemption (European Parliament, 2021, p. 52). It should be noted that there are different CIT exemptions in different EU Member States for income resulting from various activities of associations and foundations.

Partnerships. Capital companies are the basic, but not the only type of company CIT payers in the EU. In some EU countries CIT payers also include partnerships. According to *Legal Dictionary* (n.d.) partnership company is *"an association of two or more persons engaged in a business enterprise in which the profits and losses are shared proportionally"*.

An important feature that distinguishes a partnership from a capital company is the difference in the level of responsibility of shareholders and partners for the company's obligations. In general, partners are personally liable for the company's obligations with all their assets. Their responsibility is joint and several what means that if the creditor is unable to satisfy his claims against the assets of one of the partners, the other partners are liable for these obligations on the basis of solidarity. Such liability of partners results from the fact that

partnerships are usually devoid of legal personality. There are, however, exceptions to this rule, in some EU countries partnerships have legal personality e.g. in Slovenia, Germany with partnership limited by shares, Kommanditgesellschaft auf Aktien, KGaA (Deloitte, 2020) and Greece. Partnership companies are the element the most differentiating the groups of CIT payers the most in the EU. Some of partnerships are recognised as CIT payers only in certain EU countries, such as: Belgium, Bulgaria, Czechia, Greece, Spain, Croatia, Lithuania, Luxembourg, Hungary, Malta, Austria, Poland (concerns limited partnership, limited joint stock partnership and, under some conditions, general partnership), Portugal, Romania, Slovenia, Slovakia. One of the reasons for the coverage of certain partnerships with CIT is the legislator's prevention of tax optimisation.

Taking into account CIT payers in the EU, it should be stated that despite the fact that there are the same types of entities, they are defined differently in each EU country, they enjoy different tax reliefs and exemptions. Moreover, in the case of limited liability companies, being a CIT payer is determined by their legal form, while in the case of associations and foundations, the type of activity they conduct often decides.

Legal personality is one of the first criteria mentioned when classifying a given entity to the group of CIT payers. However, not all legal entities will pay such tax. Particular EU countries provide for numerous exceptions in this respect, usually enumerating the entities excluded. A specific solution is a recognition as CIT payers also companies having their seat or management office in other countries, provided that in their country they are treated as legal persons and are subject to tax on income. This means that even if a given type of enterprise is not recognised as a CIT payer in a given country, then in the case of a foreign company recognised as such a taxpayer in its country, this solution will also be respected in the host country.

Tax capital groups and group taxation. In many EU countries tax capital groups (TCG) constitute a separate category of CIT payers, however, only some of the EU Members offer the possibility of taxing companies in groups treated as a one taxpayer and the very method of their taxation differs between particular countries.

The capital group is made up of entities, one of which is dominant, while the others are dependent on it. Two entities between which there is a capital relationship are enough to create a capital group. The dependence between the companies is mainly of a capital nature.

The parent company holds, directly or indirectly, the majority of the total number of votes in the subsidiary, it may manage the financial and operating policy of the subsidiary or has the right to appoint and dismiss Members of the management, supervisory or administrative bodies of the subsidiary or may appoint management, supervisory and administrative board. Such dependence can also be manifested in exerting a significant influence, even by a natural person from the management in one company on the functioning of another enterprise.

There can be distinguished three theories of capital groups taxation, two of them are opposed: the theory of separate entities taxation and the theory of economic unity and the third one is a compilation of the two previous methods (Toborek-Mazur, 2010).

The first theory assumes separate taxation of the entities in a group due to their separate legal personality as well as due to the theory of income. This theory says that the income can only be attributed to natural or legal persons and not to an entity formed solely on the basis of economic criteria (Gomułowicz & Małecki, 2013).

In the separation theory, legal aspects are superior to economic ones. Therefore, a natural consequence here is the separate tax subjectivity of the companies in the group which causes unfavourable consequences for them. The separate taxation of entities in the group results in their treatment as separate economic entities and the application of the arm's length principle. The principle says that the entities should treat each other as separate independent economic operators and use non-preferential market prices, the same as the prices charged in a comparable transaction between the unrelated parties. Transactions between group entities are not then tax neutral. The separate taxation also means that there is no possibility of mutual coverage of the losses of one company of the capital group with the income of another company of the same group. In this case, there is only the right to long-term loss coverage (Małecka-Ziembińska, 2014).

The theory of economic unity treats the capital group as a whole. The decisive factor here is the common economic goal of the companies, so economic aspects take precedence over the legal ones. This theory assumes that the taxpayer is a capital group and its entities do not have tax subjectivity. The group's result is subject to taxation as the sum of income and losses of its individual units. All the operations between the companies in the group are treated as internal turnover, have no legal effect and does not result in double taxation. Settlements within the group are therefore tax neutral and do not affect the tax base. This

form of taxation has many advantages. Above all, it helps to avoid the excessive fiscalism that occurs with the separation theory (Toborek-Mazur, 2010).

In addition to avoiding multiple taxation, especially of dividends paid to the parent company by subsidiaries, the main benefits of treating the capital group as an economic unity include, among others: eliminating the taxation of unrealised profit amounts arising in connection with internal turnover, consolidation of the financial results of companies (Gajewski, 2005), as well as the right to use internal prices, and thus the elimination of burdensome documentation regarding the use of transfer pricing (Toborek-Mazur, 2010).

It may also happen that a given country adopts a mixed system for taxation of the capital group, compiling the principles of the theory of separate entities taxation and economic unity taxation. Such a mixed system of taxation of capital groups occurs for example in Germany and Denmark. In Denmark, a capital group does not have a separate tax subjectivity and its definition corresponds to the group definition for accounting purposes. However, all Danish resident companies and Danish branches that are Members of the same Danish or international group have to file a joint group tax return as there is a compulsory tax consolidation system. Companies as a group are therefore taken into account together at the time of consolidation. The parent company participating in the tax consolidation is designated as the management company and is responsible for the tax settlement and final payment of the corporate income tax of all Members of the group. Companies are jointly and severally liable for payment of corporate tax, also in case of withholding taxes on dividends, interest and royalty payments (PricewaterhouseCoopers, 2021).

In the case of Germany, the parent company, i.e. company with more than 50 % of voting rights in a subsidiary with headquarters in Germany, may enter into a Profit and Loss Accounting Agreement (PLAA) with it. Such a contract must be concluded for a period of at least five years. As a result of the contract and after meeting additional conditions, there is created so-called *Organschaft*. Its annual results are summed up at the parent company level. A subsidiary is only taxed for compensation paid to external minority shareholders, if applicable. Thus, intra-group profits and losses can be netted off, but there is no provision for eliminating intra-group profits from the total tax base.

Taking into account the numerous advantages of taxation of a capital group in accordance with the theory of economic unity, many EU countries have opted for such taxation. Nevertheless, the way groups are taxed varies from country to country except for elements

of harmonised taxation of cross-border transactions. It is about avoiding double taxation or preventing tax avoidance.

In 2020, the possibility of group unity taxation at the country level in the EU was offered by 11 countries, i.e. almost 40% of all EU countries. Such a possibility of settling the tax capital group is provided by: Belgium, Spain, Italy, Lithuania, Luxembourg, the Netherlands, Austria, Poland, Portugal, Slovakia and Sweden (European Commission, 2021). The solutions used in these countries differ one from another. Each of the EU countries that provide the possibility of tax settlement jointly for tax capital groups determines different legal requirements for their establishment and operation. In terms of various solutions regarding the taxation of capital groups in the EU, there can be, inter alia, distinguished three following basic systems containing elements of joint taxation: fiscal unity regime, group contribution, group relief system.

The unquestionable advantage of taxing capital group as unity in some countries is the possibility of mutual compensation of revenues and losses of related companies (fiscal unity regime). It happens in the case of full consolidation of assets and liabilities and profits and losses. Therefore, profits of one company can be offset against losses of another company forming part of that fiscal unity. There also are no inter-company transactions within the fiscal unity. TCG companies are allowed to apply the facilities at transfer pricing. Underselling or overstating the prices of intra-group transactions in relation to market prices may take place without the risk of their verification by the tax authority. TCG companies are also exempt from the obligation to prepare transfer pricing documentation.

Capital groups are often created for operational reasons and aimed at limiting the risk of business activities, mainly financial through diversification of operating activity and a wide portfolio of clients. The downside of the TCG is that the companies forming the tax capital group are jointly and severally liable for the CIT liabilities of the tax capital group for the duration of the agreement on establishing a tax capital group. There is therefore a potential risk for each company from a group that it will have to cover tax liabilities of all of them.

In principle, the possibility of settlements within a tax capital group between companies resident in one country means joint settlement of the tax due, i.e. simplification of the procedure for settling corporate income tax. The entity responsible for tax settlement is the parent company.

For CIT purposes, the tax capital group is treated as a single taxpayer, represented by the parent company responsible for tax settlement but the conditions for such treatment vary from one EU country to another. For example, in the Netherlands the tax unity regime is available to companies whose head office or place of effective management is registered in the Netherlands and whose parent company owns at least 95% of the subsidiaries (vertical tax unity regime between residents). Similarly, it is possible to form a fiscal unity with a permanent establishment (PE) of a non-Dutch but EU resident company as the parent of the fiscal unity if this PE holds at least 95% of the shares in a Dutch subsidiary (cross-border vertical tax unity between parental EU, PE and Dutch subsidiary). What is more, there is also possibility to form a horizontal tax unity between two or more Dutch resident "sister" companies if a non-Dutch EU resident holds at least 95% of the shares in both Dutch companies. At last, there can be formed a Dutch fiscal unity between Dutch entities that are linked via a non-Dutch resident EU intermediary holding company (PricewaterhouseCoopers, 2021).

In Luxembourg, as a rule, for the tax settlement of companies as one tax group, they are required to be Luxembourg residents, parent company should possess directly or indirectly at least 95% of the capital of each and each company's financial year must begin and end on the same day. The minimum period of tax unity in Luxembourg is five years. In that time the taxable income/loss in the tax group is calculated as the sum of the taxable income/loss of each integrated entity. Tax losses incurred by a group member in the period of consolidation are set off against tax profits of other group Members. However, tax losses arising in the consolidation period which remain after consolidation, are assigned to the parent company. Tax unity is also possible in case of Luxembourgish PE companies established in any country and liable for tax comparable to CIT in Luxembourg (PricewaterhouseCoopers, 2021).

An interesting solution adopted in 2020 in Luxembourg is the possibility of transforming a tax capital group in the horizontal regime into a vertical regime. In 2015, the country introduced the possibility of creating horizontal tax unity for resident subsidiaries of the same non-resident parent company. However, for a possible change from vertical to horizontal unity, the Luxembourg law provided that the existing vertical structure had to be resolved first. Court of Justice of the EU (CJEU) ruled that this requirement is contrary to EU law (CJEU, 2020 C-749/18; KPMG, 2021).

In turn, the conditions for a neutral transition from vertical to horizontal fiscal unity provide, inter alia, that an integrating parent entity of an existing group becomes an integrating subsidiary of a new group, and that the newly created group must have a broader scope than the existing group (KPMG, 2021).

In Poland taxation of capital groups is also carried out on the basis of economic unity. It should be noted, however, that the empowerment of a tax capital group takes place only within the scope of CIT and no other taxes. Such situation leads to a kind of dualism in the sphere of taxation (Małecka-Ziembińska, 2014). It is true that from January 1, 2023, Polish companies can form VAT groups, but on completely different terms than for CIT purposes and without the participation of foreign companies.

Tax regulations relating to capital groups vary between EU countries. First of all, capital groups will not be considered a taxpayer in all EU countries. The possibility of creating tax capital groups is offered only to some EU countries. And if companies already have the possibility of forming a tax capital group in a given country, the way it is created, operated and taxed varies in the EU countries. For example, a Polish tax capital group (TCG) may only be constituted by capital companies registered in Poland and if the average share capital of each of them is not lower than PLN 0.25 million. Subsidiaries in the group may not hold shares in the share capital of other companies that make up this group. On the other hand, the parent company must have a direct share in the share capital of each of its subsidiaries in the amount of at least 75%. This means that in the case of a Polish TCG, the only possibility is vertical economic unity between the residents and that the companies with parent company's indirect stake are excluded from the group. In addition, Polish law requires that the companies belonging to the group have settled all the tax payments.

The tax capital group is established for a period of at least three tax years on the basis of a written agreement concluded between the parent company and its subsidiaries (Act, 1992). Transactions within a tax capital group are not subject to transfer pricing regulations. However, in the case of transactions with related entities but outside the tax group, companies from the group cannot establish conditions that differ from those that would be agreed by unrelated entities. This solution is to prevent the transfer of profits to foreign related companies in order to avoid taxation.

In the case of a tax capital group, the subject of CIT taxation is the income it earns in a given tax year. This income is the sum of the income of all companies in the group minus the

sum of their losses. Income tax and advance payments for this tax are calculated, collected and paid by the parent company but the group companies are jointly and severally liable for the group's income tax liabilities for the period of the group's existence.

In the case of the group contribution system group companies are not consolidated for CIT purposes but may achieve the same goal by offsetting their taxable income and losses with the help of group contributions. Contributions are a kind of interest-free deposit, lump sum cash payments based on annual taxable income. They may be used, for example, by transferring profits and, at the same time, net assets from a subsidiary to its parent company. The possibility of making such a contribution to tax deductible costs for the granting company (contributor) and at the same time recognising it as taxable income for the receiving company (recipient) depends on a number of conditions. For example, in Finland, among other things, both companies must be Finnish residents for tax purposes[6] and belong to a group in which the parent company is required to hold at least a 90% stake of its subsidiary. It may own the shares either directly or indirectly with its subsidiaries. Additionally, the group structure should exist throughout the financial year. None of the companies can be a financial or insurance institution and the contributor can only be a company that is profitable. It is also important that the accounting period for both companies ends on the same day and that the amount of the contribution did not exceed the taxable income from the economic activity of the granting company (PricewaterhouseCoopers, 2021).

A transfer of profits from a subsidiary to its parent company is more often done through the payment of dividends than through group contributions. Group contributions are more efficient as they allow for a faster transfer of income. It is worth noting, however, that if the profits from previous tax years are transferred to the parent company or if the income is to be transferred to a foreign company, the only way is to pay a dividend.

The third method of taxation of a capital group is the tax relief system used, for example, in the ex-EU Member- the United Kingdom and in Ireland. In the United Kingdom each corporate group Member has to submit individually their own tax return on a stand-alone basis. Operating taxable profits and losses arising in the same period can usually be offset

[6] The exception applies to the Finnish permanent establishment of a company established in an EEA Member State or a country subject to a tax treaty. Such a PE may also be involved in a group contribution.

between resident group members in United Kingdom. Group relief system allows company group members to transfer certain corporation tax losses to other members of the group. In turn, the transferred loss reduces the amount of CIT that the recipient company must pay. The solutions used in the United Kingdom and in Ireland show basic similarities. In the case of these two countries the companies are considered group members if there is a 75% capital relation between domestic parent company and the domestic subsidiaries. In the case of the United Kingdom, it is also possible, after fulfilling additional requirements, to offset British profits attributed to a British PE of a non-British resident group member. Similar solution is used in Ireland. The original British solution predicts a "de-grouping" fee if the transferee company leaves the group within six years.

Figure 1 shows the breakdown of the EU countries with its former Member – the United Kingdom into three clusters in terms of capital group taxation.

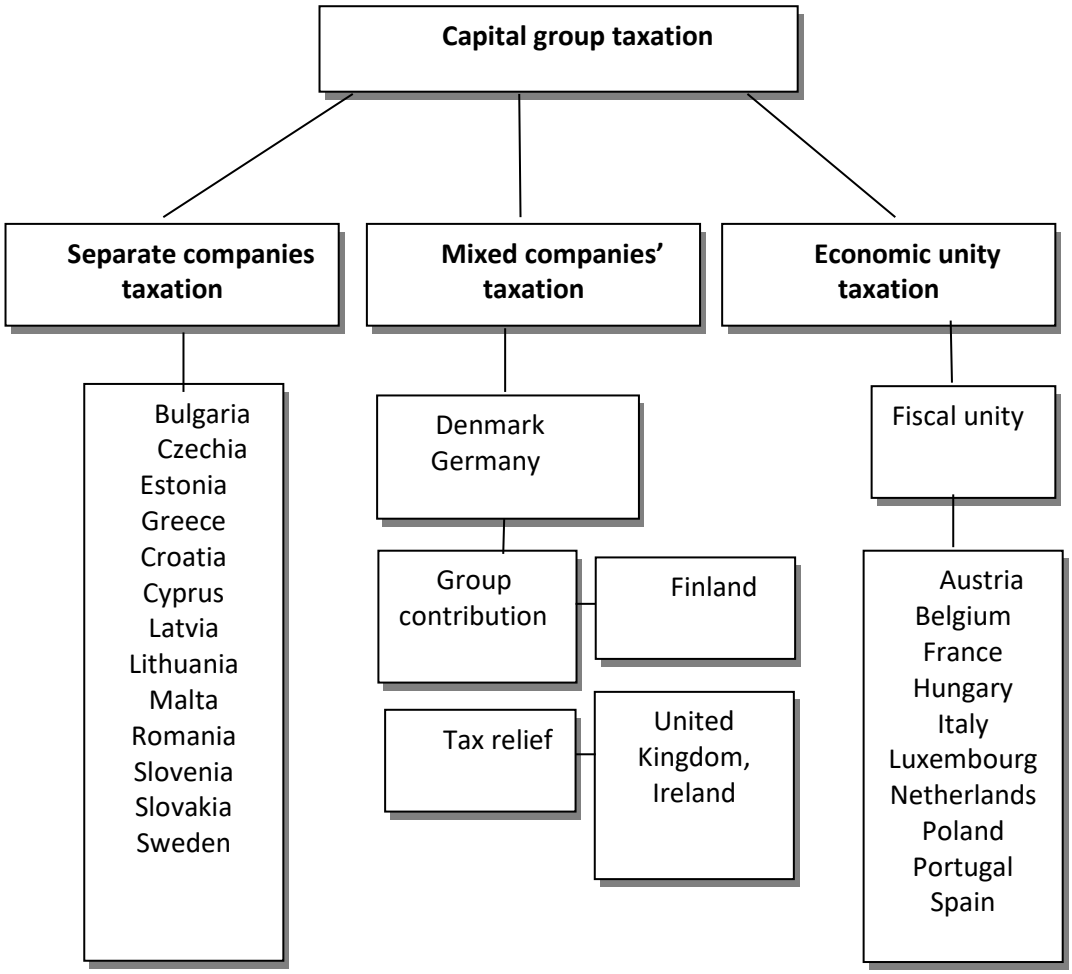

Figure 1. Division of EU countries including former EU Member the United Kingdom according to the method of taxation of capital groups.
Source: Own study based on European Commission, Taxes in Europe Database v3, 2021.

Thirteen out of twenty-eight countries of the then Union applied a strictly separate taxation of companies within a capital group. This means that there were no consolidation of profits and losses among the Members of the capital group. Each of the companies accounted for CIT separately. Ten countries use a system of joint taxation of companies within a group, i.e. the system of fiscal unity. This does not mean that they have the same solutions but are based on the same principles. The basic rule is that the group is treated as a single taxpayer. Five countries in the Mixed companies' taxation cluster treat individual companies in the group as separate taxpayers but allow the application of certain joint taxation rules. In Denmark, the capital group is not a separate taxpayer, but is required to settle CIT for all companies jointly and group Members are jointly and severally liable for tax liabilities. In Finland, group contributions by companies have the same effect as the consolidation of gains and losses in fiscal unity.

In the United Kingdom and Ireland, each group company files its own tax return separately, but operating profits and losses can usually be offset between the resident group members.

Elements of joint tax settlement of a capital group were underlying the EU's last CIT harmonisation project. *The Common Corporate Consolidated Tax Base* was intended as mandatory for capital groups operating in the EU and achieving global annual revenues in excess of EUR 750 million. This requirement is also repeated in the Directive 2022/2523 with regard to the suggested harmonisation of the minimum CIT rate. The Directive will be discussed in more detail in Chapter III. At this point, it is worth noting that both the CCCTB project and the 2022/2523 Directive refer to the concept of group taxation, but they do it in a different way. The CCCTB assumed the common consolidated tax base for the companies in the group which meant that each of the companies in the group would calculate its tax base according to the uniform EU rules set out in the directive. Thereafter, the profits and losses of all group entities would be netted off. The Directive 2022/2523 refers to the concept of a group taxation only within the scope of calculation of the common effective CIT rate of the entities in the group in each EU State, therefore on the jurisdictional level.

Common to the CCCTB and the Directive 2022/2523 is the special role of the parent company in the group responsible for calculating and paying tax to its tax office. The CCCTB project did not require entities to create tax groups as separate taxpayers, nor does the Directive 2022/2523.

2. Differences in the CIT tax base affecting the differentiation of the tax burden in particular EU countries

In addition to the subjective scope i.e. taxpayers, the main structural elements of CIT include, among others objective scope — the tax base, subjective and objective exemptions and the tax rate.

Income. The object of taxation in CIT is primarily income but, in some cases, such as payment of dividends, it may be the revenue. Corporate income tax is levied on the income of units recognised by the law of particular countries as corporate taxpayers. These are legal persons, such as capital companies, cooperatives, associations, foundations, entities without legal personality, such as companies in organisation and partnerships but also tax law institutions created in some countries only for CIT purposes, i.e. tax capital groups.

As a rule, the entire income of CIT taxpayers from all sources, including income not related to business activity, as well as income from economic or commercial activity, is included in the tax base. Income is the sum of revenues reduced by the costs of obtaining them in a given tax year in accordance with their book value determined based on accounting documents, in accordance with the relevant accounting standards of a given country and International Financial Reporting Standards (IFRS). It is worth adding that the EU adopted IFRS in 2002 as the required financial reporting standards for all European companies preparing consolidated financial statements. This solution is effective in 2005.

Taxable income arises if the sum of revenues obtained from their individual sources exceeds the sum of the costs assigned to them, in other words, the revenues obtained must be higher than the costs of obtaining them.

Revenues. The definitions and sources of revenue obtained from different legal sources vary in EU countries but include revenues from business activities and from capital gains.

Capital gains include, inter alia:

- revenues from participation in the profits of legal persons (including e.g. dividends, revenues from redemption of shares, from liquidation, revenues obtained as a result of mergers and divisions);
- other revenues from shares, including their exchange, sale or sale for redemption;
- revenues from the in-kind contribution;

- revenues from the sale of receivables previously acquired by the taxpayer and receivables resulting from revenues classified as capital gains;
- revenues from property rights (copyrights or related property rights, licenses, industrial property rights and know-how);
- income from securities and derivative financial instruments (with a few exceptions e.g. derivatives used to hedge revenues or costs, not included in capital gains, are not included in revenues);
- income from participation in investment funds;
- income from lease, tenancy or other agreement of a similar nature.

All revenues that are not listed in the capital gains revenues catalogue are revenues from other activities. Annex I of the *Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains* contains a classification of economic activities in the EU and enumerates its 99 divisions from agricultural production through construction and various types of services to activities of extraterritorial organisations and bodies. Thus, revenues from business activities conducted by the company as well as obtained capital gains are included in the income. As a rule, capital gains (apart dividends) paid in one country are subject to standard CIT taxation which means, in principle, the use of the same tax rate and methods of deducting costs as for income from business activities. In 2021 only two EU Members had their capital gains totally (Cyprus) or partially excluded (Sweden capital gains, other than dividends on shares).

Revenues from capital gains in cross-border transfers. Depending on the tax system, income from capital gains may be taxed in a different way in the case of cross-border transfers. In some countries there is a problematic question of *economic double taxation*. The problem with double taxation in the economic sense arises in the case of taxing the same income (the same object of taxation) in the same tax period with two different entities (different taxpayers). Such a situation takes place, for example, when imposing a tax on income generated by a capital company, both at the level of the company and at the level of partners. Classic tax systems allow for the existence of such double taxation while an imputation system minimises this problem by the possibility of deduction of all or part of the already paid corporate income tax when calculating the income tax payable by the recipient

of the dividend. However, in the case of cross-border transfers, the situation is more complicated and there are additional solutions for capital transfers. Most often, there is double taxation in the legal sense which means that in the same tax period, the same income of the same taxpayer is taxed twice (identity of the subject and object of taxation). This is the case when identical or similar taxes are imposed on the same income in two different countries. This situation may arise in the case of cross-border activities of a taxpayer or cross-border transfers of capital, where no double taxation treaty exists between countries. While the legal regulations concerning the types of economic activity in particular EU Member States have not been harmonised, in the case of income from capital gains, the EU has partially harmonised them. These regulations concern mainly issues of cross-border transfers of capital gains like the exemption of dividends, interest and royalties from withholding tax (WHT) in order to eliminate double taxation and arbitration proceedings in the event of disputes over profits. The reason for this is that the capital is one of the most mobile factors today, it is also used frequently by transnational corporations for cross-border tax optimisation.

The analysis of the data of the European Commission shows that the element that differentiates the EU countries the most in terms of the tax base is the issue of including income from dividends and agricultural activity in it.

Revenue from dividends. With regard to the most visible diversification of the CIT regulations in terms of capital gains, the cross-border payments are the most differentiating and problematic element and the taxation of dividends is the most complicated. The rules of CIT taxation in the EU countries vary greatly within this scope. The word *dividend* comes from Latin and means *a thing to be divided* (Latin *dividendum*). Dividend payment is therefore one of the methods of profit distribution characteristic of a capital company. The distribution of profit most often consists in the payment of money to the beneficiaries – a natural or legal person or an entity without legal personality. Profit distribution may also take place in a non-cash form through compensation from the company's receivables from the shareholder or in kind, e.g. by handing over movable or immovable property. In each case, such profit distribution entails tax consequences, most often the obligation to collect and pay tax to the tax office, the most often by the company paying the dividend, i.e. the CIT payer (Organ et al., 2023).

The dividends themselves are highly varied and divided into many types, such as cash, stock or property dividends. There are also *deemed dividends* (e.g. in Latvia and Estonia). They represent that part of the profits for which the share capital is increased by CIT, not withheld until the payment of dividends and the reduction of the share capital. In that case CIT is applied almost exclusively to distributed profits (deemed profit distribution). Dividend profit then arises when it is actually received. Therefore, it does not apply to dividends due but not paid. Such differentiation offers an opportunity for tax optimisation, also when using accounting principles, and can sometimes lead to the deliberate issuance of dividends by the company to alter taxable and reported income. It is worth mentioning the so-called *hidden dividend*, i.e. distribution of profit to shareholders in a way that reduces the taxpayer's income by classifying the payment as tax deductible costs. Such deduction should not take place because in the case of dividend payment, it is the revenue, not the income that is taxed. The reason for dividends diversification into different types is mainly connected with the level of dispersion of the shareholding structure, but also results from the adjustment to state's and legal regulations.

Dividends can be paid not only by domestic companies to domestic entities. Very often they are the subject of international transfers, they can be paid to domestic entities by foreign companies, and domestic companies can pay dividends to foreign entities. Paying out dividends is the most common way of transferring profits, but they also constitute the type of revenue for which, despite partial harmonisation, the EU countries apply the most diverse CIT solutions. Both, in the case of foreign and domestic dividends there may occur the so-called *double taxation*.

As a rule, dividends paid to residents by domestic companies are excluded from their tax base, because income tax is paid by the beneficiaries, i.e. shareholders and stockholders, most often natural persons, but also legal persons or persons without legal personality. However, there are countries where double taxation of domestic dividends occurs, first at the level of the company, then at the level of the beneficial owner. It should be noted that in this case, the dividends paid are very often not included in tax deductible costs. If dividend income is included in the CIT tax base, the applicable tax rate in a given country applies. Dividends can not only be taxed twice in one country: at the level of the company and shareholders, but also in the case of a foreign transfer, their taxation will differ significantly

depending on which country they are paid from. For this reason, they are also one of the main tools for tax optimisation.

The matter with taxation of dividends paid abroad is more complicated for several reasons. Income from such dividends in the case of companies associated with EU countries will be, under *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* (2011) (The Parent-Subsidiary Directive, PSD), excluded from the tax base of the companies that distribute dividends. In the case of companies from EEA countries or with which particular Member States have signed agreements on the avoidance of double taxation, the income from outgoing dividends will be excluded or the CIT rate will be the same as for domestic companies or another. In the case of collecting tax on outgoing dividends by the state in which the paying company is located, the countries with which it has signed agreements may apply the settlement of dividend taxation using the tax credit method, and those with which the state does not have an agreement - most often apply tax deduction to avoid a situation of double taxation.

Detailed regulations apply to the situation depending on whether it concerns portfolio dividends (shareholders with shares up to 10% in the company's income, dispersed shareholding) or above this threshold (stockholders). In most EU tax jurisdictions, cross-border payments of passive income such as dividends, interest, royalties, license fees or some intangible services are taxed in the form of withholding tax (WHT). WHT is a specific form of CIT as a rule applied at the national rate — in the absence of an applicable double taxation avoidance agreement. In the case of a double taxation agreement concluded between countries, taxpayers from these countries may apply to the capital payments tax rates from such an agreement, especially if they are lower than the statutory rates.

The EU implemented directives on capital transfers between related companies constitute, in a sense, partial harmonisation in the area of income taxes. These are mentioned earlier The Parent-Subsidiary Directive and *Council Directive 2003/49/EC on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States (*Interest and Royalty Directive, IRD). The purpose of the directives is to eliminate double taxation of the distribution of EU MNE profits, both in legal and economic terms (tax exemption by the parent-subsidiary regime).

The rules for calculating income in the EU countries are similar, as shown in Table 1 prepared on the basis of data from the European Commission (2021). It can be concluded from the table that EU countries have special and more diversified solutions for dividends taxation than for other income.

Table 1. Chosen elements in CIT tax base calculation in 2021

EU Member	Income inclusion in tax base	STR	Income (revenue) from dividends					
			Domestic companies/residents	EU	Outgoing WHT			
					Treaty countries		Non-treaty countries	
					STR	Settlement method	STR	Settlement method
Austria	income from: business activities and capital gains like interest, royalties, immovable property, movable property	25%	CIT exempt	CIT exempt according to The Parent-Subsidiary Directive	25%	Tax credit	25%	Tax credit
Belgium		25%	subject to CIT		30%	Exemption Tax credit	30%	Deduction
Bulgaria		10%	CIT exempt		5%	Exemption	5%	Tax credit
Croatia		18%	CIT exempt		10%	Deduction	10%	Deduction
Czechia		19%	CIT exempt		15%	Exemption Tax credit	35%	Deduction
Denmark		22%	subject to CIT		15%	Exemption Tax credit	27%	Exemption Tax credit
Estonia		20%	CIT exempt		0%	Exemption Tax credit	0%	Exemption Tax credit
Finland		20%	CIT exempt		30%	Tax credit	20%	Tax credit
France		26.5%	subject to CIT		0%	Exemption	30%	Exemption
Germany		30%	CIT exempt		25%	Exemption	25%	Exemption system
Greece		22%	subject to CIT		5%	Tax credit	5%	Tax credit
Hungary		9%	CIT exempt		9%	Exemption Tax credit	9%	Tax credit
Ireland		12,5%	CIT exempt		25%	Tax credit Deduction	25%	Tax credit Deduction
Italy		24%	Subject to CIT		26%	Exemption Tax credit	26%	Exemption Tax credit

Latvia		20%	subject to CIT- when distributed		0%	Exemption Tax credit	0%	Exemption Tax credit
Lithuania		15%	CIT exempt		15%	Exemption Tax credit	15%	Tax credit
Luxembourg		17%	Subject to CIT		15%	Exemption	15%	Tax credit
Malta		35%	subject to CIT		0%	Tax credit	0%	Tax credit
Netherlands		25,8%	subject to CIT		15%	Exemption	15%	Exemption
Poland		19%	subject to CIT		15%	Exemption Tax credit	19%	Tax credit
Portugal		21%	subject to CIT		15%	Exemption Tax credit	25%	Exemption Tax credit
Romania		16%	CIT exempt		5%	Exemption Tax credit Deduction	5%	x
Slovakia		21%	CIT exempt		0%	Exemption Tax credit	35%	x
Slovenia		19%	CIT exempt		5%	Tax credit	15%	Tax credit
Spain		25%	1,25%		15%	Exemption Tax credit	19%	Exemption; Tax credit
Cyprus	capital gains excl.	12,5%	CIT exempt		0%	Exemption	0%	Exemption
Sweden	capital gains on shares excl.	20,6%	CIT exempt		30%	Exemption	30%	Exemption
United Kingdom (2020)	income from business and capital gains; dividends excl.	19%	CIT exempt		19%	Exemption	19%	Exemption

Source: Own study based on data from the European Commission, Taxes in Europe Database v.3, 2021; PricewaterhouseCoopers (n.d.) Worldwide Tax Summaries.

STR- statutory (or nominal) tax rate- tax rate set by law.

In twelve EU countries domestic dividends are subject to CIT under different national rules, in fifteen countries (and in the United Kingdom as ex-EU Member) they are CIT exempt. For dividends paid between related companies located in the EU, there are common harmonised rules described in EU directives. The national regulations are consistent with the directives, but it should be remembered that directives are binding only as to the effect and the deadline for its achievement and that it is up to the EU Member States to choose the means used to achieve the effects set out in the directive. This is confirmed, for example, by Article 7 (2) of the Parent-Subsidiary Directive. The article provides that the directive "*shall not affect the application of domestic or agreement-based provisions designed to eliminate or lessen economic double taxation of dividends, in particular provisions relating to the payment of tax credits to the recipients of dividends*". EU states have then common obligatory part concerning taxation of some part of capital gains and additional separate legal regulations.

Thus, summing up the principles of calculating the CIT tax base, numerous similarities can be noticed. Namely, the rule is to include all income from the activities of enterprises and majority of capital gains, except for dividends, the settlement of which is differentiated.

Almost half of the current EU countries include dividends in the CIT tax base. In most cases, this means economic double taxation of domestic dividends, i.e. taxation at the level of the paying company and the domestic beneficiary. Typically, domestic dividend income is taxed at the nominal CIT rate. In this case, the nominal rate without additional surcharges (STR) should be taken into account. However, some countries provide for the possibility of making large deductions in such income. For example, in Italy companies paying domestic dividends (for domestic beneficiaries) and receiving dividends from treaty countries may deduct 95% of the dividends amount from the tax base. It is worth mentioning that, unlike other capital gains, in the case of dividends there is no holding period for shares in the paying companies or minimum ownership percentage to qualify for this exemption.

On the one hand, for companies that receive income from dividends from investments in shares and other financial instruments held for trading and placed in LTJ, the income is fully taxable according to nominal or even higher CIT rate. On the other hand, dividends distributed from Italy (outgoing dividends) are taxed at a rate higher than the national nominal CIT rate, at the level of 26%. This applies both to countries with which Italy has

double tax treaties (DTTs) and countries with which there is no such agreement. The exceptions include the taxation of dividends paid by subsidiaries located in the EU and EEA (European Economic Area) countries. The Parent-Subsidiary Directive provides for the exemption of withholding tax on dividends and other distributed profits paid out by subsidiaries to their parent companies and the elimination of double taxation of such income at the level of the parent company.

Higher taxation of outgoing dividends in the EU is not a rule. Some countries apply zero (Cyprus, Malta) or lower (e.g. Bulgaria, Denmark, Croatia) WHT rates than the taxation of dividends for domestic beneficiaries. They are resulting from DTT's. In the case of Estonia and Latvia, 0% of WHT rates usually means that no CIT is taxed until the profit is distributed to the beneficiaries. Theoretically, the lower the WHT rate, the more attractive the country for investment and allocating a subsidiary there. A lower WHT rate means that the host country of the investment will charge a lower tax on the dividend. What is also important, however, is the regime in which income taxation between countries is settled. The Parent-Subsidiary Directive exempts from WHT's the dividends and other profit distributions paid by subsidiaries to the parent companies and eliminates double taxation of such income at the level of parent companies. In the case of *tax credit* parent companies can deduct any tax paid by any of the subsidiaries assuming compliance with the requirements of the directive.

The rules for collecting this tax also have an impact on the amount of the tax burden. In some countries (such as in Poland, from 2021 and binding from 2022), withholding tax payers who pay foreign entities with dividends and other income from profit sharing in excess of the set threshold (in Poland PLN 2 million), must, as a rule, collect and pay tax in national standard rate, even if WHT rate is lower. The surplus can be recovered at a later date, but the initially incurred tax burden is higher and the taxable income is higher (*pay and refund mechanism*). WHT is a flat-rate tax. Income obtained from dividends and other shares in the profits of legal persons is subject to taxation. The costs of obtaining them are not written off.

The Parent-Subsidiary Directive and the Interest and Royalty Directive have been implemented to facilitate cross-border income flows within the internal market but they are also used for reduction of the tax burden on income flowing out of the EU. According to both directives, cross-border transactions relating to dividends, interest and royalties, are no longer subject to taxation, if the capital flows have intrafirm character. Harmonisation in this

respect is therefore limited to the movement of certain types of capital between certain companies. MNEs use double treaty taxation to conduct financial operations in countries with more favourable tax conditions. This phenomenon is called *treaty shopping*. Treaty shopping is precisely a method of tax avoidance based on the application of lower WHT rates agreed in the double taxation agreement instead of higher basic rates and quite often involves the repatriation of profits.

Revenues from agriculture. In the case of income from agricultural activities, in most EU countries they are subject to corporate income tax as business activities, while in a few countries they are subject to separate taxation, for example in Poland and France. In the case of Poland, the exception is income from *the organized agricultural production departments* that would be subject to CIT. In countries where agricultural income is subject to CIT, the taxation is regulated in different ways. As a principle, one of the two tax models is used: taxation on general principles or preferential one (Gruziel, 2015). Sometimes the difference in the method of taxation results from other factors, e.g. the size or form of the organisation of farms. For example, in some countries, agricultural income will be taxed only on larger farms — agricultural enterprises (Czechia), agricultural cooperatives and producers' groups at preferential rate (Greece, Italy, Latvia, Lithuania, Hungary, Portugal), or with special preferential treatment on corporate farms in less favoured areas (Croatia). In 2018, eleven of the twenty-eight countries of the then EU did not offer preferential CIT taxation of agricultural income. These were the United Kingdom, Ireland, Denmark, Germany, Estonia, Spain, France, Slovenia, Slovakia, Finland and Sweden (European Commission, 2021). In conclusion, it is worth remembering that in most EU countries, with a few exceptions, agricultural income generated from production activities on larger farms is subject to CIT. Only some EU countries provide for preferential taxation for agricultural entrepreneurs.

Tax deductible costs. Gross income is the difference between revenues and the costs of obtaining them. Tax deductible costs can be defined as inputs or expenses incurred by the taxpayer in order to earn revenue from a source of revenue or to maintain or secure a source of revenue in a given tax year. Therefore, in order for an expense to be considered a tax-deductible cost, there must be a purposeful and causal relationship between the expense and the business activity conducted by the taxpayer, from which he obtains a specific type of revenue. An additional condition is that the legislator does not exclude this

cost from tax-deductible costs. It should be noted, however, that the occurrence of revenue is not a necessary condition for recognising the cost as a tax-deductible cost. It is enough to be able to assign it to the source of income in a given business activity of the taxpayer.

Tax deductible costs can be divided into those directly related to revenues and costs other than those directly related to revenues. In the case of costs directly related to revenues, it is possible to indicate the revenue to which the incurred cost contributed or was expected to contribute. An example of indirect tax-deductible costs may be expenses incurred for the protection of property related to the general functioning of the company, e.g. protection of warehouses, halls, production facilities, costs incurred by taxpayers in connection with the fulfilment of obligations under the law, e.g. payment of real estate tax. It will also include general administrative costs, costs of employee training, banking, legal, accounting and consulting services. Thus, these are costs that allow the taxpayer to maintain the existing source of revenue so that this source brings revenue in the future but cannot be directly attributed to a specific source of revenue. When determining the taxable income, non-taxable, tax-free revenues are not taken into account, a well as the revenues which are subject to another tax.

Depreciation. One of the most important tax-deductible costs and thus reducing the tax base are depreciation write-offs. Depreciation is a method of settling the wear or use of the company's assets, which are most often tangible or intangible fixed assets. Purchase of assets by a company that are subject to depreciation is referred to as "capital investments" or “CAPEX” (Capital Expenditures). Depreciation is accrued over the life of an asset and is intended to express the company's operating cost related to the use of a given asset of the enterprise over time. The spreading of the depreciation of costs over time is based on a concept from accountancy. Its main goal is to present a reliable picture of the company, especially the financial result. If the enterprise uses certain assets over a longer period of time, then expenses for such assets should not be charged to the financial result only in the year in which they were incurred. Therefore, the deduction of costs should be spread over time over the entire useful life of the assets used to generate revenues (principle of matching revenues and costs). Depreciation is thus performed by systematically allocating the asset's initial value over a specified period of depreciation on a systematic and scheduled basis. Examples of tangible fixed assets are buildings, technical equipment, machinery, means of transport, fixed assets under construction, improvements to fixed assets. Examples

of intangible assets are patents, brands, trademarks, industrial and utility designs, copyrights, licenses, know-how. The main feature of fixed assets is that the period of their wear or use is more than one year. They can be purchased by the company or manufactured or built on their own. As a rule, depreciation does not apply to such fixed assets as land and the right of perpetual usufruct.

It is worth mentioning that in the USA it is customary to distinguish between two terms: *depreciation* and *amortization*. Depreciation is used to denote the wear of tangible assets (machines, devices, cars, etc.), while amortization is used as a designation of intangible assets (e.g. software, patents, trademarks, brands, etc.).

In continental Europe, a single term *depreciation* is used to describe the write-offs of both tangible fixed assets and intangible assets. Then, in this paper the only used term for both: the tangible and intangible assets is depreciation.

The depreciated value cost may relate to asset's purchase, installation, implementation or enhancement. After being entered into the records, the depreciation write-offs may be classified as tax-deductible costs, provided that they are causally related to the operating revenues of a specific asset. The mechanism of depreciation write-offs means that the purchased equipment or right is recorded in the accounting books not as an expense but as a fixed asset. Then, the period of likely economic use of the device or right is determined (e.g. 5 years). Both the types of assets tangible and intangible and the period and method of their depreciation differ from one EU country to another. In Table 2, countries are grouped in terms of depreciation according to asset types and ranges of their depreciation period.

Two countries — Latvia and the former EU Member – the United Kingdom do not provide for depreciation at all.

The first type of analysed assets are buildings. They typically have the longest depreciation period compared to other assets. Of course, the period of their depreciation will vary depending on the type of building (e.g. commercial, industrial used for manufacturing). The table breaks down the countries according to the time span of the depreciation of buildings provided for by national law. The first column includes countries that provide for a depreciation period of buildings no longer than 24 years. There are only five such countries.

Table 2. Depreciation periods in EU countries 2020 according to types of assets

Buildings			
Up to 24 years	**25-39 years**	**40-60 years**	**No depreciation**
Croatia, Finland, Italy, Lithuania, Netherlands	Bulgaria, Belgium, Cyprus, Denmark, Estonia, France, Germany, Greece, Ireland, Luxembourg, Poland, Spain, Slovenia	Austria, Czechia, Hungary, Malta, Portugal, Romania, Sweden, Slovakia	United Kingdom, Latvia
Immovables (e.g. machinery)			
Up do 10 years	**11-20 years**	**Above 20 years**	**No depreciation**
Austria, Bulgaria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Hungary, Ireland, Italy, Lithuania, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden	Germany, Luxembourg	Greece	United Kingdom, Latvia
Movable (tangible) assets (e.g. cars, furniture, work equipment) & intangible assets (patents, goodwill etc).			
Up to 5 years	**6-10 years**	**Above 10 years**	**No depreciation**
Belgium, Croatia, Czechia, Estonia, France, Hungary, Italy, Malta, Netherlands, Poland, Romania, Sweden	Austria, Bulgaria, Cyprus, Denmark, Finland, Greece, Slovakia, Slovenia	Germany, Ireland, Lithuania, Luxembourg, Portugal, Spain	United Kingdom, Latvia

Source: Own study based on data from the Taxes in Europe Database v.3, 2021 and Tax Summaries of PricewaterhouseCoopers 2021

In the case of Italy, the depreciation period of buildings is 14 years, and in the case of Lithuania — 15 years. Shortened depreciation period means, in principle, the possibility of

applying higher depreciation write-offs and faster settlement of the cost of purchase or construction of such a building. The higher the tax-deductible costs, the lower the tax to pay. Therefore, such a solution is beneficial for entrepreneurs because the tax burden incurred in a given tax period is lower.

The most numerous group of countries, however, is that with a depreciation period for buildings in the range of 25-39 years. There are thirteen such countries in the EU. Eight EU countries provide for buildings depreciation period of 40 years or longer. In the case of Romania, it can even be 60 years. Countries offering the possibility of faster depreciation of buildings and a lower tax burden will therefore be a much more attractive place for the investor to locate investments. There is less variation in the depreciation period for machine type assets. In most EU countries, the coverage of their initial value with write-offs does not exceed ten years. As for movable work equipment (e.g. cars) and intangible assets (e.g. patents), their depreciation period is much shorter compared to other types of assets. In twelve countries, such depreciation is completed in up to five years, in eight countries it is less than ten years and in six countries it is above eleven years.

The attractiveness of tax solutions or the amount of the tax burden should of course be considered not only on the basis of the depreciation period, but also taking into account the method of its implementation, as well as special CIT rates offered in IP regimes.

Table 3 shows that the two most frequently used depreciation methods in the EU countries are straight-line method and declining balance. The straight-line method is the most popular and considered the simplest. The taxpayer assumes that the wear and tear of a fixed asset will be even throughout its lifetime. The depreciation write-offs of the same amount are determined in accordance with the depreciation rates. This method ensures equal distribution of the asset's costs over time. It is worth noting that in the case of fixed assets that are used more intensively, depreciation rates may be increased. Then, for selected fixed assets, a specific factor is used by which the depreciation rate of this fixed asset should be multiplied. In consequence we are dealing with accelerated straight-line method.

The second most popular depreciation method chosen by taxpayers is the declining-balance method. In this case, it is assumed that the asset's performance decreases over its useful life. Thus, in the initial period of depreciation (usually in the first year), an increased

depreciation rate is applied, i.e. multiplied by an appropriate coefficient specified by law. This method of depreciation allows for faster settlement of the cost of the asset.

One should also not forget about the individual depreciation of fixed assets or a one-time write-off of low-value assets, different for particular EU countries.

Table 3. Depreciation methods and limit rates in EU Member States in 2020

Member State	Dominant depreciation method	Assets	Applicable tax depreciation rate, additional comments
Austria	Declining-balance straight-line	All assets	From 1.5% for buildings to 12.5% for movable tangible assets (e.g. cars, furniture, work equipment)
Belgium	Declining-balance straight-line	All assets	From 3% for buildings to 20% for movable tangible assets (e.g. cars, furniture, work equipment); 33.3% for R&D
Bulgaria	No requirement for using a concrete depreciation method	All assets	From 4% for buildings to 30% fixed immovable assets (e.g. machinery)
Croatia	Straight-line	All assets	From 5% for buildings to 25% for the rest of the assets
Cyprus	Straight-line	All assets	3% (for buildings)- 20% (movable tangible assets, e.g. cars, furniture, work equipment) and fixed immovable assets, e.g. machinery)
Czechia	Declining-balance straight-line	All assets	From 2.5% for buildings to 20% for movable tangible assets (e.g. cars, furniture, work equipment)
Denmark	Straight-line	All assets	From 4% for buildings to 25% for fixed immovable assets (e.g. machinery); 14.3% for R&D
Estonia	Straight-line	All assets	x
Finland	Declining-balance	All assets (except computer software)	Maximum 25% (except lower rates for buildings)
	Straight-line	Computer software	Maximum depreciation period 10 years; The asset value can be deducted immediately if useful life of the asset is maximum three years

France	Straight-line	All assets	Different rates from 5% for building to 25% for cars. In the case of scientific or technical research equipment possible accelerated depreciation on a declining-balance basis. Acceleration multiples range from 1.5 to 2.5
Germany	Straight-line	All assets	From 4.7% for aircraft to 33% for computer hardware and software
Greece	Straight-line	All assets	From 4% for buildings to 40% for Equipment used for R&D
Hungary	Straight-line	All assets apart intangible assets (e.g. patents)	From 2% for buildings to 33% fixed immovable assets (e.g. machinery). In the case of intangible assets possible depreciation methods are straight-line method, declining balance and production method
Ireland	Straight-line	All assets	From 4% for buildings to 12.5% for movable tangible assets (e.g. cars, furniture, work equipment) and fixed immovable assets (e.g. machinery); 7% for intangible assets (e.g. patents)
Italy	Straight-line	All assets	From 5.5% for buildings to 35% for Equipment and small tools
Latvia	x	x	x
Lithuania	Declining-balance straight-line, (additionally Production method for movable (tangible) assets, e.g. cars, furniture, work equipment)	All assets	From 6.67% for buildings and intangible assets (e.g. patents) to fixed immovable assets apart buildings (e.g. machinery)
Luxembourg	Declining-balance straight-line	Different methods for various assets	From 3% for intangible assets (e.g. patents) to 7% for fixed immovable assets other than buildings (e.g. machinery)
Malta	Straight-line	All assets	From 2% for buildings to 33.33% for intangible assets (e.g. patents)
Netherlands	No single dominant method	All assets	Use of various depreciation methods under the concept of “sound business” practice

Poland	Declining-balance straight-line	All assets	From 1.5% for buildings to 50% for licenses (sublicenses) for computer programs, screening films, broadcasting radio and television programs and copyrights
Portugal	Straight-line	All assets	From 5% for plan machinery and equipment and car parks to 33,33% for computer hardware and software
Romania	Declining-balance straight-line (production method for fixed immovable assets other than buildings, e.g. machinery)	All assets	no information
Slovakia	Declining-balance straight-line	All assets	From 2.5% for buildings to 25% for movable tangible assets (e.g. cars, furniture, work equipment)
Slovenia	Straight-line	All assets	From 3% for intangible assets (e.g. patents) to 20% for fixed immovable assets other than buildings (e.g. machinery) and movable tangible assets, e.g. cars, furniture, work equipment)
Spain	No single dominant method	All assets	From 2% for building and car parks to 50% for furniture, fittings or fixtures
Sweden	Declining-balance straight-line	All assets	2% (specific buildings, e.g. hydroelectric power buildings) to 30% (many assets, e.g. computer hardware and software)
United Kingdom	x	x	x

Source: Own study based on data from the Taxes in Europe Database v.3, 2021

Production method used often in Hungary, Lithuania and Romania, assumes that the consumption of a fixed asset is the same for each work unit (e.g. piece, kilogram, hour), so the depreciation amount depends on the amount of work performed in a given period of time. The diversified approach to depreciation in the EU, especially in terms of its period and rates, means that tax issues have an impact on the decision-making by entrepreneurs about the location of the investment. Therefore, the most attractive countries are those that provide the fastest amortization of investment costs. This results in a diversified tax burden in the EU, as well as influences the tax and investment attractiveness of individual countries. Therefore, the issues of tax depreciation are not neutral for the internal market. The CCCTB directive proposal provided for the unification of the terms of depreciation but was rejected

by the EU. However, the Harmonisation Directive of 2022 provides for deductions from the taxable income of the top-up tax for entities with tangible assets. The conditions of this relief will be presented in Chapter III.

Other tax deductions and allowances. Some costs of financing enterprises may also be tax deductible or profit from tax allowance. A company is usually financed (capitalised) through a mixture of debt and equity. Excessive debt financing is often associated with the concept of *thin capitalisation*. It means the situation in which a company is financed through a relatively high level of debt compared to equity. Thinly capitalized companies are referred to as *highly leveraged* or *highly geared*.

The way a company is capitalised affects the amount of profit it will reveal for tax purposes. The tax law of many EU countries allow the deduction of interest paid or payable. Thus, the higher the amount of interest, i.e. the higher the level of debt in a company, the lower its taxable income will be. Therefore, debt financing is considered to be more tax efficient than equity. Multinationals often use the opportunity to structure their financing to maximize tax benefits. They are able to establish a tax-effective mixture of debt and equity for example through borrowing from an entity in a jurisdiction that either does not tax interest income or taxes it at a low rate (OECD, 2012). The two main approaches used by countries to determine the maximum amount of debt above which interest is not deducted are: the *arm's length* approach and the ratio approach. Under the *arm's length approach*, the maximum amount of *eligible debt* corresponds to the amount of financing an enterprise would be able to obtain under market conditions from an independent lender. This approach takes into account the specific characteristics of the entity in determining its "creditworthiness". On the one hand, the advantage of the arm's length approach, admittedly enables taking into account the actual creditworthiness of the company and eliminates the asymmetric treatment between companies that are Members of multinationals and those that are not. On the other hand, it is difficult to apply because it requires high commitment of resources (time, financial resources) and expertise on the part of tax authorities. In order to determine the correctness of the calculated debt, the tax inspector must understand the criteria used by the external lenders to determine a maximum amount of debt and should be able to determine the specificity of the entity that is indebted. Such an approach therefore requires a certain judgment, in all factual situations. In the "ratio" approach, the maximum amount of debt against which interest can be

deducted for tax purposes is determined using a predefined ratio such as debt to equity (D/E).

Table 4 shows the financing of enterprises in the EU. EU Countries are ordered from more to less stringent debt financing arrangements (ATAD focus, the Directive will be presented in Chapter III). However, taking into account the tax burden, it should be noted that limiting the possibility of deducting interest on debt from the tax base contributes to an increase in the tax burden for the entrepreneur. Thus, the countries in the table are also arranged in accordance with the decreasing tax burden resulting from the greater possibility to deduct interest from the tax base. Countries are grouped into those that have and have not fixed thin capitalization thresholds. Limiting excessive debt financing means that interest on the debt amount above the limit known as the *capitalization threshold* is not tax deductible and should be added to the CIT base. At the beginning of 2020 fifteen out of twenty-eight EU countries had such a solution mainly based on D/E ratio. The restrictions on excessive debt financing were differentiated between EU countries but concerned mainly borrowing between the related parties. However, in 2019-2020, most EU Members implemented the *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.*

This directive is based on the OECD BEPS project and aims to prevent companies in general from avoiding taxation through their excessive indebtedness. The directive introduced the principle of limitation the possibility of deducting interest on borrowing costs. Pursuant to the directive, all costs related to obtaining debt financing began to be limited, regardless of the existing links between the companies. According to the directive, the deductibility factor is determined in such a way that the amount of the company's debt relates to its income before interest, tax, depreciation and amortization (EBITDA). This solution is called the *earnings-stripping approach* and is based on the D/E ratio. It focuses on the amount of interest paid or payable in relation to the amount of income from which that interest is paid (OECD, 2012). An indicator from directive is the ratio of interest amount to a cash flow measure (interest to EBITDA ratio) but an interest can also be related to operating profit. The countries in Table 4 have been ordered in such a way that there are first those countries that in 2020 already had established thin capitalization rules, as well as other advanced rules limiting debt financing (e.g. Denmark) or having equity financing facilities (Belgium).

Table 4. Financing enterprises in EU countries, 2020

Member State	Thin Capitalization	Main principles on limits to interest deductions	Notional Interest Deduction rate (NID)
Belgium	yes	D/E ratio 5:1; Maximum interest deduction up to 30% of EBITDA or EUR 3 million	0.092%, 0.408 % for SMEs *
Denmark	yes	Fully deductible net financing expenses passing: • Thin capitalization test: D/E ratio 4:1; This rule only applies if the controlled debt exceeds DKK 10 million. • Assets test: net excess financing expenses exceeding the interest value of assets in the corporation, are not tax deductible. Limit for deduction of net financing expenses above DKK 21.3 million is maximum of 80% of EBITDA. • The EBITDA rule: deduction up to 30% of EBITDA.	no
Lithuania	yes	1. Exceeding borrowing costs deductible up to 30% of EBITDA or EUR 3 million whichever is higher; 2. Arm's length principle for interest expenses paid to related parties; 3. No tax deduction for interest expenses related to the earnings of non-taxable income; 4. Interest paid to foreign companies registered in blacklisted countries only under condition of their substantial economic activities.	no
Czechia	yes	Interest on loans financing participation acquisition is not tax-deductible. Interest on profit participation loans is not tax-deductible. Interest limitation rule from ATAD	no
France, Germany	yes	Maximum deduction between EUR3mln and 30% of EBITDA	no
Bulgaria	yes	Limits apply if net borrowing costs exceed EUR3 million	no
Slovakia	yes	Maximum interest deduction up to 25% of EBITDA	no
United Kingdom	yes	Maximum interest deduction up to 30% of EBITDA, possible an alternative group ratio calculation.	no
Hungary	yes	Maximum deduction up to the higher of 30% of the tax EBITDA or HUF 939,810,000	no
Latvia	yes	For interest payments of up to EUR 3 million: a debt-to-equity ratio of 4:1; for interest payments exceeding EUR 3 million-deduction of 30% of EBITDA.	no
Poland	yes	Maximum interest deduction up to 30% of EBITDA	National Bank of Poland i.e. 1,5% + 1%
Slovenia	yes	Debt-to-equity (D/E) ratio 4:1	no

Greece	yes	No deduction of interest exceeding the interest that would have arisen if the interest rate was equal to the interest rate of loans accounts provided to non-financial enterprises by the Bank of Greece at that time. Maximum interest deduction up to 30% of EBITDA	no
Croatia	yes	Debt-to-equity (D/E) ratio 4:1; Rate fixed on arm's length principle not lower than that published by the finance minister	no
Estonia	no	Three criteria for assessing the excess of loan interest: 1. The excess cost of the loan (the amount by which they exceed the company's return on interest and equivalent sources) exceeds EUR 3mln. 2. Excessive borrowing costs exceed 30% of EBITDA. 3. Profitability of the entity paying the interest. No need to pay CIT by an entity with negative profitability and excessive borrowing costs in excess of EUR 3 million and 30% EBITDA, if they do not exceed losses. In the case of a profitable entity, CIT is due on excessive borrowing costs above EUR 3 million and 30%EBITDA.	no
Portugal	no	Maximum interest deduction up to 30% of EBITDA or EUR 2 million	7%
Spain, Romania	no	Maximum interest deduction up to 30% of EBITDA or EUR 1 million	no
Italy	no	Interest deduction up to 30% of EBITDA	1,30%
Luxembourg	no	Maximum interest deduction up to 30% of EBITDA or EUR 3 million	no
Sweden	no	Maximum interest deduction up to 30% of EBITDA or SEK 5 million (depending on what is higher). The SEK 5 million threshold may be used only once between associated companies.	no
Netherlands	no	1. Interest paid on non-functional loans paid to a related company is not deductible. 2. Interest is deductible up to 30% of the EBITDA.	no
Finland	no	Maximum interest deduction up to 25% of EBITD	no
Austria	no	1. No tax deduction of financing costs related to acquisitions of participations within a group. 2. No tax deduction for interest paid to a related entity if that interest is taxed in the hands of the recipient at a rate of less than 10%. 3. No tax deduction for interest if it is not taxed abroad in the hands of the recipient due to a hybrid mismatch.	no
Ireland	no	Deductible only interest wholly connected with trade.	no
Cyprus	no	No interest deduction up to 7 years for the purchase of private vehicles and assets not used in business	no
Malta	no	no	no

Source: Own study based on data from the Taxes in Europe Database v.3, 2021 and Tax Summaries of PricewaterhouseCoopers 2021

* The NID in Belgium was abolished for taxable periods ending as of 31 December 2023

Thirteen EU countries in 2020 did not have a set rule of thin capitalization at that time, but most of them already had implemented Directive 2016/1164 *laying down rules against tax avoidance practices that directly affect the functioning of the internal market.* Three of these countries, Portugal, Poland and Italy, had additional allowance for corporate equity called *Notional Interest Deduction (NID)*. This solution was also used in Belgium till the end of 2023. Belgium had already implemented the thin capitalization rule. NID is a tax incentive intended to induce taxpayers to finance themselves with equity instead of debt. The solution is based on the application of the notional interest deduction rate which allows for the reduction of the taxable profit. Table 5 shows the mechanism of Notional Interest Deduction on the example of Portugal. From the equity allocated to finance the company, 7% i.e. the amount of the NID granted, was deducted. Then, the remaining taxable income was multiplied by the effective average CIT rate calculated for 2021 for this country. Instead of a tax of EUR 1.712, the taxpayer would pay EUR 214, which is 18.72% less.

Table 5. Application of allowance for corporate equity on the example of Portugal

Country	**Portugal**	
Share capitalised for group financing	EUR 100 000	
Intra-group interest rate	8%	
Notional Interest Deduction (NID)	**Before NID**	**With NID**
Profit before tax	EUR 8 000	EUR 8 000
Notional interest deduction (7%)	X	- EUR 7000
Taxable	EUR 8 000	EUR 1 000
Corporate tax (EATR 21,4%)	EUR 1 712	EUR 214
Effective average tax rate	21,40%	2,68%

Source: Own study based on Notional Interest Deduction: an innovative Belgian tax incentive

It should be noted that the use of allowance for equity can be an extremely effective tool in the fight against excessive indebtedness of enterprises. While limiting the possibility of deducting interest on debt from the tax base may contribute to the reduction of investments

undertaken by the company, the promotion of equity financing may lead to an improvement in the profitability of companies and would certainly result in a change in the structure of financing enterprises in the EU. Unfortunately, for the time being the allowance for corporate equity is used by only three EU countries. It should be mentioned however that currently the work is underway in the EU on a directive to introduce an equity tax allowance equalising the terms of tax breaks for debt and equity financing (European Parliament, 2024; European Commission, 2022).

Summing up, on the one hand, the more restrictive the methods of preventing excessive indebtedness of companies in a given country, the greater the tax burden. On the other hand, limiting indebtedness has a positive effect on the condition of enterprises. An effective method of financing would be the possibility for enterprises to use the allowance for corporate equity, but - firstly, it is not popular in the face of transfer pricing between companies in the group, and secondly – it would constitute a kind of discrimination against enterprises that are not part of transnational corporations. Therefore, such a solution was not provided for in the CIT harmonisation CCCTB proposal. The new directive proposal of December 2021 on CIT harmonisation does not address the issue of debt financing at all.

Write-offs and carry-over of losses. A significant possibility of reducing the tax burden is the write-off of the loss incurred as tax deductible costs. In the case when the tax-deductible costs are higher in a given tax year than the revenues obtained, the taxpayer shows a tax loss in the tax declaration. The amount of the loss may be then deducted from the tax base in the next few years. Such a solution is provided for by almost all EU countries, although the method itself and the period of loss settlement varies between them. The deductibility of the incurred loss gives the taxpayer an opportunity to reduce the tax burden in a given tax period. The conditions for taking advantage of this tax relief, the amount of deduction from tax base and the period over which the loss may be spread is determined by the legislator. In the EU, the rule is to carry forward tax losses, apart from Estonia, which does not provide for the possibility of settling losses at all and the tax is charged only on distributed profits. Other countries give taxpayers the option of settling losses in the next tax years. The settlement period varies between countries. According to the database of the European Commission presented in Table 6, in 2019 36%, i.e. the ten countries of the then EU, set the statutory period for settling losses for the next five consecutive tax years. Four countries provided a longer defined loss settlement period from six (Netherlands) to seventeen years

(Luxembourg). Eleven countries did not provide for a time limit for the settlement of losses (indefinite period for loss settlement). Out of thirteen countries that did not specify a loss settlement period, one (Denmark) set a maximum amount of the loss settlement limit at EUR 11.5 billion.

Table 6. Loss settlement in EU countries in 2019

Member State	Loss carry-forward	Loss carry-backward
Bulgaria, Czechia, Greece, Croatia, Cyprus, Latvia, Poland, Portugal, Slovakia	yes: 5 years	no
Hungary	yes: 5 years	yes: 2 years
Netherlands	yes; 6 years	yes, 1 year
Romania	yes; 7 years	no
Finland	yes; 10 years	no
Luxembourg	yes; 17 years	no
Spain, Italy, Lithuania, Malta, Austria, Slovenia, Sweden	yes; time limit: indefinite	no
France, Germany	yes; time limit: indefinite	Yes: 1 year; amount limit: EUR 1 million
Ireland, United Kingdom	yes; time limit: indefinite	Yes: 1 year
Belgium	yes, time limit: indefinite	yes: 3 years only applies for agricultural and horticultural companies under specific conditions
Denmark	yes, indefinite in time but amount limit: 11 480 668 015 EUR	no
Estonia	no	no

Source: Own study based on data from the Taxes in Europe Database v.3, 2021

The limitation of the amount in income reduction because of the loss settlement in the following years is moreover used in the EU countries as an additional restriction to the time limitation. Loss from economic activity is accounted for differently than in the case of income earned by a natural person. Namely, the annual amounts of income and expenses

from activities are, in principle, aggregated under two sources: business activity and capital gains. Taking into account the fact that in CIT there is a distinction between two sources of revenue: from capital gains and from other sources, also the loss settlement will be subject to this rule. Thus, incurring a loss under one source means that in the future it may be deducted only from the income obtained under the same source of revenue. If the taxpayer has suffered a loss from the source of income from capital gains, he will not be able to compensate it in the following years with income obtained in the scope of income from other sources. It is logical — incurring a loss from one source does not reduce the income from the other source. Thus, the consequence of listing the source of income and the costs relating to them is the prohibition to compensate the income with the loss achieved through various sources of income. The indispensable condition for the loss settlement is that the taxpayer achieves sufficient income in the next tax year or years to enable the tax base to be reduced by the full or partial amount of the loss. On the one hand, the possibility of deducting the loss from income is a tax relief for the taxpayer, on the other hand it means limiting the state budget revenues from a given tax. For this reason, the settlement of losses is subject to many limitations.

An additional limitation, apart from the time and amount of the deduction, is the exclusion of a number of activities for which there is a possibility of loss settlement. Some types of losses may not constitute tax deductible costs due to the circumstances of their creation and documentation. In principle only the loss resulting from events beyond the control of the taxpayer will be a tax expense. If it arises due to the fault, negligence or breach of regulations by the entrepreneur or its employees, e.g. as a result of violation of regulations or the lack of supervision over employees, it will not reduce the company's revenues. Also, losses whose incurrence has not been properly documented, will not constitute a tax expense. On the one hand, by limiting the possibility of deducting a loss from income tax or spreading its deduction over time, the state thus secures budgetary revenues from this tax. On the other hand, the possibility for an entrepreneur to take advantage of such a tax relief allows him to keep a larger part of the profit and gives him the opportunity to conduct business in an undisturbed manner, without excessive indebtedness.

There are two techniques of loss settlement that can be distinguished and also presented in table 6: loss carry-forward and loss carry-backward. A tax loss carry-forward (or carryover) is a provision allowing a taxpayer to shift a tax loss to future years to offset a profit. The

carry-forward results from an accounting technique that applies the current year's net operating loss (NOL) to future years' net income to reduce the tax liability. A company that has experienced a loss in one tax year but will make profits in the following years may reduce these future profits by taking advantage of carrying this loss forward and compensating it against profits in subsequent years. This results in lower taxable income in next years, reducing future tax liability of the company.

A carry-forward loss is recorded as an asset (a deferred tax asset) on the company's balance sheet. It offers a benefit to the company in the form of future tax liability savings. Loss carry-forward may also be an element of tax optimization or tax avoidance. An example of the use of such tax optimization are multi-billion-euro losses, reported by companies such as Amazon or Apple carried forward from year to year and effectively reducing taxation. For example, in 2014, the effective tax rate for Apple in Europe was 0.005% but tax rate can also be reduced even to zero (Crace, 2023).

It is worth noting that the effective use of carry-forward, which is not indexed by inflation after all, requires the taxpayer to take advantage of the offsetting as soon as possible. A loss carry-backward (or carryback) describes a situation where a company decides to settle the loss in its tax return for the previous year. This causes an immediate return of taxes previously paid in advance by reducing the tax liability for the previous year. It is worth mentioning that settling a loss backwards is usually more beneficial than carrying it forward because the time value of money shows that tax savings in the present are more valuable than in the future.

Table 6 shows that in 2019 (before the COVID-19 pandemic) the loss carry-backward solution was used less frequently than carry-forward. It was used only by taxpayers in seven EU countries (Belgium, Germany, Ireland, France, Hungary, the Netherlands and the United Kingdom), assuming that the amount and time were limited for the settlement of such a loss. The possibility of a carry back loss settlement is currently provided for in most of the laws of the EU Member States. This solution became one of the elements of supporting enterprises in the economic crisis caused by the COVID-19 pandemic. This solution was also one of the elements of the CIT reform proposed by the European Commission in 2021.

Tax deductions related to investments in research and development, human resources and economically lagging sectors and regions. In addition to the costs of obtaining revenues, depreciation and loss settlement, it is necessary to take into account various

additional types of tax credits, deductions, exclusions, allowances and incentives. All deductions have an impact on the final tax burden borne by the taxpayer, and such a burden, if excessive, leads to tax optimization and sometimes to tax evasion. Tax allowances constitute a kind of tax break or tax relief which is designed to reduce tax liability of a corporates and individuals, they may provide assistance to a particular group in need but also are a kind of incentives. Tax exemptions are possible only in the defined statutory situations. In corporate income tax, tax incentives play an important role in attracting investment. Particular EU countries use different types of tax incentives, but three of them are the most common. Table 7 shows the main tax credits or incentives offered by EU countries in 2018. The incentives have been divided by the author into the following three groups: R&D, Human factor support (HR support) and Economic sectors and regions (ESR).

R&D tax credits. Most countries decided to offer tax breaks to entrepreneurs investing in broadly understood R&D. R&D tax credits mean the possibility to take advantage of a deduction of costs of investment in, inter alia, know-how, patents, innovation centres.

Table 7 presents types of tax reliefs most commonly used in EU countries. One of the most frequently used reliefs is the possibility of deducting from the company's income the qualified expenses incurred for employees named by the author Human Resources support (HR Support). Such outlays mean creating new jobs, employing handicapped and elderly people, but also organizing trainings for workers and cooperation with scientists. Sixteen out of twenty-eight countries offered allowances for Human Factor Support in 2018 and most of them were trainings. Similar level of support was offered for investments in Economic sectors and regions. Seventeen EU countries offered tax breaks in this area. The support concerned special solutions for particular sectors (e.g. agriculture, audiovisual) and for the weaker economies or regions (i.e. with high unemployment, located in less favoured areas like the City of Vukovar in Croatia).

Table 7. Exemplary tax reliefs and incentives in R&D, HR and Regional aid in the EU in 2018

EU State	R&D	HR support	ESR	Other
BE	Green investments: Patent Income Deduction (up to 80% of income from the exploitation of patents developed or improved in Belgium; Innovation Income Deduction (up to 85% of qualifying innovation income	Tax relief for employing scientific workers	Regional aid	Tax shelter for audiovisual work and performing art.
BG	x	Tax deductions for hiring of long-term unemployed, disabled, or elderly persons, scholarships	Granting back of up to 100% of the CIT due for investment in regions with high unemployment	Partial granting of the CIT due for performance of agricultural activities
CZ	For research and development investments (up to 100% deduction within 3 years). Supported areas: Industry, Technology centres, Business support services centres – shared-services centres, software-development centres and high-technology repair centres, call centres and data centres	Trainings, donation to charities, tax incentives for employment of disabled persons, investment incentives	yes	x
DK	yes	x	yes	x
DE	x	x	x	x
EE	x	x	x	x

IE	Many different reliefs and grants for R&D, e.g. 25% credit on qualifying R&D expenditures; IP at favourable tax rates; R&D tax credit for construction or refurbishment of a qualifying R&D building	x	x	Exemptions from CIT for start-ups within first three years, grants for selected industrial undertakings; Accelerated tax depreciation allowances for approved energy efficient equipment
EL	x	x	Yes, reginal aid	x
ES	R&D and technological innovation tax credits	Trainings	yes	x
FR	Research and development investments; R&D credit up to 30% of the R&D eligible expenses incurred during the year, up to EUR 100 million	The tax credit is calculated as a percentage of the wages paid during the calendar year to employees receiving less than 2.5 times the French regulated minimum wage	investments in targeted areas	Artistic productions
CR	yes	Trainings	relief for targeted regions, e.g. for business activity in Vucovar	x
IT	yes	Trainings	yes	x
CY	yes	x	yes	x
LV	yes	x	Yes, special economic zones	x
LT	yes	Trainings	x	x
LU	Exemption of up to 80% of income from IP rights	special depreciation rates for investments favouring the protection of the environment, the realisation of energy savings, the creation of employment for handicapped workers	yes	tax credit 8% for investments up to 150,000 EUR, and 2% for investments exceeding 150,000 EUR

HU	Development Tax Incentive	x	yes	Support to cinematographic works, sponsorship of popular team sports, on Investments, renovations to comply with energy efficiency targets, on live music services, tax allowance for small and medium-sized enterprises
MT	yes, investment tax credits	Trainings	x	x
NL	Preferential taxation with reduced 7% tax rate to income derived from IP Box	Trainings	yes	x
AT	R&D investments	x	x	x
PL	5% CIT for IP Box	Eligible costs of R&D expenditures include employees' wages and social contributions	Special Economic Zones with reliefs	x
PT	R&D investments; Special Incentives for Technology Investments	Support and reliefs for jobs creation; Pension funds exemption from CIT	yes	Relief for income derived from cultural, entertainment or sport activities, investments in agriculture, forestry, mining, acquisition of companies with a difficult financial situation
RO	yes	Trainings	yes	X

SI	yes	Trainings, Employment, voluntary supplementary, donations	yes	Limited number of legal persons exempt from corporate tax for income derived from non-profit activities
SK	Relief for patents income	Relief for NGOs income	x	x
FI	yes	x	x	Refoundation of refundable connection charges collected by companies that maintain electricity, telephone, water, sewage or district heating systems
SE	x	x	x	x
UK	yes	x	x	Tax relief for charitable organisations

Source: Own study based on data from the Taxes in Europe Database v.3, 2021.

In 2018, only nine countries offered three types of tax breaks, giving the taxpayer the most opportunities to lower the tax base. These were: Romania, Belgium, Spain, Croatia, Italy, Luxembourg, Netherlands, Portugal and Slovenia. Three of the countries did not offer in 2018 any of the three tax benefits. These were Germany, Estonia and Sweden. In the case of Estonia, it is worth remembering that although there are no special CIT incentives in this country, the entire Estonian corporate tax system, which provides for an indefinite deferral for taxing corporate profits, may be viewed as a tax incentive that promotes reinvestment of profits and thus stimulates economic growth.

In 2018, twenty-two EU countries offered the possibility of taking advantage of the CIT tax relief for investments in R&D. However, it should be emphasized that just as there are different solutions in the field of R&D, so are the tax breaks provided for by EU states. For example, in Belgium, the taxpayer could choose between the investment relief for patents or modern "green investment" solutions, i.e. investments in energy-saving systems, smoke extraction systems or air treatment in catering outlets, investments made to promote the

reuse of refillable packaging and products industrial reusable, technologically advanced products. Income from one of these selected sources might be exempt from taxation, similarly to income from dividends. Belgium is one of the EU countries providing for many types of costs of revenues excluded from taxation, e.g. tax shelters for audiovisual work and performing arts (European Commission 2021).

A very often solution used in the EU countries is to apply reduced a special R&D relief in the form of a reduced effective CIT rates to an income derived from *a patent box* known as *an intellectual property system*, *innovation system* or *IP module*. The purpose of applying such relief is to encourage further research and development, and thus generate innovation in economic activity and stimulate further progress. Table 8 shows 2020 CIT tax rates for IP box solutions in selected EU countries. The reduced tax rates provided under patent box regimes in 2020 range from 0% in Malta, Hungary and Poland for investments in free zone areas to 12% in Italy.

Table 8. Reduced 2020 CIT rates for IP regimes in chosen EU countries

EU-2020	Regime Name	STR	Tax rate that would otherwise apply
Belgium	Patent income deduction	3.76%	25.00%
United Kingdom	Patent box	10.00%	19.00%
Spain	Partial exemption for income from certain intangible assets (Federal regime)	10.00%	25.00%
Slovakia	Patent-box	10.50%	21.00%
Portugal	Partial exemption for income from patents and other industrial property rights	10.50%	21.00%
Netherlands	Innovation box	7.00%	20.00%-25.00%
Luxembourg	IP regime	4.99%	24.94%
Lithuania	IP regime	5.00%	15.00%
Italy	Taxation of income from intangible assets	12.00%	24.00%
Ireland	Knowledge development box	6.25%	12.50%
Hungary	IP regime for royalties and capital gains	0.00%-4.50%	9.00%

France	Reduced rate for long term capital gains and profits from the licensing of IP rights	10.00%	32.02%
Greece	Tax patent incentives	10.00%	28.00%
Malta	Patent box deduction rules	0.00%	35.00%
Poland	**IP Box**		

Source: Own study based on OECD, Intellectual Property Regimes 2021

It should be noted that EU countries are making rapid progress in granting IP reliefs. This is to encourage enterprises to invest in development and modern technologies. For example, taking into account Greece did not offer an R&D tax relief in 2018 but between 2018 and 2020 introduced a reduction in the CIT rate as an patent incentive (European Commission 2021). The use of tax reliefs in the EU varies, but three main tax credits are present in a large number of countries, these are deductions used for investments in R&D, special groups of workers and special zones or regions requiring support in individual countries. Admittedly, the applied reliefs reduce the income of enterprises and the state budget revenues from CIT for some time. However, in the long term, taking into account the nature of the supported areas, they should translate into an increase in CIT revenues.

3. Differences in nominal and effective tax rates

Statutory or nominal tax rates (STR). Comparing corporate tax systems in particular countries mainly comes down to comparing the tax burden. As for the tax burden itself, it is most easily noticed by comparing CIT rates and among tax rates, nominal rates are the most visible element differentiating this tax between EU countries.

Statutory or nominal tax rates in twenty-eight European Union countries varied in 2019 considerably, from 10% for Bulgaria to 35% for Malta. In 2023, Hungary had the lowest 9% nominal CIT rate. STR relates to the tax base and is the primary source of information on taxation in a given country. It is a percentage ratio that, related to the tax base, enables calculation of the tax liability. The attractiveness of such a tax rate for comparative purposes is undoubtedly due to its availability. STR may be the first point of reference for international comparisons and assessment of tax burdens in different countries (Wawrzyniak, 2011). This

tax rate is fixed by national law. It is usually the highest of any other types of rates concerning a given type of tax. STR includes surtaxes but is exclusive of local taxes[7].

STR allows to initially determine the friendliness or severity of the taxation system but does not give the full picture of the real tax burden incurred by companies. It omits a whole range of issues affecting the actual tax burden, such as the methods of determining the tax base, accounting for costs and revenues over time or possibility of benefiting from tax incentives like tax deductions or exemptions. Statutory CIT rates are the headline tax rate for corporations and are used to compare the theoretical tax burden across jurisdictions over time. However, they are not a good measure of the tax burden actually borne by corporations because they do not take into account additional tax solutions provided by particular tax regimes, such as tax credits or exemptions (e.g., IP Box, local business taxation, surtaxes). STR does not reflect special tax regimes solutions in particular countries, solutions targeted to certain industries or income types. The statistics report a standard rate that does not target any particular industry or income type. STR is also not the only measure of the corporate tax burden of companies on their income in particular countries.

It is worth presenting the example of Malta with a STR of 35% and Hungary with a STR of 9%. Malta, despite having the highest STR among EU countries, has one of the lowest ETRs. This is because it offers a refund of up to six-sevenths of corporation tax to both residents and non-residents investors through its imputation system. In the case of Hungary having an STR of 9%, it is worth mentioning an additional tax paid by business entities that is not included in the Hungarian statutory CIT rate. This is a local business tax called HIPA in Hungarian for "Helyi Iparűzési Adó" paid once a year, without filing a tax return to the local municipality where the companies' seats are placed. This tax is calculated on the company's annual revenues up to 2% of their amount. It is not included in the CIT tax base. Thus, companies in Hungary are subject to a higher level of taxation than the statutory CIT tax rate reflects (PWC, 2023).

[7] A surtax, also known as a surcharge, is an additional tax levied on top of another tax. Governments impose surtax and charge taxpayers with additional burden in order to raise extra funds to cover specific programs or initiatives in healthcare or military service (e.g. 3,3% social surcharge in France in 2019 for large companies or the solidarity surcharge of 5,5% in Germany). Such surcharge may be calculated as a percentage of a certain given amount or as a flat charge.

Some jurisdictions offer companies multiple tax rates depending on the characteristics of the corporation, their income, size (measured by revenues or the number of employees), branch or geographic region in which they operate (special economic zones). In some countries, companies can benefit from a preferential tax regime offering differential rates for retained and distributed earnings (OECD, 2023). The reason why STR do not reflect the actual tax burden of companies in the tax regime based on distributed earnings results from the fact of taxing profits not when they are earned but only when they are distributed. This is the case in Estonia and Latvia, which tax distributed earnings at a rate of 20% and do not, as a rule, impose tax on retained earnings. Therefore, although the reported in international statistics STR for these countries is 20%, it is usually much lower taking into account the proportion of income to which it applies (only distributed). Failure to pay dividends by an enterprise means practically no obligation to pay CIT. This solution draws attention to another important detail regarding the tax burden of enterprises - the possibility of postponing tax payments by entrepreneurs.

Given the increasing internationalisation of business and capital mobility, EU countries aiming to improve their investment climate for foreign companies, were gradually lowering the nominal CIT rates. The mean corporate income tax rate in the EU has fallen from 38% in 1990 to 33% in 2000 (Gorter & de Mooij, 2001). However, it should be noted that the tax burden for enterprises remained at a more or less similar level. This is because the tax burden experienced by businesses is largely influenced by effective rather than nominal tax rates. For those reasons, STR is not a sufficient indicator for the international comparisons. The use of statutory tax rates can be confusing because their influence on capital allocation is not as significant as the influence of effective tax rates. Thus, not only the statutory rates, but also parameters affecting the tax base determine the after-tax rate of return on real investment. International differences between tax bases cause that even in case of the same statutory tax rates, the tax burden is different in particular countries. Whereas effective tax rates usually show the ratio of tax payment to total taxable income.

Effective tax rates. The effective CIT rate (Effective Tax Rate, ETR) is a much more reliable measure of the tax burden. It takes into account statutory tax rate but also many other aspects allowing to calculate the amount of tax paid. Effective tax rates may be calculated as *backward* or *forward-looking tax rates* which in turn may be computed as *average (EATR*) or *marginal tax rates (EMTR)*. In the case of forward-looking approach tax burden is

determined for a hypothetical investment project and on the basis of existing tax rules so they can be used to measure the impact of taxes on new investment projects. Backward-looking methods allude to existing capital and are based on real historic data. In macroeconomic terms, effective backward tax rates are calculated on the basis of aggregate national or international data like that concerning national accounts from Eurostat or OECD figures. The diversification of the CIT tax base in the EU countries, especially in terms of deductions, and the resulting difficulty in capturing complex details significantly impede the calculation of effective tax rates, and also contribute to their differentiation and their difficult comparability. Ederveen & De Mooij, 2003 draw attention to the fact that in research on the tax burden experienced by enterprises, various specifications and data. In particular, a multitude of tax rates are used in econometric analyses. In addition to the statutory rates, these include average or different types of effective tax rates. Their calculation method may vary. This raises the question of the comparability of the results of particular studies. The matter is additionally complicated by the fact that effective CIT rates are the result rates, calculated on the basis of nominal rates and tax deductions permitted by law. The calculation methods themselves, however, vary. In order to avoid a problem of comparability, in this work the author uses the effective rates published by Eurostat and OECD. This has its drawbacks, such as from delays in publication of effective rate.

Table 9 presents a list of statutory and effective average CIT rates in line with the increasing value of the latter.

Table 9. Corporate income tax rates and CIT share in GDP in the EU in 2019 (in percent)

EU Member state	STR	EATR	GDP	EU Member state	STR	EATR	GDP
Bulgaria	10,0	9,0	2,0	Finland	20,0	19,6	2,5
Hungary	10,8	11,1	1,2	Denmark	22,0	19,8	3,0
Lithuania	15,0	12,7	1,6	United Kingdom	19,0	20,2	2,6
Cyprus	12,5	13,4	5,9	Portugal	31,5	21,4	3,1
Estonia	20,0	13,9	1,8	Luxembourg	24,9	21,8	5,9
Ireland	12,5	14,1	3,1	Netherlands	25,0	22,5	3,7
Romania	16,0	14,7	2,1	Austria	25,0	23,1	2,8
Croatia	18,0	14,8	2,4	Italy	27,8	24,6	1,9
Poland	19,0	16,6	2,2	Belgium	29,6	25,0	3,7
Czechia	19,0	16,7	3,3	Malta	35,0	25,3	5,7
Latvia	20,0	16,7	0,2	Greece	28,0	26,6	2,2

Slovenia	19,0	17,3	2,0	Germany	29,9	28,9	2,7
Slovakia	21,0	18,7	3,0	Spain	25,0	30,1	2,1
Sweden	21,4	19,4	3,0	France	34,4	33,4	2,8

Notes: EATR according to Devereux and Griffith methodology. Source: Own study based on European Commission, Taxation Trends Report (2021)

While the nominal rates only provide a quick insight into the potential CIT tax burden in a given country, the effective rates show the burden actually incurred, taking into account all kinds of reliefs, deductions and less tax surcharges.

As shows table 9, there may be large discrepancies between the STR and the EATR. In the case of Malta and Portugal the difference between STR and EATR is around 10 percentage points to the disadvantage of the latter. Most often, nominal rates are higher than the effective averages. This is due to the possibility for the taxpayer to take advantage of tax reliefs and deductions from the tax base.

In the case of a large difference between the nominal rate and the average effective rate to the disadvantage of the latter, it can be assumed that either the tax administration in a given country is ineffective and it causes the widening of the tax gap (backward-looking tax rates) or that the given country offers very high or numerous tax breaks (low forward-looking tax rates as an incentive for potential investors). Therefore, the method of calculating effective CIT rates as well as the source and type of data on which the calculations are based are important for comparative purposes.

However, in the case of some countries (Hungary, Cyprus, Ireland, United Kingdom, Spain), the EATR is higher than the STR, which may be associated with an additional surtax or from accruals.

According to Table 9, the average STR for the EU in 2019 was 21,8%, and for the EATR 19,7%. The countries in Table 9 are arranged in line with the increasing EATR. The difference between the country with the lowest (Bulgaria, 10%) and the highest EATR (France, 33,4%) in 2019 was over 23%. This shows the scale of the actual differentiation of the tax burden in the EU countries. The disparity of effective tax rates between EU countries reflects, in a sense, the differences in the tax base. The wider it is and the fewer exemptions it provides, the higher the effective CIT rate should be. Maintaining the differentiation of tax bases and rates is the result of tax competition between EU countries, it also gives MNE the opportunity to apply tax optimization.

Effective tax rates (ETR) differ from statutory tax rates in that they attempt to measure taxes paid as a proportion of economic income, while statutory rates indicate the amount of tax liability (before any credits) relative to taxable income, which is defined by tax law and reflects tax benefits and subsidies built into the law. It is important that the amount of CIT ETR translates directly into the amount of revenues from this tax to the state budget. On the other hand, for comparative purposes in international statistics, the share of revenues from this tax is very well illustrated by the percentage share in GDP.

4. Different CIT share in GDP and tax revenues in the EU countries

In addition to comparing the width of the tax base and tax rates, the macro-scale tax burden comparisons usually take into account the share of a given tax in gross domestic product (GDP). The relation of tax revenues to GDP in a given country shows the level of fiscalism, i.e. the tax burden in that country. In the EU, the highest degree of fiscalism in 2020 was in France, Denmark and Belgium, and the lowest in Ireland, Romania and Bulgaria. The percentage of tax in GDP is an important indicator used in analysis and comparative statistics. On an international scale, it shows the differences in the amount of the tax burden in different countries, and at the country level, it proves the importance of a given tax in supplying the state budget. CIT share in tax revenues shows its importance in terms of the level of generating state budget revenues. Being one of the basic measures of the work outcomes of a given country's society, GDP describes the aggregate value of final goods and services produced by national and foreign production factors in a given country in a specific unit of time, most often per year. It is also a measure of the size of an economy. The dynamics of real GDP, its rise or fall, is a measure of economic growth. Therefore, the share of a given tax in GDP indicates how important a given tax is for the economic growth.

Taking into account Table 10 and the percentage share of CIT revenues in the GDP of each country, the following ranges grouping the countries can be established: CIT <2% share in GDP, CIT= 2-3% of GDP, CIT= 3-5% of GDP and the last range from CIT >5%.

Table 10. CIT rates and revenues share in GDP of EU countries (in percents), 2019

EU Member State	STR	EATR	GDP
Latvia	20,0	16,7	0,2
Hungary	10,8	11,1	1,2
Lithuania	15,0	12,7	1,6

Estonia	20,0	13,9	1,8
Italy	27,8	24,6	1,9
Slovenia	19,0	17,3	2,0
Bulgaria	10,0	9,0	2,0
Spain	25,0	30,1	2,1
Romania	16,0	14,7	2,1
Poland	19,0	16,6	2,2
Greece	28,0	26,6	2,2
Croatia	18,0	14,8	2,4
Finland	20,0	19,6	2,5
United Kingdom	19,0	20,2	2,6
Germany	29,9	28,9	2,7
Austria	25,0	23,1	2,8
France	34,4	33,4	2,8
Sweden	21,4	19,4	3,0
Denmark	22,0	19,8	3,0
Slovakia	21,0	18,7	3,0
Ireland	12,5	14,1	3,1
Portugal	31,5	21,4	3,1
Czechia	19,0	16,7	3,3
Netherlands	25,0	22,5	3,7
Belgium	29,6	25,0	3,7
Malta	35,0	25,3	5,7
Cyprus	12,5	13,4	5,9
Luxembourg	24,9	21,8	5,9

Source: Own study based on European Commission, Taxation Trends Report (2021).

The group of countries with the highest share of CIT in GDP, i.e. over 5%, includes Cyprus, Malta and Luxembourg. These countries use favourable tax incentives towards foreign investors. Cyprus uses very favourable solutions for non-residents, e.g. offers low STR, does not levy a WHT on dividends, interests, and royalties paid to non-residents. There is an exception concerning 10%of WHT for royalties earned on rights used within Cyprus, but this tax can also be reduced to zero. In addition, this country requires a minimum of formalities for establishing and running a company. Diversified legal and tax solutions have an impact on a different method of determining: the tax base, the amount and type of tax reliefs and

deductions, depreciation write-offs, loss settlement, or the use of accounting for tax purposes. These solutions also translate into the differentiation of CIT in the EU, which in turn affects the different competitive position of particular Member States for domestic and foreign investors and the functioning of the internal market itself. It should be noted that the great variety of solutions also complicates the process of free movement of capital and income between countries.

CIT harmonisation of the rules for determining the tax base could significantly contribute to the elimination of double taxation and tax avoidance in EU countries. The process of harmonisation should, however, start with a comparison of the different solutions of CIT in particular countries. Harmonisation of the minimum effective CIT rate does not unify the rules for determining the tax base in individual EU countries, it is only based on unified accounting standards in order to uniformly calculate the top-up tax. This is due to the goal of harmonisation being narrower than previously assumed, i.e. eliminating competition and limiting the tax gap in CIT. Unifying the rate while maintaining other different CIT solutions is a risky solution. In terms of budget revenues, the risk may be related to the fact that individual EU countries have a saturation point of the Laffer curve in a different place and the imposed tax rate may, in the case of some of them, result in a decrease, not an increase, in budget revenues from CIT.

Chapter III Harmonisation status quo in corporate taxation in the EU

1. The level of corporate income tax harmonisation in the EU till December 2022

The EU has no direct treaty mandate to make changes to taxation in particular EU countries. The principle of subsidiarity states that direct taxes shall be left to the discretion of national authorities. Thus direct taxation does not fall within the exclusive competence of the Union. The Union will only take action if certain EU objectives cannot be sufficiently achieved at the level of the Member States and therefore because of their scope or their effects, they will be better achieved at the common level. Article 288 of the consolidated version of the Treaty on the Functioning of the European Union (TFEU, 2012) provides that the EU institutions may exercise the competences of the Union by adopting regulations, directives, decisions, recommendations and opinions. The relevant legal acts applicable to the adoption of changes in taxation at the EU level are directives.

The legislative procedure in the field of taxation at the EU level is therefore the subject to restrictions so that legal amendments interfere as little as possible with the sovereignty of the Member States. Any changes in taxation at the EU level require the adoption of a directive by the EU authorities, which so far requires unanimity of all EU Member States.

The requirement of unanimous consent of the Member States for the introduction of changes in tax matters by EU authorities is enshrined in Art. 115 of the TFEU. It provides that only unanimously acting Council using a special legislative procedure and after consultations with the European Parliament and the Economic and Social Committee, can issue directives approximating laws, regulations and administrative provisions of the Member States which directly affect the establishment or functioning of the internal market. Also point 2 of the Art. 223 of TFEU states that any provisions or conditions relating to taxation of current or former EU Members require unanimity in the Council. On the other hand, dividends distributed from Italy On the other hand, dividends distributed from Italy Even the adoption of a directive leaves Member States a certain degree of freedom as to its implementation. Directives are binding, as to the result to be achieved on each Member State to which they are addressed but leave to the national authorities the choice of form and means to achieve this result.

The harmonisation of tax law is top-down, therefore it requires the initiative and activity of EU authorities. Among the numerous harmonisation initiatives undertaken, mainly by the European Commission in many cases using guidance of the Organisation for Economic Co-operation and Development (hereinafter: OECD), there can be mentioned both: documents that do not have legal force, as well as few legal acts concerning mainly solving the problems with cross-border transactions like double taxation and tax avoidance.

The EU has used on several occasions the special procedure for enacting changes to the taxation of its Members. However, due to problems with reaching consensus, there are not so many legal acts within this scope. The top-down harmonisation process started in the 1990s is visible in the directives which are still in force, albeit after necessary changes. The first directives concerned primarily the most pressing issues concerning taxation of income earned by cross-border companies, i.e. operating in many countries. However, these directives resolved problems of income taxation in a piecemeal way.

First European legal acts on direct taxation reflect the consensus reached by the Member States and concern problems with double taxation or no taxation of cross-border transactions as well as the problems with administrative tax cooperation. These directives have been amended several times but are still valid. The following directives partially regulate the taxation of income transfers of the related companies in an international group:

- 2011/96/EU *on the common system of taxation applicable in the case of parent companies and subsidiaries of different Member States,*

- 2009/133 /EC *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,*

- 2003/49 /EC *on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States,*

There is also Convention 90/436 /EEC *on the elimination of double taxation in connection with the adjustment of profits of associated enterprises.*

The Directive 2011/96/EU is a recast of the earlier directive 90/435/EEC from 1990 (Council of the European Union, 2011). The purpose of the directive is to exempt dividends and other profits paid by subsidiaries to parent companies from withholding tax, thus eliminating double taxation of the same profit in the subsidiary and the parent company.

This solution led to the elimination of distortion of competition in the single market and discrimination between related domestic companies operating only on local markets and the companies operating internationally.

In the case of Directive 2009/133/EC based on the earlier Council Directive 90/434/EEC, the rules of corporate taxation were unified, mainly in the event of companies merger, division, transfer of assets, exchange of shares, as well as the transfer of the registered office of a European company from one EU country to another (Council of the European Union, 2009). Thanks to the directive, the enumerated operations between companies are, in principle, tax neutral. The directive introduced e.g. a system of deferring taxation of capital gains from shares of the acquired company transferred to a recipient company located in another country until their disposal.

Council Directive 2003/49/EC introduced common rules for the taxation of interest and royalties paid by companies located in two different EU countries. Interest and royalties are exempt from taxation in the country in which they arise if the recipient-owner is a related company or a permanent establishment (hereinafter: PE) of a company in another EU Member State (Council of the European Union, 2003).

By signing the Convention 90/463/EEC (European Union, 1990), EU countries agreed on the rules governing the situation when two EU countries could claim the right to tax the company's profits. This may be the case, where a company in one EU country participates directly or indirectly in the management, control or capital of a company in another EU country, or carries out its activities in another EU country through a PE located there.

The Convention also introduced the rules for arbitration in the event of non-compliance by one of the states with the rules for eliminating double taxation.

Taking into account the applicable European legal acts in the field of corporate income taxation, it can be concluded that the Member States agreed only to those acts that were necessary to reduce their CIT gap and capital flight reducing their budget revenues while boycotted several directives proposals aimed at elimination of distortions of competition in the common market. Such a proposal was the draft of the directive on the Common Consolidated Corporate Tax Base (hereinafter: CCCTB), which the Commission and the Council abandoned in 2021. That proposal was aimed at establishing common rules for taxing operating income of MNEs active in the EU. The taxation of those enterprises is the most problematic for tax administrations. International companies have, on the one hand,

the greatest potential for high profits and, on the other hand, the greatest possibilities for tax avoidance. For this reason, directives on tax avoidance by multinational corporations as well as on international cooperation of tax administrations have been developed in order to facilitate the detection and prevention of such cases.

An important role in setting standards for EU legal acts in the field of international taxation is played by the publications created by OECD. One of such documents is the *OECD/G20 Inclusive Framework on Base erosion and profit shifting* (hereinafter: BEPS) which refers to tax planning strategies used by multinational companies that exploit legal loopholes and discrepancies in tax law in different countries to avoid paying taxes (OECD, 2013). BEPS proposes 15 actions aimed at counteracting various practices of tax avoidance by companies.

In response to the OECD's BEPS action plan, the EU has adopted in 2016 The Anti Tax Avoidance Package containing measures to prevent aggressive tax planning and to increase tax transparency. The Package contributed not only to the adoption of non-legally binding documents like recommendations, communications, staff working documents and studies but also to the adoption of the Council Directive 2016/1164/EU of 12 July 2016 *laying down rules against tax avoidance practices that directly affect the functioning of the internal market (*Anti Tax Avoidance Directive I or ATAD I). This directive was modified one year later by the Council Directive 2017/952/EU of 29 May 2017 *amending Directive (EU) 2016/1164 as regards hybrid mismatches with third countries (*Anti Tax Avoidance Directive II or ATAD II). Council Directive 2016/1164 established rules against the erosion of tax bases in the Single market and the shifting of profits outside the EU (Council of the European Union, 2016). One of the measures introduced by the directive to prevent tax avoidance is inter alia the principle of limiting the company's ability to deduct the amount of its external financing from its revenues up to 30% of the company's financial result before interest, taxation, depreciation and amortization (EBITDA).

This Directive also introduced a tax on unrealised capital gains, known as the exit tax. The tax is levied when the taxpayer (company or individual) transfers assets, tax residence or PE to another country.

The third important solution proposed in this directive are the Controlled Foreign Company rules (hereinafter: CFC). These rules stipulate that the parent company must pay tax for its controlled foreign companies in the countries that do not tax, tax very low or

exempt from taxation the income of that controlled companies, and which do not cooperate or are unwilling to cooperate with the EU in tax matters (hereinafter: tax havens).

The provisions of the directive in this regard are additionally supplemented by the EU list of non-cooperative jurisdictions for tax purposes adopted by the Council of the European Union and established in 2016 in the Code of Conduct group (Council of the EU, 2016). The list is constantly updated. Monitoring of countries in terms of meeting international standards of tax cooperation is carried out by the EU Council and checked twice a year and particular countries are listed or de-listed as they undertake or fail to undertake tax reforms (Council of the European Union, 2023).

The Directive 2016/1164 defines the conditions that a company located in a preferential tax jurisdiction must meet in order to be considered a controlled entity. Firstly, the parent company must hold, directly or indirectly, independently or together with another related entity, more than 50% of shares, control or voting rights in a foreign entity. Secondly, at least 33% of the revenue of such a foreign entity must come from capital gains (dividends, interest, receivables...) or from copyright or related rights, i.e. its activity is not related to the material and personal substratum. Thirdly, the tax actually paid by it is lower than the tax which the company would have paid if it had been established in the country of the parent company (EU Council, 2016).

It should be noted that the joint fulfilment of these three conditions allows for the separation of companies actually conducting real business activity in countries with preferential taxation from enterprises established there only for the purpose of obtaining a tax advantage, i.e. usually avoiding taxation of profits.

The directive ATAD II concerning hybrid mismatches and amending the directive ATAD I, is also a manifestation of partial CIT harmonisation in the EU.

The main purpose of this directive is to eliminate cases of corporate income tax avoidance as a result of different qualification and treatment of an entity or an instrument used by the entity by the tax regulations in different countries. These are cases which refer to deduction in one country without inclusion in another, double deduction in both countries or non-taxation without inclusion. All these cases result in the erosion of the tax base.

The so called "hybrids" are different characterization in two tax systems of a payment, entity or its business activities. An example is the classification by a company in one country

of a payment as a dividend, which is not taxed and by a company in another country as interest which is deductible. (Council of the European Union, 2017). In the event of such discrepancies, the directive provides for the possibility of limiting the taxpayer's right or obligation to qualifying the incurred expenses as tax deductible costs, imposing on the taxpayer the obligation to show receivables in the revenues.

ATADs were to be implemented by all EU states till the end of 2019. They ensure a minimum level of protection for all Member States' tax bases against their erosion. The ATADs provide also minimum harmonisation rules relating to interest expense deductions, controlled foreign companies (hereinafter: CFC) and hybrid mismatches. They also require the introduction of a corporate general anti-abuse rules (GAAR) and an exit tax.

The significant role in harmonizing direct taxation solutions in the EU is also played by the Council Directive 2011/16/EU of 15 February 2011 on *administrative cooperation in the field* of taxation and repealing Directive 77/799/EEC (Directive DAC). This directive lays down the rules and procedures for Member States cooperation in the field of information exchange between tax administrations (Council of the European Union, 2011).

It provides an obligation to automatically exchange information with regard to reportable cross-border tax arrangements and is the EU's response to harmful optimization practices involving foreign companies but also individuals.

The directive regulates the scope and conditions of mandatory automatic exchange of information through a joint dedicated IT system - CCN network. It is mainly about reporting the sources, amount of income and data of taxpayers (both natural and legal persons) meeting certain income criteria and earning income in various EU countries. The reporting area includes e.g. tax identification number, date of birth, taxpayer's address, details of accounts where funds are kept and details of tax residency.

However, from December 2021, the obligation to share information on income and the amount of tax paid also rests with large international concerns. The EU Directive 2021/2101 of the European Parliament and of the Council of 24 November 2021 *amending Directive 2013/34/EU as regards disclosure of income tax information by certain undertakings and branches* (hereinafter: CbCR directive) then entered into force (European Parliament and Council of the European Union, 2021). The latest solution is also a very significant legal act contributing to partial harmonisation of CIT provisions. The assumption of this directive is the obligation to report income and the taxes paid by multinational enterprises and

standalones achieving in two consecutive tax years global annual revenues in the amount of EUR 750 million and above.

Corporations should disclose: information about the type, location and the size of the business. This means providing information such as on the value of assets held, share capital, number of employees, the amount of realized revenues, profits or losses and the tax paid and due. Most of this information is information from companies' financial statements.

For easier comparability and reliability of data presented in the financial statements of companies located in individual countries, the financial reporting framework and definitions are presented in the directive, e. g. the net turnover.

The CbCR reporting mechanism is designed to increase the effectiveness of combating tax fraud leading to the transfer of profits to other jurisdictions, especially to tax havens. The obligation to submit information on companies in the international capital group is generally imposed on the parent company. In some cases also entities that are not parent entities may be required to submit a CbCR. The report should be provided electronically to country administration within 12 months from the end of the reporting financial year of the group. The report on income tax information should disclose data separately for each jurisdiction.

All of the mentioned directives regulate the issue of the common approach against tax avoidance but they only partially regulate the most problematic matters, i.e. those related to the operations of transnational corporations and profits transferred across borders.

These solutions are aimed at regulating the issue of avoiding taxation of profits in the country of their sending and reception and at the problem of double taxation and the disputes between countries which have the right to tax such profits.

A review of the EU's partially harmonised corporate tax regulations by 2022 suggests that EU countries tried to resolve disputes in the first place, but have not yet decided to go a step further and establish common framework for income taxation that would effectively prevent tax avoidance. In December 2022, the Commission adopted the Directive on the common minimum effective CIT rate, which is a significant step towards the harmonisation of this tax, similar to VAT and excise duty.

2. The scope of harmonisation proposed in the Directive 2022/2523 of December 2022 on minimum effective corporate tax rate

Main assumptions. In December 2022 the Council of the European Union (hereinafter: the Council) has implemented a new *Directive 2022/2523 on ensuring a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the Union* (Council of the EU, 2022). The Directive is based on the global CIT reform proposed by the OECD in the document *Tax Challenges Arising from the Digitalisation of the Economy – Global Anti-Base Erosion Model Rules (Pillar Two)* (hereinafter: OECD proposal) (OECD, 2021).

Accepted in 2021 by nearly 140 countries, the OECD/G20 Inclusive Framework on Domestic Tax Base Erosion and Profit Shifting initiative based on two pillars has contributed to global CIT reform, which is expected to raise global CIT revenues by introducing a minimum 15% CIT rate for all multinationals with consolidated revenues of at least EUR750 million (Pillar II) and shifting the right to tax from the country of residence to the countries where companies do actual business and earn revenues (Pillar I).

This reform is seen as a milestone in taxation (Gelepithis & Hearson, 2022). It is a response (especially Pillar I) to the ongoing digitization of economies and the increasing virtual presence of companies in each country. Pillar II, based on the proposal for a global minimum effective CIT rate, is a response to tax evasion facilitated in the era of globalisation. Pillar II is reflected in EU Council Directive 2022/2523 of 2022.

The subject of the Directive is to establish common measures for minimum effective taxation of MNEs and domestic groups with annual global revenues of EUR 750 million and above (hereinafter referred to as: Group or Groups ≥ EUR750 million) resulting from the consolidated financial statements for at least two of the four financial years immediately preceding the audited financial year. The eligibility of companies depending on the amount of income in two consecutive tax years is consistent with the CbCR directive.

The Directive of the Council of the European Union has been subject to a special legislative procedure applicable in the EU in the area of adopting a new tax law. In addition to consultations with the European Parliament, the Economic and Social Committee, the procedure assumes that in order to pass the tax directive, it is necessary to obtain unanimity of the EU Member States voting in the Council on the adopted issue.

Unanimity in the Council is indispensable in particularly sensitive matters, such as taxes or social security and social protection (EU Publications Office, 2023).

The Directive was also submitted for consultations to the national parliaments of all EU Member States.

The minimum global CIT rate is intended to prevent multinational companies from shifting their profits to jurisdictions where they are not subject to taxation or where they are taxed very low. The reform aims to put an end to competition in corporate tax rates and to level out corporate taxation around the world enabling jurisdictions better protection of their tax bases. The OECD proposal to introduce a minimum effective CIT rate of 15% was accepted by almost 140 countries. However, this solution is not a legal act. The EU Directive is a document largely based on the OECD proposal, but it is primarily adapted to the EU legal system already in force in the EU.

The Directive is framed by two interrelated provisions: the Income Inclusion Rule (hereinafter: IIR) and the Undertaxed Payments Rule (hereinafter: UTPR), collectively referred to as the "GloBE Rules". On their basis, an additional "top-up tax" is to be levied whenever the effective CIT rate of companies' from a Group ≥ EUR750 million present in a given EU jurisdiction is below 15%. The Directive defines such country as a „low tax jurisdiction".

Under the system, the ultimate parent entity (hereinafter: UPE) of a Group ≥ EUR750 million located in an EU country will be required to apply the IIR up to its share of the top-up tax relating to each low-tax group entity (hereinafter: constituent entity) located within or outside the EU. The right to collect a specific part of the top-up tax is to result from the percentage share of the parent company in the capital of the subsidiary.

As it may happen that the amount of the parent company's shares in the subsidiary is too low to collect the entire top-up tax due, UPE is excluded from the system or placed in a country that did not adopt the IIR, then the UTPR will additionally be applied. The application of the Directive provisions to companies that are resident and non-resident in a given EU Member State to international entities and national entities operating on a large scale is intended to avoid discrimination of particular companies.

The subjective scope of the Directive. The main purpose of the new Directive is to establish a common framework for the minimum effective taxation of specific enterprises in EU countries. The Directive clearly specifies which companies are meant and which are

excluded from the proposed method of taxation. First of all, entities being part of the MNE's and biggest domestic groups are taken into account. All capital groups and standalones meeting criterion of the revenue ≥ EUR750 million and having any entities located in an EU Member State and low taxed are to be subject to the top-up tax.

According to the Directive, entities mean legal persons or arrangements preparing separate financial accounts. Therefore, the harmonisation will not apply to units without legal personality. Secondly, the obligations arising from the Directive are to apply to MNEs and domestic groups with an annual revenue ≥ EUR 750 million. This does not mean that the group will include only companies with high turnover. It is stated in the Directive that there may also be included in the group the entities which have been excluded from the consolidated financial statements by the ultimate parent entity because of their small size, smaller materiality or for the reason that they are held for sale.

When calculating the minimum revenue qualifying the capital group to the proposed taxation method, the consolidated financial statements of the group for the last four fiscal years will be taken into account. The proposed requirement is that the mentioned revenue must be achieved annually by the group for at least two of the last four consecutive tax years.

Contrary to the OECD proposal, the Directive also provides for the obligation of introducing a minimum effective taxation for domestic capital groups. This solution was not predicted by the Directive's proposal from 2021 which provided for such an option, not an obligation. The decision to introduce minimum effective CIT taxation of domestic groups was to be left to the discretion of EU Member States.

The imposition of a top-up tax based on the revenue criterion ≥ EUR750 million on both, international and domestic entities, residents and non-residents in a given EU country is to ensure non-discrimination of particular companies. This income threshold is in line with other acts of EU tax law, such as the CbCR Directive 2021 on the transparency of company financial data and financial reporting.

System exemptions. The provisions of the Directive exclude entities that do not meet the criterion of annual global revenue of ≥ EUR750 million. It should be emphasized that only the repeatability of the mentioned annual turnover achieved by the entities in at least two consecutive of the last four audited tax years qualifies these entities for further verification

of the level of their effective taxation. This condition means that the Directive applies to the largest multinationals, not to capital groups that have achieved such a turnover once.

Some organisations are excluded from the scope of this Directive due to their status and the nature of their non-economic activities (non-profit organisations). The fact that they act in the general interest of society, such as healthcare or charity, was also taken into account, as well as the fact that they would be exempt from CIT in particular Member States.

Therefore, in accordance with Art. 2 of the Directive the excluded entities are following: governmental entities, international organisations, non-profit organisations, pension funds, investment funds being an ultimate parent entity, real estate investment vehicles being an ultimate parent entity (hereinafter referred to as: the excluded entities). Pension and investment funds are so called „flow-through" entities passing all their income to the owners: investors or shareholders which are the proper taxpayers. Therefore, such a constituent entity will be treated as fiscally transparent in relation to its income, expenditure, profit or loss in the jurisdiction where it was created unless it is a taxpayer in another jurisdiction because of its tax residency.

Excluded are also the entities owned directly or indirectly in at least 95% by the excluded entities, with the exception of entities providing pension services, and operating exclusively or almost exclusively, to hold assets or invest funds for the benefit of the excluded entity or entities, or exclusively carrying out activities ancillary to those performed by the excluded entity or entities (hereinafter: entities auxiliary to excluded).

The same exclusion applies to the entities belonging directly or indirectly to the excluded entities in at least 85%, with the exception of pension services entities, provided that substantially all of their income comes from dividends or capital gains or losses that are excluded from the calculation of qualifying income or loss fixed in accordance with Art. 16 sec. 2 point b and c of the Directive (hereinafter referred to as: capital gains owners).

The constituent entity filing a tax return may decide not to treat the entities auxiliary to excluded and capital gains owners as the excluded entities.

The exemption from the minimum CIT regime also applies to the international shipping sector, which, due to its unstable nature and long economic cycle, is subject to alternative or additional tax systems in the Member States. Income from international shipping is understood in accordance with Article 17 of the Directive as income from such activities of the entities as transportation of the cargo and passengers by ship in international traffic.

An additional exclusion is the application of the *de minimis* rule to companies from a group that, while reaching a global annual revenue threshold of ≥ EUR750 million, has companies in certain tax jurisdictions with an average revenue of less than EUR10 million and an average qualifying income or loss below EUR1 million. Such multinational or large domestic groups should not pay top-up tax in that jurisdiction even if their effective tax rate is below 15%. In this case, it is about balancing the achievement of tax reform goals with the burden on tax administrations and taxpayers in a given country.

The Directive will not apply to the so-called "excluded entities", provided the filing constituent entity (the entity filing the consolidated financial statement, usually parent company) has chosen not to treat such entities as excluded.

The special role of the parent entities. The Directive assigns a special role and responsibility to parent companies in capital groups. There are three categories of such parent companies enumerated in this document: ultimate parent entity, intermediate parent entity and partially owned parent entity. Their differentiation results from their different position in the structure of the group and, therefore, a different role assigned to them by the Directive.

The special status is provided for by the Directive for the parent company called the “ultimate parent entity” (the aforementioned: UPE) which is defined as the main entity of a group or an entity holding directly or indirectly a controlling interest (i.e. interest above 50%) in any other company in the group and that is not owned, directly or indirectly, by another entity with a controlling interest in it (Council of the European Union, 2022, art. 3 p. 14). Special position of UPE results primarily from practical reasons. The parent company has, directly or indirectly, a controlling stake in all other entities that are part of a multinational or large national capital group. Such groups prepare consolidated financial statements, so the parent company has information and control over the amount of revenue obtained, debt management of companies in the group or their role. This entity should be able to provide its tax office with the necessary information, as well as to pay additional tax on companies in which it owns shares.

Within the capital group itself there may be stronger and weaker companies, indebted and earning high profits, operating in different countries in different legal and economic conditions, the main or ultimate parent entity is at the top of the group and has insight into what is happening in the entire group, usually manages the profits from the activities of the

entire group, from its consolidated result. Usually also, in accordance with financial accounting standards, this is the entity that is required to consolidate the financial accounts of all entities belonging to an MNE group or a large national group.

The assumption of the Directive is to use the special status of a parent company, especially entity located in the EU, for more efficient collection of additional tax from its subsidiaries. This imposes an additional obligation on parent companies of capital groups with revenue ≥ EUR 750 million to take care of the so-called tax compliance in the scope of incurring the appropriate amount of the tax burden by the Group.

The parent company ranked lower in the capital group according to the Directive is the intermediate parent entity (hereinafter: IPE). IPE is defined in the Directive as a constituent entity having direct or indirect ownership interest in another constituent entity in the same capital group and qualified neither as an ultimate parent entity, nor as partially-owned parent entity, a permanent establishment or an investment entity (Council of the European Union, 2022, art. 3 p. 20).

The next category of a parent company mentioned by the Directive is partially-owned parent entity (hereinafter: POPE) which is defined as a constituent entity having directly or indirectly ownership interest in another constituent entity of the same capital group and for which more than 20% of the ownership interest in its profits is held, directly or indirectly, by one or several persons not being constituent entities of that group and not qualifying as an ultimate parent entity, a permanent establishment or an investment entity" (Council of the European Union, 2022, art. 3 p. 22).

Tax collection mechanisms. The Directive is based on two principles illustrating the methods of collecting tax from companies whose effective CIT rate was less than 15% in a given tax year. These are mentioned earlier the IIR which stands for Income Inclusion Rule and UTPR meaning Undertaxed Payments Rule. They are to be introduced in the EU in two stages. The IIR rule is to be implemented first, followed by the UTPR. The latter method is to be a supporting mechanism enabling top-up tax collection in the event it is impossible with the use the IIR or in the case IIR does not allow the collection of the entire top-up tax. The purpose of the Directive is therefore to use the presence of parent companies of MNE and domestic groups ≥ EUR750 million in particular EU and non–EU countries to collect the top-up CIT whenever its effective rate is lower than 15% for these companies, using two interlocking rules: IIR and UTPR.

Top-up tax collection under IIR rule. According to the IIR rule, the main parent company of the Group ≥ EUR 750 million, i.e. UPE, preparing the consolidated financial statement of the entire capital group, should verify whether any of the subsidiaries in the same country and in other EU and non-EU countries have not paid too low corporate tax. Too low tax means a tax with an effective rate of less than 15%. In such a case, UPE should add an additional tax (hereinafter: top-up tax) so that each of the companies in the group bears the tax burden at a level not lower than 15%. The task of the UPE will not only be to calculate the difference between the actual and the minimum CIT rate of the subsidiaries, but also to pay the difference to its tax office. The Directive provides for different options for collecting the top-up tax depending on the situation of constituent entities, especially UPE, in the Group.

UPE in the European Union. As the role of UPE is crucial for top-up tax collection, according to Art. 5 of the Directive, each Member State shall ensure that for the fiscal year:

1) UPE located in EU Member State is subject to the top-up tax in respect of its low-taxed constituent entities located in another jurisdictions or stateless (e.g. flow-through entities);

2) UPE placed in EU low-tax jurisdiction is subject to the IIR top-up tax in respect of itself and of all low-taxed constituent entities placed in the same Member State.

Under the IIR regime, an EU-based UPE is required to collect a top-up tax from each of its low-tax subsidiaries located within and outside the EU i.e. in third countries. Tax collection is limited to the value of UPE shares in the subsidiary. Therefore, there may be a situation where the amount of the parent company's shares in the daughter company will be lower than the top-up tax due. In such a situation, the tasks of UPE should be taken over by Intermediate Parent Entity (hereinafter: IPE) which is located lower in the group but holding shares in companies from which the tax is to be levied.

UPE in the third country. Another case of shifting the obligation to collect top-up tax from the UPE to an EU IPE will occur when the UPE is located outside the EU or in a country where the OECD model rules, including the IIR, have not been implemented. In this case, EU IPE will be required to collect the top-up tax from its low-taxed entities to the amount of its shares in them. It is a Member State that must ensure that such an entity located in a Member State is subject to the IIR and collects top-up tax for the fiscal year in respect of its low-tax constituent entities located in another jurisdictions or stateless.

UPE in the third country, IPE in the low-taxing EU country. The same rule applies to an IPE located in the EU country with low taxation and owned by UPE outside the EU. In this case, the Member State must be able to enforce IPE to collect the top-up tax for itself and its low-tax subsidiaries but only in that EU country.

There is no top-up tax collected by the IPE from the entities placed in third countries if the UPE in a third country is subject to the IIR or other IPEs with a controlling interest in the first IPE are subject to this rule. In the case of more than one IPE holding indirectly shares in a low-taxed entity, the IPE highest in the structure would have to collect the tax (Art. 6 of the Directive).

UPE as an excluded entity with IPE in the EU. In the case of an IPE located in the EU but owned by an UPE which is, according to the Directive, an excluded entity, the Member State must ensure that this IPE collects the tax on low taxed constituent entities located in other jurisdictions or stateless. If, additionally, the EU country in which the IPE is located is also a low-tax jurisdiction, then such IPE should charge additional tax both on its income and on the income of low-tax constituent entities in the same Member State for the fiscal year.

The EU IPE owned by the excluded entity will not collect the top-up tax if it is also held by another IPE which is a subject for qualified IIR (Art. 7 of the Directive).

POPE in the EU, no significance of the location of the UPE. Among the capital companies in the MNE or domestic group, some may be owned by the shareholders from outside the group. If the share of the external shareholders is higher than 20%, such companies are defined in the Directive as POPE — partially-owned parent entities.

Given that EU partially-owned parent entity is held in more than 20% by interest holders outside the group, that POPE should apply IIR up to its allocable share of the top-up tax, unless it is wholly-owned by another POPE obliged to collect it. Tax collection by POPE should have place regardless of whether the UPE is located in a jurisdiction that has a qualified IIR. It is also the Member State that should ensure EU POPE is subject to the IIR top-up tax for the fiscal year in respect of its low–taxed constituent entities located in another jurisdiction or stateless. If POPE's EU country of residence is a low-tax jurisdiction, POPE would have to collect the top-up tax for itself and its undertaxed constituent entities in that country in a given fiscal year. According to Art. 8 of the Directive, POPE higher in the hierarchy of the MNE group, i.e. having shares in another POPE, will always be responsible for collecting the top-up tax.

Allocation of top-up tax according to IIR rule. Article 9 of the Directive states that the IIR top-up-tax due of the constituent entity should be calculated in accordance with Art. 27 of the Directive and multiplied by the parent entity's allocable share in such top-up tax for the fiscal year.

The share of the parent company in the tax is defined as the proportion of the parent entity's ownership interest in the qualifying income of the low-taxed constituent entity according to following formula:

$$parent's\ ownership\ interest\ in\ qualifying\ income\ of\ c.entity = \frac{qualifying\ income\ of\ c.entity - qualifying\ income\ attributable\ to\ other\ owners}{qualifying\ income\ of\ c.entity}$$

Where:

- c. entity- means constituent entity;

- all data concern one fiscal year;

- qualifying income attributable to other owners shall be consistent with the data from the financial statements.

In the case of IIR, there is also possibility of offsetting the tax due if UPE holds shares in low-tax companies indirectly through IPE or POPE that apply IIR. The top-up tax collected by the latter parent companies is credited towards the tax liability calculated by the UPE.

In the case of UPE placed in a low-tax jurisdiction, the amount of IIR top-up tax due for the fiscal year shall include parent entity's whole top-up and the amount of top-up tax computed for its all low-taxed subsidiaries multiplied by parent's shares in each subsidiary.

Qualified domestic top-up tax. The Directive leaves Member States the option of choosing a qualified domestic top-up tax (hereinafter: domestic top-up tax) instead of the Community system. A Member State that decides on the domestic top-up tax, should notify the European Commission of such a choice within four months of its introduction into the national legal system. This choice will be valid and irrevocable for a period of three consecutive years and will be automatically renewable unless, four months before the end of the three-year period, the Member State informs the Commission of a change of decision.

The choice of domestic top-up tax means that all low-tax companies of MNEs and domestic Groups ≥ EUR 750 million will account for the additional tax due according to this

domestic system but will not pay community top-up tax. The domestic top-up tax should be based on generally accepted financial accounting standards in order to avoid competitive distortions in the EU and to enable entities from different EU countries an top-up offset mechanism. This mechanism means that if EM Member, as a result of the introduction of a domestic top-up tax, increases the CIT ETR to 15% for the constituent entities from the Group, then parent companies from other Member States cannot charge additional top-up tax from subsidiaries in that country with domestic top-up tax. These systems are supposed to be equivalent. Both solutions must be consistent also because of the fact that a Member State that has opted for a domestic top-up tax may decide to change to the community solution.

It should be noted that choosing a domestic top-up tax can be very beneficial for the state, because the additional tax only goes to the budget of a given state, even if the parent companies are located in another country. However, this means that the possibility of using the Community allocation system will be excluded for this period. The Directive also contains a provison that if a country with a domestic top-up tax fails to collect it successfully within four years following the year in which the tax was due, then that amount will be added to the jurisdictional top-up tax calculated under Art. 27, therefore to the Community top-up tax. This is the pool from which the individual country's tax collection allocations are then calculated, but a country that was unable to collect the tax from the domestic system will not be entitled to collect the outstanding tax.

UTPR mechanism. In the case of UPE excluded or located in a third country and not applying the IIR rule, the Articles 12 to 14 of the Directive provide the UTPR procedure to ensure the collection of top-up tax from the EU constituent entities of this UPE. The UTPR is intended to act as a protective mechanism for the IIR. On its basis, collection of any residual (not collected) amounts of top-up tax on entities with low taxation is to be relocated to from the parent company to EU States.

Due to the fact that these companies may be located in many EU countries and that UPE does not calculate and pay the top-up tax due for them, the Directive provides for a special allocation system entitling particular EU Members to collect tax from the low–taxed constituent entities of this UPE. According to UTPR rule, Member States should ensure that the UTPR top-up adjustment made by the EU country should take the form of a top-up tax due or a refusal by the tax office to accept the deduction against the taxable income of those

entities. This amount should be calculated and next allocated to that particular Member States per fiscal year in accordance with the Article 14 of the Directive.

The amount of the adjustment in the form of a denial of deduction against the taxable income may be carried forward for the next fiscal years until the entire UTPR top-up tax due is settled.

Computation and allocation of the UTPR top-up tax amount. The allocation amount should be calculated as the product of total UTPR top-up tax and the Member State's UTPR percentage. The total UTPR top-up tax for the fiscal year (hereinafter: total UTPR) consists of the sum of the top-up tax due of all low-tax constituent entities calculated for each constituent entity in accordance with Article 27 of the Directive and not collected in the IIR mechanism. The total UTPR shall be multiplied by EU State's UTPR share (hereinafter: Member State's percentage). Member State's percentage means the right to collect a certain amount of tax and results from the size of resources engaged by companies in a given country, i.e. the number of employees and the value of fixed assets. According to Art. 14 of the Directive the allocation formula is calculated as follows:

$$MS\ UTPR = 50\%\ x\ \frac{nr\ of\ employees\ \ in\ the\ MS}{nr\ of\ employees\ \ in\ all\ UTPR\ jurisdictions} + 50\%\ x\ \frac{the\ total\ value\ of\ tangible\ assets\ in\ the\ MS}{the\ total\ value\ of\ tangible\ assets\ in\ the\ MS}$$

where:

(a) MS UTPR means the Member State UTPR

(b) the number of employees in the Member State is the sum of all employees of all the constituent entities of the MNE group placed in the Member State;

(c) the number of employees in all UTPR jurisdictions is the is the sum of all employees of all the constituent entities of the MNE group placed in the jurisdictions with a qualified UTPR in force for the fiscal year;

(d) the total value of tangible assets in the Member State is the sum of the net book value of all tangible assets of all the constituent entities of the MNE group placed in that Member State;

(e) the total value of tangible assets in all UTPR jurisdictions is the sum of the net book value of all tangible assets of all the constituent entities of the MNE group placed in a jurisdiction that has a qualified UTPR in force for the fiscal year.

When calculating a country's UTPR percentage in the MNE group's UTPR, the share of employees hired by MNEs in a given country in total MNE employees hired in all UTPR jurisdictions is taken into account as well as the share of the net book value of MNE's tangible assets in that Member State in relation to the net book value of tangible assets of all companies of MNE group placed in UTPR jurisdictions.

Number of employees means the number of all employees of all constituent entities in a given jurisdiction on a full-time equivalent basis.

Therefore, in addition to persons employed under contract of employment, they may also be independent contractors if they participate in the ordinary operating activities of the companies employing them.

The tangible assets mean tangible assets of all constituent entities placed in the given jurisdiction without cash, cash equivalent, intangibles and financial assets.

As a rule, employees and assets of flow-through and investment entities have been excluded from the UTPR allocation calculations.

In conclusion, it should be stated that for Groups ≥ EUR750 million whose companies are effectively taxed below 15%, the parent company should calculate the top-up tax in accordance with the IIR rule and pay it to its tax office. If it is not possible to collect the top-up tax in accordance with the IIR regime, the UTPR rule applies. According to this principle, the total top-up tax due for individual Groups is calculated at the Community level. Then, the share in the collection of the remaining tax due for individual EU countries is allocated. The share of EU countries in such a division depends in half on the number of employees, and in half on the value of tangible assets of a given MNE located in a given Member State. The more assets of a MNE are physically present in a given EU country, the higher the share of that country in the amount of UTPR top-up tax.

The principle emerging from the stipulated cases is that the EU parent company highest in MNE or domestic group structure, with interests in low-taxed subsidiaries inside or outside (in the case of MNE) the Union, should collect the missing top-up tax. When the parent company is outside the Union, in a country without IIR or a low-tax jurisdiction, then the other EU topmost company in the hierarchy of the MNE group should collect the tax. The

goal, therefore, is to keep as much CIT income as possible in the Union, as long as the MNE group is affiliated with the EU. The amount of revenue from top-up tax depends partly on the size of assets in a given EU country, by which the author understands in this case both personnel and tangible fixed assets. On the one hand, they give the Member State the possibility of participating to a greater extent in the division of the total UTPR top-up tax, on the other hand, they entitle constituent entities to benefit from the relief, which will be discussed later.

Tax calculations. The assessment of whether a company is high or low taxed is to be based on common rules resulting from the Directive allowing for the calculation of the effective tax rate (ETR) at the jurisdictional level. The starting point for these calculations will be non-consolidated financial statements prepared by the companies in the group. It is worth emphasizing here that consolidated statements are taken into account to qualify the Group for the top-up tax system. On the other hand, in order to calculate qualifying income or loss and the level of effective corporate taxation, individual statements should be analysed.

Calculation of the corporate tax rate at the jurisdiction level is intended to ensure that tax competition between EU countries is reduced.

The application of the common principles for preparing financial statements, as a rule based on the Directive on the disclosure of income tax information, and then adjusting financial data prepared for consolidation in accordance with the rules of Directive 2022/2523 on minimum CIT rate is to ensure a uniform method of calculating the net qualifying income or loss, to determine the amount of taxes paid or covered, to include accruals in the same way and to determine the top-up tax due.

Computation of the qualifying income or loss. Pursuant to Article 26 of the Directive, determining whether the constituent entities of the Group in a given jurisdiction should be subject to top-up tax is calculated by dividing the sum of taxes covered by the all constituent entities in this jurisdiction by the total net qualifying income of these all entities. However, in order to calculate net qualifying income or loss, net income or loss from the separate financial statements of each entity should be used. Then, net income or loss from the financial statement is adjusted by the positions indicated in Articles 16 to 19 of the Directive. The adjusted result obtained in this way constitutes qualified income or loss. The top-up tax is therefore calculated for all Group companies in a given tax jurisdiction.

In the case of companies from the MNE ≥ EUR750 million, it is easier because the CBCR directive of 2021 imposes on them a certain standard of preparation and presentation of financial statements in accordance with the International Financial Reporting Standards (IFRS) or IFRS as adopted by the Union according to Regulation (EC) No 1606/2002. Using data prepared in this way, it is possible to select groups of MNEs qualifying them for top-up tax system.

Adjustments to determine the qualifying income or loss. From the guidance provided in Articles 16-19 of the Directive it comes up that in order to calculate the so-called qualifying income or loss of a constituent entity, one should take its financial accounting net income or loss and then adjust it by the amount of the following items:

(a) net taxes expenses;

(b) excluded dividends;

(c) excluded equity gains or losses (ex. from changes of the fair value of an ownership);

(d) included revaluation method gains or losses;

(e) gains or losses from the disposal of assets and liabilities excluded pursuant to Article 35, therefore, regarding the transfer of assets, e.g. as a result of a merger, demerger or liquidation of the company;

(f) asymmetric foreign currency gains or losses (asymmetry resulting from different functional currencies used for tax and accounting purposes);

(g) policy disallowed expenses (ex. for bribery);

(h) prior period errors and changes in accounting principles;

(i) accrued pension expenses.

It is worth mentioning that all transactions between constituent entities located in different jurisdictions which are not recorded in the same amount in their financial accounts or inconsistent with the arm's length principle should be adjusted in such a way as to be set according to the arm's length principle and in the same amount in both entities.

The arm's length principle, i.e. the price that would be agreed between unrelated entities, applies to all transactions between related entities, as well as to determine the loss on the sale or other transfer of an asset between two constituent entities.

The Directive also defines the method of calculating the qualifying income of such entities as a permanent establishment or a flow-through entity.

The Directive stipulates that a constituent entity which is a permanent establishment (PE) should have its financial accounting net income or loss reflected in its financial accounts separate from the main entity's accounts. That means that PE's financial result should not be included in the qualifying income or loss of the main entity.

According to the Directive, the qualifying loss of a permanent establishment may be deducted in the case of a main entity when calculating its qualifying income only to the extent that it was the expense of that main entity. It should not however be offset against an item of the domestic taxable income of the main entity. In that case, the qualifying income earned later by the PE should be consistently treated as the qualifying income of the main entity only due to the earlier loss recognised as an expense of the main entity.

Pursuant to the Directive, the qualifying income of the flow-through entity should be reduced by the income attributed to its owners outside the capital group, unless the flow-through entity is an UPE or held by an UPE.

The adjustment of covered taxes. In addition to the method of calculating the qualifying income, the Directive describes how should the covered taxes be adjusted for the purpose of calculating this income. "Taxes covered" means taxes paid or all kinds of income taxes that, in principle, affect the income from business activity of the enterprise e.g. taxes on distributed profits. Nonetheless, they do not include top-up tax, neither jurisdictional levied under IIR, nor qualified domestic, as well as taxes attributable to an adjustment resulting from application of the UTPR. (Council of the European Union, 2022, p. 92).

Computation of the effective tax rate and the top-up tax. The method of calculating the ETR of entities from Groups ≥ EUR750 million and the top-up tax is presented in Articles 26 to 32 of Chapter V of the Directive. Calculations of the effective tax rate should be based on previously prepared data based in turn on the financial statements of constituent entities from Groups ≥ EUR750 million. Thus, calculating the ETR requires dividing the sum of all adjusted covered taxes of the constituent entities of a Group in a given jurisdiction by their net qualifying income.

"Adjusted covered taxes" (hereinafter: ACT) are defined in Chapter IV and "net qualifying income" (hereinafter: NQI) is defined in Chapter III of the Directive.

The Art. 20 of the Directive states that ACT "should include" taxes recorded in the financial statements of a constituent entity regarding its corporate income or profit. Thus, these will be taxes on income, profit or shares of the income or profits of the company

resulting from the ownership of shares. These may include taxes on distributed profits (like dividend), deemed profit distributions and other expenses imposed under an eligible distribution tax system. The directive provides that these may also be taxes levied in place of a generally applicable corporate income tax, as well as taxes levied on retained earnings and corporate equity. This set is not closed. However, the Directive clearly states that the ACT does not include top-up tax, neither domestic accrued by the constituent entity nor resulting from qualified IIR accrued by the parent entity.

The effective CIT rate is to be calculated according to the following formula:

$$ETR = \frac{ACT\ of\ the\ constituent\ entities\ in\ the\ jurisdiction}{NQI\ of\ the\ constituent\ entities\ in\ the\ jurisdiction}$$

Where:

(a) ETR – stands for effective CIT rate;

(b) ACT of the constituent entities in the jurisdiction means adjusted covered taxes that is total of covered taxes of all constituent entities from the capital group per jurisdiction which were adjusted according to Chapter IV of the Directive;

(c) NQI of the constituent entities in the jurisdiction means net qualifying income that is the sum of the qualifying income of all constituent entities net of their qualified losses per jurisdiction, calculated according to the Directive.

A quotient below 15% means that a given jurisdiction is classified as a low-taxing for the entities from a given capital group, which results in the obligation to add top-up tax in the amount of the difference between the minimum rate of 15% and the actual CIT rate of the companies from the group. ETR is calculated for all non-exempt constituent entities in a given jurisdiction. It follows that the calculation includes companies with different effective CIT rates, above and below 15%. The resulting ETR coefficient for a group of companies in a given jurisdiction qualifies it or not for adding top-up tax. The so-called jurisdictional ETR below 15% triggers the IIR procedure, in which the parent company, usually UPE, is required to add and pay top-up tax to its tax office.

A indispensable condition for calculating the top-up tax is obtaining net qualifying income by the company. Therefore, it should be assumed that despite the fact that ETR is calculated as common rate for all companies from the capital group per jurisdiction, the

mere fact of taking a given company into account for the calculation of the rate requires that it achieves net qualifying income. It is not only about the income resulting from the company's financial statements, but the net qualifying income obtained after calculating the data from the company's financial statements based on the guidelines of the Directive. Net qualifying income is in turn computed according to the following formula:

$$NQI = qualifying\ income\ of\ the\ constituent\ entities - qualifying\ losses\ of\ the\ constituent\ entities$$

Where:

(a) qualifying income of the constituent entities mean the sum of qualifying income of all constituent entities in the jurisdiction computed according to Chapter III of the Directive;

(b) qualifying losses of the constituent entities mean the sum of qualifying losses of all constituent entities in the jurisdiction computed according to Chapter III of the Directive.

According to Art. 26 of the Directive, investment entities being a part of a capital group are excluded from the calculations of the adjusted covered taxed and the qualifying income. Thus, they are excluded for purposes of calculating the group's ETR in a given jurisdiction.

For the constituent entities in a given jurisdiction with CIT ETR below 15%, the top-up tax must be added, separately for each company, depending on how much its actual ETR was. Article 27 of the Directive stipulates that, if in a given jurisdiction the ETR calculated for companies in a given Group ranks below 15%, the top-up tax must be added separately for each of these companies. The rate by which income for additional taxation should be multiplied is the difference between the minimum rate of 15% and the companies' actual ETR, according to the formula:

$$Top\text{–}up\ tax\ percentage = minimum\ tax\ rate - effective\ tax\ rate$$

Where:

(a)- minimum tax rate means 15%

(b)- effective tax rate means actual tax rate calculated as average rate for all entities in the capital group in the jurisdiction calculated according to Art. 26 of the Directive.

Thus, the determination of whether a jurisdiction is low-tax is to be verified on the basis of calculating the average effective CIT rate for companies in a given tax group. Thus, it may happen that a jurisdiction classified as low-tax jurisdiction for one Group will not necessarily be low taxing for another Group, also the level of taxation of the constituent entities in the same Group will be different. Such differentiation of taxation, even within one Group, is due to the fact that because the effective rate depends on a number of factors, including whether particular entities enjoy tax benefits. Therefore, even within a single group, individual companies may have a different effective CIT rate. However, taking into account intra-group capital flows, the offsetting of profits and losses between companies, as well as the fact that the group prepares consolidated financial statements, the calculation of a common effective tax rate for all entities in one jurisdiction for the purposes of qualifying them for the top-up tax system seems to be fully justified. It brings a picture of the Group's taxation level in a jurisdiction and simplifies calculations at the initial stage. Note that some constituent entities should not be included in the calculation, as mentioned earlier. These include, for example, investment companies, as a rule, flow-through or shipping companies. However, if the Group is under-taxed in a given jurisdiction the top-up tax should be charged to each company separately. In such a situation, the ETR of each company separately is compared with the minimum rate of 15%. It follows that different companies in the same group may have top-up tax added at different CIT rates.

The top-up tax is charged at the jurisdictional level. The formula for its calculation is as follows:

$$Jurisdictional\ top-up\ tax = (top-up\ tax\ percentage\ x\ excess\ profit) + additional\ top-up\ tax - domestic\ top-up\ tax$$

Where:

- excess profit is a positive amount as a result of the difference between net qualifying income determined in accordance with Art. 26.2 of the Directive and substance-based income exclusion understood according to Art. 28 of the Directive as a sum of 5% carve-out

of net book value of fixed assets and 5% carve-out of employees payrolls of each constituent entity in the jurisdiction;

- additional top-up tax- means top-up tax calculated additionally in the cases predicted in Art. 11.3 (not paid qualified domestic top-up tax), Art. 16.7 (gain from disposal of tangible assets), Art. 22.6 (deferred tax asset attributable to a qualified loss), Art. 25.1 (adjustment to covered taxes for previous fiscal year) and 25.4 (recomputation of ACT to amount over EUR 1 million unpaid for four years), Art. 40.5 of the Directive (reduction of ACT and ETR due to outstanding balance)[8];

- domestic top-up tax- means a top-up tax that is implemented in the domestic law.

The excess profit for the jurisdiction for the fiscal year is calculated in a following way:

$$Excess\ profit = net\ qualifying\ income - substance-based\ income\ exclusion$$

Where:

- the net qualifying income is the income computed per jurisdiction as indicated in Article 26 (2), then it is the difference between qualifying income and qualifying losses of constituent entities in the jurisdiction;

- the substance-based income exclusion means the sum of 5%carve-out of net book value of eligible payroll costs of employees of each constituent entity in the jurisdiction and 5% carve-out of their eligible tangible assets in this jurisdiction, determined in accordance with Article 28 of the Directive.

Thus, excess profit is the result that remains after deducting 5% of the value of tangible assets and payrolls of employees of the constituent entities of a given Group in a given jurisdiction from net qualifying income.

It should be specified that payroll costs include, in accordance with Article 28.2 of the Directive, all compensation expenditures of employees. This means salaries, wages, other direct employees benefits, e.g. resulting from healthcare, pension and social contributions as well as payroll and employment taxes. For the purposes of the calculations, the author took

[8] For example: Article 11.3 refers to the case of additional top-up tax if no domestic top-up tax has been paid for four consecutive years; Art. 16.7 provides for an adjustment of qualifying income or loss and thus the possibility of an additional top-up tax on the disposal of local real estate to third parties outside the capital group.

into account the collective position "employees costs" present in almost every financial statement, which, according to the author, best reflects the costs related to employees.

The Directive includes both full-time and part-time workers of each constituent entity as employees, as well as independent contractors but participating in the ordinary operating Group activities.

In the case of eligible tangible assets, the Directive specifies that it is about property, plant and equipment, natural resources, license or similar arrangements for the use of immovable property granted by the government and a lessee's right to use tangible assets in a given tax jurisdiction. For the purposes of the calculations, the author took into account the item Tangible fixed assets available in each financial statement.

For the purposes of the calculation, the author has taken into account the deduction from net qualifying income of 5% of substance-based income exclusion, in accordance with the guidelines of the Directive in Article 28 points 3 and 4. However, this percentage is variable. Article 48 of the Directive stipulates that the relief is temporary, it is provided for a period of ten years from 2023 to 2032, always counted from December 31 and its amount varies in relation to payrolls and assets. Therefore, the amount of the relief will change over time, which will be discussed in more detail later in this work.

Based on the calculated jurisdictional top-up tax, the top-up tax of each constituent entity should be computed in the following way:

$$top-up\ tax\ of\ the\ cons.entity = jurisd.top-up\ tax\ x\ \frac{qualifying\ income\ of\ the\ cons.entity}{aggregate\ qualifying\ income\ of\ all\ cons.entities}$$

where:

(a) the qualifying income of the constituent entity means the income determined for and entity in a given jurisdiction for a given fiscal year in accordance with Chapter III;

(b) the aggregate qualifying income of all constituent entities for a jurisdiction for a fiscal year stands for the sum of the qualifying income of all the constituent entities located in the jurisdiction for the fiscal year.

When calculating the top-up tax of constituent entities being stateless (e.g. flow-through entities), the top-up tax should be calculated separately of other constituent entities from

the group. In the course of complex calculations, it should be reMembered that the Directive requires the top-up tax to be added only to by the constituent entities that obtained net qualifying income in a given tax year, although the calculation of the jurisdictional top-up tax also includes constituent entities with a loss.

The top-up tax of each constituent entity in the Group calculated in this way by the parent company should be paid to the tax office of the parent company, as a rule, the office of UPE.

Temporary exclusions and reliefs. De minimis. In addition to the subjective exclusions mentioned earlier, the Directive also provides for temporary exclusions and reliefs.

Article 30 of the Directive provides that, despite low taxation, the constituent entities in a given jurisdiction may avoid adding top-up tax if they meet two cumulative conditions proving their low profitability. The relief is called “de minimis exemption”. The first condition is that the average qualifying revenue for a given tax year for constitiuent entities should be less than EUR10 million. The second condition is that the average qualifying income or loss of all constituent entities in a given jurisdiction is lower than EUR1 million. Assuming that the above-mentioned conditions are met, the top-up tax may not be added to the companies. The decision belongs to the company filing the tax return for the entire Group.

One of the additional requirements of the Directive is that the Group companies whose income is taken into account in the calculations must be residents of a given jurisdiction in a given fiscal year and two years preceding it. The de minimis exemption does not apply to the constituent entities which are stateless or investment entities.

Substance-based income exclusion carve-out. The Article 28 of the Directive in connection with Art. 48 provides a temporary relief for the entities located in low-tax jurisdictions, if they are physically present in a given jurisdiction, i.e. they have eligible tangible assets and employees there. The European legislator has recognised that these entities pose low risk of contributing to base erosion and relocating to low-tax countries for the sole purpose of obtaining a tax advantage. At the beginning of the Directive it is indicated that this exclusion partly solves the problem of the presence of a MNE groups or a large-scale domestic groups that conduct economic activity requiring material presence in low-tax jurisdictions and it is not related to their desire to obtain only a tax advantage, which contributes to the erosion of the tax base in CIT. An additional top-up tax due to their low taxation would be detrimental to such companies. It should be noted that the higher the

value of tangible assets and employees' costs, the higher the amount of the relief calculated on these values as a percentage. Therefore, the Directive somehow rewards the physical presence of national and international enterprises in particular EU countries, which is a guarantee of their actual business activity.

The proposed relief is presented in the table below. The Directive provides a percentage of the tax reduction for the next 10 years, starting from fiscal year 2023.

Table 11. Substance-based income exclusion for 2023-2032

Year	Payrolls carve-out	Tangible assets carve-out
2023	10%	8%
2024	9,8 %	7,8%
2025	9,6 %	7,6%
2026	9,4 %	7,4%
2027	9,2 %	7,2%
2028	9,0 %	7,0%
2029	8,2%	6,6%
2030	7,4%	6,2%
2031	6,6%	5,8%
2032	5,8%	5,4%

Source: The Directive 2022/2523 on 2022.

Payrolls and tangible assets are of key importance in applying the relief. Both of these terms are defined in Article 28 of the Directive. The relief refers to "qualifying employees" to which the Directive includes both: full-time and part-time employees of the constituent entity and also the independent contractors involved in the normal operating activities of a MNE or a large domestic group. It is essential that employees work under the direction and control of an MNE group or a large national group. *Eligible payroll costs* mean not only expenses for employee compensation, including salaries and wages, but also other expenses that provide the employee with a direct and distinct personal benefit. These include health and pension insurance contributions, payroll and employment taxes and employer's social security contributions.

The *eligible tangible assets* in the Directive include property, plant, equipment and natural resources located in the jurisdiction but also "lessee's right to use these tangible

assets as well as a license or similar arrangement from the government for the use of immovable property or exploitation of natural resources that entails significant investment in tangible assets" (Directive, Art. 28). A constituent entity filling the tax declaration may decide that group companies will not benefit from the relief by excluding a certain percentage of salaries and fixed assets from net qualifying income for the purpose of calculating the top-up tax. The eligible payroll costs which are excluded from the relief are costs already capitalized and included in the carrying value of qualified tangible fixed assets or attributed to income excluded because it comes from international shipping. The carrying value of tangible assets used to derive income from international shipping and of real estate, including land and buildings intended for sale, lease or investment have been excluded from the set of eligible fixed assets for the purpose of calculating the relief.

The Table 10 shows that during the 10-year transitional period, a certain percentage of the value of tangible fixed assets and employee payrolls will be excluded each year. Whereby each year this deduction percentage will be declining. For the first 6 years, it will be lower by 0.2% each year in the case of salaries and fixed assets, and from the 7th year onwards it will be lowered annually by 0.8% in the case of payrolls and by 0.4% in the case of tangible assets. In this case, depreciation of tangible fixed assets should be taken into account, which additionally reduces the value of the assets themselves. It should be remembered that in particular EU countries, three generally applicable depreciation methods are used, i.e. straight-line, declining balance and production method, with the first two predominating, not forgetting individual accelerated depreciation of some fixed assets. This means that the value of tangible fixed assets in different EU countries is reduced at different rates and at different speed. Thus, a curve-out calculated as a percentage of carrying net value of tangible assets in some countries will be more profitable than in others. The ten-year period of curve-out relief coincides with the most frequently used depreciation period for machines in most EU countries (in 2020 it was 23 countries).

It is also worth noting that companies that have invested in tangible fixed assets with the entry into force of the reform can gain the most from the relief, because they will benefit from it throughout the entire 10-year period and the relief at the beginning of the period is the highest.

Exemption for groups starting international activities. The Directive also proposes a 5-year exemption from additional taxation income of multinational and national groups that

are in the early stages of their activities. The legislator assumed that additional taxation could discourage such companies or groups from developing cross-border activities. It should be noted, however, that the exemption is to apply if the group does not have entities in more than six jurisdictions.

The Directive being analysed by the Member States contains more conciliatory elements than its initial draft. One such element is, for example, granting the administrations of Member States with very few MNE groups of EUR>750 million and with a small number of entities the possibility of temporarily resigning from the application of the IIR and UTPR. The Directive does not specify what period is meant. Member States making this choice will have to notify the Commission of their decision before the deadline for transposition of this Directive, i.e. before 31 December 2023. Member States that would use the option of a temporary exemption from minimum effective CIT should transpose this Directive in such a way as to ensure the proper functioning of the global system. It concerns, among others, providing information to entities within other Member States and third country jurisdictions so that these EU states and third country jurisdictions could apply the UTPR.

The Directive contains a very precise regulations not only of the method of calculating and collecting the tax, but also exclusions, reliefs, special rules in the case of corporate restructuring, as well as administrative provisions. However, the author, guided by the purpose of her work, i.e. determining the fiscal effects of the Directive harmonizing the effective CIT rate, focused mainly on the calculations to show how the harmonisation will affect the budget revenues of selected EU countries.

3. The importance of the effective CIT rate as a subject of harmonisation

The subject of CIT harmonisation in the Directive 2022/2523 is the effective tax rate.

As mentioned earlier ETR differs from the nominal rate both in terms of the amount and nature. While the nominal rate is imposed by law and gives just a general information about the amount of tax in a given country, the effective rate is resultant and reflects the tax burden actually borne by the taxpayer taking into account the loopholes, exemptions, deductions, credits or used preferential rates. The knowledge of the actual tax burden in a given country is used by investors when making decisions about locating an investment in

one country or another (Devereux, Loretz, 2010). ETR provides investors with more complete information than STR about the cost of invested capital in a given country.

Sztuba (2016) notes that a rational comparison of the level of taxation in different countries is possible only with the use of effective, not nominal tax rates. For example, the Effective Average Tax Rate (EATR) is often used to compare alternative locations for investments of the same type. Investors decide to locate their investments not necessarily in the country with the lowest nominal CIT rate, but rather with the lowest EATR rate, which means that a given jurisdiction offers the maximum return on investment after taxation (OECD, 2007). Therefore, knowledge about the level of effective taxation in a given country allowed for some kind of tax optimisation and decisions on locating investments in a country with a lower tax burden. The choice of investment location is not determined by geography, but by the ability of particular countries to win in global competition (Sztuba, 2016). It could be added that this is also due to the fact that companies are less and less dependent on extracted raw materials, and that they are increasingly digitalised and have a virtual presence in many countries. The tax reliefs offered to potential investors by individual governments would contribute to lowering their actual tax burden.

As Uchman (2014) noted that any preferences in income taxes aimed at investment growth are against the principle of tax neutrality and result in a reduction of state budget revenues. However, the author drew attention to the fact that in the field of income taxes there is a tendency to increase the neutrality of taxation. Directive 2022/2523 seems to confirm this statement (Uchman, 2014).

In addition to the EATR rate, the marginal rate METR or EMTR (Marginal Effective Tax Rate or Effective Marginal Tax Rate) is also used when assessing the return on investment in a given country. This rate is a simulated value that allows to determine the value of the tax that an investor would pay in a border investment, i.e. one in which the profit would only cover the cost of the invested capital.

Another type of effective CIT rate is the implicit tax rate (ITR) used in public finance to determine the aggregate tax receipt from a specific source to its aggregate tax base.

There is finally the effective tax rate (ETR) which is used in financial reporting. Unlike EATR and EMTR, which are based on simulations, this rate concerns real data of the enterprises. It was introduced to the International Financial Reporting Standards (IFRS) as the International Accounting Standard nr 12 (IAS 12) introducing the practice of presenting

both current income tax (to be paid for a given tax year) and deferred tax in financial reporting. EATR shows the average tax contribution a company makes on an investment earning economic profits. Calculation of the effective rate for the current tax year is made by dividing the tax due for that year by the company's gross financial result. This is the so-called cash ETR (Poszwa, 2017). However, this method does not take into account the difference between the accounting and tax result of the enterprise. These differences result, among others, from permanent shifts in the moment of recognizing revenues and costs in accounting and tax terms. The effect of shifts is the fluctuation of ETR in particular periods and its discrepancy with the nominal rate. On the other hand, taking into account the change in assets and provisions for deferred tax in plus or minus, allows for making the effective tax rate more realistic and reducing the difference between it and the nominal rate.

As a rule, the effective rate is lower than the statutory rate, but it may happen that it will be higher. CIT payers are required by IFRS implemented into national law to create provisions for future tax payments. Deferred income tax provisions are created in the amount of income tax payable in the future, in connection with the occurrence of positive temporary differences, i.e. differences resulting in an increase in the tax base in the future. The amount of this provision is determined taking into account the CIT rate applicable in the year when the tax obligation arises. The rate subject to the Directive is the ETR rate and also includes deferred CIT. Therefore, sometimes the effective rate may be higher for a given year than the nominal one.

In the second half of January 2024, eighteen EU Member States - Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Romania, Slovakia, Slovenia and Sweden completed their internal legislative process required to implement the Directive.

In turn, Estonia, Latvia, Lithuania, Malta and Slovakia notified the EC of their intention to opt for the deferred application of IIR and UTPR (in accordance with Article 50 of the Directive) (European Commission, 2024).

Five EU countries did not opt or were not eligible for deferral and missed the transposition deadline. These were: Cyprus, Greece, Poland, Portugal and Spain - missed the transposition deadline (KPMG, 2024).

The Commission has initiated infringement proceedings against these countries.

Chapter IV Factors influencing the amount of budget revenues from CIT

1. The multitude of factors influencing the amount of tax revenues from CIT.

As described in previous chapters, the differentiation of CIT in the EU has many negative consequences, which boil down to the fact that budget revenues from this tax in the Member States are lower than they should be. This is due to the fact that companies are shifting profits to countries with lower tax burden and governments are competing with each other for capital.

In the analysis of factors influencing the amount of budget tax revenues, one of the most frequently mentioned elements is the tax rate. It is however worth noting that, apart from this one element, the amount of budgetary tax revenues are influenced by many other elements. There are primarily elements resulting from the construction of a given tax, but also factors not directly related to the tax such as shadow economy or digitalisation level.

Taking into account the fact that taxes are the main source of financing public tasks, their collection affects the functioning of the state, as well as its economic growth. Tax revenues that are too low may lead to underinvestment in the sphere of public services, too high may stifle economic development.

Crivelli et al. 2021 point out the diversity of factors affecting the amount of CIT revenues. They underline that CIT revenue performance varies across European countries and is driven by tax and non-tax factors. Budget revenues from CIT only partly result from tax factors, including tax competition, the taxpayers decisions concerning tax compliance and profit shifting, tax regimes and above all — structural elements of the tax and their manipulation, e.g. lowering the nominal rate and broadening the tax base. Non-tax factors also play an important role in budget revenues from CIT. These can be, between others, the large variation in the degree of incorporation, the practice of running businesses as transparent entities taxed under the personal income tax, the economic structure of the country, e.g. the presence of natural resource rents, presence of large MNE or the behaviour of taxpayers in their investment.

The authors point out that such a great quantity of factors creates challenges for cross-country comparisons and that, in such a case, the measure that is often used is the CIT revenue productivity. It is defined as the ratio of CIT revenue scaled by GDP to the statutory

CIT rate. This measure shows how much revenue is raised by each percentage point of the CIT rate (Crivelli et al. 2021).

Those numerous factors influencing the amount of tax revenues to the state budget can be ordered in terms of many criteria. Factors determining the amount of CIT revenues can be of international as well as of domestic nature. International factors include the international activity of corporations and the mobility of capital, which is conducive to tax optimisation and the creation of a tax gap, the international tax competition of governments which is conducive to reducing the tax burden and the international cooperation of tax administrations aimed at reducing the level of tax avoidance by taxpayers. Domestic factors include the general tax policy of the government, which affects many aspects of taxation in a given country but comes down to an attempt to balance the tax burden with the economic development.

These factors can also be divided into those of a qualitative and quantitative nature. Qualitative factors include for example various types of facilities for the taxpayer aimed at facilitating contact with the tax administration which should lead to higher tax revenues. Such factors also include the level of agglomeration or tax incentives aimed at attracting foreign investors to a given country, the level of digitalisation that favours mass sales, and thus higher incomes of companies operating digitally or digitalisation of communication between the tax office and the taxpayer that shall translate into easier and faster filing of tax returns.

An important qualitative factor is also the level of training of tax administrations, as well as more possible ways of contacting taxpayers with tax officials. Finally, an important qualitative factor influencing the amount of tax revenues is the legal system of tax regulations applicable in a given country or association of states (e.g. in the EU).

Quantitative factors mainly concern the structure of the tax, but may also concern other measurable phenomena related to taxation. The structural factors of the tax affecting the amount of the state budget revenues are the tax rate and the tax base and resulting from it the taxable income as well as the number of taxpayers. Despite the fact that it is easier to show the influence of quantitative factors, it is not easy to decide whether quantitative or qualitative, international or national factors are more important. In the era of globalisation and strong economic ties between countries, all factors interpenetrate and affect the

amount of income from particular taxes in particular countries e.g. the tax rates applied in one country affect the tax rates applied in another country (De Mooij, Ederveen, 2003).

In the Table 12, the author presents a list of exemplary qualitative and quantitative factors affecting the amount of CIT income, resulting from her review of the literature in this area.

Table 12. Factors affecting CIT revenues

Factors affecting CIT revenues	
Qualitative	
Of economic nature	**Of legal nature**
International capital mobility Taxation of foreign profits (Becker & Fuest, 2010)	The level of cooperation of tax administrations
Tax and investment policy of the country; openness of the economy (Slemrod, 2004), inflow and outflow of foreign direct investment, financing investments with taxes	Tax incentives and company size (Bachas et al., 2023), double tax treaties
Tax policy and tax competition in other countries, e.g. tax rate (Riedl & Rocha-Akis, 2012)	International common rules for determining the tax base
Solutions not directly related to taxation, e.g.: infrastructure, agglomeration (Baldwin & Krugman, 2004)	Degree of digitalisation, efficiency and effectiveness of tax administration (Felis, 2010)
Corporate profitability (Auerbach & Poterba 1987, Douglas 1990, Poterba 1991); The cyclicality of the economy (Kubatova & Rihova, 2008)	Costs and time of tax compliance thanks to the tools available to the taxpayer
The size of the enterprise sector (Clausing K., 2007) and the size of the shadow economy (Schneider et al., 2010)	The level and forms of individual income taxation
Quantitative	
Structural elements of the tax rate, tax base (Devereux, Griffith, & Klemm, 2004) and related elements like tax reliefs (Devereux, 2007)	
The number of taxpayers	
The amount of taxpayers' income	
The level of digitalisation of the economy and society attractive to global companies	
Market size and effective marginal tax rate to attract investors	
Value of tangible fixed assets, costs of employees	
The limit tax rate of rational tax burdens - the Laffer curve (Raczkowski 2016).	

Source: On the basis of literature analysis.

Qualitative factors seem to outweigh quantitative factors, however, the author's intention was to try to determine the fiscal effects of harmonizing the effective CIT rate for ten selected EU countries. Therefore, in the further part of the work, mainly quantitative

factors were taken into account, such as the income of a group of enterprises selected in accordance with the criteria resulting from the Harmonisation Directive 2022/2523, the aggregated effective tax rate of MNEs in the selected jurisdictions, the net value of tangible fixed assets and staff costs in constituent entities – subject to a harmonised CIT rate, as well as the level of digitalisation of selected EU countries expressed by the Digital Economy and Society Index (DESI) and the level of the shadow economy in those countries.

According to the author, the analysis of state budget revenues obtained from a specific tax also requires mentioning potential revenues which do not flow into the state budget. One of the reasons that CIT revenues do not flow into the budgets of individual countries is the fact that there is a smaller or larger tax gap and the shadow economy in each country. A factor that may intensify the effect of the tax gap or minimise it is the level of digitalisation of a given country and society. Those two factors are in turn connected with the effectiveness and efficiency of tax administrations. A higher level of digitalisation of society means the possibility of more efficient settlement of electronic tax returns containing no or fewer errors, faster communication between the tax office and the taxpayer and easier tax inspections. All this is conducive to the increase in the efficiency of tax administration, and thus should contribute to an increase in tax revenues for the state budget.

Therefore, in this Chapter, the author analyses the selected factors mentioned above, which, in her opinion, are important for the analysis of CIT budget revenues.

2. The importance of structural elements of the tax

Considering the size of budget revenues, the impact of the elements of the tax structure should be considered first, and then the other elements. Therefore, the kind and number of taxpayers, the amount of their income, as well as the tax rate by which this income is multiplied will be of key importance.

Number and categories of CIT payers. CIT payers i.e. the entities bearing the CIT burden are undoubtedly the element that is of fundamental importance for the size of budget revenues from this tax in particular EU countries. As described in Chapter II, such taxpayers vary between EU countries, both in terms of their number and kind. The current number of all CIT payers is different in each EU country, as well as the number of taxpayers covered by CIT harmonisation predicted in Directive 2022/2523, due to the fact that some EU countries

have a larger, other a smaller number of companies from Groups ≥ EUR750 million. What is more important, some EU countries have more parent entities located there which is relevant for budget revenues in the case of the provisions of the Directive 2022/2523.

Table 13 shows EU headquarters of UPEs in Groups ≥ EUR750 million and their number of worldwide subsidiaries. The countries are ordered from the highest to the least number of subsidiaries owned by UPEs.

Table 13 The number of UPE from groups ≥ EUR 750 million in selected EU countries, 2020

CbCR EU country_2020 Ultimate Parent Jurisdiction	Number of MNE Entities worldwide	Total Revenues in USD	Profit (Loss) before Income Tax in USD	Income Tax Paid (on Cash Basis) in USD
France	103 513	24 844 916 223	-705 618 646	354 648 542
Germany	92 048	31 292 903 000	1 511 418 000	453 781 000
Netherlands	34 689	45 275 246 424	1 376 079 401	311 918 386
Luxembourg	31 526	3 599 553 665	73 166 976	33 011 375
Spain	26 297	10 054 753 303	759 803 508	28 515 792
Sweden	25 757	273 547 907 320	41 084 685 390	4 757 980 353
Italy	18 637	1 978 719 744	18 636 438	6 643 408
Austria	16 616	189 675 351 041	11 471 016 349	1 233 207 212
Denmark	13 812	4 613 165 238	214 323 006	26 638 777
Belgium	11 992	3 785 000 000	681 100 000	21 200 000
Ireland	11 770	108 998 107 445	-7 703 413 452	717 450 498
Finland	7 219	143 248 742 906	5 916 763 970	1 318 609 953
Greece	2 352	94 828 827	-32 979 216	..
Poland	1 783	239 990 974	8 877 191	-435 003
Hungary	612	26 360 506 404	1 634 218 474	237 707 337
Slovenia	351	13 776 964 624	81 900 851	94 247 873
Lithuania	212	302 974 072	-393 516	483 477
Latvia	62	39 156 001	1 233 988	101 405

Source: OECD (2023c). Table I - Aggregate totals by jurisdiction for 2020

Number of MNE Entities worldwide* means entities placed in one or more of 110 jurisdictions analysed by OECD.

According to the IIR resulting from the Directive 2022/2523, UPEs will be responsible for top-up tax collection for the subsidiaries with the ETR lower than 15%. Data presented in

Table 13 is aggregated and calculated by the OECD only for countries that have submitted CbC reports. Therefore, profit (loss) is also an aggregate value for all reported UPEs of MNEs in each country. The OECD noted in its disclaimer regarding the limitations of the statistics on CbCR and that this is only part of the data, even from reporting countries, because some of it is confidential (OECD, 2023).

The absence of some EU countries is noticeable. The reason is either the lack of CbCR submission on their part or or lack of willingness on the part of MNEs to locate UPEs in these countries. Therefore, the introduction of a minimum effective rate of 15% higher than the previously applicable rates for MNEs in these countries may result in a stronger tendency in the future to transfer profits from these countries to companies located in countries that do not apply IIR and CbC reporting.

The author selected only EU countries where UPEs of MNE's are located because they are responsible for collecting top-up tax in the event of too low taxation of their subsidiaries in the EU and outside the EU. Of the nine Central and Eastern European countries that have been part of the EU since 2004-2007 and analysed by the author later in the work, just over half of them seem to have UPEs of MNEs with a global turnover ≥ EUR 750 million on their territory. These are: Poland, Hungary, Slovenia, Lithuania and Latvia. They are at the bottom of the table, UPEs in these countries are probably less numerous and accumulate fewer subsidiaries. The main bargaining position of these countries in terms of corporate taxation aimed at attracting foreign investors were reduced corporate income tax rates.

There is also visible a significant discrepancy between Poland with UPEs possessing 1783 subsidiaries and the rest of the group (UPEs with 62-612subsidiaries). Theoretically, UPE with a larger number of subsidiaries (constituent entities) means the possibility of higher revenues from top-up tax in the case of subsidiaries located in low-tax jurisdictions.

The harmonised minimum effective CIT rate applies only to a narrow group of companies in the EU, i.e. entities belonging to capital groups that meet specific revenue criteria. These are usually large companies generating high revenues, but this does not mean that each of these companies is highly profitable.

As for the legal forms of CIT taxpayers, apart from a few exceptions for types of companies in several countries, these forms are very similar in name. In all countries there are, for example, limited liability companies or joint-stock companies, although the legal regulations concerning them differ from country to country. The differentiation of the type

of CIT payers is influenced not only by their legal form, but also by the size expressed by the number of employees and the generally understood income criterion. Generally, because in some countries it may refer to the income of companies, in others to turnover or revenue.

Diversification of CIT payers in terms of the number of their employees or the amount of income may translate into the level of their tax burden. In many EU countries, a distinction is made between small, medium-sized and large companies. The examples of the EU countries where the income criterion divides taxpayers into small and large and directly affects their tax burden is Poland or France. The standard CIT rate in France was reduced to 25% in 2022, but entrepreneurs with the turnover of less than EUR 10 million, whose capital is at least in 75% owned by natural persons, may benefit from the 15% CIT rate (DILA, 2023).

The turnover criterion translates into differentiation of the nominal CIT rate applicable to them. Among the Southeastern nine EU countries analysed in terms of CIT revenues, only few of them decided to introduce a reduced rate of this tax for the smaller entities. This may be due to the fact that standard rates in these countries are already much lower than those in Western EU countries. Such reduced rates for smaller enterprises apply to Poland, Slovakia and Lithuania. In Poland, a small CIT payer (i.e. the entity whose sales value together with the amount of VAT for the previous year did not exceed EUR 2 million) is charged with nominal CIT rate in the amount of 9% of the income obtained, and a large taxpayer in the amount of 19%.

Among the countries analysed by the author in terms of CIT, Slovakia has different rates of this tax due to the amount of income. The basic rate in this country is 21%, while for a small entrepreneur, i.e. with an income below EUR 100 thousand, the rate is reduced to 15%. The reduced CIT rate for small entrepreneurs is also present in Lithuania and amounts to 5%, which is a significant reduction compared to the standard rate of 15%.

The lower CIT applies to taxpayers with a turnover below EUR 300 thousand and having less than 10 employees.

Lower nominal CIT rates are often provided for SMEs but in turn the largest companies have strong economic position which gives them the opportunity to reduce their level of effective taxation. All these factors affect the amount of state budget revenues and at the same time the differences in taxation make CIT revenues calculations more complicated.

Bachas et al., 2023, drew attention to the differences in taxation due to the size of the company. The authors also paid attention to the fact that while a lot of analyses have been

carried out in the field of tax evasion and profit shifting, much less attention has been paid to tax expenditures. Their latest research, based on data from tax returns in 13 developing countries, shows that there is a correlation between company size and effective corporate tax rates. These countries spend approximately 0.9% of GDP annually on financing tax incentives, thus offering companies lower taxation for making certain investments. Such incentives are mainly used by the largest companies that have adequate opportunities to invest in research and development. For this reason, approximately 1/3 of such companies have a tax burden lower than 15%.

The effective taxation of small and medium-sized companies is lower mainly due to the fact that they benefit from lower statutory rates for smaller taxpayers. According to the authors, increasing the minimum effective CIT rate to 15% could increase corporate income tax revenues by an average of 27% in each of the analysed countries (Bachas et al., 2023).

CIT payers are various entities, from municipalities and partnerships in some countries to large international corporations present in each EU state. However, statistics on the number and structure of CIT taxpayers are kept in the EU mainly at the national level, as national statistical business registers and are not generally available in Eurostat.

Generally available in Eurostat is data on aggregated CIT budget revenues in individual countries in particular fiscal years, without division into categories of taxpayers. Fortunately, in the case of harmonisation of the effective minimum CIT rate, it was enough to precisely define one category of taxpayers in terms of their number, income, effective taxation and location, i.e. companies from the Groups ≥ EUR750 million. This is due to the fact that CIT harmonisation will apply only to a specific narrow group of entities.

The Directive CbCR introduces greater transparency in terms of insight into the MNE income and the Directive, on the basis of which the minimum effective CIT rate is to be introduced, unifies the methods of ETR calculation and of the top-up tax.

The expected allocation of topped-up CIT may significantly change the amount of budget revenues in particular EU countries unless they decide on qualified domestic top-up tax.

The allocation resulting from IIR will depend, among others, on the current tax burden incurred by enterprises i.e. the level of effective corporate taxation, as well as the category of taxpayers, i.e. whether it will be a parent company or a constituent entity. It will also be important whether the third country in which the UPE has the constituent entities applies the IIR rule.

Harmonisation will concern the largest taxpayers in terms of income. Their number matters, but the income they generate matters even more. Due to the fact that Groups ≥ EUR 750 million may also include capital companies from the SME's group from countries that guaranteed them so far a lower nominal CIT rate (e.g. Poland 9% rate, Lithuania 5% rate), the tax burden for these companies will increase significantly. Taking into account the revenues of these companies, they would not be charged with top-up tax as standalones, but if they are subsidiaries of the Group meeting the criteria of the Directive, they will have to bear a higher CIT burden, unless they belong to group with an average revenue of less than EUR 10 000 000 and an average qualifying income or loss of less than EUR 1 000 000 in a jurisdiction (de minimis exclusion).

In the case of the Directive harmonizing the effective CIT rate, the analysis applies only to a limited number of taxpayers, i.e. companies belonging to Groups ≥ EUR750 million, provided that they achieved such revenue in two of the last four consecutive fiscal years, therefore, it is a very limited set of taxpayers.

The tax base and income. The tax base is an indispensable element of tax calculation, which determines the amount of budget revenues. In the case of CIT, the tax base is, with a few exceptions, the taxpayer's income after deduction of all types of reliefs from which he benefited. Therefore, the tax base is the result of calculations consisting in deducting from the revenues the costs of obtaining them. At the same time, we distinguish two sources of revenues: from capital gains and profits from other sources. These revenues may be reduced by direct or indirect costs of obtaining them. It is important to assign the costs of getting the revenues from capital gains to these revenues, and the remaining ones to other non-capital revenues related to business activity. The tax base may also consist only of the company's revenues. This is the case for some profits obtained by foreign taxpayers which may concern dividends, licences, other profits resulting from having shares in other company and for some forms of taxation like a lump sum. After obtaining the calculated amount of income or revenue, the taxpayer may reduce the tax basis by the deductions permitted by law. The size and number of possible deductions reduce the tax base accordingly and thus the CIT budget revenues. The tax base in CIT in EU countries is calculated in a similar way but the revenues and costs are very often different. It is worth mentioning that the tendency of the last several years in the CIT taxation in the EU was the gradual reduction of the statutory rates of this tax and the broadening of the tax base by particular countries. Broadening the tax base

while lowering the rates resulted in maintaining relatively constant budget revenues from this tax in majority of EU countries (European Commission, 2021).

According to Małecka-Ziembińska (2012), extending the tax base in a given tax serves to increase its fiscal and economic efficiency. The tax base in the fiscal sense is understood as the amount on which the tax is calculated. Extending such a base means an increase in budget revenues from a given tax, because, as a rule, the more revenues are included in the base, the higher the revenues should be generated from it for the state budget. The higher the income generated by the tax, the greater its effectiveness.

The tax base may also be understood in the economic sense. In that case, extending tax basis reduces the distortion of taxpayers' behaviour consisting in replacing taxable activities with non-taxed or less taxed ones (tax optimisation). Therefore, broadening the tax base results in a reduction or elimination of substitution behaviours, i.e. attempts at tax optimisation. The taxpayer has fewer opportunities for such optimization carried out in a legal way (Małecka-Ziembińska, 2012).

Walasik draws attention to an important aspect when it comes to the tax base, to its elasticity. In the case of enterprises' income, it is very elastic, i.e. sensitive to economic fluctuations, therefore it is an unstable source of financing, which in turn does not guarantee budgetary income (Walasik, 2015).

It cannot be overlooked that, among all CIT payers, the international entities with the highest turnover are usually the least taxed even in countries with a high statutory CIT rate because they have the greatest possibilities of shifting income between countries.

Saez et al. (2012) indicate that the leakage in budget revenues may be caused, among others, by the elasticity of the taxed income and the behaviour of taxpayers trying to reduce their tax burden. Although this is not the only factor in reducing budget revenues, a tax system with a narrow tax base, giving many possibilities for deductions, results in high efficiency costs of a given tax. This means that in order to obtain a certain amount of income from a given tax, one must incur disproportionately high costs of obtaining it. The authors note that in this context, broadening the tax base and eliminating tax avoidance opportunities reduces such elasticity of the tax base and reduces efficiency costs more than in the case of introducing higher tax rates (Saez et al., 2012).

It is worth noting that in the case of additional budget revenues of EU countries calculated on the basis of Directive 2022/2523, taxation applies to the qualified income of companies actually taxed at a rate lower than 15%.

Each low-taxed company that did not show a qualified loss will have to pay an additional top-up tax, increasing its effective taxation to 15%. However, which country will be the beneficiary of additional revenues from the top-up tax will be determined by an additional key element introduced by the Directive 2022/2523. This is the headquarters of the parent company of the Group, i.e. UPE (relatively UPO or IPE). The parent company, as a rule UPE, is obliged not only to calculate but also to pay top-up tax to its tax office for a low-taxed related company in and outside the EU. Therefore, countries that have so far applied low CIT rates may lose part of their income from this tax to the countries where parent companies from particular capital groups are located. The more parent companies from Groups ≥ EUR750 million in the country, the greater the probability that more income will go to the state budget.The tax base for CIT is generally income, but in some cases, it may also be revenue. Therefore, the concept of tax base is a broader than the concept of income. For the purposes of the study, the author will only take into account income. The choice is dictated by the Directive's guidelines, according to which income should be taken into account to calculate top-up tax.

Tax rate. States' budgetary revenues are undoubtedly influenced by the tax rate by which the companies' income is multiplied. The tax rate is one of the most important elements affecting the amount of budget revenues in the case of most taxes. It directly determines what percentage of the taxpayer's income, in some cases - revenue, is due to the state budget. STR is the first piece of information visible to an investor and a taxpayer that tells about the state's implemented tax policy towards companies. There has been a noticeable general downward trend in statutory tax rates, mainly from governments' decisions to restore state competitiveness for investors (Kawano & Slemrod, 2016).

To calculate CIT revenues of EU countries it is sufficient to multiply the amount of companies' established income by the appropriate statutory rate (sometimes different for small and larger entrepreneurs) in each country and to sum the results of all EU countries. However, the harmonisation directive is based on the effective CIT rate and income calculated in accordance with the formula presented therein.

Taking into account the real budget revenues from CIT, it should be remembered that there is possibility of taking advantage of tax reliefs by enterprises in particular EU countries. This, of course, reduces the effective CIT rate, but it may also directly reduce the statutory rate of this tax. For example, the income earned by an enterprise under the IP Box regime in Poland, reduces the CIT rate from 19% (or 9% in the case of small or medium enterprise) to 5%. In the case of using other tax reliefs, this results in a reduction of the effective tax rate. Therefore, this rate shows the real burden of a specific CIT payer for the state budget.

ETRs, similarly to STSs have also been declining, with such declines averaging 0.4% per year between 1988 and 2012 (Dyreng et al., 2017). Interestingly, with these downward trends in CIT rates stemming from the practices of high- and low-tax jurisdictions, there can be noticed a relative degree of constancy, that is: high-tax jurisdictions continue to remain high-tax, while low-tax jurisdictions also retain their character (Markle & Shackelford, 2012).

Rates in the EU are, as mentioned earlier, very diverse both in statutory and effective terms. As a general rule, the nominal rate, resulting from the law, is fundamental for the tax calculation, in the sense that it illustrates how much percentage of the company's income should be collected and paid to the state budget.

The effective rate (in its various variants, such as the EATR or ITR) is outcome-based and shows what proportion of the income at a given nominal rate and possible allowances and deductions the analysed company has paid into the state budget. Thus, the effective rates are outcome-based, which is why they have so far been published by the Eurostat and OECD with a delay of about one or even few years.

The use of different tax rates by EU countries is an expression of their sovereignty and, at the same time, a compromise between the burdensome nature of taxation and the deterrence of investors to new investments and the need to ensure certain levels of tax revenues. The tax rate, especially the nominal (statutory) one, is also the first most quickly available information on the friendliness of a country's tax system, which can of course be misleading given the other tax elements like the omnifarious tax reliefs. It should be clearly noted that with the differentiation of these other elements, also the the tax base or the number of taxpayers, even the application of identical nominal rates by all EU countries will bring different tax revenues.

Directive 2022/2523 using the effective rate calculated for each MNE company will mean that the actual minimum tax burden of each MNE company should be no less than 15%

which somehow equalizes the minimum burden in each country and stops race to the bottom in the EU. This does not mean, however, that this burden will be felt equally by smaller and larger constituent entities and that the tax competition between the states will disappear. The purpose of Directive is to obtain additional income from CIT for states budgets and to reduce the tax gap, by ending profit shifting to low-tax jurisdictions.

The harmonisation proposals of CIT rates have been repeated in the EU several times, alternatively with the proposed unification of the rules for determining the tax base, which turned out to be an idea too much interfering with the sense of sovereignty of the Member States.

CIT rates (statutory and effective), the most visible manifestation of this sovereignty, have been reduced for decades (Clausing, 2007), e.g. global CIT EATR has halved over the last 43 years (Bray, 2021). In the period from 1980 to 2021, the global weighted average corporate STR decreased by 21%, i.e. from 46% to 25% (Bray, 2021).

The decline in tax rates was followed by a decline in CIT revenues in relation to GDP (Dyreng et al., 2017). The widespread race to the bottom and the widening CIT tax gap contribute to a significant burden for countries, especially those where CIT revenues constitute a significant part of their overall tax revenues. Reducing CIT rates is, in principle, beneficial for MNEs and their shareholders, while it is problematic for state governments, as it reduces budget revenues from the tax. Reducing tax revenues means less ability for the state to fund public services (e.g., health, transportation, education, defence) and pensions.

However, it is not always the case that lowering the tax rate will translate into lower tax revenues for the state budget and rising tax rates can lead to shrinkage of the tax base by increasing susceptibility to tax avoidance and by causing major economic disruptions that translate into lower revenues because of reduced output (Bi, 2012; Heijman & Van Ophem; 2005; Papp & Takats, 2008; Trabandt & Uhlig, 2011).

Changes in tax rates result in changes in the amount of tax revenues both in the direction of increasing and decreasing them (Laffer 1981, Wanniski 1978). The relationship between the tax rate and state budget revenues is described by the Laffer curve. Contemporary analyses in the field of the rate-revenue relationship, conducted especially in advanced economies, but also by the OECD and the European Commission, are largely based on the Laffer curve.

According to Laffer, the curve takes the shape of an inverted parabola, which implies that at both a 0% and 100% tax rate, the value of state tax revenues will be zero. Therefore, the relationship between tax rates and revenues is non-monotonic (Canto et al., 1981).

At a rate of 0%, the tax will not occur, at a rate of 100%, taxpayers will try to avoid it and transfer their economic activities to the gray zone, since they would have to give 100% of their income to the state (Allingham & Sandmo, 1972; Sandmo, 2005).

It is worth noting that the Laffer curve has been a concept used to study the tax avoidance process for about 40 years. Latest models of endogenous growth are also based on it, especially DSGE models used, among others, also for this purpose (Cichocki, Kokoszczyński, 2016).

The shape of the curve also shows that there is a statutory revenue maximizing tax rate for the state which is located at the apex of the curve and called saturation point.

Rates located on the rising arm of the inverted parabola will cause an increase in tax revenue to the state budget, while rates on the falling arm will cause a decrease in revenue.

It is also known that that each country will have a different Laffer curve, that it will be different for different types of taxes and also that it varies in depending on time because, for example, during war, taxpayers accept higher taxation (Rossa G. 2011). The saturation (or tipping) point on the Laffer curve determines the level of acceptance of a given society for a given tax amount and that when it is exceeded, the probability of tax avoidance increases. The graph of the curve will differ from one country to another. Therefore, the basic problem of sovereign states is to determine their maximum socially acceptable tax rate in order to maximize budget revenues to cover the costs of public services and implement other state tasks (Gaspar et al., 2016). States are attempting to determine the Laffer curve, especially the saturation point to which they can raise tax rates. Exceeding this point, according to Laffer's concept, should result in a decline in state tax revenues.

Factors influencing the different shapes of the curve are also examined. According to some authors it depends on the characteristics of the country, such as size or openness (Suárez & Zidar, 2018).

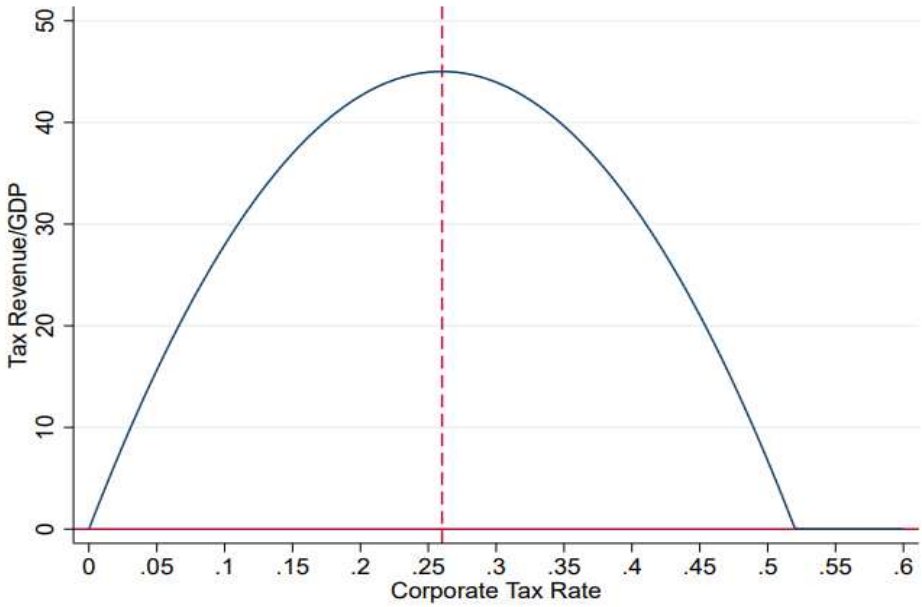

Figure 2. Laffer's curve
Source: Suárez Serrato, J. C., & Zidar, O. (2018), The structure of state corporate taxation and its impact on state tax revenues and economic activity, p. 33

The rate-revenue relationship has been the subject of research for many years, especially in advanced economies, but also by the OECD and the European Commission.

In the EU, it is known to compete with nominal rates between individual countries (rates to the bottom) but granting the corporations as investors reliefs and deductions actually comes down to lowering the effective CIT rate. Therefore, the emphasis on competing with the element that is obvious and visible at first glance has been shifted to the element that reduces the tax burden only after the taxpayer has benefited from the reliefs. The Directive 2022/2523 takes into account the effective rate as a result of taxpayers' use of reliefs in a given jurisdiction.

3. Selected non-tax factors affecting the collection of corporate income tax

Tax gap. The tax gap is generally defined as the difference between the tax revenues that should be achieved by the state or local government and the amount of actual tax revenues. According to Her Majesty Revenue and Customs (HMRC), the tax gap is the difference between the tax revenues collected by the tax administrations in a certain period and the amount of tax that should be collected in the case there is no tax evasion or loss (HMRC, 2012). Similar definition was made by Andreoni et al. (1998).

According to European Commission and OECD, tax gap is the difference between the amount of taxes that should be paid and the amount of taxes actually paid. It is equated with state revenue loss from taxes (European Commission, 2016; OECD, 2017).

Therefore, since this is the amount of taxes that should have flowed into the state or local government budget, but was not settled by taxpayers, it is of fundamental importance for the amount of budget revenues from taxes. Therefore, on the one hand, there is the expected hypothetical amount of tax revenue that should be collected, and on the other hand — the actual amount of revenue collected.

Due to the fact that taxes are the basic source of budget revenues for most countries, and the tax gap means the amount of taxes that did not reach the state budget, many attempts have been made in individual countries to estimate the size and sources of such a gap in order to counteract it because understanding its causes and reforming the tax system may contribute to reducing it and increasing budget revenues.

Uygun and Gerçek, 2023 note that while the effective collection of tax revenues is essential for governments, they sometimes allow tax evasion, tax avoidance, and informal activities to support economic growth and development (Uygun and Gerçek 2023). While there is no doubt about the statement that governments allow taxpayers to take advantage of loopholes in the law and tax avoidance, which legally contributes to the creation of a tax gap, one cannot agree with the statement that state governments approve tax evasion, which is a phenomenon of breaking the law. It is less problematic to classify as tax evasion the concealment of income by corporations in a given country and their transfer to tax havens, but each time it is necessary to carefully examine cases in which the government of a country grants a given corporation public aid or relief as a result of which the rate of its effective tax decreases. Such cases have been the subject of many years of disputes between the European Commission and the governments of some EU countries, resolved before the Court of Justice of the EU.

Some authors draw attention to the fact that income losses resulting from taxpayers' use of legal loopholes or permitted tax reliefs result from the state's tax policy and constitute the so-called *policy gap*, not tax gap (Bratkowski & Kotecki, 2018).

Piwowarski notes that although the policy gap is not treated as a tax gap, its estimates are and should be presented in the literature, because assuming 100% tax collection, the theoretical amount of income is calculated in the absence of preferential tax rates and

reliefs (Piwowarski 2022). Policy gap consists of the gap related to the application of reduced and zero tax rates called *rate gap* and the gap resulting from the applicable exemptions called *exemption gap* (Poniatowski et al., 2023b).

The literature emphasizes that measuring the tax gap allows for the identification of levels of misuse of resources, helps to increase the efficiency of their allocation and becomes a measure of the effectiveness of tax authorities in collecting tax revenues (Warren & McManus, 2006).

Nerudova &Dobranschi (2019) notes that the tax gap has negative multidimensional implications for public policy causing not only a budget deficit and austerity in the supply of public goods and services but also on the rule of law. For this reason, measuring the tax gap is beneficial because provides guidance on more effective tax collection and allocation of resources necessary to address this gap. For the EU Member States facing global challenges in combating tax evasion and tax fraud, precisely identifying tax gap is an essential step in improving tax efficiency and is also of key importance in shaping the strategy for necessary tax reforms (Nerudova & Dobranschi, 2019). The IMF also points to the need to estimate the tax gap in order to engage additional resources to conduct more effective tax administration (IMF 2023). Uygun & Gerçek, 2021 suggest that the size of the tax gap indicates how defective is the socio-economic policy of the state and that it should be corrected. The authors also point out that predicting the tax gap is necessary to protect the financial interests of the state and to create a control mechanism in the public administration (Uygun & Gerçek, 2021; Uygun, 2021).

Plumley 2005 distinguished three main causes of the tax gap: filing errors, under-reporting and underpayment (Plumley, 2005). Some authors drew attention to behavioural factors influencing tax avoidance (Elffers et al. 1987) and some pointed out that the gap results mainly from intentional actions of taxpayers, such as deliberate understatement of income or claiming unjustified tax deductions and not due to inadvertent non-compliance resulting from calculation errors or inadequate knowledge of tax law (Kirchler 2007).

Similarly, the IMF states that non-compliance is not an observable variable because taxpayers, especially companies, do not want to disclose the extent to which they fail to meet their tax obligations (IMF 2023). Tax non-compliance is usually hidden by taxpayers, therefore, when trying to estimate the tax gap, different methods are used by tax administrations.

There are two main kinds of methods of tax gap estimation: the top-down or bottom-up approaches. The top-down methods are based on collected external macroeconomic aggregate data, such as industrial or third-party data-matching information, also national accounts data available, for example, in Eurostat. On the basis of this information, the theoretical tax base and tax liability is determined and the difference between this theoretical aggregated liability and tax amounts received is the estimated value of the tax gap. A top-down approach is typically used for indirect taxes.

The bottom-up methods are based on a detailed analysis of microeconomic data sources such as internal administrative data, for instance — data from tax returns or audit results. The results of the sample (mainly through audit) are then extrapolated to the rest of the population. A bottom-up approach is typically used for direct taxes. The most extensive research on the tax gap is conducted by the International Monetary Fund (IMF) representing top-down methodology and the British administration - Her Majesty Revenue and Customs (HMRC) basing on bottom-up approach. This method is also used by the IMF which draws attention to the fact that although bottom-up techniques are more likely to identify the root causes of any estimated tax noncompliance, the top-down techniques are more likely to provide a more comprehensive assessment of all tax revenue lost as a result of non-compliance (IMF, 2023).

Direct and indirect methods of estimating the tax gap have also been the subject of analysis in the scientific literature, with some researchers considering direct methods to be less effective due to the fact that they are based on the study of selected representative groups of taxpayers, and further research is generalized to the entire population (O'Doherty, 2014). Some researchers considered microdata-based measures of tax noncompliance as capable of providing more reliable data, but a problem was noted with selecting the right sample to be able to appropriately extrapolate the study results to the entire population (Gemmel & Hasseldine, 2012). The disadvantage of using national accounts for this purpose is that the data is not sufficient detailed so that it is possible to fully specify the causes of the gap or to link the gap to individual taxpayers or even economic sectors.

Many attempts have been made to estimate the tax gap of individual countries. Giles who defined the tax gap as a hidden economy and hidden income, proposed to estimate its value by multiplying the illegal income by the statutory tax rate (Giles, 1997a; Giles, 1997b).

Keyifli (2019) examined the tax gap for all OECD countries from 2010 to 2015. The study used an indirect method to estimate the tax gap, using the results of the shadow economy estimated using multi-indicator methods, countries' GDP and total tax rates. The estimation results showed a total tax gap for 34 OECD Member countries in 2015 of USD 1,373.3 billion. The study also showed no relationship between the size of the tax burden in individual countries and their estimated level of shadow economy. Countries with the highest tax burden in 2015, such as France (64.9%) and Italy (64.8%), were not the countries with the highest estimated level of shadow economy. Mexico (28.07%) and Turkey (27.43%) were the leaders in this respect (Keyifli, 2019).

There is no indicated generally accepted level of the tax gap in the literature, but some authors indicate the acceptable level of the gap is 5% of GDP and point out that a tax gap exceeding this threshold even contributing to economic growth, it may have a negative impact on long-term sustainability (Kuhen, 2014; Schneider et al., 2010; Schneider, 2002).

Uygun & Gercek (2023) conducted tax gap measurements to determine tax revenue losses in OECD countries. The study was conducted as an econometric analysis that determined the impact of GDP, the shadow economy and the total tax index on the tax gap as the dependent variable.

The nominal value of the tax gap and its relation to GDP were measured in 35 OECD countries, using GDP, the shadow economy and total tax rates as independent variables. In order to examine their impact on the tax gap, panel data analysis and Stata 15 were used to analyse cross-sectional dependence, the unit root test and fixed effects models. The authors indicate that an increase in the tax gap means an increase in the shadow economy, while the existence and size of the latter prevent the collection of public revenues and cause distortions in the fair distribution of income. According to the authors, knowing the size of the tax gap may allow the state to undertake the necessary analyses and actions to protect the financial interests of the state budget.

In 2013, the OECD, in cooperation with the G20, launched the Base Erosion and Profit Shifting (BEPS) project. The project pointed to gaps in international tax law that facilitate the transfer of profits by multinational corporations outside the place of their core business and contribute to the emergence of a CIT tax gap (OECD 2013).

The 15-point recovery plan proposed by the OECD in 2015 to solve the problem of tax base erosion in CIT was based on three assumptions: improving the consistency of national

regulations affecting cross-border activity, ensuring that taxation is adjusted to the place of business and the place of generating added value (profit) and transparency and tax certainty for businesses and governments. One of the results of this activity is the CIT harmonisation Directive. In 2015, the loss of government revenue due to BEPS was conservatively estimated at 4-10% of global corporate income tax which means USD 100 to 240 billion per year based on data from 2014 (OECD, 2015).

An important component of the 2015 BEPS Project was the work carried out under Action 1 "Meeting the tax challenges of the digital economy". The Special Task Force on the Digital Economy built on previous work on the subject, including the 1998 "Ottawa Report on Electronic Commerce: A Framework for Taxation" (OECD, 2001) and addressed the challenges of digitalisation both in both direct and indirect taxes.

Shadow economy. One of the factors that affect taxation and is connected with the tag gap is the shadow economy. The number of CIT taxpayers affects the amount of budget revenues of particular countries. What is important is the percentage of these taxpayers which pay taxes and the amount of their income to be taxed.

The literature draws attention to the fact that non-payment of taxes is closely intertwined with behavioural factors and that some societies are more prone to tax avoidance and evasion, which also results from the enforcement capability of the state (Slemrod & Yitzaki, 2002).

The phenomenon of tax evasion contributes to the widening of the tax gap. Due to the fact that tax evasion is illegal, its measurement is extremely difficult, just like measuring the tax gap. One way to estimate such a tax gap is estimation of the shadow economy.

Shadow economy is a phenomenon in which economic activity is legal, but is neither recorded nor regulated, so it also means tax evasion. This concept is most often used to describe tax evasion in VAT and personal income tax, however, estimation of shadow economy may also used to attempt to estimate tax evasion in corporate income tax (Schneider 2005).

A study conducted by Schneider in 2022 confirms the differences in the level of the shadow economy in EU countries that have existed for years. The results for 2022 presented in the Table 14 show that all EM countries analysed by the author have a high level of shadow economy of over 10%, measured as a percentage share in their official gross domestic product (GDP).

This means that tax evasion in these countries is also at a high level, which has a negative impact on the amount of budget revenues from taxes.

Therefore, the introduction of a minimum effective rate of 15% for MNEs in these countries may result in a stronger tendency in the future to transfer profits from EM countries to constituent entities located in countries that do not apply IIR and CbC reporting.

Table 14. Shadow Economy in the selected EU-Countries in 2022 as a percentage of GDP

EU Member	2022	EU Member	2022
Bulgaria	33.1	Portugal	15.7
Croatia	29.7	France	14.2
Romania	29	Czech Republic	13.5
Hungary	25.4	Slovakia	13.1
Cyprus	23.9	Finland	10.8
Lithuania	22.4	Sweden	10.8
Slovenia	22.1	Ireland	10.1
Poland	21.9	Denmark	9.7
Greece	20.93	Germany	8.8
Italy	20.3	Luxembourg	8.3
Latvia	19.9	Netherlands	8.2
Belgium	16	Austria	6.6
Spain	15.8	-	-

Own study on the basis of Schneider & Asllani (2022).

Digitalisation and access to Internet. One of the factors that affect taxation and, consequently, tax collection is the ubiquitous digitalisation. Its wide range of implications for taxes is indicated by the OECD emphasizing that digitalisation affects tax policy and tax administration both at the national and international level, offering new tools, but also introducing new challenges (OECD 2018).

The consequences of digitalisation for tax policy have been the subject of international global debates (e.g. at the G20 Finance Ministers meeting in Baden Baden in March 2017), during which it was wondered whether international tax regulations still keep up with the increasingly changing economic environment. Conclusions drawn during such discussions formed the basis of the new Directive aimed at harmonizing the minimum effective CIT rate.

In March 2018, the OECD developed a new “Interim report on tax challenges arising from digitalisation” based on the 2015 report (OECD, 2018). This report provides an analysis of various digital business models and characteristics of digital markets.

The following three main and common features of digital business models have been defined: scale without mass, reliance on intangible assets and data and user contributions.

The term "scale without mass" is used for the phenomenon typical of the digital economy, describing the development and transcontinental growth of a company without increasing its "mass", i.e. physical presence on the market in a given country. This phenomenon is problematic for taxation as profits are still attributed for tax purposes to the physical presence of the enterprise (principle of residence, withholding tax when taxing at source, permanent establishment). A digitalized enterprise that outsources the production of a good or the provision of a service, eliminating its physical presence in a jurisdiction, is elusive for the tax administration in terms of taxation. There is no physical nexus binding this entity with the place of its business activity and of making a profit (Ramirez Ocampos 2019). Digitalisation therefore contributes to the widening of the tax gap and the reduction of CIT revenues to state budgets.

Taking into account the scale and pace of progressing digitalisation, especially since the COVID-19 pandemic, the phenomenon is becoming more widespread.

The European Commission has been measuring the level of digitalisation in EU countries for several years, and since 2014 the Digital Economy and Society Index (hereinafter: DESI) has been used in the EU. The index was commissioned by the Commission and aims to monitor EU Member States' digital progress indicators.

Currently, DESI monitors 32 "digital maturity" indicators in four areas:

- Digital competences covering the broadly understood skills of using the Internet and computers by society (e.g. making purchases online). Within this area, the number of graduates in ICT (Information and Communications Technology) is also examined;

- Digital infrastructure - meaning the level of accessibility to society of digital infrastructure, to fifth generation telecommunications networks, to broadband Internet thanks to fast connections or high-bandwidth media;

- Digital transformation of enterprises - meaning, among others, enterprises' use of digital technology, level of robotization, number of people employed in digital technology, e.g. the number of programmers;

- Digitisation of public services, which means that the public can use public services remotely (e.g. in the field of submitting electronic tax returns).

Figure 2 shows the level of digitization of an EU country, which shows that almost half of the EU countries have a lower level of digitization than the average EU value, and more than half of these countries are EM countries, i.e. in order from the least digitized: Romania, Bulgaria, Poland, Hungary, Slovakia, Czech Republic and Latvia. Only two of the EM countries have a higher DESI index than the EU average, these are Lithuania and Slovenia.

Digitalisation and access to the Internet can influence the payment of taxes negatively by facilitating tax avoidance, but also positively because taxpayers can settle their tax liabilities faster, easier and more conveniently, and the tax administration can contact taxpayers and the tax administration of another country more quickly. Taking into account the numerous advantages of digitalisation and Internet access, their positive impact on the amount and timeliness of budget tax revenues can be assumed (OECD, 2021).

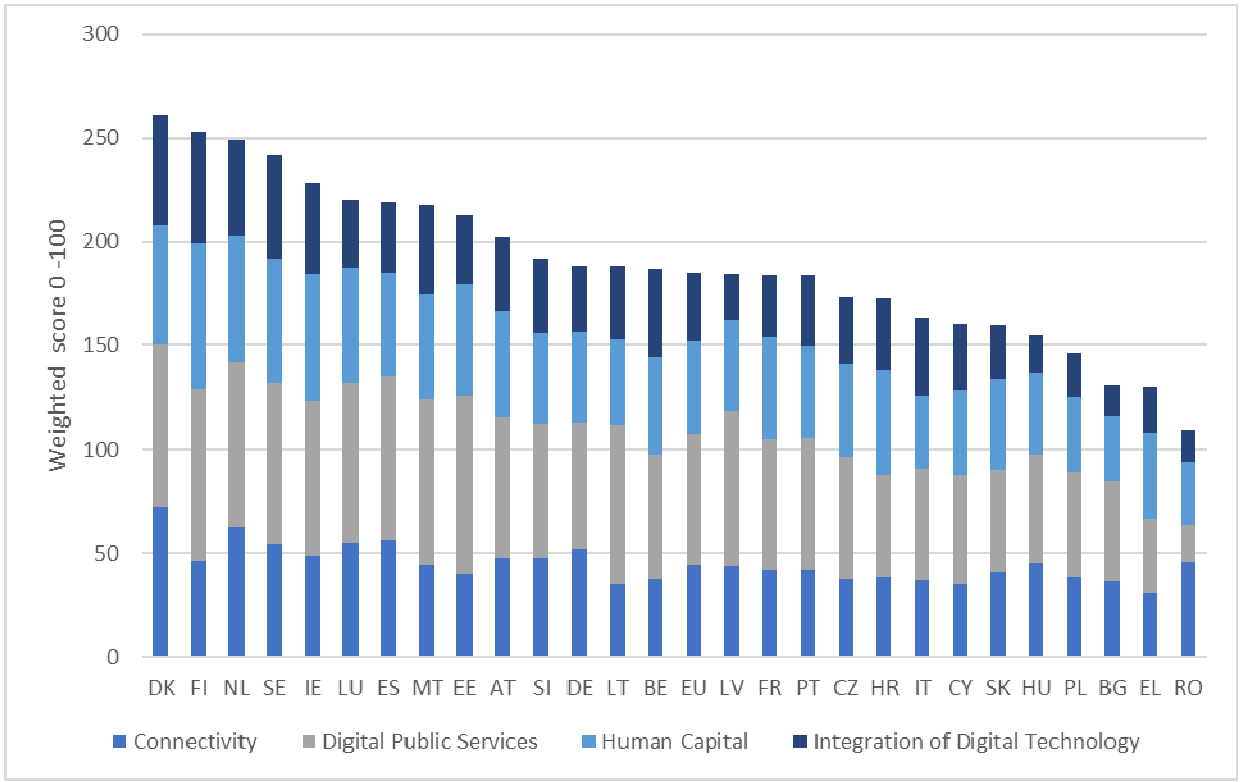

Figure 3. Digital Economy and Society Index in the European Union, 2022
Source: Own study based on European Commission, Shaping Europe's digital future

The purpose of implementing Pillar II, on which the Directive is based, is mainly to close the CIT gap in the countries implementing this solution.

New rules for reallocating the profit of MNEs between countries due to the digital presence of most MNEs in individual countries will be included in Pillar I, which is currently in the preparation phase and is therefore not the subject of analysis in this work.

Nevertheless, a compilation of OECD data from CbC reporting regarding the location of UPE and global revenues of MNEs and the level of digitalisation of EU countries (Table 15) could suggest the correlation between the location of UPE and the level of digitalisation and translate into the amount of revenues in top-up tax. For this reason, the level of digitalisation will be taken into account in the panel study in Chapter V.

The table summarizes information about UPEs' headquarters in the EU, their global gains and the level of digitalisation of the country of headquarters. The author took into account the year 2019 as containing less distorted data in the year 2020 affected by the peak of the COVID-19 pandemic.

Table 15 EU Locations of UPEs with their global revenues and the level of digitalisation of the countries of their residence, 2019

MNE parent comp.	2019 MNE Profit [mln EUR]	2019 Average combined DESI index	MNE parent comp.	2019 MNE Profit [mln EUR]	2019 Average combined DESI index
BE	421 971	40	**IE**	10 328	47
DE	261 482	38	**HU**	8 381	32
FR	86 996	39	**CZ**	7 566	37
SE	86 128	52	**FI**	5 218	54
NL	80 236	51	**RO**	1 887	22
DK	42 107	52	**LT**	1 643	42
LU	36 491	48	**EL**	1 236	26
ES	35 847	47	**SK**	898	33
IT	34 822	34	**SI**	842	41
PT	28 852	40	**BG**	787	28
PL	26 360	30	**LV**	447	41
AT	16 643	41	**EE**	57	57

Own study on the basis of Shaping Europe's digital future, European Commission (2023) and Aggregate totals by jurisdiction, OECD (2023)

What is noteworthy is the fact that there are zero revenues for the countries in column 2 in Table 15. This is due to either the lack of CbC reporting or the lack of UPEs location in these countries. Seven of these countries are analysed EM countries.

The efficiency of tax administrations. Digitization is a challenge for tax administrations not only because of the certain elusiveness of profit transferred by companies to countries with low taxation or due to their lack of physical presence in the country of economic activity. An additional challenge is the issue of digitalisation of the tax administration in order to increase its efficiency. Effective taxation of companies from MNE groups present in many countries requires the cooperation of the administrations of these countries and the rapid exchange of information. The exchange of information requires not only appropriate interconnected computer systems, but also personnel who can use them. All these factors affect the effectiveness and efficiency of tax administrations, which ultimately translates into the amount of tax revenues from the budget (Milosavljević, Radovanović, Delibašić, 2023). It is important to pay attention to the costs and time spent on obtaining the tax for the budget. Well-trained tax officials are able to serve the taxpayer faster, and a taxpayer who is served more efficiently and trusts tax officials is more willing to pay tax. It should be remembered that tax compliance is also costly and time-consuming for the taxpayer, especially for multinational enterprises that have to comply with different tax regulations in each of the countries where they are present.

The awareness and morale of a taxpayer equipped with an IT system that supports taxes seems to be of key importance for the efficient operation of the tax administration and an effective tax system. These factors may contribute to a significant increase in tax revenues of the state budget. There is a huge variation in the EU in terms of the level of digitization of tax administrations and the possibility of settling tax liabilities through an IT system.

Tax-to-GDP ratio. The tax-to-GDP ratio illustrates the level of fiscalism in a given country, it also shows the fact how strongly a given country is dependent on tax revenues.

The total taxes collection to GDP ratio may also indicate how effective the tax administration of particular countries is in collecting taxes (Ramírez-Álvarez et a., 2020), however the generosity of the states in granting various reliefs to taxpayers should also be taken into consideration. Given that taxes constitute the main source of state budget revenues, it should be assumed that the higher the share of tax revenues in GDP, the greater the effectiveness of a given tax system (World Bank 2022).

Figure 4 shows the percentage of total taxes collected by EU countries in in relation to their GDP.

Fiscalism. The word *fiscus* comes from the Latin and means a wicker basket for storing money. Then fiscalism would be the state policy aiming at the greatest possible collection of taxes as budget revenues by imposing further tax burdens on taxpayers. Excessive fiscalism, manifested in the application of too high tax burdens, e.g. increasing the tax rate or eliminating reliefs, may lead to the inhibition of economic growth and taxpayers transferring their activities to the gray zone ((Laffer Curve), it may also manifest itself in economic emigration or the transfer of profits to tax havens. In turn, too low a level of fiscalism will not provide the state with the tax revenues necessary to implement public tasks.

The degree of fiscalism can be measured using various methods, including through the level of tax rates, the scope of the *grey zone*, the amount of time a taxpayer has to fulfil tax obligations, the number of tax burdens, and, above all, the level of tax burdens in the country's GDP. The level of fiscalism in the EU varies greatly, but it is noticeable that it is generally higher in the countries that made up the EU-15 (*old EU countries*). The tax rates in these countries are higher than in EM countries. Tax revenues are also higher in these countries. This is confirmed by numerical data from Eurostat presented in the form of a bar chart in Figure 4. The chart shows that the highest percentage share of tax burden in GDP is recorded by countries such as France, Belgium and Austria. Tax burden and the share of taxes in the GDP of these countries is high, so it can be assumed that skilfully used (not excessive) fiscalism is positively correlated with the amount of tax revenues, and its increase should translate into an increase in tax revenues to the state budget.

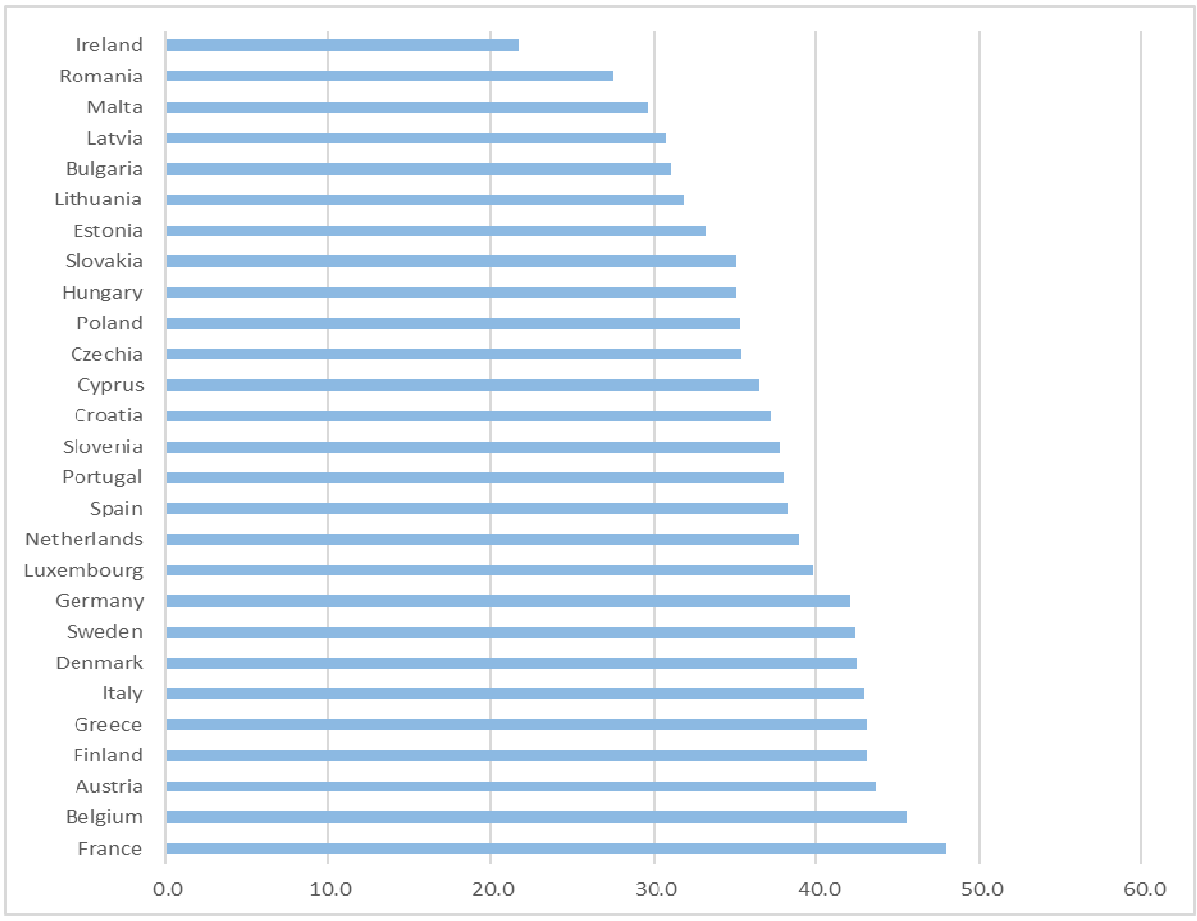

Figure 4. Total taxes in EU countries (including compulsory social contributions) as percent of GDP
Source: Own analysis on the basis of Eurostat data

Thus, the higher the share of total tax revenues in a country's GDP, the greater the fiscal efficiency of the tax system. Szołno-Koguc (2016), however, rightly notices the need to relate tax revenues to public expenditure and the fact that the source of tax revenues has not been destroyed. Thus, fiscal efficiency is the state's ability to obtain the highest taxable income, not detrimental to the source of their collection, and its evaluation should be performed primarily in terms of the tax system's capabilities to cover public expenses.

According to World Bank tax revenues above 15% of a country's GDP are a key ingredient for poverty reduction and economic growth (World Bank, 2022; Junquera-Varela et al., 2022).

Chapter IV lists six selected by the author non-tax factors that, may have in her opinion a significant impact on the amount of additional budget revenues from top-up tax the i.e.: the number of MNEs subsidiaries, level of digitalisation, access to broadband Internet, level of fiscalism, level of shadow economy, R&D expenditures. These factors are independent variables in the panel study conducted by the author in Chapter V.

In turn, tax factors were included in the calculation of the explanatory variable. These were income, substance-based exclusion value and ETR. Their choice was dictated by the provisions of the Directive, according to which they must be taken into account when calculating the top-up tax.

According to the author, the shadow economy is better researched than the tax gap level, and these two phenomena are strongly correlated which is why the author decided to choose one variable - the shadow economy level.

Research and development is one of the key factors affecting effective corporate taxation. The application of tax credits contributes significantly to lowering ETR, which will undoubtedly affect the amount of top-up tax added, unless R&D were considered tax refundable costs.

Chapter V Simulation of top-up tax revenues in the selected EU countries and the susceptibility of this tax to factors not directly related to CIT structure

1. The scope of the study and the data for the simulation

Main assumptions. Considering the provisions of Art. 5 of the Directive 2022/2523, in accordance with the IIR rule, EU UPE's ownership of their subsidiaries in low-tax jurisdictions imposes on each UPE the obligation to calculate and collect top-up tax and pay it to its tax office, i.e. the office in the country of UPE's headquarters. However, if the country where the UPE is based is a low-tax jurisdiction, i.e. the companies' CIT ETR is lower than 15%, the UPE may collect a top-up tax equalising the tax up to 15% only in the country where it is based. In that case, it is not possible for UPE to collect tax for the subsidiaries located in another country. The top-up tax for low-taxed subsidiaries in other countries will have to be collected by a lower-level company that is superior to those subsidiaries. Therefore, in each case, the application of the IIR principle means additional budget revenues from the top-up tax for the country where the UPE or another parent company is incorporated. In turn, for low-tax jurisdictions where UPE's subsidiaries are located, the application of IIR should mean the loss of additional top-up tax revenues to the country of UPE's headquarters. Therefore, when using IIR for the calculation of top-up tax, the higher the profits of subsidiaries and the lower their taxation, the greater the revenues to the budget of the country of UPE's headquarters (unless it is a low-tax jurisdiction). The more UPEs a given country has, the greater the potential revenues from top-up tax and the more MNEs in a given country, the greater the probability that among them are UPEs responsible for top-up tax collection, the greater potential budget revenues from CIT a given country can expect in the case IIR is adopted.

EU Member States also have possibility to apply a qualified domestic top-up tax (QDMTT) computed and paid on the excess profit of all the low-taxed MNEs constituent entities located in their jurisdiction (Art. 1 sec. 2 of the Directive 2022/2523). The method of collecting QDMTT and the penalties for failure to collect the tax are to be regulated by detailed national regulations if an EU Member decides to use QDMTT. QDMTT stops the application of the IIR for the collection of top-up tax within a given

jurisdiction which means retaining additional CIT revenues in particular countries. The author's analysis of the financial statements of the surveyed MNEs in EM countries showed that these are mainly subsidiaries whose UPEs are located in EU-15 where, as a rule, CIT ETR is higher than 15%. Therefore, if the IIR was applied for the collection of top-up tax and it turned out that CIT ETR of subsidiaries in EM countries was lower than 15%, EU-15 would gain additional budget revenues at the expense of EM countries. Based on the above premises, it can be hypothesised that the application of the Income Inclusion Rule for the collection of top-up tax will result in a decrease in potential CIT revenues in EM countries.

As potential revenues from top-up tax, the author assumes the revenues estimated in accordance with the guidelines of Directive 2022/2523 and financial data of companies in each jurisdiction. In turn, assuming that EM countries will choose QDMTT and will be able to collect the tax would mean that these countries will see an increase in their budget revenues from CIT.

Analyses sequence. Since the use of QDMTT means that each country within its jurisdiction can collect topped-up CIT and gain additional budget revenues instead of giving it up to other countries, the author assumed that most EU jurisdictions, especially low-tax ones would be interested in introducing QDMTT. These assumptions are confirmed by the information available on the OECD website (OECD, 2023). According to the OECD, several EU countries have already confirmed to the European Commission their willingness to implement QDMTT, these are: the Netherlands (QDMTT will be charged for the 2024 tax year), Sweden (QDMTT has already been implemented into national law), Germany (QDMTT from 2024), Ireland (2024), Denmark (2024) and Czech Republic (2024) (OECD, 2023).

Due to the fact that the author only had access to the financial statements of companies from EM countries, and it was only possible to estimate the potential revenues from QDMTT. The lack of implementation of this solution in the analysed period the author treated as the potential loss of the estimated top-up tax revenues for the benefit of EU-15 where UPEs are located. Pursuant to the Directive, in the absence of application of the QDMTT, the IIR applies, according to which the top-up tax is levied by the UPE. It is also worth remembering that the choice of QDMTT made by the state, but not supported by actual tax collection, means that the state will lose the application of

QDMTT and IIR will be implemented and budget revenues in the top-up tax will be lost to the state with UPE. Based on these assumptions, the study was performed in the following order:

1. Forecast of revenues from QDMTT in the selected EM countries for the period 2023-2032 based on the 2015-2021 time series data taken from the companies' financial statements;

2. Calculation of loss of potential top-up tax revenues in the analysed EM countries for the countries where the UPEs are located, in the case IIR is used. Estimation was based on the 2015-2021 time series data taken from the companies' financial statements;

3. Analysis of the relationship between revenues from top-up tax and the selected factors not directly connected with CIT structure but potentially influencing the amount of top-up tax revenues.

The first two analyses were performed in Excel due to the need to control manually formulas at each stage of calculations (e.g. deduction of variable carve-outs different in subsequent tax years for wages and tangibles or indexation of wages year to year) and to prepare data synthetic summaries for the selected countries. The software is flexible in this respect and allows not only to create clear reports, but also to make forecasts and simulations. The third study examining the relationship between the estimated amount of top-up tax revenues and the selected variables was prepared in Gretl as a panel data analysis, both with fixed and random effects, with a final indication of greater usefulness for the study of the model with random effects.

The starting point for the study was the selection of capital groups that achieved in two of the last four consecutive tax years preceding 2021 global revenues equal or higher than EUR 750 million. The technique used to search for companies was Boolean search, which enables searching based on logical operators. This method narrows the search possibilities, which allows obtaining only results that meet the given criteria. Thus, the first criterion was the selection of active companies. By active companies, the author understands companies operating, not closed and not in liquidation. This criterion resulted from the author's intention for the study to also have the utility dimension, i.e. to calculate future states budget revenues from CIT on the income earned by these companies. The next criterion was narrowing down to related companies belonging to capital groups achieving global annual revenues of at least EUR 750 million in at least two

out of four consecutive tax years preceding 2021. Companies indicated in the Directive 2022/2523 as excluded entities such as investment or insurance entities or entities with majority government participation were omitted in the study. The last criterion was to narrow down the search to companies located in the nine selected EU countries. The result of the search was obtaining 437 companies' records meeting all the given criteria. It is worth emphasizing the noticeable diversity of the countries in terms of the number of companies belonging to groups ≥ EUR 750 million as well as in terms of the shares of UPEs located in Western EU countries. Thus, the smallest number of companies meeting the group total revenue criteria was found in Latvia, the largest was recorded in Poland with 30% share of Polish capital. The highest concentration of foreign capital among the analysed companies was recorded in the Czech Republic (80%), Romania (72%) Poland (70%) and Slovakia (67%). This information is important in the case those countries would not introduce or lost the right to apply the QDMTT regime. In that case UPEs from other EU States would be obliged to collect the top-up tax.

The analysis showed that UPEs and subsidiaries of capital groups ≥ EUR 750 million are mainly located in the Western EU countries. In the nine selected EM countries, there were a total of 437 such companies out of 5,900 EU companies meeting the criteria of the Directive 2022/2523. Thus, the preliminary analysis showed that entities in EM countries are mainly subsidiaries representing 7% of all MNEs in the EU with annual global revenues ≥EUR 750 million. The remaining 93% of MNEs are located mainly in the Western EU countries.

In the case of the analysed companies in the selected EM countries, the data included: names of companies, UPEs geographic location and their percentage share in the subsidiaries located in the analysed countries. In the case it was indicated that UPE's location is outside the EU, the author took the next in hierarchy parent company in the EU (i.e. IPE or POPE), because, according to the Directive 2022/2523, it is responsible for collecting the top-up tax for its low-taxed subsidiaries.

The year 2021 was the last year for which data from the companies' financial statements was available. The study was limited to nine EU Members located in the Central and Eastern Europe, which joined the EU in 2004-2007 (EM countries). These were: the Czech Republic (CZ), Lithuania (LT), Latvia (LV), Poland (PL), Slovakia (SK), Slovenia (SI), Hungary (HU), Bulgaria (BG) and Romania (RO). Due to insufficient data, the

analysis did not include Cyprus and Malta, which also joined the EU at that time. Estonia was omitted due to its different taxation system. The choice of countries resulted from the author's interest in the issue of shaping the tax burden of enterprises in those countries, both immediately after their accession to the EU, as well as in connection with the newly introduced CIT 2022 reform. The accession of those countries to the Union exacerbated the phenomenon of the *race to the bottom*, while the new reform is to mitigate the phenomenon of tax competition between EU Members.

The data for conducting linear regression in Excel is based on 2015-2021 financial data. This was sufficient time series to simulate revenues from the top-up tax in 2023-2032, although the author is aware of the lower representativeness of the data for 2020-2021 as the years of the COVID-19 pandemic.

The data. The research was based on following data:

- companies' records from the financial statements in EMIS and Eikon Refinitiv database,
- MNEs global income, their number of the constituent entities, UPE's headquarters in EU countries, the level of expenditure on R&D and the use of broadband Internet in EU countries downloaded from OECD database,
- the level of fiscalism and the GDP in EU countries downloaded from Eurostat database,
- the amounts of the average monthly wages in EU countries downloaded from the International Labor Organisation (ILO),
- the level of digitalisation in EU countries downloaded from the European Commission and the level of the shadow economy in EU countries downloaded from the European Parliament,
- the percentage of the relief for particular years taken from the guidelines of the Directive 2022/2523.

The microdata of MNEs with revenues ≥ EUR 750 million was downloaded from two database: EMIS and Eikon Refinitiv because although the Eikon database covers all EU countries, it contains a lot of missing data in the financial statements. The EMIS database contains more complete data but within the EU it only covers countries defined in the EMIS nomenclature as *the emerging markets*, therefore, it covers only 9 out of 27 EU countries. The data was downloaded from companies' unconsolidated financial

statements. This data was used by author for calculation on MNEs CIT ETR on a jurisdictional level. Therefore, the Eikon database was mainly used to analyse data from a broader EU perspective (e.g. UPEs shares in their subsidiaries located in EM countries) and when calculating income from the top-up tax, the author relied on data from companies' financial statements contained in EMIS database.

For the purposes of the study, the following data was collected from the financial statements for 2015-2021: companies' income, accrued income tax, employees' costs, number of employees, net book value of fixed tangible assets (the net value of property, plant and equipment). The last parameters were necessary for the author because of calculation of the relief provided for in Art. 48 of the Directive 2022/2523 that is the substance-based income exclusion (carve-out).

The limited scope of the data resulting from the financial statements (e.g. lack of information on dividends paid or deferred taxes) did not always allow for the adjustment of the accounting income to qualifying income (in accordance with Article 16 of the Directive). In this case, the author relied only on the income resulting from the financial statements. Based on the above data, it was possible to calculate ETRs of capital groups present in the jurisdictions to determine whether they were low tax. The Directive states that such calculations should be made for each tax year, because low taxation of a capital group in one year does not mean that it will also be low in the following year.

2. Estimation of national top-up tax revenues (QDMTT)

Since the calculations concerned states budgets revenues, not the top-up tax for each company, the data of the particular companies within the capital group in the jurisdiction were aggregated (blended within each capital group) by the author, according to the OECD indications (OECD, 2020c).

As a result of dividing the sum of adjusted covered taxes (ACT) by the sum of net qualifying income (NQI) of all companies in each group in the jurisdiction, the effective CIT rates separate for each analysed MNEs group per jurisdiction were calculated. The jurisdictional ETRs were calculated per each MNE according to the below formula (described broader in Chapter III):

$$ETR = \frac{ACT\ of\ the\ constituent\ entities\ in\ the\ jurisdiction}{NQI\ of\ the\ constituent\ entities\ in\ the\ jurisdiction}$$

where:

ETR- effective tax rate of a MNE group per jurisdiction

ACT- adjusted covered taxes of a group in the jurisdiction

NQI- net qualifying income of a MNE group in the jurisdiction.

In order to estimate state budget revenues, the author calculated the average ETR for the jurisdiction by averaging all ETRs of MNEs groups in individual EM countries for the last three years. The author is aware that this is a far-reaching simplification, but it allowed to make estimates of the aggregated potential income from top-up tax. When calculating the average ETRs for individual MNEs located in jurisdictions, the 10% of the outliers with the highest and lowest values were removed and replaced with the observations closest to them, according to the formula:

$$Winsorised\ mean = \frac{X_{n...}X_{n+1} + X_{n+2}}{N}$$

where:

n – the number of largest and smallest data points to be replaced by the observation closest to them;

N – total number of data points.

The received winsorised mean enabled to obtain more reliable and robust ETR data. This mean is more resistant to outliers than the ordinary arithmetic average (Wilcox & Keselman, 2003). For each year, countries with an ETR ≥ 15% were omitted from the rest of the study because top-up tax is to be added only if the effective CIT rate is lower than 15%. In the next part of the study, in accordance with the guidelines of the Directive, the author selected only companies that obtained net qualifying income and were taxed below 15%. The difference between the 15% rate and the rate calculated for MNE companies in each jurisdiction and for each analysed year showed the rate of top-up tax applicable to the companies in the jurisdiction according to the formula:

$$Top\text{–}up\ tax\ percentage = minimum\ tax\ rate\text{–}effective\ tax\ rate.$$

Calculations of substance base. For each subsequent year, the value of tangible assets was reduced by the value of the average linear depreciation rate of 10%. To simplify and standardise calculations for all countries except Latvia, which does not apply depreciation, the author assumed an average linear 10% depreciation of all fixed tangible assets (i.e. plants, machinery and equipment) except for land that is not subject to depreciation. In terms of the amount of depreciation in particular EU countries, the author used information from previous analysis presented in this dissertation regarding the review of depreciation rates for fixed assets based on data from the European Commission (European Commission, 2021). As the companies were not analysed by industry, the replacement expenditures for the purchase, maintenance or improvement of fixed assets such as buildings, vehicles and machinery, was not included in the calculations.

In terms of employee costs, due to missing data from companies' financial statements, the average monthly wages in particular EU countries published by ILO were used. Then, the wages were increased by 20% because the calculations concerned MNEs employees whose earnings exceed the national average. The validity of this assumption is confirmed by the literature (Baraké et al., 2021b; Reitz, 2023). The average annual wage in each of the analysed countries was calculated based on the monthly average wages multiplied by the number of months in the year. Then the annual average earnings were multiplied by the aggregate number of MNEs employees in each country, which gave the value of accumulated earnings in particular MNEs per each year in each jurisdiction. Subsequently, for each country, the percentage of tax relief in the field of tangible assets and employee costs was calculated, starting from 2023 to 2032.

For the purposes of the simulation, the author adopted the initial values of tangible assets and employee costs from 2021 financial statements and assumed that the only changes in their values will consist in the 10% depreciation of fixed assets each year and 6% indexation of wages. Wages indexation rate was calculated based on ILO 2012-2022 data concerning average monthly wages in each EU jurisdiction (ILO, 2023). Based on this data, the level of wage indexation in each country was calculated year-to-year, and then the average indexation level was adopted for the nine analysed countries (similarly Baraké et al., 2021a; Reitz 2023).

To simplify the calculations, it was assumed that the number of employees of MNEs would be constant over time in each jurisdiction. The average value of tangible assets and employee costs in each analysed country were multiplied by the percentage values of carve-out reliefs, separate for tangibles and employee costs, indicated in the Art. 48 of the Directive 2022/2523. Then the value of both carve-outs was added up as a substance-based income exclusion at the level of each tax jurisdiction.

Calculation of the top-up tax amount. Having aggregated data on income for each MNE in each country, the percentage rate of top-up tax and the amount of relief resulting from the substance-base carve-outs, it was possible to calculate the excess profit for each MNE, which in the case of top-up tax constitutes the tax base. According to the Directive, the excess profit is the result of subtracting the aggregated carve-out value for tangible assets and employee costs from companies' net qualifying income, according to formula:

$$Excess\ profit = net\ qualifying\ income - substance-based\ income\ exclusion,$$

where the amount of substance means the sum of eligible employee costs and the value of eligible tangible assets in the MNE group per jurisdiction.

In the case of the amount of the substance-base exclusion higher than the income, the top-up tax was zero. Therefore, the higher the value of tangible assets and employee costs, the smaller the tax base for additional taxation. The resulting excess profit was multiplied by the top-up tax rate. For the purposes of the simulation, the average effective rate for all companies in the jurisdiction from the last three years preceding the analysed period was taken into account. The same calculated ETR was adopted for each year of simulated tax collection. The calculation results are presented in the Tables 16 to 19. All columns (except the first and third) in the relevant tables contain data in millions of euros. The simulation prepared on the basis of data available to the author indicated that only four of the nine analysed EM countries could obtain revenues from top-up tax in the next nine years. These are: Bulgaria, Lithuania, Latvia and Poland. However, revenues in Latvia could occur from 2025 (for the fiscal year 2024). Before that period, the value of substance-based income exclusion will be higher than the value of net qualifying income, so there should be no excess profit, which is the tax base in top-up tax.

Calculations for other countries showed ETR rates higher or equal to 15% (Czech Republic and Slovakia 17%, Romania 16%, Slovenia 15%). In the case of Hungary, the ETR was 7%, however linear regression analysis showed a decline in the value of income to negative values (loss), also available times series historical data for this country was shorter (for years 2015-2018). The problem most likely results from the quality of data from companies' financial statements.

Table 16. Simulation of top-up tax revenues in Bulgaria in 2023-2032

Year	Net income 2021	av. ETR in %	Tangible assets net value	Wages	Carve-out tangibles	Carve-out employees	Total carve-out (SBIE)	Tax base for Top-up (Excess profit)	Top-up tax
2021	1426.26	0.12	3727.39	350.00	-	-	-	-	-
2022	1211.24	0.12	3354.651	371.00	-	-	-	-	-
2023	1355.79	0.12	3019.186	393.26	241.53	39.33	280.86	1074.93	32.25
2024	1500.34	0.12	2717.267	416.86	211.95	40.85	252.80	1247.54	37.43
2025	1644.89	0.12	2445.541	441.87	185.86	42.42	228.28	1416.61	42.50
2026	1789.45	0.12	2200.987	468.38	162.87	44.03	206.90	1582.55	47.48
2027	1934.00	0.12	1980.888	496.48	142.62	45.68	188.30	1745.70	52.37
2028	2078.55	0.12	1782.799	526.27	124.80	47.36	172.16	1906.39	57.19
2029	2223.10	0.12	1604.519	557.85	105.90	45.74	151.64	2071.46	62.14
2030	2367.65	0.12	1444.067	591.32	89.53	43.76	133.29	2234.36	67.03
2031	2512.21	0.12	1299.661	626.80	75.38	41.37	116.75	2395.46	71.86
2032	2656.76	0.12	1169.694	664.40	63.16	38.54	101.70	2555.06	76.65

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS database

Assuming an average ETR of 12% and taking into account the amount of assets (substance) and income estimated on the basis of data from the financial statements of enterprises for previous years, the estimated income from top-up tax in Bulgaria should amount to approximately EUR 32 million for 2023, i.e. the first year for which tax collection will be made and increase steadily to approximately EUR 77 million in 2032.

Table 17 Simulation of top-up tax revenues in Lithuania in 2023-2032

Year	Net income 2021	av. ETR in %	Tangible assets net value	Wages	Carve-out tangibles	Carve-out employees	Total carve-out (SBIE)	Tax base for Top-up (Excess profit)	Top-up tax
2021	567.01	0.14	151.28	858.04	-	-	-	-	-
2022	620.64	0.14	136.15	909.52	-	-	-	-	-
2023	674.27	0.14	122.54	859.04	9.80	85.90	95.71	578.56	5.79
2024	727.89	0.14	110.28	910.58	8.60	89.24	97.84	630.05	6.30
2025	781.52	0.14	99.25	860.04	7.54	82.56	90.11	691.41	6.91
2026	835.14	0.14	89.33	911.64	6.61	85.69	92.30	742.84	7.43
2027	888.77	0.14	80.40	861.04	5.79	79.22	85.00	803.77	8.04
2028	942.40	0.14	72.36	912.70	5.06	82.14	87.21	855.19	8.55
2029	996.02	0.14	65.12	862.04	4.30	70.69	74.99	921.04	9.21
2030	1049.65	0.14	58.61	913.76	3.63	67.62	71.25	978.40	9.78
2031	1103.28	0.14	52.75	863.04	3.06	56.96	60.02	1043.26	10.43
2032	1156.90	0.14	47.47	914.82	2.56	53.06	55.62	1101.28	11.01

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS

According to the financial data of the analysed MNEs in Lithuania and the average ETR rate of 14%, revenues from top-up tax for this country could amount to approximately EUR 6 million in the first year of collection to EUR 11 million in the last year of the simulation, i.e. in 2032. ETR 14% means that Lithuania is 1% short of minimum taxation, so even small changes in taxation resulting in an increase in CIT (e.g. lower tax breaks for companies) may mean that this country will not receive revenues from the top-up tax. When deciding on the choice of IIR or QDMTT, governments of particular countries had to calculate the potential profits from the implementation of QDMTT and the costs of its implementation (costs of administration and enterprises, including software to facilitate calculations, training of accountants, costs of tax advisors). Each country must consider whether revenues from the top-up tax will be high enough to incur additional costs related to the implementation of QDMTT and tax collection. It can be assumed that not introducing QDMTT will be less costly, because the tax would be settled and paid by foreign UPEs to their tax offices, and then the companies would settle the receivables within the group. However, countries that have not chosen QDMTT will give potential additional revenues from top-up tax to other countries (IIR

and UTPR). Lithuania is one of the countries with less than 12 UPEs. The Directive provides for such countries the possibility of postponement of the full implementation of the Directive for a period of 6 years. Lithuania has notified the Commission of its intention to benefit from such a postponement but has not yet passed the appropriate law (Įstatymo projektas, 2024).

Table 18 Simulation of top-up tax revenues in Latvia in 2023-2032

Year	Net income 2021	av. ETR in %	Tangible assets net value	Wages	Carve-out tangibles	Carve-out employees	Total carve-out (SBIE)	Tax base for Top-up (Excess profit)	Top-up tax
2021	74.82	0.11	338.18	1.835	-	-	-	-	-
2022	83.98	0.11	304.36	1.95	-	-	-	-	-
2023	93.15	0.11	273.93	859.04	21.91	85.90	107.82	-14.67	0.00
2024	102.31	0.11	246.53	910.58	19.23	89.24	108.47	-6.15	0.00
2025	111.48	0.11	221.88	860.04	16.86	82.56	99.43	12.05	0.48
2026	120.64	0.11	199.69	911.64	14.78	85.69	100.47	20.17	0.81
2027	129.81	0.11	179.72	861.04	12.94	79.22	92.16	37.65	1.51
2028	138.98	0.11	161.75	912.70	11.32	82.14	93.47	45.51	1.82
2029	148.14	0.11	145.58	862.04	9.61	70.69	80.30	67.84	2.71
2030	157.31	0.11	131.02	913.76	8.12	67.62	75.74	81.56	3.26
2031	166.47	0.11	117.92	863.04	6.84	56.96	63.80	102.67	4.11
2032	175.64	0.11	106.12	914.82	5.73	53.06	58.79	116.85	4.67

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS

Latvia, similarly to Lithuania, expressed the willingness to postpone the application of the Directive 2022/2523. Latvia's Ministry of Finance has notified the Commission that it is preparing a draft law providing for the partial implementation of Directive 2022/2523. This means the implementation of the Directive in terms of introducing reporting obligations but deferring the application of IIR and UTPR. This is a country that can benefit from this opportunity because it also has less than 12 UPEs on its territory. Estimated calculations also show that for the first two tax years 2023-2024, Latvia would not receive revenues from top-up tax.

The first year in which top-up tax would be levied in Latvia is 2030, and the tax would be levied for 2029. Conservatively estimated revenues would then amount to EUR 0.48 million.

Table 19 Simulation of top-up tax revenues in Poland in 2023-2032

Year	Net income 2021	av. ETR in %	Tangible assets net value	Wages	Carve-out tangibles	Carve-out employees	Total carve-out (SBIE)	Tax base for Top-up (Excess profit)	Top-up tax
2021	6539.95	0.1	26718.22	8852.86	-	-	-	-	-
2022	6279.94	0.1	24046.40	9384.04	-	-	-	-	-
2023	6773.75	0.1	21641.76	859.04	1731.34	85.90	1817.24	4956.50	247.83
2024	7267.55	0.1	19477.58	910.58	1519.25	89.24	1608.49	5659.06	282.95
2025	7761.35	0.1	17529.82	860.04	1332.27	82.56	1414.83	6346.52	317.33
2026	8255.15	0.1	15776.84	911.64	1167.49	85.69	1253.18	7001.97	350.10
2027	8748.96	0.1	14199.16	861.04	1022.34	79.22	1101.56	7647.40	382.37
2028	9242.76	0.1	12779.24	912.70	894.55	82.14	976.69	8266.07	413.30
2029	9736.56	0.1	11501.32	862.04	759.09	70.69	829.77	8906.79	445.34
2030	10230.36	0.1	10351.19	913.76	641.77	67.62	709.39	9520.97	476.05
2031	10724.17	0.1	9316.07	863.04	540.33	56.96	597.29	10126.87	506.34
2032	11217.97	0.1	8384.46	914.82	452.76	53.06	505.82	10712.15	535.61

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS

Poland with the average ETR used for MNEs of 10% is the country where the highest potential top-up tax amount could be collected, reaching over EUR 500 million in 2031 and 2032. i.e. approximately PLN 2.5 billion. This amount is similar to the estimates given by the Polish Ministry of Finance during the conference on Pillar II, which took place at the end of May 2024 (Conference, 2024).

However, taking into account the fact that approximately 70% of the capital of the analysed companies located in Poland is foreign capital (the largest Polish state-owned companies were eliminated from the study), an important issue is when Poland will implement the Directive 2022/2523 and the QDMTT mechanism within it. Otherwise, revenues from top-up tax will support the budgets of other countries which have already implemented the Directive. These are the countries which offered locations for many UPEs and have a jurisdictional ETR higher than 15%. The use of IIR potentially gives them the

opportunity to collect top-up tax in other low-tax jurisdictions and only the implementation of QDMTT by the latter excludes this possibility. Poland was late in implementing the Directive because the implementation should have taken place by the end of 2023. For this reason, the top-up tax revenues for 2023 and 2024 will most likely be collected by the jurisdictions in which UPEs are located. The possible introduction of legislative changes in the field of taxation resulting from the Directive 2022/2523 during 2024 will result in state action inconsistent with the Art. 2 of the Constitution of the Republic of Poland, from which follows the principle that it is prohibited to introduce changes (especially unfavourable ones for the taxpayers) in tax law during the tax year (Konstytucja Rzeczypospolitej Polskiej, 1997; Dowgier, 2009). Therefore, there would be a potential conflict at this level between the economic interest of the state (revenues from top-up tax) and the legal interest of taxpayers. According to the announcement of the Polish Ministry of Finance, the draft act implementing the Directive is to be adopted by the Council of Ministers in the third quarter of 2024, and the act is to enter into force from the beginning of 2025. The preferred solution is QDMTT, so for 2026 Poland could obtain additional budget revenues of approximately EUR 350 million. According to the announcement of the Polish Prime Minister, the draft act implementing the Directive is to be adopted by the Council of Ministers in the third quarter of 2024, and the act is to enter into force from the beginning of 2025 (Office of Prime Minister, 2024). The preferred solution is QDMTT (Projekt ustawy, 2024) so for 2026 Poland could obtain additional budget revenues of approximately EUR 350 million.

3. Potential losses of domestic top-up tax revenues in EM countries (IIR)

Income Inclusion Rule. In the absence of a state's implementation of the QDMTT by EM countries, the top-up tax revenue will be collected by the Member States in which the UPEs are headquartered. Based on information in the EMIS and Eikon database regarding what part of the income belongs to UPEs located in different EM countries, the author estimated the percentage share of foreign and domestic capital for each EM jurisdiction. The percentage division of the aggregate income generated in the analysed jurisdictions into the capital from countries with UPE headquarters allowed for calculating the percentage share of these countries in the potential top-up tax. This is a considerable simplification for the simulation purposes, however, showing the scale of the possible loss of top-up tax revenues

in the analysed EM countries to the benefit of EU-15 with UPEs. Therefore, if the share of the capital of country A (no single MNE companies from country A) in country B was 60%, the revenues from top-up tax were also proportionally allocated by the author to country A as 60% share. A simplifying assumption was made that the percentage of capital invested by UPEs from one EU country in another is constant over the analysed years. The results for each of the analysed countries in which top-up tax could be charged are presented in separate Tables 20-23.

Table 20. Bulgaria- allocation of forecasted top-up tax in 2024

EU Member		Estimated net income 2023 in EUR million	Share in top-up tax revenue in EUR million
BG – share of foreign capital	**UPEs headquarters**	**Total: 1 355.79**	**for 2023**
20.54	AT	279	6.62
0.60	DE	8	0.19
78.86	BG	1 069	25.43
Total top-up tax revenue	**in 2024**	**-**	**32.25**

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS database.

The analysis concerns the division of revenues from top-up tax in accordance with the IIR principle, according to which the tax would be collected by UPEs. In most of the analysed cases, UPEs held 100% of shares in the subsidiaries in EM countries. According to the analysed data, the estimated amount of top-up tax in the first year of its collection in the case of Bulgaria should exceed EUR 32 million but in the case of use of IIR the Bulgarian budget should receive just over EUR 25 million. The estimated amount of top-up tax for the Bulgarian budget results from the share of Bulgarian capital in the total income generated by group companies ≥ EUR 750 million. The lower amount of budget revenues compared to the amount of potential tax collection results from the fact that approximately 21% of income used for calculation of excess profit and next the top-up tax in Bulgaria is the capital earned by foreign companies in which 100% of the shares are held by UPEs located in other countries, mainly in Austria (over 20%) and in Germany (0.6%). For this reason, with the income generated by the analysed companies from MNEs groups in Bulgaria estimated at

approximately EUR 1.36 billion, in the case of IIR application, approximately EUR 7 million of the top-up tax charged on it would go to the budgets of other EU countries.

The simulation of potentially lost revenues from top-up tax concerns in each analysed country first year of tax collection. In the case of Bulgaria (Table 20) it should be 2024 (i.e. the year for which the top-up tax should theoretically be settled for the first time on the basis of MNEs 2023 income) but in the case of Latvia, Lithuania and Poland, the top-up tax collection will take place later. As mentioned, in the case of Latvia and Lithuania, the full implementation of Directive 2022/2523 will be postponed for 6 years. Therefore, the first tax collection would occur in 2030 for the 2029 fiscal year (Table 21). The calculation applies to 2029, because according to the simulation, the top-up tax should not be collected in this country for the first time for the fiscal years 2023-2028. The simulation confirms that revenues in earlier years will be quite low compared to revenues in other countries. The Latvian Ministry of Finance probably also estimated the costs of introducing the new tax, which most likely turned out to be too high compared to the potential revenues from the new tax. Therefore, the Latvian government took advantage of the tax deferral option.

Table 21. Latvia- allocation of forecasted top-up tax in 2030

EU Member		**Estimated net income 2029 in EUR million**	**Share in top-up tax revenue in EUR million**
LV – share of foreign capital in percents	**UPEs headquarters**	**Total: 148.14**	**for 2029**
2.35	CY	3.48	0.06
7.62	LV	11.29	0.21
90.03	non-EU	133.37	2.44
Total top-up tax revenue	**in 2030**	**-**	**2.71**

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS database.

An additional argument for such a decision could also be the fact that the majority of MNEs' investments in Latvia (over 92%) have their source in foreign capital of which less than 2.4% is Cypriot capital, and over 90% is non-EU capital, most likely Russian. Therefore, incurring the costs related to the full implementation of Directive 2022/2523 could turn out

to be an expense disproportionately high compared to the potential revenues from top-up tax, both when choosing IIR and QDMTT.

If the jurisdictions in which non-EU UPEs – owners of Latvian subsidiaries are located would not have implemented IIR (the OECD Two-Pillar Agreement) until 2028, the top-up tax would have to be collected by the EU constituent entities (if existing) lower in hierarchy than non-EU UPEs. In the case of lack of such EU parent companies, the UTPR rule would apply. According to Art. 50 of the Directive 2022/2523, Latvia was one of the few countries to notify the Commission of its intention to delay the application of the IIR and UTPR due to the small number of UPEs on Latvian territory. According to data from the Latvian Ministry of Finance, the number of UPEs covered by the Directive 2022/2523 will not exceed three in Latvia and approximately three hundred subsidiaries and permanent establishments. Latvia's temporary exemption is to apply for six consecutive years (OECD, 2024).In addition to Latvia (as of December 2023) Estonia, Lithuania, Malta and Slovakia have notified the Commission of their intention to opt for deferred application of the IIR and UTPR provisions in accordance with Article 50 of the Directive 2022/2523 stating that no more than twelve UPE is located within their tax jurisdiction. The introduction of QDMTT could contribute to higher tax revenues in these countries, however, taking into account the costs of reforming tax administrations to collect top-up tax and the amount of potential revenues from this tax in the first years of the Directive 2022/2523 validity the venture could have been unprofitable. In the case of Lithuania, estimated revenues in 2030 from top-up tax for fiscal year 2029 could exceed EUR 9 million over 96% of which would go to the Lithuanian budget.

Table 22. Lithuania- allocation of forecasted top-up tax in 2030

EU Member		**Estimated net income 2029 in in EUR million**	**Share in top-up tax revenue in EUR million**
LT – share of foreign capital in percents	**UPEs headquarters**	**Total: 996.02**	for 2029
1.76	DE	17.53	0.16
1.76	SE	17.53	0.16
96.48	LT	960.96	8.89
Total top-up tax revenue	**in 2030**	**-**	**9.21**

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS database.

Despite the fact that the top-up tax would mainly contribute to Lithuania's budget, the country decided to postpone the full implementation of the Directive (application of IIR), just like Latvia.

Table 23. Poland- allocation of forecasted top-up tax in 2024

EU Member		Estimated net income 2023 in in EUR million	Share in top-up tax revenue in EUR million
PL – share of foreign capital in percents	UPEs headquarters	Total: 6 773.75	for 2023
0.33	AT	22.69	0.83
1.01	BE	68.20	2.50
0.29	CY	19.90	0.73
2.57	DE	174.31	6.38
0.13	DK	8.64	0.32
3.19	ES	216.37	7.92
8.24	FR	558.33	20.43
0.03	IT	1.96	0.07
12.18	LU	825.36	30.20
28.14	NL	1 905.98	69.73
0.02	PT	1.10	0.04
4.15	SE	280.86	10.28
28.97	PL	1 962.41	71.80
10.74	non-EU countries	727.63	26.62
Total top-up tax revenue	**in 2024**	**-**	**247.83**

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS database.

Poland did not manage to implement Directive 2022/2523 on time. The implementing act is to be adopted by the government at the end of 2024. This means that the QDMTT collection planned by the Polish government will take place in 2026 for the fiscal year 2025. Comparing the results of the simulations presented in Tables 20 to 23, in terms of the amount of potential revenues from top-up tax collection, Poland could be the largest beneficiary among these four countries. However, in terms of the percentage of the revenues possible to be obtained to those potential resulting from the income, Bulgaria and Lithuania would be larger beneficiaries, because Bulgaria should collect 79% of the income from the entire top-up tax amount and Lithuania could gain 96%. The percentage share of the Polish budget would amount to approximately 29% of the total collected top-up tax. The rest of the revenues, in accordance with the IIR principle, would be collected by UPEs from other EU countries and paid by them to their tax offices. Even though Poland will collect

QDMTT only in 2026, the top-up tax will also be collected in the country for 2023-2024. According to the IIR, the tax will be collected and settled by UPEs from their low-taxed subsidiaries in Poland. According to Table 23, the largest beneficiary of the Polish top-up tax should be the Netherlands, which has invested the most capital in Poland (over 28% of the total foreign capital invested by MNEs meeting the criteria of Directive 2022/2523). Therefore, before the Polish budget is supplemented in 2026 with an amount estimated at approximately EUR 92 million (29% of EUR 317.33 million for 2025), the state budget will have lost almost EUR 531 million. This is the total estimated amount that should be collected in Poland from top-up tax for 2023-2024. Wherein, 71% of total collection would be made by the UPEs placed in EU-15 and responsible for low-taxed Polish subsidiaries top-up collection. The remaining 29% of the total amount of Polish top-up tax due will probably be divided between UPEs countries in proportion to their share in the value of tangible assets and employees' costs located in Poland (UTPR mechanism). In this case, it was more advantageous for Poland to implement the Directive and use the IIR, according to which 29% of the total top-up tax for these years would flow to the Polish budget. Failure to implement Directive 2022/2523 means the loss of 100% of potential top-up tax revenues for 2023-2024.

Basing on data from the reports of MNEs placed in EM countries allowed the author to isolate the main beneficiaries of revenues from top-up tax in these countries, as well as the countries that stand to lose the most. According to Table 24, the Netherlands, Germany, Luxembourg, Sweden and Italy are the countries that, according to data from Eikon Refinitiv and EMIS, have invested the most in EM countries and may gain the highest additional revenues from top-up tax in those EM countries, if the latter would not implement and keep QDMTT rule. According to the forecast, Poland may experience the greatest loss of potential revenues from the top-up tax, especially since the country did not manage to implement the Directive 2022/2523 on time and, UPE's from EU-15 should collect the Polish part of top-up tax already for the tax year 2023 and 2024. Moreover, in the case of such a high share of foreign capital (71%), only the implementation of QDMTT will allow the Polish budget to secure future revenues from top-up tax in the coming years.

It should be emphasized that out of the nine analysed EM countries, only 4 of them turned out to have an average ETR lower than 15%, which was a surprise for the author. In the case of Hungary, the average ETR for MNEs in this country was 7%, but the lack of sufficient data for all analysed years prevented the author from conducting a full analysis.

Table 24. The main beneficiaries of top-up tax collected in EM countries, in accordance with the IIR principle in 2023-2032

Beneficiaries	Top-up tax total (in EUR million)	Countries of top-up tax collection (in EUR million)			
		LV	BG	LT	PL
CY	**0.35**	0.35	-	-	-
NL	**565.77**	-	-	-	565.77
DE	**613.33**	-	189.58	26	397.75
LU	**490.06**	-	-	-	490.06
SE	**571.28**	-	-	42.27	529.01
IT	**519.87**	-	-	-	519.87
DK	**422.53**	-	-	-	422.53
ES	**409.53**	-	-	-	409.53
AT	**387.87**	-	111.31	-	276.56
FR	**396.93**	-	-	-	396.93
PT	**360.96**	-	-	-	360.96
BE	**258.91**	-	-	-	258.91

Own study based on Directive 2022/2523 and data from the Eikon Refinitiv and EMIS databases.

The purpose of the simulation was to confirm or deny the main hypothesis that the application of the Income Inclusion Rule for the collection of top-up tax will result in a decrease in potential CIT revenues in EM countries.

Taking into account that the author only had access to a limited amount of financial data of companies from EM countries, this task was somewhat difficult. The analysis of financial data alone showed that only 7% of all MNEs in the EU are located in EM countries and that these are mainly subsidiaries. This would confirm the main hypothesis. However, further analysis showed that in addition to the number of companies, the amount of their income, the fact whether they are UPEs or subsidiaries, the percentage of share of UPEs in subsidiaries' capital and the percentage of inward FDI in each country should also be considered. The low share of inward FDI means that there are mainly domestic UPEs in a given country, so the use of IIR in such a case could mean an increase in revenues from top-up tax. However, taking into account the analysed countries, it should be stated that those in which MNEs are taxed effectively below 15% and have a high share of foreign investments have opted for QDMTT. The example of Poland, which did not manage to implement the Directive on time, shows that over the 2023-2024 the country will lose approximately EUR 500 million as a result of the application of IIR. Latvia exercised the right to defer top-up tax for a period of six years, but if after that time the country would agree to apply IIR, over 90%

of the potential Latvian additional CIT revenues were collected by other countries where the UPEs of Latvian companies are located. If thus potential CIT revenues mean additional budget revenues that EU countries can obtain from top-up tax, then each estimated amount of such revenues, part of which would be transferred to another country, means a decrease in potential CIT revenues, therefore the main hypothesis was positively verified.

4. Verification of the relationship between top-up tax revenue and the selected factors not directly connected with CIT structure – panel data model

Econometric models and their classification. The essence of econometric modelling is the construction of a model explaining the mechanism of changes taking place in the examined part of reality. The model is written in the form of an equation or system of equations describing the basic connections between specific economic quantities, i.e. variables.

The general form of the one-equation model can be written as the following equation:

$$Y = f(X_1, X_2, \ldots, X_k, \varepsilon),$$

where:

Y – is the regressand, i.e. the explained (endogenous) or dependent variable; in the forecasting model - predicted variable (predicate),

$X_1, X_2, \ldots, X_k$ – are regressors, i.e. explanatory (exogenous) independent variables in the forecasting model (predictors),

f – means analytical form of functions of explanatory variables (e.g. linear function, exponential function, parabola),

ε – is random component (random deviations).

The econometric model describes the relationship between the explained variable *Y* and the explanatory variables ($X_1, X_2, \ldots, X_k$). Due to the complexity of economic phenomena, such a description is only approximate, however, the selection of the model functions should not be random but theoretically justified from the point of view of economic and econometric postulates.

Considering random deviations (ε) in the model gives it a stochastic character, which reflects the influence of side phenomena, and its introduction into the econometric model is justified, among others, due to the inability to include in the model all explanatory variables describing the evolution of the explained variable or errors resulting from inaccurate measurement of variables (Osińska, 2007).

The stochasticity of the model means that the regularities of the development of the studied variable are visible in many observations. The better the model reflects the examined reality, the smaller the deviations of the actual values of the explained variable from its values determined in this model.

Econometric models can be classified according to various criteria, e.g.:

– the number of explained variables (or the number of equations in the model),

– analytical form,

– scope of the study,

– the role of the time factor in the description of the modelled phenomena,

– the cognitive nature of the model.

According to the criterion of dividing models based on the number of explained variables, a model describing one regressand is called a single-equation model, while a model describing the formation of many variables at the same time is called a multi-equation model.

In turn, due to the nature of the connections between unlagged endogenous variables in the multi-equation model, we can distinguish:

– simple models in which there are no connections between interdependent variables,

– recursive models in which the connections between jointly interdependent variables are one-sided,

– models with interdependent equations (Simultaneous Equations Model) describing the relationships between variables that mutually and simultaneously influence each other.

From the point of view of the analytical form, the basic division of models is linear and non-linear models. In the linear model, the explained variable is a linear function of the explanatory variables and the random deviation. In the case of a linear model function, the basic modelling technique is linear regression.

The equation of the non-linear model is a non-linear function. Some non-linear models can be reduced to a linear form, e.g. by logarithmisation (linearizable models), while some of them cannot be reduced to such a form (e.g. logistic function) (Sobczyk, 2013).

The criterion of the scope of the study enables the division of models into micro-, meso- and macroeconomic. An example of using a micro-scale model is to describe the operation of a specific entity, e.g. a consumer or entrepreneur, or the functioning of the market for a certain good or service.

The meso-economic model most often describes some economic sector, industry, region, or area, e.g. a rural area (Gorynia, 1995).

Macroeconomic models describe phenomena on the scale of the entire economy, international markets, or the global economy.

Due to the time criterion, models are divided into dynamic and static. A model that does not take into account the dynamics of the analysed processes is a static model that does not show delays in the explanatory variables (Witkowska, 2005).

In dynamic models, regressors show time lags or leads and may also be based on any trend function. A variable with lags means that the observed state of the regressand depends on the values of the explained variables observed in the past (e.g. in the period $t - 1, t - 2$...). This class of models also includes models with parameters that change over time (Sobczyk, 2013).

According to the criterion of cognitive values, models can be divided into cause-and-effect, symptomatic, autoregressive, and development tendency (trend) (Nowak, 1994). In the cause-and-effect model variables are explained by the causes of the explained variable of a given equation, while in symptomatic models some of the explanatory variables are not a direct cause for the explained variable but are strongly correlated with it.

In an autoregressive model, an explained variable with time-lagged values is its own explanatory variable. Trend models describe the development of phenomena over time, so the variability of the regressand is described by an explanatory variable, which is time (Sobczyk, 2013).

Panel data models. Since the subject of the analysis were cross-sectional data observed in subsequent units of time, the author decided to use a panel data model.

Panel data contains variables observed in at least two dimensions i.e. spatial and temporal which means that many objects are observed in many periods.

Cross-sectional data are created as observations made at the same time on many variables, e.g. budget revenues from corporate income tax in EU countries in 2003, while time series make it possible to observe a given phenomenon or object in subsequent selected units of time, e.g. quarters or years. An example is the observation of budget revenues from CIT in Poland in 2003-2023.

Therefore, panel data model (hereinafter: panel) provides for the possibility of observing the same objects at subsequent moments of time. Observations in panel data involve at least two dimensions: a cross-sectional dimension indicated by subscript *i* and a time series dimension indicated by subscript *t* (Hsiao, 2006) but may also include a more complicated structures like hierarchy or clustering (Antweiler, 2001; Davis, 1999).

Panel data (also known as longitudinal or cross-sectional time-series data) is a dataset consisting of repeated observations over time on the same set of cross-sectional units (Woolridge, 2016). Exemplary observations, units or entities could be individuals, states or companies observed across time (t).

A typical panel contains *N*T* observations, where *N* contains *i*-elements which is the number of objects and $i \in \{1, \ldots, N\}$ and *T* contains t-elements which stand for time units and $t \in \{1, \ldots, T\}$.

Therefore, according to the earlier distinction between cross-sectional data and time series: when *i* = 1 and *t*>1, the data set is a time series. When *t* = 1 and *i*>1, the data set is a cross-sectional sample.

In the case when $i > 1$ and $t > 1$, i.e. the number of objects is greater than 1 and the number of observation periods is greater than 1, the data is the panel data. In general, *N* stands for the cross-sectional dimension and *T* for time dimension.

The proliferation of panel data use and major development of new panel data econometric tools started with the publication of *Pooling Cross Section and Time Series Data in the Estimation of a Dynamic Model: The Demand for Natural Gas* which was the seminal work of Balestra and Nerlove (1966).

In his later work, Nerlove (2002) pointed out the important advantages offered by panel data over data sets with only a temporal or a longitudinal dimension, namely the fact that panel data offer more observations than conventional time-series data and that they are not so highly aggregated as typical time series. This last statement is due to the fact that panel data gives the possibility to observe the same number of units over time which enables to

test more complicated dynamic and behavioural hypotheses than those that can be tested using unidimensional data (Nerlove, 2002).

The following advantages of panel data can be mentioned:

- they allow the analysis of the phenomenon both in time and in cross-sectional or spatial dimensions,

- their use makes it possible to increase the number of degrees of freedom (hereinafter: df) in the model, i.e. the number of result values that can be estimated on the basis of the data. The degrees of freedom are usually calculated as n-1 or n-2 (depending on the number of independent variables),

- panel data allows to isolate the individual specificity of individual objects, the impact of unobservable variables or effects,

- their use allows for greater heterogeneity (diversity) of research units,

- the use of panel data increases the efficiency of the estimation,

- by isolating periodic effects, it is possible to examine the dynamics of adjustment,

- panel data offer more information and its greater variability and less collinearity of regressors.

According to Woolridge (2016), a proper treatment of the cross-sectional and panel data methods requires selecting the stochastic setting appropriate for the type of cross-section and panel data sets, assuming all else as equal. The setting should be as simple as possible (Woolridge, 2016).

Panels can be divided into:

- a balanced panel in which each unit has the same number of observations,

- unbalanced panel where the number of time series observations is different across units.

It is worth noting that specific to panel data is the potential risk of autocorrelation among variables. Both observations relating to the same unit may be correlated with each other, and observations relating to the same period may be correlated with each other.

Panels can be in the form of models with intercept decomposition (FEM - Fixed Effects Model or FE model) or models with random component decomposition (REM - Random Effects Model or RE model), and the decomposition can take into account only one factor (single-factor models) or two factors simultaneously (two-factor models).

RE model treats individual effects as part of the random component, they are not subject to estimation, only their dispersion is estimated, indicating what part of the total random error results from unobservable characteristics of individual objects that do not change over time.

The assumption of the FE model is that apart from structural parameters common to all units (α vector), each unit has individual characteristics that may influence the outcome and predictors variables. The FE model assumes that individual effects are not random, and it is possible to estimate them.

Since individual characteristics are not random but fixed and may impact the predictors or the outcome variables, it is assumed that there is a correlation between the predictor variables and the entities' fixed effects error terms and that the effect should be controlled to avoid such influence. Due to control of all time-invariant differences in observable and unobservable fixed effects, FE models reduce the risk of omitted variable bias.

Stages of model construction in the study. The purpose of the panel model prepared by in the second part of the study was to show the relationship developing over time between the dependent variable, which was the estimated value of the top-up tax expressed as a percentage of GDP at market prices and the independent variables describing the dependent variable, which were not directly related to the CIT structure.

The aim of the analysis was to answer whether there is a correlation between the revenues from the top-up tax and the selected factors not directly related to the CIT structure.

After defining the purpose of the study, the construction of the model in accordance with the literature review was based on the following stages:

- specification of variables along with data collection,
- selection of the analytical form of the model,
- parameters estimation,
- model selection and its verification,
- interpretation of the estimated model and its practical application.

Specification of variables along with data collection. The dependent variable *Y* was the percentage share of revenues from top-up tax in the GDP in particular EU countries. The calculations concerned the QDMTT rule.

The independent variables were selected based on the previous analysis contained in Chapter IV regarding the factors influencing the amount of CIT collection, resulting from the literature review. The selected variables were:

- level of shadow economy (ShadowEc) as a percent of GDP in each analysed EU country,
- composite DESI Index (DESI),
- number of the entities in the MNE group under UPE headquarters localisation (Entities),
- the level of fiscalism as a percent of total taxes revenue in GDP in each country (Fiscalism),
- Research & Development Tax expenditure expressed as a percentage of GDP in particular countries.
- Broadband understood as mobile data usage per mobile broadband subscription in gigabytes (GB) per month. All regressors except Entities and Broadband were denominated as a percent of GDP in particular EU states.

In the case of the level of shadow economy, the data was taken from the Study Taxation of the Informal Economy in the EU requested by the FISC committee of the European Parliament and prepared by prof. Schneider and Dr Asllani (Asllani & Schneider, 2022). The author assumed that the higher the level of shadow economy, the lower the revenues from top-up tax since a given society accepts tax avoidance and is hiding income to a greater extent. For this reason, the hypothesis was formulated: There is a negative relationship between the level of shadow economy in EM countries and the amount of revenues from top-up tax.

In the case of the second explanatory variable - the DESI is the abbreviation used for The Digital Economy and Society Index that is has been published annually by the European Commission since 2017. It is used by the Commission to monitor the level of digitalisation in four areas: human capital (citizens' skills in using digital technologies), digital infrastructure, the level of integration of digital technologies into the everyday activities of enterprises and the level of digitalisation of public services.

The DESI level is calculated by the European Commission for each of these areas separately. The author calculated the average DESI value from four areas for each country, so she did not give them any weight because the four areas are treated by the European Commission as equivalent.

It was assumed that in the event of a correlation between DESI and revenues from top-up tax, the relationship between the variables will be positive, because the more digitalised countries are, the more UPEs they have and in the case of implementation of IIR rule, the more tax revenue they will gain. This assumption results from the previous analysis of OECD data in terms of the number of UPEs and European Commission data in terms of the digitalisation rate in individual EU countries. Countries with a higher level of digitalisation gather the most parent companies. In the case of the QDMTT rule, a higher level of DESI also should translate into higher revenues from top-up tax. The author assumed that a higher level of DESI indicates a higher level of economic development, which attracts foreign investors, mainly MNEs.

Therefore, the hypothesis was stated: There is a positive relationship between the level of digitalisation of EM countries and their top-up tax revenues.

Data regarding broadband Internet comes from the OECD database. The author created the variable Broadband due to a different approach to the level of digitalisation by the OECD value of R&D the following hypothesis was formulated: There is a positive relationship between the access to broadband Internet in EM countries and the amount of revenues from top-up tax. The variable regarding the number of entities in MNEs groups was considered in the study because a larger number of entities means potentially more companies (being part of MNEs) generating income constituting the basis for top-up tax calculations. The following hypothesis was formulated: There is a positive relationship between the number of MNEs in EM countries and the amount of revenues from top-up tax. Data on the number of entities was downloaded from the OECD database.

The level of fiscalism expressed as a percentage of the sum of all taxes collected, including, according to the OECD definition, also social contributions in GDP, on the one hand, indicates the overall tax burden in a given country, the level of dependence of GDP on tax revenues, but may also indicate the efficiency of the state, namely tax administration, in tax collection. Lower tax revenues in the case of effective tax administration may result, for example, from the possible tax reliefs offered by the state to the taxpayers. Therefore, it was assumed that the level of fiscalism should be positively related to the top-up tax and the following hypothesis was stated: There is a positive relationship between the level of fiscalism in EM countries and the amount of revenues from top-up tax.

The last variable from the selected set was the level of government spending in a given country for companies' R&D activities. In this case, expenses should be understood not only as government subsidies for such activities, but also as granting different types of tax reliefs for R&D (RD variable) reducing the amount of tax revenues to the state budget, expressed as a percentage of GDP in particular countries. By giving up part of the budget revenues, the state invests in the technological development of enterprises, attracting foreign investors, and therefore invests in economic growth. The effect of this variable on the amount of basic CIT collection is destimulatory because higher R&D reliefs mean lower effective taxation on companies' income and that more companies will be willing to take advantage of the relief, which, as a result, reduces budget revenues from CIT for some time. However, lower effective taxation of companies generally means higher top-up tax to be collected, which may suggest that RD is a stimulant for revenues from top-up tax. Therefore, the following hypothesis was stated: There is a positive relationship between the value of R&D expenditures in EM countries and their top-up tax revenues.

Selection of the analytical form of the model. A basic statistical method that allows modelling and analysing the relationship between two or more variables is a regression analysis. The idea of this method is to predict the value of the dependent variable based on one or more independent variables.

The simplest form of regression is linear regression which enables to estimate how much *y* will change when *x* changes by one unit. Linear regression can be visualised as a straight line and written as the formula:

$$y = a + bx,$$

where:

y- dependent variable

x- predictor (independent variable)

a (or α) – intercept (constant)

b (or β)- slope coefficient (regression coefficient)

The constant *a* and coefficient *b* are the parameters of the line (its angle of inclination and the point of intersection with the *Y* axis). Unstandardised regression coefficient (slope coefficient) is determining the angle of inclination of the regression line relative to the *X* axis

and determining how much the value of the dependent variable will increase or decrease if the value of the predictor changes by one unit. Therefore, the coefficient in a linear regression is necessary to predict the value of the dependent variable. It can be determined by the use of the least squares method (LSN) which involves minimising the sum of the squares of the distances of all points from the searched line. It is also the value by which the predictor is multiplied.

The sign the coefficient indicates the direction of the relationship between the predictor and the regressand, a positive sign indicates that an increase of the predictor value will translate into an increase in the regressand value, and the negative sign of predictor means that as the value of the predictor increases, the value of the response variable will decrease. The coefficient value describes the mean change in the response given to a one unit change in the predictor, e.g. if a coefficient is +2, the mean response value increases by 2 for every one unit change in the predictor. The intercept is a measure providing information about what value the dependent variable may take if the predictor is zero. The value of the intercept may be negative, but this does not mean that the independent variable will also have negative values.

Selection of the analytical form of the model. Before the choice of RE or FE model, the author used Pooled OLS model and confirmed that the linear regression method is appropriate for the model. The linear relationship between the dependent variables and the independent variable was confirmed by a scatter plot and a correlation matrix. For variables studied in twenty-three EU countries (N=23) over five years, i.e. 2016-2020 (T=5), the author obtained 72 observations instead of 115. This fact results from incomplete data regarding explanatory variables, including reporting of the DESI level by the European Commission that has been taking place since 2017, and in the case of some variables (e.g. Broadband or R&D), the OECD did not have data for few countries for selected years. Missing lines were omitted from the analysis. White's test confirmed the lack of heteroscedasticity. P-value= 0.50 in the test did not provide grounds to refute the null hypothesis about the lack of heteroscedasticity, therefore the test confirmed homoscedasticity. Homoscedasticity is one of the conditions for using a linear function in the model. Homoscedasticity means that the variance of the residuals is the same for all observations. The Woolridge test confirmed the lack of autocorrelation of first-order residuals. To check additionally the correctness of the use of the linear form of the model, the *Regression Equation Specification Error Test* (*RESET*

test, Ramsey test) was also performed. The test validates the specifications for linear regression models.

```
Model 1: Pooled OLS, using 72 observations
Included 18 cross-sectional units
Time-series length = 4
Dependent variable: TopUp

              coefficient    std. error    t-ratio   p-value
  ---------------------------------------------------------
  const       −0.0460692     0.0454993     −1.013     0.3150
  ShadowEc     0.000189805   0.000953216    0.1991    0.8428
  DESI         0.000735793   0.000620958    1.185     0.2404
  Entities    −0.000206949   0.000159678   −1.296     0.1995
  Fiscalism    0.000733657   0.000640072    1.146     0.2559
  RD           0.0647503     0.0427245      1.516     0.1345
  Broadband   −0.00108908    0.000642441   −1.695     0.0948   *

Mean dependent var   0.007673   S.D. dependent var   0.030711
Sum squared resid    0.059804   S.E. of regression   0.030333
R-squared            0.106911   Adjusted R-squared   0.024472
F(6, 65)             1.296847   P-value(F)           0.271228
Log-likelihood       153.1970   Akaike criterion    −292.3940
Schwarz criterion   −276.4573   Hannan-Quinn        −286.0496
rho                 −0.106817   Durbin-Watson        2.065919

Excluding the constant, p-value was highest for variable 8 (ShadowEc)

RESET test for specification (squares only) -
  Null hypothesis: specification is adequate
  Test statistic: F(1, 64) = 5.64393
  with p-value = P(F(1, 64) > 5.64393) = 0.0205212

White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not present
  Test statistic: LM = 22.1234
  with p-value = P(Chi-square(27) > 22.1234) = 0.731082

Wooldridge test for autocorrelation in panel data -
  Null hypothesis: No first-order autocorrelation (rho = 0)
  Test statistic: t(17) = -0.752143
  with p-value = P(|t| > 0.752143) = 0.462253
```

Figure 5. Panel data own analysis in Gretl. Tests before choosing a model
Source: Own calculations based on CbCR data, OECD 2020

The Ramsey test did not confirm that the model specification was adequate. The null hypothesis with the P-value = 0.021, would have to be rejected. In such a situation, the form (function of the model) should be changed, or variable should be added or eliminated.

```
Model 2: Pooled OLS, using 90 observations
Included 18 cross-sectional units
Time-series length = 5
Dependent variable: TopUp

              coefficient    std. error    t-ratio   p-value
  ---------------------------------------------------------------
  const        0.0114383     0.00646155     1.770    0.0802  *
  Entities    −0.000155950   0.000125419   −1.243    0.2171
  RD           0.0710631     0.0372519      1.908    0.0598  *
  Broadband   −0.000827932   0.000523667   −1.581    0.1175

Mean dependent var   0.008992   S.D. dependent var   0.030933
Sum squared resid    0.078714   S.E. of regression   0.030254
R-squared            0.075680   Adjusted R-squared   0.043436
F(3, 86)             2.347107   P-value(F)           0.078318
Log-likelihood       189.1742   Akaike criterion    −370.3484
Schwarz criterion   −360.3492   Hannan-Quinn        −366.3161
rho                 −0.079571   Durbin-Watson        1.867210

Excluding the constant, p-value was highest for variable 10 (Entities)
```

Figure 6. Panel data own analysis in Gretl. Omitted variables test
Source: Own calculations based on CbCR data, OECD 2020

Hence, the next step was to eliminate the least significant independent variables. The author removed three variables with the lowest significance (i.e. the highest p-value) from the set of variables. Removed variables: ShadowEc with p-value=0.8428, Fiscalism with p-value=0.2559 and DESI with p-value=0.2404. After removing the three variables, the Ramsey test showed the adequacy of the model specification (Figure 7).

```
RESET test for specification (squares only) -
  Null hypothesis: specification is adequate
  Test statistic: F(1, 85) = 3.09691
  with p-value = P(F(1, 85) > 3.09691) = 0.0820387

White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not present
  Test statistic: LM = 8.34243
  with p-value = P(Chi-square(9) > 8.34243) = 0.50004

Wooldridge test for autocorrelation in panel data -
  Null hypothesis: No first-order autocorrelation (rho = 0)
  Test statistic: t(17) = -0.798005
  with p-value = P(|t| > 0.798005) = 0.435874
```

Figure 7. Tests in Gretl before choosing a model. Own study
Source: Own calculations based on CbCR data, OECD 2020

Additionally, the *Pesaran test* was performed to confirm the lack of cross-sectional dependence (Figure 8).

```
Pesaran CD test for cross-sectional dependence -
  Null hypothesis: No cross-sectional dependence
  Asymptotic test statistic: z = 7.01825
  with p-value = 2.24669e-12
```

Figure 8. Test for cross-sectional dependence in Gretl. Own study
Source: Own calculations based on CbCR data, OECD 2020

Tests conducted before selecting the model confirmed the correctness of selecting the linear model function.

One of the assumptions of regression analysis is the lack of multicollinearity of predictors. Its occurrence means that the predictors are correlated with each other, and the model parameters deteriorate. The correlation of independent variables could lead to incorrect interpretations of the regression analysis and significantly limit the strength of the conclusions drawn from it. The Belsley-Kuh-Welsch collinearity diagnostics did not indicate any excessive collinearity of independent variables.

```
Belsley-Kuh-Welsch collinearity diagnostics:

  variance proportions

    lambda      cond     const  Entities        RD Broadband
     2.660     1.000     0.022     0.036     0.050     0.023
     0.692     1.961     0.001     0.517     0.154     0.044
     0.549     2.201     0.051     0.046     0.726     0.069
     0.099     5.189     0.927     0.402     0.071     0.864

  lambda = eigenvalues of inverse covariance matrix (smallest is 0.098776)
  cond   = condition index
  note: variance proportions columns sum to 1.0

According to BKW, cond >= 30 indicates "strong" near linear dependence,
and cond between 10 and 30 "moderately strong".  Parameter estimates whose
variance is mostly associated with problematic cond values may themselves
be considered problematic.

Count of condition indices >= 30: 0
Count of condition indices >= 10: 0

No evidence of excessive collinearity
```

Figure 9. Collinearity test
Source: Own calculations based on CbCR data, OECD 2020

Estimation of parameters and the choice of most suitable model. When estimating structural parameters, it is important that the collected information is reliable and as comprehensive as possible, and the number of observations is 3-5 times greater than the

number of estimated model parameters (Sobczyk, 2013). The fact of comparability of observations is also important.

Taking into account that the study concerned the relationship between variables describing particular countries in particular years, it was based not only on cross-sectional data characterising individual countries, but also on time series, therefore, in the author's opinion, the most appropriate model used for the purposes of the study was the panel data regression model. The panel model allows for the measurement of one or more variables for each unit in particular time units. Each country in the model is a separate unit examined in subsequent time units, so it is a balanced model, unlike an unbalanced model in which individual units are examined in different time units.

The literature indicates that in order to examine the correlation between tax revenues and non-tax factors, the fixed effect model (Andrejovská and Glova, 2023; Cozmei, 2015; Kalaš et al., 2020; Zimčík, 2016) is equally often used as the random effects model (Adamczyk, 2016; Boukbech et al. 2019; Khwaja and Iyer, 2014; Mara, 2007) however most researchers start analysis with the model with random effects (recommended by Woolridge, 2016) and select the most suitable model based on the *Hausman test*. This test, called *specification test*, allows not only to detect endogenous (determined by other variables in the system) predictors in a regression model but also in the case of panel data models helps to choose between fixed effects model or a random effects model, hence its second name is a *test for model misspecification* (Hausman, 1978; Hausman, Taylor, 1981).

The test verifies if there is a correlation between the unique errors and the regressors in the model. The null hypothesis in the test is that there is no correlation between the two.

The hypothesis is: Generalized least squares (GLS) estimators are consistent. It means that the model is suitable. The basis for refuting the null hypothesis is the p-value obtained in the test at a level below 5%. P-value (probability value) specifies the test probability calculated under the assumption that the null hypothesis is true. A p-value lower than the critical level of significance, usually defined as α =0.05 means the rejection of the null hypothesis and acceptation of the alternative hypothesis.

Using the same variables, the author prepared a model with fixed effect and a model with random effects in order to select the better one. The result of Hausman test indicated the appropriateness of using the RE model (Figure 5). A high p-value of the test did not provide grounds to refute the null hypothesis that the random effects model is consistent.

For the diagnostics the author used the pooled Ordinary Least Squares (OLS) regression model recommended in the literature as the simplest and most frequently used way to estimate a panel model. The OLS regression model is often used as the reference or baseline model for comparing the performance of other models (Dańska-Borsiak, 2011).

```
Diagnostics: using n = 18 cross-sectional units

Fixed effects estimator
allows for differing intercepts by cross-sectional unit

              coefficient    std. error   t-ratio   p-value
  ------------------------------------------------------------
  const        0.0144759     0.0237893     0.6085   0.5449
  Entities     0.000170750   0.00114833    0.1487   0.8822
  RD          −0.0814190     0.136391     −0.5970   0.5525
  Broadband   −0.000199254   0.00100023   −0.1992   0.8427

Residual variance: 0.0650164/(90 - 21) = 0.000942267

Joint significance of differing group means:
 F(17, 69) = 0.855087 with p-value 0.626248
(A low p-value counts against the null hypothesis that the pooled OLS model
is adequate, in favor of the fixed effects alternative.)

Variance estimators:
 between = 0
 within = 0.000942267
theta used for quasi-demeaning = 0

Random effects estimator
allows for a unit-specific component to the error term

              coefficient    std. error    t-ratio   p-value
  ------------------------------------------------------------
  const        0.0114383     0.00646155     1.770    0.0802  *
  Entities    −0.000155950   0.000125419   −1.243    0.2171
  RD           0.0710631     0.0372519      1.908    0.0598  *
  Broadband   −0.000827932   0.000523667   −1.581    0.1175

Hausman test statistic:
 H = 2.15663 with p-value = prob(chi-square(3) > 2.15663) = 0.540541
(A low p-value counts against the null hypothesis that the random effects
model is consistent, in favor of the fixed effects model.)
```

Figure 10. Diagnostics FE and RE models
Source: Own calculations based on CbCR data, OECD 2020

In the model with fixed effects evaluated by author p-value was 0.63 which means that the null hypothesis was rejected, therefore the model with FE turned out to be inappropriate. Moreover, the result of the analysis indicated the insignificance of all independent variables selected to explain the dependent variable. For all variables, the p-value was higher than 5%.

Using the same variables, the author prepared the model with random effects which proved to be more propriate for the regression analysis of the selected variables.

With the p-value resulting from the Hausman test at 0.10, there was no basis to refute the null hypothesis that: generalized least squares (GLS) estimates are consistent. The RE model proved to be appropriate for performing the regression analysis.

The choice of the random effects model was based on the Hausman test, but also based on other parameters it can be concluded that the random effects model is better suited to the analysed data than the model with fixed effects, e.g. the log-likelihood value is a measure of model suitability. There are no log-likelihood ranges used, its values in different models can range from negative infinity to positive infinity, however the higher the value of the log-likelihood, the better a model fits a dataset. Therefore, of two or more compared models, the one with a higher log-likelihood value is the model that better fits the data. In the case of the analysed FE model Log-likelihood is -215 while in the RE model it was 189. The RE model was hence more appropriate.

```
Model 3: Random-effects (GLS), using 90 observations
Included 18 cross-sectional units
Time-series length = 5
Dependent variable: TopUp
Standard errors clustered by unit

              coefficient    std. error      z      p-value
  ----------------------------------------------------------
  const        0.0114383     0.00474624     2.410   0.0160  **
  Entities    −0.000155950   9.64146e-05   −1.617   0.1058
  RD           0.0710631     0.0326195      2.179   0.0294  **
  Broadband   −0.000827932   0.000400529   −2.067   0.0387  **

Mean dependent var   0.008992   S.D. dependent var   0.030933
Sum squared resid    0.078714   S.E. of regression   0.030079
Log-likelihood       189.1742   Akaike criterion    −370.3484
Schwarz criterion   −360.3492   Hannan-Quinn        −366.3161
rho                 −0.255512   Durbin-Watson        2.225553
```

```
Hausman test -
  Null hypothesis: GLS estimates are consistent
  Asymptotic test statistic: Chi-square(3) = 6.21155
  with p-value = 0.10176
```

Figure 11. Random effects model reduced to three explanatory variables
Source: Own calculations based on CbCR data, OECD 2020

The panel analysis showed that among the six independent variables, the only variable significantly related to revenues from top-up tax was the RD variable, i.e. government expenditure on R&D activities conducted by enterprises. These expenditures should be understood not only as subsidies for enterprises for their research and development activities, but also as granting by the government all kinds of reliefs, especially tax ones, for R&D activities.

The coefficient for this variable is positive, which indicates that an increase of the predictor value will translate into an increase in the regressand value. The coefficient value is about 0.10 what suggests that an increase in R&D expenditure by 1 unit will result in an increase in top-up tax by 0.10 for each one unit of R&D expenditure.

Therefore, an increase in the level of reliefs granted should contribute to an increase in revenues from top-up tax. As a rule, a relief or deduction means a reduction of the tax base. However, the sense of top-up tax is to increase the level of effective taxation to the desired percentage, so it will act as a tool to eliminate all types of relief that the taxpayer used during the year. For example, the use of the IP Box rate reduces effective taxation, while the top-up tax charged after the end of the tax year will increase the effective tax rate back to 15%. P-value concerning Broadband could also indicate on the significance of this variable but the sign the coefficient for this variable indicated the negative relationship between the predictor and the regressand which cannot be logically explained.

Interpretation of the obtained results. The results of the panel linear regression study indicate the lack of relationship between five of the six independent variables taken into account, i.e. factors unrelated to the structure of CIT and the amount of the top-up tax (dependent variable). However, there is a strong positive relationship between the amount of the top-up tax and government expenditure on research and development (RD) also understood as the government offering taxpayers the opportunity to take advantage of tax relief for research and development activities. This dependence results from the fact that each CIT tax relief reduces the effective rate of this tax, which in turn will lead to the UPE's obligation to increase it to 15% by paying subsidiary's top-up tax. Top-up tax will then undermine the sense of reliefs for R&D activities used so far in the case of the largest enterprises, which will contribute to higher CIT revenues to the budgets of EU. The

application of R&D relief will therefore only result in postponing the full tax payment to a later date due to the later addition of the top-up tax.

Despite the impossibility of conducting a full panel study due to the lack of sufficient data, it seems that the amount of this top-up tax is less dependent on non-tax factors than the basic CIT. The reason for this situation is most likely the fact that the tax efficiency of companies and the tax itself is calculated only on the basis of financial data from companies' financial statements.

The obtained results of the panel regression analysis are only partially consistent with the author's expectations as only one specific hypothesis 2 was positively verified that: There is a positive relationship between the value of research and development expenditure in EU countries and their future income from the top-up tax. However, there was no basis for accepting the specific hypotheses 1,3,4,5,6.

According to the author, the obtained results come from narrowing the panel analysis to the QDMTT, without taking into account the IIR principle, according to which the countries where the parent companies are located could collect tax from the countries where the subsidiaries are located. It was impossible to conduct such a study due to the lack of sufficient data for countries where the CIT rate is from 15% and above. Moreover, the top-up tax constituting the dependent variable in the model could not be calculated for such countries because it is to be added only in the case of jurisdictions with ETR <15%.

Therefore, in the panel study, the value of top-up tax (as a dependent variable) for countries with CIT ETR ≥15% was zero. Nevertheless, such a study will be possible to conduct in a few years, when high-taxing countries will obtain revenues from top-up tax in accordance with the IIR principle from low tax countries. It will then be possible to conduct a more detailed examination between the amount of revenues from this tax in these countries and the selected factors not directly related to the structure of CIT and diversified between low and high tax countries. However, this is a topic for a separate study, for which the data currently available to the author turned out to be insufficient.

Summary and conclusions

CIT is one of the most important sources of budget revenues for each EU country and this results not only from its share in GDP or the amount of current revenues to the budgets of EU countries, but from its potential to generate much higher revenues in the future.

A comparison of the budget revenues of EU countries from CIT with the revenues achieved by its largest taxpayers – MNEs, the amount of reliefs and public aid they benefit from and the use of tax competition between EU countries to apply tax optimisation suggests that budget revenues from CIT constitute only a small percentage of revenues, which can be obtained from this tax and CIT harmonisation may be a way to achieve this goal.

Due to the harmonisation of the effective minimum CIT rate introduced by the *Council Directive (EU) 2022/2523 of 14 December 2022 on ensuring a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the Union*, which took place after 60 years of harmonisation failed attempts undertaken by the Commission and the lack of a developed definition of harmonisation, the author reviewed the literature to bring closer to the Reader the idea of CIT harmonisation (Chapter I). In turn, the short review of the history of CIT harmonisation in the EU made by author outlines the problems resulting from the lack of CIT harmonisation and allows to highlight the uniqueness of the year of implementation of the *Directive 2022/2523.* The historical outline (Chapter I) has been supplemented with existing legal acts introducing harmonising solutions in the field of individual elements of corporate taxation, also in the field of CIT itself (Chapter III).

The author's analysis of CIT in EU countries showed strong differences between countries in terms of the main structural elements of CIT: taxpayers, tax base and rates (Chapter II). The tax reliefs offered by EU Members also differ significantly. Differences in taxation in individual EU countries in the existing common market are open to numerous abuses, optimisations and distortions of fair competition. However, in the author's opinion, they are also a premise for CIT harmonization. Approximation (harmonisation) of even singular CIT elements from EU countries may help to put an end to harmful tax competition, ineffective allocation of investments in the EU and may contribute to higher budget revenues in EU countries and thus to reducing their CIT gap.

The Directive 2022/2523 introduces a harmonised minimum effective corporate tax rate, which has a direct impact on the amount of the taxpayer's burden but also on the amount of budget revenues of individual countries. So far, the real burden of taxation could be verified by calculating ETR. Investors often made decisions based on the ineffective allocation of resources in the selected countries, mainly guided by the level of the tax burden. The effective CIT rate has so far played a fundamental role in the competition of EU countries to win the favour of the largest investors, it indicated the real tax burden borne by taxpayers in particular EU countries. However, the effective rates were somehow hidden for two reasons: they were resultant in nature and were calculated as average rates for all taxpayers in the jurisdiction, regardless of whether they were small companies or corporations. Until the entry into force of Directive 2022/2523, these rates were calculated and published by Eurostat with approximately a year's delay and concerned the real but averaged tax burden in individual EU countries, which somehow diminished the informational value on the CIT tax burden in EU countries and did not solve the issue of its differentiation and of too low taxation of the largest CIT taxpayers.

Directive 2022/2523 introduced the obligation to calculate the actual effective rate for largest MNEs inside and outside the EU immediately after the end of the tax year. This procedure causes the ETR is no longer only informative, published with a delay for statistical purposes, as was the case with Eurostat. Verification of the effective rates to which selected companies are subject in individual countries first informs which tax jurisdictions are taxing low the capital groups, secondly, in the case of low-taxed companies, the Directive 2022/2523 imposes on parent companies (UPEs) the obligation to calculate, collect and pay the top-up tax up to a minimum level of 15%. This is a very practical solution because parent companies have information about their subsidiaries, have their financial statements, are able to pay additional tax and, if necessary, collect it from the subsidiaries. They are also able to collect tax from companies located in jurisdictions that do not apply the IIR and UTPR rules, so it is intended to be a system for more effective additional tax collection. The responsible entity is indicated - the parent company, to which the tax office may submit a claim for tax payment.

The effectiveness of the solution should therefore contribute to the implementation of one of the assumptions of Directive 2022/2523, i.e. increasing taxation of the largest international concerns and limiting their illegal and legal tax optimisation methods. Although

the top-up tax does not eliminate the existing reliefs enjoyed by taxpayers, it actually contributes to the elimination of their benefits, because after settling the annual CIT return and calculating the effective rate, low-taxed companies will be obliged to pay the top-up tax.

The meaning of ETR has changed. Instead of the previous function of providing information and encouraging the investor to locate their venture in a country with low effective taxation, the function is of a utilitarian nature. The effective CIT rate calculated for MNEs is the starting point and one of the calculation elements of top-up tax.

In her work, the author focused on the fiscal effects of introducing a harmonised minimum CIT rate of 15% for the budgets of selected EU countries.

One of the goals of the author's work was to examine which from the nine analysed EM countries would benefit from minimum CIT rate harmonisation and which ones may lose in terms of obtaining or losing tax revenues from top-up tax.

In connection with the chosen goal, the author has formulated the following main hypothesis: *The application of the Income Inclusion Rule for the collection of top-up tax will result in a decrease in potential CIT revenues in EM countries*.

The results of the simulation conducted in Excel showed that only four out of nine analysed EM countries have a chance of receiving budget revenues from top-up tax in the coming years. These are Bulgaria, Lithuania, Latvia and Poland.

Based on the guidelines of Directive 2022/2523 and data from the financial statements of MNEs located in EM countries, the author calculated the average aggregate ETR of each country. For five out of nine EM countries the rate was less than 15%. For these countries (excluding Hungary, due to unreliable result indicating that the income of MNEs is decreasing in the coming years, even turning negative, which may be due to the quality of data contained in the financial statements of some companies), revenues from top-up tax were estimated.

The condition for obtaining revenues from top-up tax in the case of those countries is the application of Qualified Domestic Top-up Tax (QDMTT). This is particularly visible in the example of Poland and Latvia, where most companies (in Poland 71%, in Latvia over 90%) belong to capital groups whose parent companies (UPEs) have their headquarters in other EU or non-EU countries. This means that in the case of the Income Inclusion Rule, revenues from top-up tax would go to the budgets of other EU (or non-EU) countries which are hosts for the UPEs. Poland turned out to be the largest potential beneficiary of top-up tax, but only

assuming the implementation of a QDMTT that prevents the collection of top-up tax by UPEs of other EU countries. Therefore, the main hypothesis was confirmed.

Due to the fact that Poland did not implement Directive 2022/2523 on time for the tax years 2023-2024, it will lose revenues from top-up tax to other EU countries, mainly the Netherlands, which has 28% of subsidiaries in Poland among all MNEs located in Poland. The amount of lost revenue was estimated by the author, based on the data available to her, at approximately EUR 530 million. This amount is consistent with the amount of PLN 2.5 billion provided by the Ministry of Finance at the end of May 2024 at *4th CASP SGH Scientific Conference and IFA Poland Global minimum tax - opportunities and challenges for Poland*.

The aim of the second study conducted by the author was to examine the relationship between the amount of budget revenues from top-up tax (as a dependent variable) and six selected independent variables. The following independent variables were taken into account: the level of fiscalism in EM countries, level of digitalisation in EM countries, level of shadow economy in EM, the number of MNEs in EM countries, access to broadband Internet in EM countries and the level of R&D government expenses in EM countries.

This study referred to one of the specific goals set by the author, namely the examining the correlation between selected non-tax factors that may affect the amount of top-up tax.

To examine the relationship between these independent variables and the dependent variable, i.e. the amount of revenues from top-up tax, the author used a panel study conducted in Gretl.

The following specific hypotheses were formulated regarding the explanatory variables and the relationship between the amount of the top-up tax and non-tax factors:

1. There is a positive relationship between the level of digitalisation of EM countries and their top-up tax revenues.

2. There is a positive relationship between the value of R&D expenditures in EM countries and their top-up tax revenues.

3. There is a negative relationship between the level of shadow economy in EM countries and the amount of revenues from top-up tax.

4. There is a positive relationship between the access to broadband Internet in EM countries and the amount of revenues from top-up tax.

5. There is a positive relationship between the level of fiscalism in EM countries and the amount of revenues from top-up tax.

6. There is a positive relationship between the number of entities in EM countries and the amount of revenues from top-up tax.

The panel study did not show any significant relationship between the top-up tax and the four following independent variables: the level of fiscalism, level of digitalisation, level of shadow economy and the number of MNEs. Therefore, detailed hypotheses no. 1, 3, 5, 6 were verified negatively. The study showed that there is a strong positive relationship between the amount of the top-up tax and government expenditure on research and development also understood as the government offering taxpayers the opportunity to take advantage of tax relief for research and development activities. This dependence results from the fact that each CIT tax relief reduces the effective rate of this tax, which in turn will lead to the UPE's obligation to increase it to 15% by paying subsidiary's top-up tax. Top-up tax will then undermine the sense of reliefs for R&D activities used so far in the case of the largest enterprises, which will contribute to higher CIT revenues to the budgets of EU. The application of R&D relief will therefore only result in postponing the full tax payment to a later date due to the later addition of the top-up tax. Therefore, detailed hypothesis no. 2 was verified positively.

In the case of the variable Broadband (access to broadband Internet in EM countries), there was a strong correlation, but with a sign opposite to that assumed by the author. Detailed hypothesis No. 4 was partially positively verified because there is a correlation between access to broadband Internet and the amount of revenues from top-up tax.

According to the author, the obtained research results are a consequence of limiting the panel analysis to the QDMTT rules without taking into account the IIR rule, which resulted from the lack of financial data of MNEs from the remaining 18 EU countries. It is worth repeating the study for the same variables but taking into account a wider group of EU countries and after several years of collecting the top-up tax.

List of tables

List of figures

References

Abbas, S. A., Klemm, A. (2013). A partial race to the bottom: corporate tax developments in emerging and developing economies. International Tax and Public Finance, Vol. 20, No. 4, pp. 596-617.

Adamczyk, A. (2016). Czynniki kształtujące dochody z tytułu podatku dochodowego od osób prawnych w Polsce na tle państw Unii Europejskiej. Finanse, Rynki Finansowe, Ubezpieczenia nr 5/2016 (83), cz. I. DOI: 10.18276/frfu.2016.5.83/1-01

Adamczyk, A., Franek, S. (2017). Jakość systemów podatkowych a ich wydajność fiskalna. Opodatkowanie przedsiębiorstw. Finanse, Rynki finansowe, Ubezpieczenia, nr 3/2017 (87) cz. 2. Zeszyty Naukowe Uniwersytetu Szczecińskiego.

Akitoby, B. (2018). Raising revenue. Five country cases illustrate how best to improve tax collection. Finance & Development.

https://www.imf.org/en/Publications/fandd/issues/2018/03/akitoby

Allingham, M., Sandmo, A. (1972). Income tax evasion: a theoretical analysis. Journal of Public Economics 1, pp. 323–338.

Altshuler, R., Grubert, H. (2004). Taxpayer Responses to Competitive Tax Policies and Tax Policy Responses to Competitive Taxpayers: Recent Evidence. Working Paper No. 2004-06.

Altshuler, R., Goodspeed, T.J. (2014). Follow the Leader? Evidence on European and US Tax Competition. Public Finance Review2015, Vol. 43(4) 485-504.

Andenas, M. & Andersen, C.B. (Eds.). (2011). Theory and practice of harmonisation. Edward Elgar Publishing Ltd.

Anderson, S., Cavanagh, J. (2000). The rise of corporate global power. https://www.iatp.org/sites/default/files/Top_200_The_Rise_of_Corporate_Global_Power.pdf

Andersson, F., Forslid, R. (1999). Tax Competition and Economic Geography. Journal of Public Economic Theory, 2003, vol. 5, issue 2, pp. 279-303.

Andrejovská, A., Glova, J. (2023). Economic Determinants Concerning Corporate Tax Revenue. Economies 11. https://doi.org/10.3390/economies11110268

Andrejovská A., Puliková V. (2018). Tax Revenues in the context of economic determinants. Montenegrin Journal of Economics 2018, 14 (1), pp. 133-141. https://doi.org/10.14254/1800-5845/2018.14-1.10

Andreoni, J. Erard, B., Feinstein, J. (1998). Tax compliance. Journal of economic literature. 1998 Jun 1; 36(2), pp. 818–60.

Baldwin, R., Krugman, P. (2004). Agglomeration, integration and tax harmonisation. European Economic Review 48 (1).

Balestra, P. Nerlove, M. (1966). Pooling Cross Section and Time Series Data in the Estimation of a Dynamic Model: The Demand for Natural Gas. Econometrica Vol. 34, No. 3.

Baraké, M., Neef, T., Chouc, P. E., Zucman, G. (2021a). Collecting the tax deficit of multinational companies: Simulations for the European Union. EU Tax Observatory Report, No. 1.

Baraké, M., Neef, T., Chouc, P.E., Zucman. G. (2021b). Revenue Effects of the Global Minimum Tax. Country-by-Country Estimates. https://www.taxobservatory.eu

Barra, P., Hutton, E., Prokof'yeva, P. (2023). Corporate Income Tax Gap Estimation by Using Bottom-Up Techniques in Selected Countries: The Revenue Administration Gap Analysis Program. IMF Technical Notes and Manuals 2023/06, International Monetary Fund, Washington, DC. https://doi.org/10.5089/9798400246265.005.A001

Barry, F. (2010). The case against corporation tax harmonisation and tax-base consolidation: A view from Ireland, 2010. https://doi.org/10.1177/1024258909357879

Bénassy-Quéré, A., Fontagné, L., Lahrèche-Révil, A. (2005a). How Does FDI React to Corporate Taxation? International Tax and Public Finance, 2005, Vol.12(5), pp.583-603.

Bénassy-Quéré, A., Gobalraja, N., Trannoy A. (2005b). Tax Competition and Public Input. Working Papers 2005-08. CEPII Research Center.

Bénassy-Quéré, A., Trannoy, A., Wolff, G. (2014). Renforcer l'harmonisation fiscale en Europe. Notes du Conseil d'analyse économique, Volume 14, Issue 4, pp.1-12.

Besley, T., Case, A. (1995). Incumbent behavior: vote-seeking, tax-setting, and yardstick competition. American Economic Review, Vol.85(1), pp.25-45.

Besley, T., Griffith, R., Klemm, A. (2001). Empirical evidence on fiscal interdependence in OECD countries. In: World tax competition conference, 1 Jan 2001, London, UK.

Bettendorf, L., Devereux, M., Horst, A., Loretz S., Mooij, R., Jacobs, B., Wasmer, E. (2010). Corporate tax harmonisation in the EU [with Discussion]. Economic Policy, Vol. 25, No. 63, pp. 537-590.

Bi, H. (2012). Sovereign Default Risk Premia, Fiscal Limits, and Fiscal Policy. European Economic Review, Vol. 56, pp. 389-410.

Bolkestein, F. (2000). Taxation and Competition: The Realization of the Internal Market. European Taxation, 40(9): 401-406.

Bond, S., Chennells, L., Devereux, M., Gammie, M., Troup, E. (2000). Research Report. Corporate tax harmonisation in Europe: A guide to the debate. IFS Report, No. R63., ISBN 978-1-87335-796-5. Institute for Fiscal Studies (IFS). London. https://doi.org/10.1920/re.ifs.2000.0063

Borck, R., Pflüger, M. (2006). European Economic Review. Volume 50, Issue 3, April 2006, Pages 647-668.

Boukbech, R., Bousselhami, A., Ezzahid, E. (2019). Determinants of Tax Revenues: Evidence from a sample of Lower Middle Income Countries. Applied Economics and Finance, Vol. 6, No. 1.

Bovenberg, A. L., Tanzi, V. (1990). Is there a need for harmonizing capital income taxes within the EC countries? In H. Siebert (Ed.), Reforming capital income taxation, pp. 171-197.

Bratkowski, A., Kotecki, L. (2018). Luka VAT w świetle analiz makroekonomicznych. Raport wstępny. Instytut Obywatelski. Warszawa.

Bray, S. (2021). Corporate Tax Rates around the World. Tax Foundation. https://taxfoundation.org/publications/corporate-tax-rates-around-the-world/#Trends; access on: 31.12.2022.

Bräutigam, R., Spengel, C., Stutzenberger, K. (2017). The development of corporate tax structures in the European Union from 1998 to 2015 - Qualitative and quantitative analysis. ZEW Discussion Papers 17-034. http://ftp.zew.de/pub/zew-docs/dp/dp17034.pdf

Brennan, G., Buchanan, J.M. (1980). The Power to Tax: Analytic Foundations of a Fiscal Constitution. https://www.econlib.org/library/Buchanan/buchCv9.html

Bretschger, L., Hettich, F. (2002). Globalisation, capital mobility and tax competition: theory and evidence for OECD countries. European Journal of Political Economy, Vol.18(4), pp.695-71.

Broll, U., Kemnitz, A., Mukherjee, V. (2019). Globalisation, inequality and economic policy. Economics and Business Review, Vol. 5 (19), No. 1: 3-11.

Britannica Dictionary. Retrieved November 12, 2020 from https://www.britannica.com/dictionary

Brueckner, J.K., Saavedra L.A. (2001). Do Local Governments Engage in Strategic Tax Competition. National Tax Journal 54(2) pp. 203-229.

Bucovetsky, S., Wilson J.D. (1991a). Tax competition with two tax instruments. Regional Science and Urban Economics 21, 333–350.

Bucovetsky, S. (1991b). Asymmetric Tax Competition. Journal of Urban Economics 30(2), pp. 167-181. DOI:10.1016/0094-1190(91) 90034-5.

Bustos-Contell E., Climent-Serrano S., Labatut-Serer G. (2020). Tax Incentives: An Effective Mechanism to Achieve EU Harmonisation? Journal of Business Accounting and Finance Perspectives, No. 2.

Cambridge Dictionary. Retrieved November 15, 2020 from https://dictionary.cambridge.org

Canto, V. A., Joines, D.H., Laffer A.B. (1981). Tax Rates, Factor Employment and Market Production. Federal Reserve Bank of St. Louis Review.

Chennells, L., & Griffith, R. (1997). Taxing profits in a changing world (No. R56). IFS Report.

Cicero, M.T. (44BC). De Officiis. Released in 2014 on https://www.gutenberg.org

Clifford, S. (2019). Taxing multinationals beyond borders: Financial and locational responses to CFC rules. Journal of Public Economics 173: 44–71.

Cichocki, S., Kokoszczyński, R. (2016). Ewolucja krzywej Laffera jako narzędzia analizowania unikania opodatkowania: od prostych modeli teoretycznych do modeli DSGE. Ekonomia. Rynek, gospodarka, społeczeństwo, 45(2016), s. 7−27, ISBN: 0137-3056.

Clausing, K. (2007). Corporate tax revenues in OECD countries. International Tax and Public Finance, 14, 115–133.

Cnossen, S. (2018). Corporation taxes in the European Union: Slowly moving toward comprehensive business income taxation? International Tax and Public Finance vol. 25, issue 3, 808–840. https://doi.org/10.1007/s10797-017-9471-2

Cobham, A., Loretz, S. (2014). International distribution of the corporate tax base: Implications of different apportionment factors under unitary taxation. International Centre for Tax and Development Working Paper 2014 (27).

Cobham, A., Janský, P., Jonesc, C., Temourid, Y. (2021). An evaluation of the effects of the European Commission's proposals for the Common

Consolidated Corporate Tax Base. Transnational Corporations, Volume 28, 2021, Number 1.

Collins Dictionary. (2024). HarperCollins Publishers Limited. https://www.collinsdictionary.com/

Commission of the European Communities. (1967). The Programme for the harmonisation of direct taxes. Bulletin of the European Economic Community, Supplement No. 8, 1967.

Commission of the European Communities. (1975). Proposal for a Council Directive concerning the harmonisation of systems of company taxation and of withholding taxes on dividends. Bulletin of the European Communities, Supplement 10/75.

Commission of the European Communities. (1985). White Paper on Completing the Internal Market.C0MC85) 310 final.

Commission of the European Communities. (1996). Taxation in the European Union. Report on the development of tax systems. Office for Official Publications of the European Communities, 96/546. ISBN 92-78-10719-0.

Commission of the European Communities. (1997a). Communication from the Commission to the Council. Towards tax co-ordination in the European Union. A package to tackle harmful tax competition. Office for Official Publications of the European Communities. ISBN 92-78-25638-2.

Commission of the European Communities. (1997b). Taxation in the European Union. Report on the development of tax systems. Office for Official Publications of the European Communities. ISBN 92-78-10719-0

Commission of the European Communities. (2001). Commission Staff working paper. Company Taxation in the Internal Market, 2001/1681.

Conference (2024). 4th CASP SGH Scientific Conference and IFA Poland Global minimum tax - opportunities and challenges for Poland.

Conseil d'Analyse Économique. (2014). Tax Harmonisation in Europe: Moving Forward. Retrieved February 25, 2021 from https://www.cae-eco.fr

Council of the European Union. (1999). Report: Code of Conduct Group (Business Taxation), SN 4901/99.

Council of the EU. (2016). EU list of non-cooperative jurisdictions for tax purposes. https://www.consilium.europa.eu/en/policies/eu-list-of-non-cooperative-jurisdictions

Council of the European Union. (2023). EU list of non-cooperative jurisdictions for tax purposes. https://www.consilium.europa.eu

Cozmei, C. (2015). Is it any EU Corporate Income Tax Rate-Revenue Paradox? 2nd Global Conference on Business, Economics, Management and Tourism, 30-31 October 2014, Prague, Czech Republic. Procedia Economics and Finance 23 (2015) 818 – 827.

Dańska-Borsiak B. (2011). Dynamiczne modele panelowe w badaniach ekonomicznych. Wydawnictwo Uniwersytetu Łódzkiego.

Delgado, F., Rodríguez-Fernández, E., Arias-Martínez, A. (2019). Club convergence in the corporate income tax: The case of European effective rates. Physica A 523: 942–953.

Deloitte (2020). Reflections on the legal form. https://www2.deloitte.com

De Mooij R.A., Liu L., Prihardini D. (2019). An Assessment of Global Formula Apportionment. IMF Working Paper WP/19/213.

De Mooij, R., Ederveen, S. (2003). Taxation and Foreign Direct Investment: A Synthesis of Empirical Research. International Tax and Public Finance, 2003, vol. 10, issue 6, pp. 673-93.

Devereux, M., Griffith, R., Klemm, A. (2002). Can international tax competition explain corporate income tax reforms? Economic Policy (17).

Devereux, M., Lockwood, B., Redoano, M. (2008). Do countries compete over corporate tax rates? Journal of public economics, 2008, Vol.92(5), pp.1210-123.

Devereux, M., Loretz, S. (2008). The effects of EU formula apportionment on corporate tax revenues. Fiscal Studies, 29(1), pp. 1–33.

Devereux, M., Loretz, S. (2010). Evaluating Neutrality Properties of Corporate Tax Reforms. Oxford University Centre for Business Taxation WP 10/07.

Dosser, D. (1973). British Taxation and the Common Market, Charles Knight.

Dowgier, R. (2009). Konstytucyjne podstawy stanowienia prawa podatkowego w Polsce. Repozytorium Uniwersytetu w Białymstoku. https://repozytorium.uwb.edu.pl

Dweck, E., Vianna, M. T., Barbosa Da Cruz, A. (2020). Discussing the role of fiscal policy in a demand-led agent-based growth model Economia, Vol.21(2), pp.185-208.

Dyreng, S. D., Hanlon, M., Maydew, E. L., Thornock, J. R. (2017). Changes in corporate effective tax rates over the past 25 years. Journal of Financial Economics, 124, 441–463.

ECOFIN (1998). Code of Conduct Group. Business Taxation. https://eur-lex.europa.eu

Economic and Social Committee. (1997). Opinion of the Economic and Social Committee on Taxation in the European Union - Report on the development of tax systems. OJ 1997, 296/09.

Edwards, J., Keen, M. (1996). Tax competition and Leviathan. European Economic Review, 1996, vol. 40, issue 1, pp. 113-134.

Edwards C., De Rugy V. (2002). International Tax Competition: A 21st-Century Restraint on Government. Policy Analysis NO. 431. https://www.cato.org

Elazar Daniel J. (1998). The New Europe: a Federal State or a Confederation of States? Swiss Political Science Review 4(4): 119-138.

Elffers H, Weigel RH, Hessing DJ. (1987). The consequences of different strategies for measuring tax evasion behavior. Journal of Economic Psychology. 1987 Sep 1; 8(3):311–37.

EU Publications Office. (2023). Glossary of summaries, https://eur-lex.europa.eu/EN/legal-content/glossary/unanimity.html

European Commission. (2006). Directorate-General for Economic and Financial Affairs. European Economy No 250.

European Commission. (2016a). Commission Staff working document impact assessment accompanying the document Proposals for a Council Directive on a Common Corporate Tax Base and a Common Consolidated Corporate Tax Base (CCCTB). SWD 2016/0336.

European Commission. (2016b). JRC Technical Reports, Falling corporate tax rates in the EU. Is there a case for harmonisation? JRC Working Papers on Taxation and Structural Reforms No 4/2016.

European Commission. (2016c). State aid: Ireland gave illegal tax benefits to Apple worth up to EUR13 billion. https://ec.europa.eu/commission/presscorner, Access on: 14.05.2021

European Commission. (2018a). Tax Policies in the European Union Survey. https://ec.europa.eu/taxation_customs/sites/taxation/files/tax_policies_survey_2018.pdf

European Commission. (2018b). Taxation Papers, Nicodème G., Caiumi A., Majewski I., What happened to CIT collection? Solving the rates-revenue puzzle. Working Paper No 74-2018.

European Commission. (2019a). Taxation Papers, Centre for European Economic Research (ZEW). The impact of the CCTB on the effective tax burden of corporations: Result from the Tax analyser Model, Final Report, Working Paper No 75-2019.

European Commission. (2019b). Communication from the Commission to the European Parliament, the European Council and the Council of 15 January 2019, Towards a more efficient and democratic decision making in EU tax policy (COM (2019) 0008).

European Commission. (2019c). Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. More efficient decision-

making in social policy: Identification of areas for an enhanced move to qualified majority voting. COM(2019) 186 final.

European Commission. (2020a). The Concept of Tax Gaps. Report on VAT Gap Estimations. FISCALIS Tax Gap Project Group (FPG/041), Brussels. https://taxation-customs.ec.europa.eu/system/files/2016-08/tgpg_report_en.pdf

European Commission. (2020b). Taxation Trends, https://op.europa.eu

European Commission. (2021a). Taxation and Customs. Taxes in Europe Database v.3 https://ec.europa.eu/taxation_customs/tedb/splSearchForm.html

European Commission. (2022). Proposal for a Council Directive on laying down rules on a debt-equity bias reduction allowance and on limiting the deductibility of interest for corporate income tax purposes, COM (2022) 216 final, 2022/0154(CNS). https://eurlex.europa.eu/legalcontent/EN/TXT/HTML/?uri=CELEXpercent3A52022PC0216

European Commission. (2023a). DG Taxation and Customs Union based on Eurostat data. https://ec.europa.eu/taxation_customs/business/economic-analysis-taxation/data-taxation_en

European Commission. (2023b). CASE. Poniatowski, G., Bonch-Osmolovskiy, M., Śmietanka, A., Sojka, A., VAT gap in the EU – Report 2023. Publications Office of the European Union, Luxembourg.

European Commission. (2023c). Shaping Europe's digital future. https://digital-decade-desi.digital-strategy.ec.europa.eu

European Parliament. (2020). Fact Sheets on the European Union. https://www.europarl.europa.eu/factsheets/en/sheet/35/company-law

European Parliament. (2021). A statute for European cross-border associations and non-profit organisations. Potential benefits in the current situation. https://www.europarl.europa.eu/RegData/etudes/STUD/2021/693439/IPOL_STU(2021)693439_EN.pdf

European Parliament. (2022). Legislative Train Schedule https://www.europarl.europa.eu/legislative-train/package-business-taxation/file-debra-proposal

EuroGroups Register. (2020). Structure of multinational enterprise groups in the EU. https://ec.europa.eu/eurostat

Eurostat (2020). Business registers. Recommendations manual, Methodologies and Working Papers, Publications Office of the European Union, Luxembourg. http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-32-10-216-EN-C-EN.pdf

Felis, P. (2010). Główne źródła dochodów budżetowych w Polsce. Studia BAS, Wydanie 3, pp. 91-114. Kancelaria Sejmu.

Flotyńska, A. (2010). Opodatkowanie dochodów przedsiębiorstw w świetle koncepcji podatku dochodowego zorientowanego na konsumpcję. http://www.wbc.poznan.pl

Gajda, J. B. (2017). Prognozowanie i symulacje w ekonomii i zarządzaniu. Wydawnictwo C.H. Beck.

Gajewski, D. J. (2015). Polityka Unii Europejskiej przeciwdziałająca szkodliwej międzynarodowej optymalizacji opodatkowania. Studia z Polityki Publicznej. Issue 3(7), pp.63-80.

Gajewski, D. J. (2015). Porównanie zasad opodatkowania holdingów w państwach Unii Europejskiej. https://ksiegowosc.infor.pl/prawo-unii-europejskiej/33489,Porownanie-zasad-opodatkowania-holdingow-w-panstwach-Unii-Europejskiej.html

Gajewski, D. J. (ed.). (2017). Przyczyny międzynarodowego unikania opodatkowania – zarys problem. Międzynarodowe unikanie opodatkowania. Wydawnictwo C. H. Beck.

Gandhi, V. P. (1987). 9 Tax Structure for Efficiency and Supply-Side Economics in Developing Countries. Supply-Side Tax Policy. International Monetary Fund.

Gaspar, V., Jaramillo L., Wingender P. (2016). Political Institutions, State Building and Tax Capacity: Crossing the Tipping Point. IMF Working Paper, No. 16/233.

Gelepithis, M., & Hearson, M. (2022). The politics of taxing multinational firms in a digital age. Journal of European Public Policy, 29(5), pp. 708–727.

Gemmell, N., Hasseldine, J. (2012). The Tax Gap: A Methodological Review. Advances in Taxation, Vol 20, December 2012, pp. 203-231. Victoria University of Wellington School of Business Working Paper No. 09/2012. http://dx.doi.org/10.2139/ssrn.2199200

General Secretariat of the Council. (2019). Report on Poland's notional interest deduction regime. Code of Conduct Group. Business Taxation. https://data.consilium.europa.eu/doc/document/ST-14114-2019-ADD-2/en/pdf

Giannini S. (2002). Home state taxation vs. common base taxation. CESifo Forum 1/2002.

Giles, D. E. A. (1997a). The hidden economy and the tax gap in New Zealand: A latent variable analysis. New Zealand. Working Paper 97-08. Department of Economics, University of Victoria. https://ideas.repec.org/p/vic/vicewp/9807.html

Giles, D. E. A. (1997b). Causality between the measured and underground economies in New Zealand. Applied Economics Letters, 4, pp. 63–67. http://doi:10.1080/758521835

Gomułowicz, A., Małecki, J. (2013). Podatki i prawo podatkowe, wyd. 7. LexisNexis. Warszawa.

Goodwin, N., Harris, J.M., Nelson, J. A., Roach, B., Torras M. (2020). Principles of economics in context. Routledge, 2nd Edition.

Gordon, R., Hines, J. (2002). International taxation. In Handbook of Public Economics, 2002, vol. 4, pp. 1935-1995. Elsevier.

Gorter, J., De Mooij R.A. (2001). Capital Income Taxation in the European Union: Trends and Trade-offs. The Hague, Sdu Publishers.

Gorter J., Parikh A. (2003). How sensitive is FDI to differences in corporate income taxation within the EU? De Economist, 2003, Vol.151(2), pp.193-204.

Gorynia M. (1995). Mezoekonomia - modele samoregulacji branży. Poznań. Ekonomista, nr 5-6, s. 815-837.

Gropp R., Kostial K. (2000). The disappearing tax base: is foreign direct eroding corporate income rates. IMF Working Papers, Vol. 2000/173, pp. 1-38. https://www.imf.org/external/pubs/ft/wp/2000/wp00173.pdf

Group of the European People's Party in the European Parliament. (2020). EU Member States must end the deadlock on tax dumping. https://www.eppgroup.eu

Haufler, A., Wooton, I. (1999). Country size and tax competition for foreign direct investment. Journal of Public Economics. Elsevier, vol. 71(1), pp. 121-139.

Hausman J. A., (1978). Specification Tests in Econometrics. Econometrica, vol. 46.

Hausman J. A., Taylor W. E., (1981). Panel Data and Unobservable Individual Effects. Econometrica, vol. 49.

Heijman, W.J.M., Van Ophem J.A.C. (2005). Willingness to Pay Tax: the Laffer Curve Revisited for 12 OECD Countries. The Journal of Socio-Economics, pp. 714-723.

Her Majesty Revenue and Custom (HMRC). (2012). Methodological Annex for Measuring Tax Gaps 2012. Retrieved 20 September 2021 from https://webarchive.nationalarchives.gov.uk/ukgwa/20150612044958/https://www.gov.uk/government/statistics/measuring-tax-gaps

Hines J. (2022). Evaluating Tax Harmonisation. University of Michigan and NBER. https://nathanseegert.com

Hospers G. J. (2002). Beyond the Blue Banana? Structural Change in Europe's Geo-Economy, 42nd European Congress of the Regional Science Association. Dortmund, August 27-31, 2002.

Hsiao, C. (1986). Analysis of Panel Data. Cambridge University Press.

Huizinga H., Laeven L., Nicodème G., (2008). Capital structure and international debt-shifting, Journal of financial economics, 2008, Vol. 88 (1), pp.80-118.

International Labour Organisation (2023). ILOSTAT. Statistics on wages. https://ilostat.ilo.org

International Monetary Fund (2021). Taxing Multinationals in Europe No 21/12, https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/05/25/Taxing-Multinationals-in-Europe-50129

James, S., Oats L., (1998). Tax Harmonisation and the Case of Corporate Taxation. Revenue Law Journal No 8.

Jankowski J. (2019). Optymalizacja podatkowa w podatkach dochodowych-dopuszczalność i prawne granice. Wydawnictwo C. H. Beck.

Junji U., (2018). Estimating the Corporate Income Tax Gap: The RA-GAP. https://www.imf.org/en/Publications/TNM/Issues/2018/09/12/Estimating-the-Corporate-Income-Tax-Gap-The-RA-GAP-Methodology-4589

Kalaš, B., Todorović, J. D., Đorđević, M. (2020). Panel estimating effects of macroeconomic determinants on tax revenue level in European Union, Industrija, Vol. 48, No. 3, 2020.

Kanbur R., Keen M., (1993). Jeux Sans Frontières: Tax Competition and Tax Coordination When Countries Differ in Size. The American Economic Review 83/4, pp. 877-892.

Karpowicz, A., Majewska, E., (2018). Corporate Income Tax revenue determinants: How important is the tax rate? Economic and Social Development: Book of Proceedings 2018/3/1. Varazdin Development and Entrepreneurship Agency (VADEA), pp. 361-369.

Kaul, I., Conceição P. (ed.) (2006). The New Public Finance: Responding to Global Challenges. Oxford University Press.
https://doi.org/10.1093/acprof:oso/9780195179972.001.0001

Kawano, L., Slemrod, J. (2016). How do corporate tax bases change when corporate tax rates change? With implications for the tax rate elasticity of corporate tax revenues. International Tax and Public Finance, 23, pp. 401–433. https://doi.org/10.1007/s10797-015-9375-y

Keuschnigg, C., Loretz S., Winner H. (2014). Tax competition and tax coordination in the European Union: A survey. Working Papers in Economics and Finance, No. 04.

Keynes J.M. (1936). General Theory of Employment, Interest and Money. https://www.files.ethz.ch

Khwaja M. S., Iyer I. (2014). Revenue Potential, Tax Space, and Tax Gap. A Comparative Analysis. The World Bank Europe and Central Asia Region Poverty Reduction and Economic Management Department. Policy Research Working Paper 6868.

Kind, H.J., Midelfart Knarvik K.H., Schjelderup G., (2000). Industrial agglomeration and capital taxation. Discussion Paper No. 7/98. Department of Economics, Norwegian School of Economics and Business Administration.

Kirchgässner G., Pommerehne W. (1996). Tax harmonisation and tax competition in the European Union: Lessons from Switzerland. Journal of Public Economics, 1996, vol. 60, issue 3, pp. 351-371.

Kirchler E. (2007). The economic psychology of tax behaviour. Cambridge University Press.

Kopaczyńska-Pieczniak K. (2019). Korporacja. Elementy konstrukcji prawnej, Wolters Kluwer.

Korečko, J., Ondrijová I. (2019). Analysis of the selected indicators of the tax burden on entrepreneurs in the EU. https://www.itema-conference.com/itema-s-p-2019-45

Kozuharov S., Ristovska N., Ilieva J. (2015). Harmonisation of Tax Policies: Reviewing Macedonia and Croatia. UTMS Journal of Economics 6 (2): 255–265.

KPMG (2021). Insights. Retrieved 21 December 2021 from https://home.kpmg/lu/en/home/insights/2021/03/luxembourg-annual-tax-update-2021/alignment-with-cjeu-decisions.html

KPMG (2023). Country-by-Country Reporting. Retrieved 20 December 2023 from https://kpmg.com/xx/en/home/services/tax/regional-tax-centers/eu-tax-centre/country-by-country-reporting.html.

KPMG (2024). Pillar Two – state of play of domestic implementation in the EU. Insights. Euro Tax Flash from EU Tax Centre. Retrieved 28 February 2024 from https://kpmg.com

Krugman, P. (1991). Increasing Returns and Economic Geography. Journal of Political Economy, 1991, vol. 99, issue 3, pp. 483-99.

Krugman, P., Venables, A. (1995). Globalization and the Inequality of Nations, The Quarterly Journal of Economics (1995). vol. 110, issue 4, 857-880.

Krugman, P., Venables, A. (1996). Integration, specialization, and adjustment. European Economic Review, Volume 40, Issues 3–5, April 1996, pp. 959-967.

Kuhen, Z. (2014). Tax rates, governance, and the informal economy in high-income countries. Economic Inquiry, 51, pp. 405-430.

Laffer, A.B. (1981). Supply-Side Economics: Financial Analysts Journal, Vol. 37, No. 5 (Sep. - Oct. 1981), pp. 29-43.

Laussel, D., Le Breton, M. (1998). Existence of Nash equilibria in fiscal competition models. Regional Science and Urban Economics. Elsevier, vol. 28(3), pp. 283-296.

Legrenzi, G., Talamona, M. (2001). Social and Fiscal Dumping in the European Monetary Union. Economia Internazionale. Camera di Commercio di Genova, Vol. 54.2001, 2, pp. 235-249.

Lockwood, B., (2000). Tax Competition and Tax Co-Ordination Under Destination and Origin Principles: A Synthesis. The Warwick Economics Research Paper Series (TWERPS) 567. University of Warwick, Department of Economics.

Ludema R., Wooton I. (2002). Economic geography and the fiscal effects of regional integration. Journal of International Economics, 2000, vol. 52, issue 2, pp. 331-357.

Lukáčová, M., Korečko, J., Jenčová, S., Jusková, M. (2020). Analysis of selected indicators of tax competition and tax harmonisation in the EU. Entrepreneurship and Sustainability Issues, 8(1), 123-137. http://doi.org/10.9770/jesi.2020.8.1(8)

Majdowski, F., (2017). CFC w świetle pozostałych rekomendacji OECD z projektu BEPS – stosunek zbieżności, wykluczenia oraz paralelizmu. Kwartalnik Prawa Podatkowego 1/2017.

Małecka-Ziembińska, E. (2010). Wybrane zagadnienia konkurencji podatkowej oraz ich egzemplifikacja na przykładzie podatku dochodowego od osób fizycznych. In T. Juja (ed.), Dylematy i wyzwania finansów publicznych, ZN UEP nr 141 (p. 451–467).

Małecka-Ziembińska, E. (2012). Efektywność fiskalna podatku dochodowego od osób fizycznych w Polsce, Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.

Małecka-Ziembińska, E. (2014). Ewolucja i skutki fiskalne opodatkowania podatkowych grup kapitałowych w Polsce. Studia Oeconomica Posnaniensia 2014 vol. 2, nr 6, pp. 223-236.

Mara, E. R. (2007). Tax Competition in the European Union – Evidence from Panel Data. Management of International Business and Economic Systems. MPRA Paper No. 21082.

Markle, K. S., Shackelford, D. A. (2012). Cross-country comparisons of corporate income taxes. National Tax Journal, 65 (3), pp. 493–528.

McGee, R. W. (2004). Is Tax Competition Harmful? Barry University Andreas School of Business Working Paper, no 617444. http://dx.doi.org/10.2139/ssrn.617444

Mclure, C. E. (1986). Tax competition: is what's good for the private goose also good for the public gander? National Tax Journal, Vol.39(3), pp. 341-348.

Milosavljević M., Radovanović S., Delibašić B. (2023). What drives the performance of tax administrations? Evidence from selected European countries. Economic Modelling, Vol. 121, April 2023. https://doi.org/10.1016/j.econmod.2023.10

Mintz, J., Weiner, J. (2003). Exploring Formula Allocation for the European Union. International Tax and Public Finance, 10, pp. 695–711.

Mintz, J. (2004). Corporate Tax Harmonisation in Europe: It's All About Compliance. International Tax and Public Finance, 11, pp. 221–234.

Monnet, J. (1976). Mémoires. Collection Pluriel, Éditions Fayard, 2022.

Mooij, R. A., Devereux, M. (2009). Alternative Systems of Business Tax in Europe. An applied analysis of ACE and CBIT Reforms. Taxation Papers (17). Directorate General Taxation and Customs Union, European Commission.

Mooij, R. A., Ederveen, S. (2003). Taxation and Foreign Direct Investment: A Synthesis of Empirical Research. International Tax and Public Finance, 10, pp. 673-693.

Mooij, R. A., Liu, L., Prihardini, D. (2019). An Assessment of Global Formula Apportionment. IMF Working Paper. International Monetary Fund.

Mutascu, M. (2015). A bootstrap panel Granger causality analysis of government revenues and expenditures in the PIIGS countries. https://shs.hal.science/halshs-01111809

Nerlove, M. (2002). Essays in Panel Data Econometrics. Cambridge University Press, number 9780521815345.

Nerudova, D., Dobranschi, M. (2019). Alternative method to measure the VAT gap in the EU: Stochastic tax frontier model approach. PLoS ONE 14(1): e0211317. https://doi.org/10.1371/journal.pone.0211317

Neumark Committee. (1963). Report of the Fiscal and Financial Committee. The EEC Reports on Tax Harmonisation. International Bureau of Fiscal Documentation.

Nielsen, S., Sørensen, P.B. (1997). On the optimality of the Nordic system of dual income taxation. Journal of Public Economics, Volume 63, Issue 3, pp. 311-329.

Nielsen, S., Raimondos- Møller, P., Schjelderup, G. (2010). Company taxation and tax spillovers: Separate accounting versus formula apportionment. European economic review, Vol.54(1), pp. 121-132.

Nowak, E. (1994). Zarys metod ekonometrii: Zbiór zadań. Wydanie: II, Warszawa, Wydawnictwo Naukowe PWN.

O'Doherty, M. (2014). Thinking and learning in the tax evasion game. Fiscal Studies, 35, Issue 3, pp. 297-339.

OECD. (1998). Report on Harmful Tax Competition: An Emerging Global Issue. https://doi.org/10.1787/9789264162945-en

OECD. (2001). Taxation and Electronic Commerce: Implementing the Ottawa Taxation Framework Conditions. OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264189799-en

OECD. (2012). Thin capitalisation legislation. A background paper for country tax administrations. Initial draft.

OECD/G20. (2013). Base Erosion and Profit Shifting Project. OECD Publishing, Paris. https://doi.org/10.1787/9789264293083-en

OECD. (2013). Action Plan on Base Erosion and Profit Shifting. OECD Publishing, Paris. https://doi.org/10.1787/9789264202719-en

OECD. (2015a). Explanatory Statement. OECD/G20 Base Erosion and Profit Shifting Project. ECD, Paris. www.oecd.org/tax/beps-explanatory-statement-2015.pdf

OECD. (2015b). Addressing the Tax Challenges of the Digital Economy. Action 1 – 2015 Final Report. https://www.oecd.org/ctp/addressing-the-tax-challenges-of-the-digital-economy-action-1-2015-final-report-9789264241046-en.htm

OECD. (2017). Tax Administration 2017. Comparative Information on OECD and Other Advanced and Emerging Economies. https://www.oecd-ilibrary.org/taxation/tax-administration2017/the-measurement-of-tax-gaps_tax_admin-2017-19-en

OECD. (2018a). Revenue Statistics. https://www.oecd-ilibrary.org/taxation/revenue-statistics-2018_rev_stats-2018-en

OECD. (2018b). Tax and digitalisation, https://www.oecd.org/tax/beps/tax-and-digitalisation-policy-note.pdf

OECD. (2018c). Tax Challenges Arising from Digitalisation – Interim Report 2018: Inclusive Framework on BEPS. OECD/G20 Base Erosion and Profit Shifting Project. OECD Publishing, Paris. https://doi.org/10.1787/9789264293083-en

OECD. (2019). Report on Measuring and Monitoring BEPS. https://www.oecd.org/tax/beps/

OECD. (2020a). Statement by the OECD/G20 Inclusive Framework on BEPS on the Two-Pillar Approach to Address the Tax Challenges Arising from the Digitalisation of the Economy. https://www.oecd.org/tax/beps/statement-by-the-oecd-g20-inclusive-framework-on-beps-january-2020.pdf

OECD. (2020b). Tax Challenges Arising from Digitization — Economic Impact Assessment. https://www.oecd.org/tax/beps/tax-challenges-arising-from-digitalisation-economic-impact-assessment-0e3cc2d4-en.htm

OECD. (2020c). Tax Challenges Arising from Digitalisation – Report on Pillar Two Blueprint. https://www.oecd-ilibrary.org

OECD. (2021). Policy Responses to Coronavirus (COVID-19). Tax administration: Towards sustainable remote working in a post COVID-19 environment.

OECD. (2022a). Tax Administration 2022. Comparative Information on OECD and other Advanced and Emerging Economies. https://www.oecd.org/tax/administration/tax-administration-23077727.htm

OECD. (2022b). Guidance on Country-by-Country Reporting: BEPS Action 13. https://www.oecd.org/tax/beps/guidance-on-country-by-country-reporting-beps-action-13.htm; access on 29.12.2023

OECD. (2023a). OECD Two Pillar Tracker. https://oecdpillars.com

OECD. (2023b). Important disclaimer regarding the limitations of the Country-by-Country report statistics. https://www.oecd.org/tax/tax-policy/anonymised-and-aggregated-cbcr-statistics-disclaimer.pdf

OECD. (2023c). Table I - Aggregate totals by jurisdiction for 2020. https://stats.oecd.org/

OECD. (2024). Latvia Issues Draft Pillar Two Law & Confirms Postponement. OECD Pillars. https://oecdpillars.com

Organ, J., Piotrowska, M., Rawicka, J. (2023). Co to jest dywidenda – definicja i zastosowanie. https://www.ey.com/pl_pl/tax/wyplata-dywidendy-w-2023-roku

Osińska, M. (ed.). (2007). Ekonometria współczesna. Toruń. Wydawnictwo TNOiK.

Owsiak, S. (2020). Finanse publiczne. Współczesne ujęcie, PWN.

Panayi, HJI, C. (2013). European Union Corporate Tax Law. Cambridge University Press.

Papp, T. K., Takáts, E. (2008). Tax Rate Cuts and Tax Compliance – The Laffer Curve Revisited. IMF Working Papers, No. 08/7.

Pavlin Korosecné, R., Györke Koponicsné, D. (2019). The analysis of the cross-border corporate profit's taxation. Regional and Business Studies, Vol 11 No 2, 49-63.

Persson, T., Tabellini G. (1992). The Politics of 1992: Fiscal Policy and European Integration. The Review of Economic Studies, Vol. 59, No. 4 (Oct. 1992), pp. 689-701. Oxford University Press.

Pîrvu, D. (2012). Corporate Income Tax Harmonisation in the European Union. Macmillan.

Piwowarski, R. (2022). Czynniki determinujące występowanie luk podatkowych. In Folia Oeconomica, Acta Universitatis Lodziensis, 2 (359) 2022.

Plumley, A. H. (2005). Preliminary Update of The Tax Year 2001. Individual Income Tax Underreporting Gap Estimates. Paper Presented at The 2005 Internal Revenue Service Research Conference IRS, Washington, DC.

Prest, A. (1979). Fiscal Policy. In: Coffey P., Economic Policies of the Common Market, pp. 69-97. Palgrave Macmillan.

PricewaterhouseCoopers. (2021). Worldwide Tax. Tax summaries. https://taxsummaries.pwc.com/netherlands/corporate/group-taxation

PWC. (2023). Hungary. Corporate - Taxes on corporate income Worldwide Tax Summaries. https://taxsummaries.pwc.com/hungary/corporate/taxes-on-corporate-income

Raczkowski, K. (2015). Measuring the tax Gap in the european economy. Journal of Economics and Management, 21 (3), pp. 58-70.

Raczkowski, K., (2016). Determinanty efektywności fiskalnej systemu podatkowego. Annales Universitatis Mariae Curie-Skłodowska. Lublin- Polonia, Sectio H Vol. L, 1.

Raczkowski, K., & Mroz, M. (2018). Tax Gap in The Global Economy. Journal of Money Laundering Control, December 21 (4), pp. 567-583. www.emeraldinsight.com/1368-5201.html

Radaelli, C.M. (1999). Harmful Tax Competition in the EU: Policy Narratives and Advocacy Coalitions. Journal of Common Market Studies, Volume37, Issue 4, pp. 661-682. https://doi.org/10.1111/1468-5965.00201

Ramirez Ocampos, A. F. (2019). Scale without mass: permanent establishments in the digital economy. Revista Direito Tributário Internacional Atual N. 5/2019, e-ISSN 2595-7155.

Razin, A., Sadka, E. (1991). International tax competition and gains from tax harmonization. Economics Letters, 1991, vol. 37, issue 1, 69-76.

R Core Team. (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing. http://www.R-project.org/

Reitz, F. (2023), Revenue Effects of the OECD Corporate Tax Reform - An Updated Impact Assessment of Pillar Two. IFF-HSG Working Papers. Working Paper No. 2023-17.

Richter, C., Paparas D. (2013) : Tax and spend, spend and tax, fiscal synchronisation or institutional separation? Examining the case of Greece, Romanian

Journal of Fiscal Policy (RJFP), ISSN 2069-0983, Editura ASE, Bucharest, Vol. 4, Iss. 2, pp. 1-17.

Rohrer J. (2018). Thinking Clearly About Correlations and Causation: Graphical Causal Models for Observational Data. Advances in Methods and Practices in Psychological Science. DOI: 10.1177/2515245917745629

Rossa, G. (2011). Krzywa Laffera. Równanie funkcji. NEon24.pl

Ruding Report Commission of the European Communities. (1992). Report of the Committee of Independent Experts on Company Taxation (Ruding Report). EU Commission - Working Document. https://aei.pitt.edu/8702/

Saez E., Slemrod J., Giertz S.H. (2012). In: Journal of Economic Literature 50 (1), pp. 3-50.

Sandmo A. (2005). The theory of tax evasion: a retrospective view. National Tax Journal 58 (4): 643–663.

Sanz-Córdoba P. (2020). The role of infrastructure investment and factor productivity in international tax competition. Economic Modelling, 2020, vol. 85, issue C, pp. 30-38.

Schindler D., Schjelderup G. (2012). Debt shifting and ownership structure. European economic review, Vol.56 (4), pp.635-647.

Schneider, F. (2002). Size and measurement of the informal economy in 110 countries around the world. World Bank Working Paper, July pp. 1-50.

Schneider, F., Buehn A., Montenegro C. E. (2010). Shadow Economies All over the World: New Estimates for 162 Countries from 1999 to 2007. Policy Research Working Paper, 5356, pp. 1-52. The World Bank, Washington DC.

Schneider F., Asllani A. (2022). Taxation of the Informal Economy in the EU. Policy Department for Economic. Scientific and Quality of Life Policies.

Segrè, C. (1966). The development of a European capital market. Report of a Group of Experts appointed by the EEC Commission. November 1966. EU Commission - Working Document.

Shoup, C. S. (ed.)., Dosser, D. (1967). Economic Analysis of Tax Harmonisation.

Shoup, C.S. (1968). Fiscal Harmonisation in Common Markets Volume 1: Theory, New York, Columbia University Press.

Šimková, N. (2015). The Hierarchical Clustering of Tax Burden in the EU27. Journal of Competitiveness, Vol. 7, Issue 3, pp. 95-109.

Sinn, H.W. (1990). Tax harmonisation and tax competition in Europe. European Economic Review 34, pp. 489-504.

Sinn, H.W. (1997). The selection principle and market failure in systems competition. Journal of Public Economics, 1997, vol. 66, issue 2, pp. 247-274.

Slemrod, J., Yitzaki, S. (2002). Tax avoidance, evasion and administration. In: Handbook of Public Economics, Volume 3, 2002, pp. 1423-1470.

Smith, A. (1776). An Inquiry into the Nature and Causes of the Wealth of Nations. https://oll.libertyfund.org

Sobczyk, M. (2013). Ekonometria. Warszawa. Wydawnictwo C.H. Beck.

Sørensen, P.B. (1994). From the global income tax to the dual income tax: Recent tax reforms in the Nordic countries. International Tax and Public Finance, Volume 1, pp. 57–79.

Sørensen, P.B. (2004). Company tax reform in the European Union. International Tax and Public Finance, Vol.11(1), pp. 91-115.

Suárez Serrato, J. C., & Zidar, O. (2018). The structure of state corporate taxation and its impact on state tax revenues and economic activity. Journal of Public Economics, 167, pp. 158–176. https://doi.org/10.1016/j.jpubeco.2018.09.006

Szołno-Koguc, J. (2012). Istota i czynniki determinujące wydajność fiskalną podatków i system podatkowego. In Famulska T., Walasik A. (eds.). Finanse w niestabilnym otoczeniu-dylematy i wyzwania. Finanse publiczne, Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach.

Szwajdler, P. (2021). Granice negatywnej harmonizacji podatków bezpośrednich w prawie Unii Europejskiej, Wydawnictwo C. H. Beck, Warszawa.

Tanzi, V., Bovenberg A. L. (2019). Is There a Need for Harmonizing Capital Income Taxes within EC Countries? DOI:10.4324/9780429304132-9

Tiebout, C. (1956). A pure theory of local expenditures. Journal of Political Economy No 64 (5).

Toborek-Mazur, J. (2010). Holding jako podmiot rachunkowości, Seria Akademicka – Oficyna Wolters Kluwer Polska.

Torgler, B. (2003). Tax morale and tax compliance: A cross culture comparison. In Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association, (2003). Vol. 96 (2003), pp. 63-74.

Trabandt, M., Uhlig H. (2011). The Laffer Curve Revisited. Journal of Monetary Economics, Vol. 58, pp. 305-327.

Tulai, C., Serbu, S. (2005). Comparative Taxation and fiscal Harmonisation. Casa Cărții de Știință. Cluj-Napoca.

Uchman, J. (2014). Opodatkowanie dochodów a inwestycje w przedsiębiorstwie. Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie. Ekonomika i Organizacja Gospodarki Żywnościowej, nr 106/2014.

Uygun, E., (2021). The Concept of Tax Gap and Measurement of The Tax Gap in Turkey. 35. International Public Finance Conference, Proceedings Book. Ekin Printing: Bursa. Antalya Turkey. 14-17 October.

Uygun, E., Gerçek. A. (2021). Measurement of Tax Gap in Turkey. Public Finance Studies-4, Edt. Burçin Bozdoğanoğlu. First Edition. Ekin Printing: Bursa: 2021.

Uygun, E., Gerçek, A. (2023). Measurement of tax gap and analysis of tax gap components in OECD countries: Panel data method. Hacettepe Üniversitesi İktisadi Ve İdari Bilimler Fakültesi Dergisi, 41 (2), pp. 334-354. https://doi.org/10.17065/huniibf.1111626

Van den Tempel, A.J. (1970). Corporation tax and individual income tax in the European Communities. In Studies Competition — Approximation of legislation. Series no. 15. Brussels, 1970.

Van der Hoek P. (2003). Tax Harmonisation and Competition in the European Union. eJournal of Tax Research, vol. 1, no. 1, pp. 19-36.

Walasik A. (2015). In Kwartalnik Kolegium Ekonomiczno-Społecznego Studia i Prace. Szkoła Główna Handlowa: Finanse publiczne i ubezpieczenia, 2015, vol. 20 (XX), Issue 3, pp. 145-156.

Wanninski, J. (1978). Taxes, Revenues, and the Laffer Curve. In The Way the World Works: How Economies Fail, and Succeed.Basic Books; First Edition 1978.

Warren, N., & Mcmanus, J. (2006). The case for measuring tax gap? eJournal of Tax Research, 4 (1), pp. 61-79, Retrieved 10 November 2019 from https://www.business.unsw.edu.au/research-site/publications-site/ejournaloftaxresearchsite/Documents/paper3_v4n1.pdf

Wawrzyniak D. (2011). Company Taxation in the European Union, Comparative Economic Research, Vol. 14/ issue 3, pp. 119-136.

Wildasin, D.E., (1988). Nash equilibria in models of fiscal competition. Journal of Public Economics 35, pp. 229-240.

Wilson J. D. (1991). Tax competition with interregional differences in factor endowments. Regional Science and Urban Economics, Volume 21, Issue 3, November 1991, pp. 423-451.

Wilson J. D. (1999). Theories of Tax Competition. National Tax Journal, 1999, vol. 52, issue 2, pp. 269-304.

Wilson, J.D., Wildasin D.E. (2004). Capital tax competition: bane or boon. Journal of Public Economics 88, pp. 1065 – 1091.

Wolff G. (2007). Foreign Direct Investment in the Enlarged EU: Do Taxes Matter and to What Extent? Open Economies Review, 2007, Vol.18 (3), pp.327-346.

Webster Dictionary (n.d.), Retrieved March 3, 2020 from https://www.definitions.net

Wilcox R.R., Keselman H.J. (2003). Modern robust data analysis methods: Measures of central tendency. Psychological Methods. 8 (3): 254–274. http:// doi.org/10.1037/1082-989X.8.3.254

Wildasin, D. (2023). Open Economy Public Finance: Competition Among Governments, NBER Working Paper, 14818. https://www.nber.org/system/files/chapters/c14818/c14818.pdf

Wilson J. D. (1986). A theory of interregional tax competition. Journal of Urban Economics No 19 (3), pp. 296-315.

Winner, H. (2005). Has tax competition emerged in OECD countries? Evidence from panel data. International Tax and Public Finance, Volume 12, pp. 667–687.

Witkowska D. (2005). Podstawy ekonometrii i teorii prognozowania. Oficyna Ekonomiczna. Kraków.

Wooldridge, J. M. (2016). Introductory Econometrics: A Modern Approach. Adrian MI: South-Western Cengage Learning.

Wrede, M. (2001). Should Commuting Expenses Be Tax Deductible? A Welfare Analysis. Journal of Urban Economics, 2001, vol. 49, issue 1, pp. 80-99.

Wyszkowski, A. (2010). Koncepcja tax expenditures w systemie podatkowym. In Gospodarka Narodowa. The Polish Journal of Economics, tom 242, wyd. 9, pp. 65-82. Szkoła Główna Handlowa w Warszawie. Kolegium Analiz Ekonomicznych.

Zagler, M. (2009). The EU CCCTB proposal. A critical appraisal. Discussion Papers SFB International Tax Coordination, 31. https://epub.wu.ac.at/1546/

Zodrow, G. R., Mieszkowski P.M. (1986). Pigou, Tiebout, property taxation and the under-provision of local public goods. Journal of Urban Economics 19, pp. 356–370.

Zodrow, G. R. (2003). Tax Competition and Tax Coordination in the European Union. International Tax and Public Finance, 2003, vol. 10, issue 6, pp. 651–671.

Zimčík, P. (2016). Economic Growth and Budget Constraints: EU Countries Panel Data Analysis. Review of Economic Perspectives – Narodohospodarsky Obzor Vol. 16, ISSUE 2, 2016, pp. 87–101. https://doi.org/10.1515/revecp-2016-0007

Legal acts, law proposals & judgements:

Act of February 15, 1992 o podatku dochodowym od osób prawnych (Journal of Laws 2023, item 2805).

Act of August 29, 1997 Ordynacja podatkowa (Journal of Laws of 2023, item 2383).

Agreement between the Republic of Poland and the Federal Republic of Germany for the avoidance of double taxation with respect to taxes on income and property, signed in Berlin on May 14, 2003 (Journal of Laws 2005, 12/90).

Consolidated text: 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 (codified version) (OJ L 2009, 310/34).

Consolidated text: 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 (OJ L 2003, 157/49).

Consolidated text: 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 (recast) (OJ L 2011, 345/8).

Consolidated version of the Treaty on European Union (OJ 2012, 326/13).

Consolidated version of the Treaty on the functioning of the European Union (OJ L 2012, 326/47).

Convention 90/436/EEC Consolidated text: Convention on the elimination of double taxation in connection with the adjustment of profits of associated enterprises (OJ L 1990, 225/10).

Council Directive (EU) 2016/881 of 25 May 2016 amending Directive 2011/16/EU as regards mandatory automatic exchange of information in the field of taxation (OJ 2016, 146/8).

Council Directive (EU) 2022/2523 of 14 December 2022 on ensuring a global minimum level of taxation for multinational enterprise groups and large-scale domestic groups in the Union (OJ 2022, 328/1).

Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation and repealing Directive 77/799/EEC (OJ L 2011, 64/1).

Directive 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market (OJ L 2016, 193/1).

Directive 2017/952 amending Directive (EU) 2016/1164 as regards hybrid mismatches with third countries (OJ 2017, 144/1).

Directive 2021/2101 amending Directive 2013/34/EU as regards disclosure of income tax information by certain undertakings and branches (OJ 2021, 429/1).

Directive (EU) 2021/2101 of the European Parliament and of the Council of 24 November 2021 amending Directive 2013/34/EU as regards disclosure of income tax information by certain undertakings and branches (OJ 2021, 429/1).

European Commission. (2016). Proposal for a Council Directive on a Common Corporate Tax Base, SWD (2016) 341, SWD (2016) 342.

European Commission. (2021b). Proposal for a Council Directive on ensuring a global minimum level of taxation for multinational groups in the Union, SWD 2021 580.

European Commission. (2024). Commission Notice Election to delay application of the IIR and UTPR under Article 50 of the Pillar Two Directive (C/2023/1536), ELI. Retrieved December 15, 2023 from http://data.europa.eu/eli/C/2023/1536/oj

Judgment of the Court of Justice of the EU (Second Chamber) of 14 May 2020 B and Others v Administration des contributions directes, Case 2020 C-749/18.

Konstytucja Rzeczypospolitej Polskiej z dnia 2 kwietnia 1997 r. (Journal of Laws 1997, 78/483).

Projekt ustawy o opodatkowaniu wyrównawczym jednostek wchodzących w skład grup międzynarodowych i krajowych z 25 kwietnia 2024 r.

Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics, repealing 10 legal acts in the field of business statistics (OJ 2019, 327/1).

Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains (OJ 2006, 393/1).

Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007 (OJ 2007, 306/1)

Treaty of Nice amending The Treaty on European Union, The Treaties establishing The European Communities and certain related acts (OJ 2001, 80/01).

Treaty on European Union. (OJ 1992, 191/01). Maastricht.