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Case study: The impact on the Romanian State Budget in the case of EU adoption of the CCCTB Directive

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Abstract. *This study comes in the current context in which the European Commission, chaired by Von der Leyen, stressed the need for a unitary and fair tax system in the European Union (CE, 2019). Moreover, considering the present macroeconomic environment influenced by the pandemic evolution and the current budgetary projections, implicitly by the historical Budget, previously approved by the European Council, I consider it appropriate to analyse the fiscal legislative efforts of the European Union.*
This case study aims to analyse the impact on the Romanian State Budget if the proposal for a European Union Directive on corporate taxation will be adopted. Considering the legislative area of which the proposal for directive is part of, namely fiscal policy, where the Member States, based on the existing treaties, retain their sovereignty over the tax law and the Romanian representatives in the European Council have a veto on unitary tax regulations, the results of this study may be a guide to how Romanian representatives will vote within the European Council. Taking into consideration the fact that once the common consolidated base will be introduced, by maintaining the current rules presented in the legislative proposal, the impact on the Romanian's national Budget will be a positive one.

Keywords: CCCTB, CCTB, European Directive, Economical impact.

JEL Classification: E62.

1. Introduction

Within the current situation, the companies within the European Union are confronting with 27 different taxation systems, which according to existing empirical studies (Nerudova, Solilova, 2019) (E&Y, 2017), (CE, 2015), (Nerudova, Schratzenstaller 2016) have an impact both on the companies with activities across the European Union territory and the Member States.

First, the different tax legislation within the Member states, and the bilateral treaty system that currently exists within EU and outside EU, were potentially used by the multinational companies to move the profits in more favourable jurisdictions through aggressive tax planning that has led to the erosion of the tax base in the Member States (CE, 2015), (OECD, BEPS, 2014).

Secondly, the diversity of corporate taxation systems increases compliance costs, both for the tax administrations of the Member States and the companies themselves. The complexity of the present taxation systems prevents the expansion of small and medium-sized enterprises (hereinafter referred to as SMEs) on foreign markets, as mentioned in Chen, Lee and Mintz (2002), Solilová and Nerudová (2016) or David and Nerudová (2008). Because SMEs represent over 99% of the total number of companies present on the European markets and creates two thirds of the total jobs (Eurostat, 2016), European Commission tried since the '70s to harmonize the direct taxation of the companies, plans which, according to literature and current legislative situation, were not successful.

The effort to harmonize the corporate taxation within the European Union dates since the EU formation and could be characterized as unsuccessful (Nerudová, 2014). First in 1962, the European Commission suggested the split of income tax rates and the application of different rates for the retained and distributed profits. More, in 1970, Temple report suggested a classic taxation system for the companies within the EU. As a consequence, the European Commission tried to approximate the corporate income tax rates by elaborating a proposal regarding the common level of companies' taxation between 45% and 55%, and recently, at a minimum level of 30%. Based on the Ruding Committee, European Commission proposed uniform basic taxable rules and a maximum corporate tax rate of 40%. Because all harmonization efforts have been perceived to some extent by Member States as efforts to limit their fiscal sovereignty, the European Commission has decided to seek to harmonize only provisions affecting the proper functioning of the internal market (Kubátová, 1998).

As a result, there is no harmonized system of corporate income taxation applied in the European Union (as in the case of VAT), but rather a combination of different national tax systems, which increases tax compliance costs and potentially creates loopholes for tax evasion, tax fraud and tax planning schemes. The situation in the European Union is an example of fiscal divergence, as Hitris (1994) states. The harmonization process, which was intended to achieve a unified tax system (through full direct harmonization of national tax systems), has transformed into a convergence and approximation of tax systems, as Hitiris (1994) and Kubátová (1998) said, mainly through negative integration (i.e.

judgments of the European Court of Justice) and indirect integration (i.e. harmonization of corporate taxation through harmonization of different areas of the law).

Recent efforts of the European Union to create common rules date back to 2001, when the European Commission (EC) started the debate on the internal market disruptions due to competing corporate tax systems. As a result, the European Commission set up a working group on the Common Consolidated Corporate tax base (CCCTB), which, after more than 7 years of research, finalized the draft Directive (European Commission, 2011). Published on 16 March 2011, the CCCTB proposal was found to be unique as it contains the basic framework for the operation of the CCCTB in the European Union. However, it has raised debates at EU level, on the consolidation regime and the rules for allocating group tax bases due to its budgetary impact on individual EU Member States. As a result, nine Member States opposed the proposal (Solilová and Nerudová, 2016).

Following the presentation of the ODCE BEPS plan (base erosion and profit shifting) and the internal situation within the EU, where studies showed that it still existed, even at a higher level than the initial situation analysed, an erosion of the taxable base caused by companies operating in the EU which are shifting profits from these countries to more favourable tax jurisdictions.

The European Commission has republished the Action Plan for the corporate tax system, which, according to the members of the commission, had to be fair and efficient and serve the interests of the Union and of citizens. Moreover, according to the statements of the president of the EC (von der Lyden, 2019), efficient and fair taxation is at the top of the current European Commission's priorities.

The CCCTB is understood as a tool for combating tax evasion and tax fraud, trying to bring and tax profits where "value" (OECD, 2014, EC, 2015) is created.

As the implementation of C(C) CTB is one of the most important tools to prevent base erosion and profit shifting, C(C) CTB can also indirectly contribute to lowering the share of labour taxation on overall taxation (European Commission, 2015). When corporate tax bases are not eroded by tax planning and value added is taxed in the country where it was generated, then additional tax revenues can create space for a decrease in labour taxation. Therefore, the implementation of C(C) CTB can effectively contribute to a reduction of several sustainability gaps defined by Schratzenstler and colab. (2016).

The resumption of the law-making process for corporate taxation is influenced by previous experiences, where at the previous vote in the Council of the European Union, the EU-wide institution for determining fiscal policies, the draft law was rejected by nine Member States (Solilová and Nerudová, 2016).

Furthermore, the Commission considered the fact that the most discussed and problematic proposal in the legislation in question was the initiative to strengthen the taxable base and the mechanism for allocating consolidated budgetary resources to the participating Member States of the tax base (David and Nerudová, 2015) Commission has suggested the implementation of the system in two steps.

First, to implement the common rules for the construction of the corporate tax base (hereinafter CCTB) and in the second phase the consolidation of the taxable base at the level of the parent company.

Given that the most attractive part of the project (Solilová and Nerudová, 2017) represented the consolidation scheme which is missing in the first step, the Commission suggests as a temporary solution the introduction of the possibility of compensating cross-border losses.

Following the above-mentioned Action Plan, the European Commission (European Commission, 2016a; 2016b) published in October 2016 two proposals for a Directive - a proposal for a Council Directive on a common corporate tax base (hereinafter the CCTB Directive) and a proposal for a Council Directive on a Common Consolidated Corporate tax base (hereafter CCCTB Directive). Both above-mentioned Directives are mandatory for all multinational group of companies with consolidated revenues of EUR 750 million.

The proposed CCTB Directive contains common rules for the computation and determination of the tax base in each EU Member State, thus limiting planning opportunities for multinational groups.

The main elements of the common set of rules are the higher deduction for R&D expenditure, the deduction of investment costs, the temporary reduction of cross-border losses with recovery, the EBITDA-based interest limitation rules, and the rules for hybrid instruments (the last two rules have already been reached by the "ATAD" – Anti tax avoidance Directive, but only to proposed as optional for implementation at the level of MS- in the case of interest limitations).

Under the CCCTB Directive, the profits of EU multinational groups will be consolidated within the EU at a country of their choice, of which they will then be redistributed to Member States based on an allocation key.

In accordance with the principle of subsidiarity, national Parliaments were again consulted. Following the national consultations, seven reasoned opinions were issued by the parliaments of Denmark, Ireland, Luxembourg, Malta, Sweden and the Netherlands (presenting two opinions, one from each Chamber).

In the European Parliament, the proposal was attributed to the Committee on Economic and Monetary Affairs, which endorsed the Commission's proposal. The two projects - the common base (CCTB) and consolidation (CCCTB) - passed by the European Parliament (EP) with a large majority on 15 March 2018, along with a number of amendments to enhance its revolutionary fiscal character.

Given the reluctance to the public legislative proposal expressed by certain Member States such as Ireland and the Netherlands, no final vote has taken place in the Council of the European Union at this time.

The Senate of Romania (June 2017) formulated its position on these two proposals on 12 June 2017 (judgment No 74 of 12 June 2017). According to the decission, the Romanian Senate agrees with the aim of adopting legislation on phased fiscal matters and considers a

thorough assessment of the tax allocation formula to be necessary to ensure the elimination of the potential negative impact on Romania's budget (Senate, 2017).

Moreover, the judgment issued and communicated to the European Parliament, the Commission and the Council of the European Union also covers issues of a technical and fiscal nature, such as the possibility of regulating at national level, for example R&D expenditure which is subject to an additional tax deduction. This consideration of the Senate helps to preserve national competitiveness in attracting capital and investing in development research.

Romania's aim will be to ensure the gradual transformation from the first step (i.e., CCTB) toward the adoption of the common consolidated corporate tax base (i.e., CCCTB).

The aim of this paper is to investigate the impact of the introduction of the Common Consolidated Corporate Tax Base on fiscal and budgetary revenues.

2. Literature analysis

Considering the complexity of the subject under consideration, namely the proposal to legislate on a unified and integrated basis for direct taxation of companies operating within the European Union, existing literature can be classified into four main categories.

The first category in which we could frame existing studies, relate strictly to the tax rates charged by different national States, both before the implementation of the common consolidated base and after implementation.

The studies in this main category share the opinion of the researchers in two directions: On the one hand, we have the studies carried out by Bettendorf and colab. (2009) or Riedel and Runkel (2007) which, according to the results of their research, recommend the implementation of a uniform rate of taxation at EU level, as not to create a competitive environment between Member States, i.e., setting a reduced rate of corporate tax to attract potential investors.

To date, although the European Parliament has been in the process of circulating, the introduction of a minimum tax rate (EP, 2018), as is also the case for VAT which is regulated at European Union level, there is nothing concrete in the legislative proposal adopted by the European Parliament and submitted to the Commission and the Council of the European Union.

Part of the existing literature on the tax rate suggests, (Mintz, 2008) different national tax rates set by Member States to ensure the fiscal sovereignty of EU Member States.

The second category of theoretical research on the Common Consolidated Base focuses mainly on the formula for allocating the tax collected in the consolidated formula, such as the form adopted by the European Parliament with the relevant amendments. In this category, we have on the one hand the debate and the results of research on an important element of the allocation key, namely the number of employees, and on the other hand the wage costs.

Mintz (2008) considers that the allocation formula should take account only the employees' costs incurred by the companies, whereas, Eberharringer and Petutschning (2014) considers, that the basis of the allocation key should be not the costs of employees, but their wages when calculating the corporate tax for each participating state.

Furthermore, the authors of existing literature focus on analysing the positive arguments made by the European Commission on proposing the sharing of related corporate tax according to the proposed allocation key.

Roggeman and colab. (2012) concluded that the allocation formula suggested by the European Commission explains the variation in corporate tax by only 28%. Similar results have been achieved by Krchnivá and Neurudová (2015). According to the authors, the CCCTB allocation key proposed by the European Union can explain almost 35% of the variability in profitability of Czech companies. Unlike Hines (2008), which concluded that the allocation formula in the USA (i.e., wages, assets, and payroll) can explain almost 50 % of the variability of profitability.

The study carried out by Cobham and Loretz (2014) brings into the existing research on the allocation key for the common consolidated corporate tax a slightly different perspective from the previous published studies.

According to them, the allocation of profit from corporate tax on the basis of tangible assets and employment is beneficial for low-income countries, while sales and wages are more beneficial factors for high-income countries.

The third category of common consolidated tax base research is studies on the impact of the introduction of the CCCTB on EU Member States' tax/budgetary revenues.

The first study in this field was carried out by Fuest, Hemmelgam and Ramb (2007). The authors investigated the contribution of German companies together with their subsidiaries to the creation of the European tax base. Although the study is strictly based on German companies, the researchers considered the relevant results on European corporate tax, given that 14% of the direct investments at the time were made by the German companies. The findings of the study showed a negative impact of a 20% reduction in corporate tax due at European level. According to the study, this is largely due to the consolidation of tax losses at the level of the group operating at European level.

The research carried out by the authors such as Devereux and Loretz (2008) focused on the European effect of collecting tax revenues to Member States' budgets. According to the submitted study, the authors concluded that the EU's tax revenues could fall by 1% as a result of the implementation of the common consolidated tax base at European Union level.

Some Member States such as Hungary, the Czech Republic or Slovakia could obtain additional tax revenues as a result of the tax-sharing mechanism in the form of an allocation formula.

According to the study carried out by the above authors, the country most affected by the current implementation of the corporate tax key would be Germany.

Another point of view in the existing research, Fuest, Hemmelgam and Ramb (2007), shows that more than 50% of European companies meet the criteria imposed by the proposed Directive to achieve consolidation with the chosen European society.

The same category defined above also includes studies carried out by various authors who have used macroeconomic modelling to simulate the impact on tax revenues. Van der Horst, Bettendorf and Rojos-Romagosa (2007) applied the CORTAX model, which represents the overall balance model that captures the behaviour of companies, households, and governments in the fully functioning market.

The analysis mentioned above takes into account the information from seventeen EU Member States. The model assumes that each Member State has a parent company in an EU Member State with subsidiaries in each other sixteen Member States. The model uses both local companies and multinationals entities of each Country who meets the following condition: (i) the Company has a permanent workforce in each state under analysis. Taking into consideration the condition mentioned before, i.e., the presence of a permanent working force, if the effective tax rate of the multinational Company: a. decreases due to the implementation of CCCTB, then the causality of the EU decision follows the increase of the Companies operations in that particular Country or b. if the effective tax rate increases, then the Company would, according to the assumptions, decreases its operation in that particular Country. Moreover, the impact on the effective tax rate would influence the number of employees employed by each Company as follow: a. the Company increases their workforce if the effective tax rate decreases due to the implementation of CCCTB, or b. the Company decreases its workforce base if the effective tax rate increases. Unlike the workforce, which according to the analysis mentioned above, is less mobile, a significant share of capital is mobile in all Member States.

The model used by the study mentioned above takes into consideration:

- the Companies mandatory obligation to consolidate financially;
- does not take into consideration the potential compensation of the tax losses registered by the Companies in other MS (i.e., the offset of the corporate income with the tax losses incurred);
- and uses as a profit allocation key the production variable instead of the variable mentioned by the drafted Directive, which stipulates as an allocation key the distance salles.

The main limitation of the model used by the Van der Horst, Bettendorf`& Rojas-Romagosa (2007) is their incapacity of offsetting the tax losses incurred by the multinational companies in different EU MS. The tax loss is a regulatory measure implicitly mentioned by the drafted Directive, and it sets them apart from other existing studies which follow the draft legislation and analyses the impact on the tax base and the booked income.

A second significant limitation of the analysis proposed by the above authors set the obligation for all analysed companies to consolidate and form a joint tax base, which was never the case in the final version of the Directive. Furthermore, the analysis considers the average tax depreciation as an element in the impact assessment achieved versus the tax

depreciation rules set by the Directive on the Common Consolidated Base of European Companies.

Thirdly, Van der Horst, Bettendorf & Rojas-Romagosa's (2007) research shows an opportunity cost of 10% resulting from the CCCTB implementation. The opportunity cost results from a lower compliance cost, i.e., computation of the corporate income tax in each member state and the tax return submission. Moreover, the 10% decrease in costs includes the compliance cost with the Transfer Pricing files. Their assumption is incorrect as TP Files would not become redundant as most multinational entities within the EU have material transactions with entities within the group that are non-EU. The analysis assumes (incorrectly) that transfer prices would be eliminated, despite transactions with non-consolidated EU subsidiaries and non-EU affiliates.

In their model, the authors concluded that a change in the consolidated corporate income tax due would automatically lead to the partial offsetting of changes in labour and consumption taxes, as capital changes trigger changes in the tax bases on consumption and wages. Any remaining aggregate tax difference is closed in the model by a change in the labour tax rate.

Member States that would lose companies' revenues due to the allocation formula would recover tax/budgetary revenues from higher labour taxation in the states affected by the corporate income tax reduction.

Using labour tax to compensate any revenue loss by MS is solely a modelling assumption used by the authors and not an evaluation of the public policies that the MS may take in such a case; the two of them cannot be correlated.

Van der Horst, Bettendorf, and Rojas-Romagosa (2007) conclude that a mandatory CCCTB would increase welfare by only 0.02% of GDP. Although the model estimates significant efficiency gains from lower assumed compliance costs, they are largely offset by new tax distortions. The simulations suggest that countries with a low level of taxation would benefit from changing fiscal planning strategies.

The study assumes that even if companies no longer transfer their corporate profits in different jurisdictions, they would instead use the new consolidated corporate tax base in order to change the elements taken into account. Based on that, the companies redistribute the tax base between the Member States so that they will not bear a more significant tax burden than before the Directive was introduced.

For example, companies would expand actual economic activities in countries with low tax rates, increasing capital and increasing wages, thus increasing citizens' well-being. In contrast, welfare would be reduced in the Member States facing higher tax rates. They argue that the EU would generally only benefit from a mandatory CCCTB system with equal tax rates in each Member State, which conflicts with the CCCTB's important objective of ensuring the sovereignty of the tax rate for each Member State.

The analysis by Van der Horst, Bettendorf, and Rojas-Romagosa (2007) also shows a wide range of macro-economic effects in all Member States. GDP varies from a decrease of -0.7% in Italy (-0.72% in Greece) to an increase of 0.82% in Germany.

The above analysis is an essential first step in examining the dynamic economic effects of a CCCTB. Other empirical studies show CCCTB as a redistribution of taxes and economic activity in the EU rather than an increase in the overall well-being of the EU. It also shows the sensitivity of the results to several key modelling parameters and essential policy features. In addition, their analysis provides a helpful framework for identifying the various impacts on tax rates and actual economic activity in different Member States based on the CCCTB.

Concerning the EU-17, the authors conclude that countries with broad profit tax bases could benefit from the system, while countries with a narrow profit tax base could lose. The authors also stressed that only the mandatory implementation of the CCCTB would allow the full benefit of all stakeholders. Bettendorf et al. (2009) simulated the impact with the application of the calculable general equilibrium model. Based on the results, they concluded that tax harmonization connected with strengthening tax bases would not lead to significant economic growth. According to the authors, higher tax revenues could be achieved by implementing the CCCTB accompanied by harmonizing the corporate tax rate.

On the contrary, Brochner et al. (2007) focused on the impact of harmonizing the tax base without harmonizing the tax rate on GDP, welfare, and tax revenues. They concluded that harmonization could increase GDP and welfare. However, they indicated a slightly negative impact on tax revenues. The model did not reflect the possibility of the consolidation and allocation formula, which could be consider a limitation of their study.

Moreover, in the same research stream, studies are covering almost the whole of the EU economy. Oestreicher and Koch (2007) were studying the impact on the EU-25. They indicated that total corporate income decreased by 4,45% in the case of mandatory implementation of the CCCTB in the EU, down by 4,57% in voluntary implementation. However, the most complex research can be considered the studies carried out by Cline and colab (2010). The authors concluded that if the CCCTB was implemented on a compulsory basis, total corporate tax revenues could increase by 0,2%. However, the analysis of each Member State, could result in a decrease of 8,4% for Denmark or an increase of 6% for France. Moreover, according to the authors, the voluntary implementation of the CCCTB would lead to a decrease in total corporate tax revenues of 0,6% and, at the same time, to a decrease in the average corporate tax base of 2,2%.

The last category of research, where this study also falls, is the impact on Member States' national budgets. The implications of implementing the CCCTB on tax revenues in Romania have been investigated in the past by Pirvu, Banica, and Hagiu (2011). The authors simulate the impact on the sample of the nine largest resident companies in Romania. They conclude that the implementation of the CCCTB in Romania would lead to a 0,035% drop in the corporate tax base. The above authors' research is based strictly on limited information on the Ministry of Finance's website under the on-balance sheet information category. Moreover, given the quality and availability of the public information, the conclusions drawn by the 2011 study can be considered irrelevant, both at the level of the sample chosen, i.e., nine companies vs. 381 entities that fall within the ceilings set by the directive, i.e., consolidated income above EUR750 million at group level, as well as effectively publicly available financial and tax data.

Domonkos and collab used a similar methodology. (2013) to investigate the impact of the implementation of the CCCTB on the Slovak Republic. Based on the sample of the 11 largest companies in the Slovak Republic, the authors concluded that the implementation of the CCCTB would lead to a 31,9% drop in tax revenues for the Slovak Republic in 2009 and a 14,6% fall in 2010. Detailed research into possible implementation scenarios and their impact on Czech Republic's tax revenues was further developed by Nerudová and Solilová (2015a; 2015b) and Solilová and Nerudová (2016). The research was based on large data sets from Amadeus and Bankcoop databases. The results show that in compulsory implementation, the Czech Republic will gain an additional 3,39% of income from corporate tax compared to the current situation. However, if cross-border losses were to be compensated, the Czech Republic would lose 0,78% of its current income from corporate tax.

As can be seen from the analysis of existing research, the simulation based on the dataset of all eligible entities in the Amadeus database has not been applied so far to research the impact on Romania's budget revenues. Moreover, the option of offsetting cross-border losses has not been investigated so far. On this basis, the study aims to investigate the impact of the mandatory implementation of the Common Consolidated base, using the data set of all entities accessible from the TP Catalyst database, and also to explore the common rules for the construction of the tax base (CCTB) with the element of possible cross-border loss relief.

3. Research Methods

The research focuses on the impact on the Romanian state budget of adopting the common consolidated base for European companies based or subsidiary in Romania and examines the following research question:

3.1. To what extent does implementing the Directive on the Common Consolidated Corporate tax base affect Romania's state budget?

The empirical analysis is based on company-wide data from the TP Catalyst database, which is provided by Bureau van Dijk. This data was taken from the 361 updated (August 2020) databases, including standardized financial information of more than 18 million public and private companies in 43 European countries.

For a meaningful but static analysis of the existing data, this study is based on an assumption found in the literature, i.e., the behavior of the companies would not change in response to the tax reform, which is also mentioned in the studies carried out by Devereux and Loretz (2007). Moreover, the paper follows the approach of Devereux and Loretz (2007), Fuest, Hemmelgarn and Ramb (2006) or Clien, Neubrig, Phillips, Sanger, and Walsh (2010), which is based on the data from the databases provided by the statistical office of Moody's and Bureau van Dijk (i.e., Amadeus, TP Catalyst, Orbiz), because it contains data on more than 18 million companies.

In selecting the representative sample, the study takes into consideration the legal requirements set out in the Common Consolidated base Directive, i.e., as the first selection criterion; the study refers to the obligation to consolidate financial situations in line with current European directives, namely:

- The companies analyzed must belong to a European multinational group;
- In order to analyze the situation of a group and the legal need to consolidate the financial situation, the companies analyzed must meet two criteria, namely, to control or to be controlled by a European multinational group, this means 50,01% in the controlled company and at least 75% ownership of the company's capital.

In the next step, the companies that fulfilled the above conditions remained in the research sample. The second selection criterion was for the selected companies to comply with the geographical principle, i.e., the parent company and the subsidiary/permanent establishment are in a Member State of the European Union. The two types of companies should be present in Romania.

Regarding the mandatory accession to the tax rules proposed by the Common Consolidated base Directive, all entities with consolidated turnover exceeding EUR 750 million will be obliged to adopt the tax rules laid down in the Directive.

Considering the above-mentioned conditions, 811 European multinational companies have been identified which operate in one form or another in Romania.

Secondly, a detailed analysis of the situation in Romania has been made. The financial statements of companies located in Romania and subsidiaries located in the other EU Member States have been analyzed to obtain the taxable gross profit (profit or loss of companies before tax).

In order to estimate the overall impact of the CCCTB on the total income tax collected at the Romanian level, the corporate tax reported by the companies found in the database is summed up and compared to the total tax collection in Romania reported in Eurostat.

The results were compared with the total tax collections in the Member State by applying an adjustment of factors that increase or decrease the tax reported in the database equal to 100% of the aggregated tax collection. This adjustment implicitly infers that companies not observed in the database have the same ownership characteristics and are affected by the CCCTB to the same extent as the modelled companies.

Differences in the total income tax reported for the companies in the database against actual government income tax collections could result from:

- incomplete coverage of companies in the TP Catalyst database
- include more than the company income tax in the income tax reported in the financial statements
- the inclusion of both current fiscal debts and deferred taxes reported in financial statements or taxes paid in countries other than the country of residence of the company, among others.

In order to identify individual EU Member States' shares in group tax bases, a detailed comparative analysis of group tax systems and consolidation regimes has been carried out. On this basis, EU Member States have been classified into four groups according to the rules they apply. These rules were then used to calculate the total tax base of subsidiaries of Romanian resident companies in the respective EU Member States.

In the next step, the study calculated the allocation of the common consolidated tax base obtained on the allocation formula principle in each EU Member State.

According to the proposed Directive, the distribution of the common consolidated base considers the weighted average of three variables as follows: Sales, labor (both wages and number of employees), and tangible fixed assets.

If one of the above variables was not submitted in the database, that group of companies was excluded. The calculations were strictly carried out on the European groups that met the criteria of the Directive and published the full and final financial information in 2018.

Moreover, 2018 was chosen as the reference year also due to the information available, given that the reporting for the financial year 2019 is made during 2020, which would have meant a more significant exclusion of the entities analyzed in the given study.

Another reason why the 2018 data were selected in the estimation of the change in the tax base of companies' income because 2018 was a year without economic recession in both Romania and the European Union. In 2018, there was nominal positive GDP growth in each EU-27 Member State. By contrast, the period during which the other studies were carried out, i.e., 2000-2004, was characterized by significant falls in GDP growth rates in the many

Member States and single years of nominal negative GDP growth for four Member States.

According to the existing literature, the studies conducted by Nerudová and Solilová (2014) applied different estimation methods to supplement the data missing from the Amadeus database, not to reduce the sample used, namely regression, imputation, and Monte Carlo method.

Having regard to the sample of 381 companies out of a total of 473 companies meeting the criteria of the Directive, i.e., EUR 750 million and control, and for which all the information was available for analysis, the study considered that the sample was representative and relevant for the analysis in question, without the need for further approximation.

4. Research limitations

First, the simulation of the impact of the CCCTB study is based on the static model, which means that no behavioral adjustments are made to the companies affected by the introduction of the consolidation obligation at the group level. The impact may be different if a statistical model of predictive behavior change of States is taken into account, i.e., additional investments versus withdrawing from specific markets, in this case, Romania.

The study also did not analyze the impact on changes in tax rules relating to the granting of tax concessions differentiated from the proposed text of the CCCTB Directive, namely, differentiated tax amortization rules, which may have an impact on tax outcome or differentiated definition, for example, eligible R&D expenditure. This last point was also the only point of objection raised by the Romanian Senate in the judgment in favor of adopting the Directive.

Thirdly, since during the research, no results were available from the micro-simulation of the impact of CCTB on the entire EU economy, we assume that the overall volume of the corporate tax base in Romania is not changed.

Moreover, since the model used for the simulation was static, the recovery element in the case of cross-border loss compensation is not covered. Finally, the study assumes that in the model used; the pre-tax profit is the same as the taxable base for determining the CCCTB.

The study presented did not differentiate in the case of the current consolidation of corporate tax at the level of each Member State EU Member States can be divided into four categories depending on the consolidation applied or the regulatory group tax, i.e. (IBFD, 2020):

- total consolidation at group level. the whole group in the European Union is the Netherlands;
- parent company consolidation: Denmark, Germany, Spain, France, Italy, Luxembourg, Austria, Poland, and Portugal;
- consolidation of group fiscal losses: Ireland, Cyprus, Malta, Lithuania, Latvia, Sweden, Finland;
- without fiscal consolidation: Belgium, Bulgaria, Croatia, the Czech Republic, Greece, Hungary, SlovakiaThe only country that allows fiscal consolidation across, Estonia, Romania, and Slovenia.

Therefore, in order not to distort the study results, the study considers the gross profit to be equal to the taxable base.

Lastly, the CCCTB impact simulation is based on mandatory implementation for companies that meet the conditions set out in the CCCTB Directive.

5. Study results

The results are based on information in the 2018 financial statements and took into account the rate of corporate tax currently applicable, i.e., 16% of the tax result obtained.

According to the data obtained from the International Bureau of Fiscal Documentation (IBFD,2020), the only European state that currently allows the tax base to be consolidated at the national level is the Netherlands.

Therefore, most of the companies analyzed are taxed at a corporate tax rate as a stand-alone company without the possibility of consolidation for tax purposes. Thanks to this, the

introduction of the CCCTB system will change the rates of EU Member States in the group tax bases, especially in countries that do not allow consolidation or group tax systems.

In order to meet the research objective, namely the impact on Romania's state budget following the application of the Common Consolidated Corporate Base Directive, companies that meet the criteria set out in the Directive and for which the conditions for fiscal consolidation are met have been selected from the TP Catalyst database. The selection criteria identified 381 companies on which this study is based.

As a consequence, detailed analysis of the financial statements of the identified companies has been carried out in order to obtain information on the financial indicators used in the allocation formula provided for by the European Directives on the Common Consolidated Corporate tax base and also on the to obtain tax information on the final result, i.e., profit or loss recorded before tax.

According to existing European Union studies (EY, (2015), Fuest, Hemmelgarn and Ramb (2006), Clien, Neubrig, Phillips, Sanger, and Walsh (2010)) the adoption of the European Directive on the Common Consolidated base would increase the collection of EU corporate income tax by €591 million annually, or about 0,2% of the current total corporate taxes. For the companies affected, the change would represent an increase of 0,7% (EY, 2015).

Revenues would increase for some Member States while decreasing for others. Changes in corporate tax collection are estimated to range from -8,3% in Denmark to + 6,0% in France (EY,2015).

As stated above, this analysis, similar to the analyzes in the literature, does not consider the tax losses of companies at the national level. Therefore, the relationship between profits and factors does not consider all tax changes in the CCCTB. The combination of income for all group companies that meet the criteria set by the Common Consolidated Tax Base Directive would eliminate the risk that losses in the current year would be blocked in a single company, allowing them to be compensated within the group, either in current periods or in future periods. Such a spread of losses among all group members would reduce the overall size of taxable income under the CCCTB.

Two primary sources of information are used in the revenue estimate: Unconsolidated company-wide financial data from the TP Catalyst database and aggregated industry-wide information from the Eurostat database.

The first step in creating the data on which revenue estimates are based is allocating each company to the Member State in which it is resident. This is done using the country identifier for each company in the database. This field indicates the Member State from which the company reports its financial information to the van Dijk, editor of the TP Catalyst database.

An essential assumption in estimating income is that this field correctly reports the actual geographic location of the entity's operations. An equally important assumption due to data limitations is that each company has operations in only one Member State. Permanent establishments and branches in other countries are not identified in the public financial reporting information.

Once the individual companies were from Romania, the financial data describing the income tax, sales, employees, pay, the assets (total, tangible and intangible) of each company, and the industry classification are included in the analysis.

After analyzing the current situation and identifying groups of companies that meet the Common Consolidated Base Directive criteria, the impact on the consolidated revenues of the Romanian budget was investigated. In this step, the Commission suggests replacing the consolidation element with the possibility of offsetting cross-border losses. The impact is shown in the table below.

No. of Companies	CIT mil EUR	CIT base post CCCTB	CIT%	Current state income from CIT	Post CCCTB income CIT	DIF %
381	1,572.86	2,181.15	16%	251.66	348.98	**28%**

According to the study carried out taking into account 381 companies that meet both the consolidation criteria set out in the Common Consolidated Taxable Base Directive, namely a consolidated income of more than EUR 750 million and the ownership and control criteria of 75% and 50,01%, respectively, the impact of adopting the directive is positive.

As shown in the above table, the corporate tax base in Romania will increase from around EUR 1,572 million to EUR 2,181 million, which in absolute terms means an increase of around 28%.

As the study mentioned in the limitations of research, this number of companies analyzed does not represent the total number of companies currently in Romania. The analysis eliminates companies that did not provide sufficient financial data in the TP Catalyst database.

However, considering the companies analyzed, the study shows that the representative industries in Romania from which these companies are part, and the study is relevant to the Romanian economy.

Moreover, according to the current study carried out by Pirvu, Banica, Hagiu, published in 2011, which analyzed the financial statements of nine companies present on the Romanian market for four years, namely 2006-2009, It was concluded that Romania would benefit from a 32.6% rise in revenues from the consolidated corporate income tax.

6. Conclusions

The CCCTB is currently the tool for tackling aggressive tax planning due to the gaps in national corporate tax systems and bilateral treaties signed by the Member States with each other and with other national States outside the European Union.

Thanks to this, on 17 July 2015, as part of the Action Plan for fair and efficient taxation, the Commission relaunched the CCCTB project, which should take place in two stages of implementation. Firstly, only common rules for constructing the corporate tax base should be implemented, together with the possibility of offsetting cross-border losses. Following the implementation of the CCTB, CCCTB would be implemented in the second phase.

The purpose of the work was to simulate the impact of introducing cross-border loss relief (i.e., the first step in implementation) and the impact of full implementation of the CCCTB on the tax bases allocated in Romania. The empirical analysis is based on the data set of companies that meet the cumulative conditions set out in the CCCTB Directive and presented in this study.

Based on the legal requirements laid down in the Directive, 381 were identified by the company on which the necessary adjustments were made to enable the complete financial information to be analyzed. The study took into account both the information available in the TP Catalyst database and the information available on the Ministry of Finance website, and the consolidated budget information provided by Eurostat.

Based on the research results, also taking into account the limitations presented, the study concludes that the introduction of the Common Consolidated base Directive would increase the contribution of corporate income tax by 28%.

The results show that the impact of the CCCTB on the Romanian budget on the static statistical model used would have a positive fiscal and budgetary impact.

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