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The voting of EU members for common consolidated corporate tax base and the tax benefits

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The voting of EU members for common consolidated corporate tax base and the tax benefits

Abstract

This paper examines the relationship between the voting behaviour of European Parliament members on the Common Consolidated Corporate Tax Base (CCCTB) proposal and economic characteristics of their respective countries. We are concerned about the political and economy factors behind policy and decision making of CCCTB in European Parliament. The analysis is conducted with Logit model identifying factors affecting the voting consultation decision of the Parliament of the European Union in 2018. Particularly, we investigate the impact of four components taken from tax benefit index proposed by W. Orłowski. We have found that economic factors alone are responsible the voting behaviour of the European Union deputies, not their personal characteristics.

Keywords

common consolidated corporate tax base | corporate income tax | political economy | voting behaviour

JEL Codes

F23, F55, H23, H25

1 Introduction

The existence of a common European market exacerbates the problem of international capital tax competition (Zodrow and Mieszkowski, 1986). Politicians believe that this phenomenon may be limited by complete harmonisation of company taxation or partial harmonisation regarding the tax base. Common tax base should also facilitate doing business and decrease operating cost for multinational companies.

The concept of the Common Consolidated Corporate Tax Base (CCCTB) stems from this idea. It assumes the harmonisation of the corporate tax base, but preserves the freedom of setting tax rates. Moreover, the tax base is divided between the countries according to the formula apportionment. This concept restricts the competition between tax bases, but it spurs tax rate competition and the competition affecting factors used for formula apportionment. Conflicting national interests and different sensitivity to tax competition makes the introduction of the CCCTB beneficial only

to some countries. As a result, this regulatory proposal is not supported by everyone and generates conflicts among politicians of different political factions and the Members of the European Parliament (MEP). Specifically, some European Parliament deputies voted against the proposals of the European Commission based upon the economic benefits to their countries.

Therefore, the question arises whether the concerns about the economic effects of the introduction of the CCCTB are reflected in the votes of the MEP, or whether the voting patterns are perhaps determined by non-economic factors. In the article, we demonstrate that the voting outcomes are mainly decided by the factors related to the potential tax revenue increase and non-economic variables have limited impact. This question is examined strictly within the context of political economy and combining the analysis with economic factors affecting voting behaviour.

Precisely, to examine this question, a logistic regression model has been applied to variables obtained from the tax benefit index proposed by Orłowski (2008). He proposed four factors making a given

country especially prone to tax competition. It should be emphasised that the composition of the index is mainly based on stylised facts about tax competition and benefits due to foreign investments. We do not consider the entire index, but only its components to determine the motivation of MEP to vote for or against the CCCTB Directive in 2018.

Our study is similar to the earlier study of voting behaviour in 2012 by Roggeman, Verleyen, Van Cauwenberge and Coppens (2015). The authors of this study investigated the voting behaviour of MEP with independent variables representing the forecast of the CCCTB reform impact on: corporate income tax (CIT) revenues (absolute change in CIT revenues as a percentage of GDP for each country), employment (relative change in total employment) and GDP (relative change in GDP, calculated as value added from capital, labour and a solid factor, excluding the value added of indirect expenditure in foreign subsidiaries). The values of this forecast were taken from the paper of Bettendorf, de Mooij, Devereux, Loretz and Van der Horst (2010).

However, contrary to the paper of Roggeman et al., we investigate the determinants of the consultative vote for the CCCTB in 2018 considering the components of the Tax Benefit Index proposed by Orłowski (2008). It should be emphasised that Roggeman et al. approach relies on the strong assumptions. For example, the effect of the CCCTB reform was simulated using the CORTAX model with mandatory participation of enterprises, equal weights of factors and common depreciation rule. We also interested to check whether voting behaviour is tied with durable characteristic of countries' economies.

2 The design of the CCCTB

The regulation tax base in corporate taxes differs between countries. Similarly the tax rates are different. This provides the possibility for tax optimisation for the firms and stimulates the erosion of tax base in countries with high tax rates. This is especially important for international enterprises. The partial harmonisation of taxes on the EU level is proposed to mitigate the problems of tax competition. This harmonisation would apply to the entire tax base except corporate tax rates, which will be decided by the respective national governments. This idea is included in the two proposals of common tax base.

Actually, the idea of corporate tax base harmonisation is based on two important factors. First, there will be uniform rules for the calculation of the tax base for all countries/territorial units covered by the Regulation (European Commission, 2011). Second, on the distribution of income among the countries, which will be based on the place a company or enterprise operates (based on formula apportionment). The important one is second part (formula apportionment) because it involves the different benefits and cost of EU countries and creates disputes between states.

Formula apportionment is not a new idea and it currently exists in some federal states. For example, in the US (in most states) the rule considers the following variables: assets, sales and wages to determine the share of a given state in the tax revenue. But in Canada only sales and wages (with 1/2 weights) were used (Krchniva, 2014; Fuest, Hemmelgarn & Ramb, 2007). This pattern has been changed and now most of the states in US use single-factor sales formula (cf. detailed analysis included in Hellerstein, 2019). Regardless of the choice of the factor for the calculation, *de facto* this chosen factor becomes taxed instead of income (Kudła, 2013). Therefore, we can expect that tax competition will not be eliminated, but will change its form and there will be bickering in choosing the factors that constituting the tax base.

According to the draft directive, accumulated income will be distributed to all countries where the given enterprise (or group of enterprises) operates. The tax base is defined as revenue less tax-exempt or deductible amounts, e.g. remuneration and depreciation (its duration will be standardised—25% per annum over 4 years for noncurrent assets) (European Commission, 2011). The project assumes consolidation of income in the proprietorship firms, so for intra-group transactions the tax is neutral. Therefore, the tax on payments between enterprises of a group, like interest and royalties, will reduce. The exempt income will include the profits of the company's permanent establishments in the country where its head office is located and the income from dividends or the sales of shares of a company outside the group (Council of the European Union, 2018). In the draft of the directive, it was decided to apply the accrual basis of accounting if there is an abnormal increase in the costs and revenues, and the cash method in case of fraud (European Commission, 2011).

The proportional division will be based on three factors—assets (all tangible fixed assets and excluding

Tab. 1: Decomposition of tax base in formula apportionment

		Firm 1	Firm 2	Firm 3	Together
I	Consolidated tax base	–			S
	Assets	A_1	A_2	A_3	$A_1 + A_2 + A_3 = A$
	Employment	E_1	E_2	E_3	$E_1 + E_2 + E_3 = E$
II	Remuneration	R_1	R_2	R_3	$R_1 + R_2 + R_3 = R$
	Turnover	T_1	T_2	T_3	$T_1 + T_2 + T_3 = T$
	Share				
	Assets	$\frac{A_1}{A} = a_1$	$\frac{A_2}{A} = a_2$	$\frac{A_3}{A} = a_3$	
	Employment	$\frac{E_1}{E} = e_1$	$\frac{E_2}{E} = e_2$	$\frac{E_3}{E} = e_3$	
III	Remuneration	$\frac{R_1}{R} = r_1$	$\frac{R_2}{R} = r_2$	$\frac{R_3}{R} = r_3$	
	Turnover	$\frac{T_1}{T} = t_1$	$\frac{T_2}{T} = t_2$	$\frac{T_3}{T} = t_3$	
	Tax base				
	Firm 1	$S * \left(\frac{1}{3} * a_1 + \frac{1}{2} * \frac{1}{3} * e_1 + \frac{1}{2} * \frac{1}{3} * r_1 + \frac{1}{3} * t_1 \right)$			
IV	Firm 2	$S * \left(\frac{1}{3} * a_2 + \frac{1}{2} * \frac{1}{3} * e_2 + \frac{1}{2} * \frac{1}{3} * r_2 + \frac{1}{3} * t_2 \right)$			
	Firm 3	$S * \left(\frac{1}{3} * a_3 + \frac{1}{2} * \frac{1}{3} * e_3 + \frac{1}{2} * \frac{1}{3} * r_3 + \frac{1}{3} * t_3 \right)$			

intangible assets and financial assets), employment (this factor will depend on two others: half of the cost of remuneration and half of the number of employees) and turnover (including the destination of goods sold or place of dispatch, and in the case of services —the place of supply). Each factor is expected to participate equally, which means using 1/3 weight. If any one of the factors does not occur, the weight will be apportioned 1/2. The choice of these criteria is intended to prevent manipulation and assign income to places where profit is generated. The income distribution procedure begins with the calculation of the consolidated tax base. Then, the sum of assets, number of employees, cost of remuneration and total turnover should be calculated for the entire enterprise (or a group of enterprises). Thereafter, the share of each enterprise in the group in a factor is measured and the value is multiplied by the weight (in the case of the number of employees and remuneration costs by 1/2) and the tax base (the decomposition of the tax base is presented in Table 1).

The proposal includes safeguarding mechanisms to prevent abuse, by shifting profits between countries, but without violating the free movement of capital and entrepreneurship. One of the tools in the fight against tax optimisation is the limit of deductible interest costs.

According to the literature, the choice of the factors best reflecting the scale of business activity for formula apportionment is ambiguous. For instance, the three factors used in the US differ in terms of their impact on the reduction of the tax burden. The largest decrease in tax revenue will be triggered by assets and the smallest by sales (Pethig & Wagener, 2007).

The most distorting factor is the use of wage distribution. Wages are deducted from revenue, so it is possible to raise the employment in low-tax countries to change the tax burden in favour of an international enterprise (Altshuler & Grubert, 2010). The use of wages in the formula is justified only if the structure of inputs and their prices are constant in the entire area using income assignment (Hellerstein & McLure,

2004). The wages cause particularly large distortions if the income gap is high, which is the case of EU. The employment criterion may work better in such a situation, but obviously it will favour less developed countries having huge employment and low wages (Devereux & Loretz, 2008).

Income can also be divided on the basis of the added value. On the one hand, the big advantage of this method is the possibility of using it in every industry. In addition, this value is already known to the taxpayers due to their VAT obligation. On the other hand, the application of added value requires adjustments for labour costs and untaxed and dismissed activities (Hellerstein & McLure, 2004). Calculation of added value raises the problem of transfer pricing of intra-company input deliveries.

Sales values are less problematic than wages and added value, but it also raises some doubts. It causes administrative difficulties because their value is susceptible to manipulation. It remains unknown, whether only the sale of the final goods and services or the sale of intermediate goods and services should be included, and which rule should be followed—the origin or destination principle (Kudła, 2013).

For this reason, several factors should be included in the formula apportionment with appropriate weights. However, determining the weights may prove very difficult. It is also advisable to consider individual industries particulars and possible corporate tax avoidance. Enterprises can manipulate the amount of assigned income, e.g. by fictitious purchases from international companies (Eggert & Schjelderup, 2003). In addition, if assets are included in the formula, mergers with enterprises from the countries with the lowest tax rates will become very profitable, which will make the taxes not neutral for decisions about mergers.

The advantage of the introduction of common tax base is the restoration of the relationship between the place of taxation and the actual place of business (European Parliament, 2018a). The unification of tax regulations should significantly reduce the costs of enterprises related to settlements with the tax authorities in 28 Member States. The CCCTB will also reduce the use of a complex transfer pricing system that results in conflicts between the tax administrations of EU countries and leads to double taxation or undertaxation (European Commission, 2011). However, this problem will continue to exist in the case of arrangements related to transfer prices

between an entity from an EU country and an entity from the country outside the EU, or if the domestic entity is not covered by the CCCTB. The new system is also intended to attract foreign investors who want to start operating in the European Union. The Commission has these optimistic expectations based on signals received from third countries (European Commission, 2011). In addition, it is believed that harmonisation with common principles regarding the tax base will have a positive impact on the budgetary stability and competitiveness of European business (Iwin-Garżyńska, 2012). The described positive effects on enterprises would translate into increased economic growth and job creation in the EU.

On the other hand, the consolidation of the tax base will also encourage tax arbitrage—e.g. conducting financial activity as an additional activity used for the cost optimisation or using an intermediary from a country with a low tax rate. For this reason, some authors indicate that a common tax base will not eliminate the phenomenon of tax avoidance but only change its nature (Kudła, 2013). For example, the company can conduct research and development in a factory in a Member State A (with production of simpler components under leasing in China) and sales and distribution in Country B with lower tax rates. Then country A gets a smaller share of the tax, although it is the ‘driving force’ of all production (Cline, Neubig, Phillips & Walsh, 2010). In addition, consolidation rules stimulate the reallocation of capital which intensifies harmful tax competition (Kudła, 2013). The employment factor is also susceptible to optimisation actions. A high-profit German company, taxed in Germany at a high rate, will have a strong incentive to acquire an unprofitable Irish company with large employment is an example. In this way, a significant portion of the profit generated in Germany will be allocated to Ireland where the tax rates are lower (Hines, 2009).

It is also worth paying attention to domestic enterprises that will not be able to benefit from the proposed regulations. Because of this reason, they will be forced to ‘internationalise’ despite their true will. To avoid this, member states should change their tax regulations affecting domestic enterprises providing further reduction in tax revenue (Kudła, 2013).

The postulate of administrative costs reduction also raises some doubts. The solution with voluntary participation will translate into higher costs of tax administration. In addition, an audit carried out on one enterprise of the group forces auditing all members of

the group. Moreover, even in the case of harmonised corporate tax rules, countries still have their own legal systems and separate commercial cultures, which require different solutions. Attention is also paid to augmenting international interaction between tax authorities, which can entail additional costs (Cline et al., 2010). The introduction of the reform proposed by the EU also hampers the quality of tax audits. In a situation where tax revenue is shared with other countries, the propensity to scrupulous control in a country will decrease (Kudła, 2013).

3 The expected economic effects of the proposal

Numerous studies have been conducted to assess the effects of the consolidated tax base reform proposed by the EU. They are mainly focused on one of the previous CCCTB proposals of the year 2007. The results of these studies are inconclusive. On the one hand, in the case of formula apportionment combined with consolidation of losses, a decrease in tax revenue would reach an average of 2.5%, if the participation in the new system were voluntary (only some countries—Slovakia, Czech Republic, Hungary can expect an increase of revenue) (Devereux & Loretz, 2008). The study also suggests that the proposed changes would benefit mainly smaller countries at the expense of larger ones. On the other hand, the mandatory participation in the new system would result in an average 2% increase of tax revenue. Referring to tax revenues in particular countries, France would benefit the most (increase in tax revenues by 6%) while Denmark would suffer the most (decrease in tax revenue by 8.3%). A study of German multinationals brought much more pessimistic conclusions—the decrease of tax revenue was estimated at 22% (Fuest et al., 2007) mainly as a consequence of the consolidation of losses.

The study based on the model of the Centre for European Economic Research Institute (Spengel, Ortmann-Babel, Zinn & Matenaer, 2012) estimated the combined impact of several key features of the 2011 CCTB project (e.g. changes in depreciation, inventory valuation), but excluding tax consolidation and formula apportionment using data for several thousand enterprises from the EU, Switzerland and the USA. Despite this huge effort, the total benefits for the European Union have not been recognised. According

to the study, and contrary to the predictions of the European Commission, the CCTB will not change the average effective tax burden. The estimated change is minimal and counted as a decrease of 0.06%. The authors predict the increase of tax burden in 14 countries, and decrease in 13. Moreover, the type of industry is not important for the analysis of project assessment. In each of them, the proposed changes will have very little significance in effective taxation because the deviations in all industries remain below 1%.

The higher benefits for enterprises stem from the calculations of the European Commission. The introduction of the CCCTB should result in a cost reduction of approximately 0.7 billion euro attributed to the lower barriers in international trade (European Commission, 2011). Savings in the compliance burden are estimated at 10% of time and 2.5% of costs. The use of CCCTB by all multinational entities could result in a decrease in tax compliance costs of around 0.8 billion euro (Council of the European Union, 2016). The tax costs related to establishing a new subsidiary in another EU country should be reduced, for example: the costs of large enterprises should be reduced from 140,000 euro to 53,000 euro (decrease by 62%) and for medium enterprises from 127,000 euro to 42,000 euro (decrease by 67%) (European Commission, 2011). If only 5% of small and medium-sized enterprises were allowed to start their operations in another EU country using a consolidated tax base and the overall savings would reach 1 billion euro. Therefore consolidation of tax base is perceived as the most beneficial in terms of reducing the high costs imposed by the current tax system (tax advisors, lawyers, consultants etc.) for these types of enterprises (European Commission, 2011). It is estimated that for these group of enterprises compliance costs currently amount to around 30% of taxes paid, and even more in the case of cross-border operations (European Commission, 2016b). These enterprises have the opportunity of deducting the loss generated in one EU country from the profit made in another Member State resulting in further savings. It is estimated at 1.3 billion Euros. In general, the tax base for the entire EU will increase by 7.9% though it will get reduced in few countries (European Commission, 2011).

The analyses of GDP growth shows that Luxembourg will be the most affected nation with a decrease of 3% (the same as for Bulgaria) while France will benefit the most, increasing its GDP by 1.1%. Larger change will happen to the foreign direct

investment (FDI), where there is a decrease of 11.7% in Bulgaria to a growth of 5% in France. However, if the reform were unbidden, both benefits and losses would be smaller. Other calculations suggest GDP increases in 5 countries—Belgium, Malta, Germany, Luxembourg and Italy; while the rest of EU countries would experience product contraction (Kutarba, 2011). The economic growth could be 1.2% higher and investment 3.4% higher (European Commission, 2016a).

Another study by Bettendorf et al., (2010) indicates that CCTB (the predecessor of CCCTB) does not benefit the European Union. On the one hand, there are positive effects associated with the reduction of transfer prices and compliance costs, but these effects are offset by unequal treatment of companies and other tax distortions caused by the formula apportionment. The changes will mainly benefit countries that have very large international corporations and tax rates below average or with a tax base wider than the EU average. In the case of countries with lower than average tax rates, enterprises will expand their activity, which will translate into an increase of wages and, as a result, higher revenues from personal income tax.

4 Policy decision and tax benefit

Normally, the analysis of the benefits or losses to EU members can also be carried out outlining only directions of change without any mathematical models. Witold Orłowski (2008) has proposed this method by creating a special index of tax benefits. This index includes four indicators: the ratio of the accumulated net direct foreign investment to GDP, the rate of corporate tax rate, CIT revenue with respect to GDP and the size of economy.

Countries with a small share of net FDI in GDP can be considered as more consuming and less goods producing (e.g. the Netherlands). The application of formula apportionment should bring financial benefits to such countries at the expense of the producer countries (Orłowski, 2008). One thing should be noted. Countries of small net FDI in the current system of unconsolidated tax base are often tax regimes with preferences (the Netherlands, Ireland). The tax preferences are also observable on the second end of the scale of net FDI investment (Cyprus). It is possible that situation of consumer or producer orientation hints problems of international

competitiveness of a country (the investment flows away from country or is attracted artificially by preferable tax regulations in countries not-attractive for business). These problems are resolved by non-standard tax regulation compensating the existing weaknesses. However we perceive the net providers of capital as more treated with the outflow of FDI, because the capital is leaving these countries even in the system without tax harmonisation. We decided to use net FDI in regression because this factor is closely related to the tax competition. For example trade balance captures the same preference for consumption over production but is less prone to tax competition.

The second indicator takes into account the corporate tax rate. The distribution of tax base among EU members is more likely to benefit countries with higher CIT rates. The CIT rate is higher if the country has a significant tax base due to tax competition. The countries with higher CIT rate will be affected more by the consolidation of tax base because they lose the other instruments attracting investors (for example preferable methods of deduction). It should be noted, that nominal rates do not include special allowances or other tax benefits intended for a narrow groups of enterprises, which is partially captured by effective average tax rate (EATR). However the EATR is sensitive to the form of enterprise financing, so we decided to use more general measure like CIT rate.

The third element of the index is revenues from CIT to GDP. The very low value of this relationship indicates disproportionate low tax revenues. It can be assumed that countries with such characteristics are the victims of tax optimisation and they should benefit from the changes proposed by the EU. One can find Ireland as counterexample, which attracts many large companies operating in the European Union that compensates low CIT rate. However, the policy of low tax for enterprises reveals a few winners despite their low popularity among small countries of EU. This is consistent with observation that strong competition for tax base is possible only for limited number of countries (Marceau, Mongrain & Wilson, 2010).

The last indicator in the calculated index is the size of economy, measured by the ratio of the country's nominal GDP to the sum of GDP of all EU members. Large countries will benefit more from the distribution of tax revenues because of larger sales. Moreover they can be more affected by harmful tax competition. Four countries stand out on this respect—Germany, France, Great Britain and Italy.

Tab. 2: Tax benefit index and its components

2012	Net FDI to GDP (0-highest FDI, 100-lowest FDI)	CIT rate (0 – lowest rate, 100 – highest rate)	CIT revenue (0 – highest revenue, 100 – lowest revenue)	Economy size (0 – lowest, 100 – highest)	Index (the highest index the highest positive impact expected)
Austria	74	57	78	11	55
Belgium	57	92	59	13	55
Bulgaria	0	0	87	1	22
Croatia	30	38	80	1	37
Cyprus	25	0	0	0	6
Czechia	23	34	57	5	30
Denmark	87	57	67	9	55
Estonia	22	42	93	0	39
Finland	82	56	78	7	56
France	82	100	65	76	81
Germany	72	77	70	100	80
Greece	72	38	100	6	54
Hungary	27	41	96	3	42
Ireland	82	10	74	6	43
Italy	71	82	74	58	71
Latvia	33	19	89	0	35
Lithuania	43	19	96	1	39
Luxembourg	33	72	13	1	30
Netherlands	100	57	78	23	65
Poland	39	34	78	14	41
Portugal	51	82	65	5	51
Romania	33	23	83	4	36
Slovakia	26	34	72	2	33
Slovenia	53	31	98	1	46
Spain	66	77	74	37	64
Sweden	70	62	70	15	54
United Kingdom	73	54	65	75	67

After making an index for each of the 4 indicators (columns 2–5 in Table 2) one may average the values to determine the index for each country (last column in Table 2). This index permits observers to assess the attractiveness of the new regulations for EU members. Malta was excluded from the calculation because of the very high value of FDI share in GDP, differing from the rest of the countries, which would disturb the adopted scale. The index was calculated for 2012, because of insufficient data in later years.

The components of the above index can be compared to the vote of MEPs from March 15, 2018 related the CCCTB directive. The European Parliament's vote was preceded by the work of the European Parliament Committee, which prepared a report on the directive. The directive was a subject to a special legislative procedure (consultation procedure) in which the EP's vote is not binding one. Directives that have a direct impact on the functioning of the internal market (the CCCTB Directive is regarded

as such) are adopted unanimously by the Council of the European Union (European Parliament, 2018b). In such a case, the European Parliament acts in a consultative capacity. The Council is not bound by Parliament's position, but the directive cannot be adopted without consultations. Parliament can therefore, in the event of an unsatisfactory proposal for a directive, delay the vote for lobbying to amend the directive (University of Portsmouth, 2013). The act of voting delay is a tool prompting the Council to take into account the results of European Parliament voting. In the empirical analysis of EP voting for the years 1999–2000 (Selck, 2006), it was pointed out that in the case of the consultation procedure, the European Parliament is closer to the actual result of the decision-making process than in traditional voting using the co-decision procedure (ordinary legislative procedure). It can be also expected that in an ordinary legislative procedure the EP may initially take a more extreme position to reach a satisfactory compromise.

5 The voting behaviour of MEP's deputies

James M. Buchanan and Gordon Tullock state that there are no prerequisites for recognising politicians as more moral than others (Buchanan & Tullock, 1962). They question the concept of politicians acting in the name of the public interest. The politicians should be treated as rational *homo economicus* who act mainly for their own interest. Buchanan and Tullock justified their views with a pessimistic vision of man, according to which private interest is always the most important reason for action (Buchanan & Tullock, 1962). Detrimental changes to the country are not in the interest of politicians because of its political responsibility to voters.

In elections to the European Parliament, voters choose candidates associated with national parties, not with European fractions, which explains why national interest sometimes may be the most important factor reflected in voting preferences. According to opinion polls, less than 60% of EU citizens have basic knowledge about the functioning of the European Parliament, and less than 5% are familiar with the duties of MEPs. Therefore, the popularity of the national parliamentary party is crucial for re-election. A deputy who votes against the stance of his or her national party may simply not

be entered on the electoral lists in the next election, which deprives him or her of the chance to get into the European Parliament. The link between MEPs and the national party is particularly strong in the case of parties forming a government (Faas, 2003).

The Cypriot MEPS were against the project, with one exception. Deputies from Ireland, which would rather suffer from an EU project, voted almost entirely (six out of seven voters; each against the party's agreement) against the CCCTB project. Contrary to this three out of four Luxembourg MEPs voted for the CCCTB. The other two countries, of which MEPs voted mainly against the project, are the Netherlands and Sweden. At the beginning of 2017, both countries, together with Ireland, Malta, Luxembourg and Denmark, raised objections to the European Commission regarding this project. Ireland's arguments include, *inter alia*, criticism of disregarding intangible assets. The same objection was raised by the Dutch parliament, indicating that larger countries with developed industries can benefit from the CCCTB the most (Bertelsen, 2017). Members of the European People's Party—Esther de Lange (Netherlands), Brian Hayes (Ireland) and Gunnar Hoekmark (Sweden) have written a joint article on CCCTB and CCTB, in which they accuse larger countries of pursuing their own interests at the expense of smaller countries (Vella, 2018). They point out that large countries cannot accept the fact that large international corporations have established their headquarters in countries such as Ireland, Luxembourg and the Netherlands. They agree that the problem of tax avoidance and evasion must be eliminated, but the CCCTB does not lead to this in any way. They also accuse the authors of the project of the lack of specific calculations for individual EU countries, which prevents them from making a rational decision about signing this reform. They also propose to extend the debate to all OECD countries, because the problem of aggressive tax planning is not only an EU problem (De Lange, Hayes & Hoekmark, 2018).

Italy is one of those countries that would benefit most from tax changes, so the vote of Italian MEPs for the project of CCCTB seems rational. However it should be emphasised that voting behaviour of Italian MEPs was against the stand of their parties in the European Parliament.

6 Econometric model of CCCTB voting

The each of the four indicators used to calculate the tax benefit index has significant impact on the voting of Members of the European Parliament for or against the CCCTB. Given that a higher index value means greater benefits due to the implementation of CCCTB for the state, the model should show a positive relationship between each indicator and the likelihood of voting in favour of the directive. However, if there is an anticipation of fierce tax competition is significant, then a higher CIT rate should negatively affect the adoption of the CCCTB proposal.

In order to build the model properly, the other variables should also be taken into consideration. Membership of one of the political groups in the European Parliament may play a role. One of the reasons for the construction of European parties bringing together members from various countries was the need to solve the problem of collective action. The functioning of several hundred parties in the European Parliament would paralyse this institution, among others due to the imagery of forming a coalition (Ceuppens, 2015). To force unanimity within the political group, the existence of party discipline has become common practice when voting on fundamental matters. Before voting, party leaders determine how to behave during the vote. In the case of insubordination, leaders can apply disciplinary measures, e.g. by not appointing a deputy as rapporteur or by limiting the time of his public statements. Voting against the group's line significantly weakens the MEP's position and makes it difficult to make a European career (Faas, 2003).

There are two main divisions in the EU Parliament. In the first division they are grouped in a rather traditional way, from the left to right. It is believed that the more the party has right-wing views, the more it does not like direct government regulation (Aspinwall, 2002; Marks & Wilson, 2002). Therefore the more right-wing the deputy is, there will be more chance the deputy to vote against the CCCTB. European political groups can also be divided into favourable and sceptical to the European Union. It is consistently assumed that extreme parties (both left and right) have a critical attitude towards the EU, while the socialist, liberal and conservative factions advocate for a deeper integration of the EU. The relationship between ideology and views on

integration seems particularly strong in economic matters., So, CCCTB should be supported foremost by the centre parties with such a classification.

The MEPs are responsible for their decisions to their country of origin, either through voters or party leaders. It can be expected that deputies from countries where citizens are sceptical to the EU will be less willing to vote for projects that limit the sovereignty of their state (Heinemann, Mohl & Osterloh, 2009).

There is a great diversity between the countries admitted to the European Union since 2004 (new members) or earlier (old members). The new members are characterised by lower GDP per capita, which effectively translates into greater political polarisation. Members of Parliament from these countries are more inclined to vote against laws restricting the autonomy of states because their independence has been gained only recently. They strive to preserve their own tax policy, which is aimed at faster growth.

Individual deputies' characteristics, such as gender, experience in the European Parliament, or education (Heinemann et al., 2009) might be relevant too. It is pointed out that women have more leftist views than men. A significant change is noted in this case compared to the '70s and '80s, when women supported more conservative parties. However, this change has not yet occurred in all countries (Giger, 2009). On the one hand, leftist views may mean greater euro scepticism, but on the other, they may translate into support for restrictive government regulations, which are forced by the EU bodies. Therefore, it is difficult to determine *ex ante* the expected direction of the relationship between gender and voting (Roggeman et al., 2015).

The greater number of years of experience in the European Parliament may translate into better orientation in the EU mechanisms and institutions, broader participation in informal groups and greater inclination to the dominant views. For this reason, it can be presumed that a longer internship in the Parliament should increase the likelihood of supporting the CCCTB directive.

The type of education also may influence the views on this project. It seems that people with legal or economic education will have an advantage over the rest of MEPs in understanding the directive and its effects (Heinemann et al., 2009). However, it is difficult to determine what impact education can have—whether greater knowledge should increase or decrease the likelihood of support for a reform

(Roggeman et al., 2015). The higher type of education increases the understanding of the reform making more probably making the voting consistent with the economic benefits of the MEP's country.

In addition, it is also worth considering the number of amendments to the project submitted by the MEP. A larger number of amendments will mean more commitment to the work on the reform, which should be associated with greater knowledge of the directive. However, it is difficult to indicate the expected direction of such impact a priori.

The basic logistic model has the form:

$$\begin{aligned} \text{Log}(\text{vote}_m \text{odds ratio}) \\ = \alpha + \beta_1 \text{indCIT}_m + \beta_2 \text{indCITincome}_m + \beta_3 \text{indFDI}_m + \beta_4 \text{indeconsize}_m \\ + \beta_5 \text{leftright}_m + \beta_6 \text{prosconsUE}_m + \beta_7 \text{relEU}_m + \beta_8 \text{NEU}_m + \beta_9 \text{age}_m \\ + \beta_{10} \text{educ}_m + \beta_{11} \text{term}_m + \beta_{12} \text{sex}_m + \beta_{13} \text{amendment}_m + \varepsilon_m \end{aligned}$$

Each parameter b is a regression coefficient, a is a constant, e is a random error, while m is an index of the deputy of the European Parliament. The dependent variable is a logarithm of odd ratio constructed on the base of dummy variable representing the voting behaviour of MEPs.

Voting data comes from VoteWatch Europe (2018). There were 436 votes in favour, coded as '1' and the 132 votes 'against' coded as '0'. A total of 652 out of 759 MEPs took part in the vote. The sample used in the regression consists of 568 deputies (observations), because abstentions and independent deputies are not considered. This is because their political views are hard to predict. Similarly the deputies from Malta have been dropped because of the very high level of FDI in GDP making them an outlier.

The variables 'indCIT', 'indCITincome', 'indFDI' and 'indeconsize' refer to the four indicators of Table 2 namely: CIT rate, CIT revenues in GDP, cumulative net FDI in relation to GDP and the ratio of the country's nominal GDP to the total GDP of all EU members.

The variable 'leftright' assigns European fractions values from 1 to 8, where 1 is assigned to the most left-wing party and 8 to the most right-wing party. The variable was coded based on an article by G. McElroy and K. Benoit (McElroy & Benoit, 2011). As a result, individual political groups were assigned the following values: GUE/NGL (United European Left—Nordic Green Left) —1, Greens/EFA (Greens—Free European Alliance) —2, S&D (Progressive Alliance of Socialists

and Democrats in the European Parliament)—3, ALDE/ADLE (Alliance of Liberals and Democrats for Europe)—4, EPP (European People's Party) —5, ECR (European Conservatives and Reformists) —6 and EFD (Europe of Freedom and Democracy)—7 (McElroy & Benoit, 2011). Four years after this paper, another group appeared in the European Parliament—Europe of Nations and Freedom. The ENF is considered to be far right, so it is assigned 8.

The variable 'prosconsEU' is a binary variable where '0' is assigned to EU-sceptical parties. This group according to the literature (Hix & Noury, 2009) consist of: GUE/NGL, Greens/EFA, ECR, EFD and ENF. The variable is 1 if the party supports deeper integration of the EU. Such views are presented by the group of centre parties—S&D, ALDE/ADLE and EPP.

The variable 'relEU' is a variable expressing the attitude of the inhabitants of a given country to the European Union. The variable was created on the basis of the Parlemeter survey of 2018. In the survey, respondents had to answer the question whether their country's membership in the EU is perceived as: (A) a good thing, (B) a bad thing, or (C) neither a good nor a bad thing (European Parliament, 2018c). On this basis, the EU popularity index for a given country was calculated using the method proposed by C. G. Nogueira and L. G. Veiga as: $A - 0,5C - B$ (Nogueira & Veiga, 2010).

The 'NEU' variable is another dummy variable. It takes the value '1' for countries that joined the EU in 2004 or later and 0 for others.

The variable 'age' expresses the deputy's age on the day of the vote. The 'educ' variable is a binary variable that assumes a value of '1' if the deputy has economic or legal education and 0 in all other cases. The 'term' represents the deputy's number of the term of office in the European Parliament. Data on these three variables were collected from the European Parliament website, where each Member has his own sub-page. In the absence of information on any of the described characteristics, the source was the private pages of Members or the pages of national parliamentary chambers where they had previously participated.

The variable 'sex' is a dummy variable, '1' means woman and '0' is man.

The 'amendment' variable expresses the number of amendments submitted by a deputy for the CCCTB directive. It was calculated on the basis of documents containing submitted amendments together with the

Tab. 3: Summary statistics of variables used

Variable	Observations	Mean	Standard deviation	Min	Max
vote	574	0.76	0.43	0	1
leftright	574	4.28	1.6	1	8
prosconsEU	574	0.70	0.46	0	1
reIEU	574	0.38	0.23	0.03	0.84
indFDI	568	60.98	22.38	0	100
indCIT	568	60.04	26.09	0	100
indCITincome	568	72.40	13.03	0	100
indeconsize	568	40.02	36.20	0	100
term	574	1.86	1.16	1	8
sex	574	0.36	0.48	0	1
educ	574	0.38	0.49	0	1
age	574	54.18	10.95	29	81
amendment	574	1.08	5.69	0	75
NUE	574	0.29	0.45	0	1

authors, presented by the Committee on Economic and Monetary Affairs (Committee on Economic and Monetary Affairs, 2017, 2018) and the Committee on Legal Affairs (Committee on Legal Affairs, 2017).

The average for the variable ‘leftright’ is 4.28; which means that no wing prevails in the European Parliament. There is a clear majority of the European Union supporters. The deputies from the new member states are in a minority. Most of the deputies are men—about 64%. Approximately 38% of Members have economic or legal education. The MEPs are dominated by the elderly—the average age is about 54 years, but this does not translate into considerable experience in Parliament duties. On average, each deputy proposed one amendment to the project. (The summary statistics of variables used are in Table 3).

7 The estimation results

After performing the logistic regression, we received the following results reported in the form of marginal effects (significant variables at 0.05 level are bolded Table 4).

Based on Wald’s statistics from Table 4, we can reject the null hypothesis about the irrelevance of all variables. Seven of 13 variables of the model turned out to be significant. The MEP’s voting attitude is

Tab. 4: The marginal effects of indicators from tax benefit index on the voting behaviour in CCCTB

Variable	marginal effects	p-value
indFDI	-0.003	0.013
indCIT	0.004	0.000
indcitincome	0.004	0.004
indeconsize	0.001	0.005
leftright	-0.056	0.000
prosconsEU	0.537	0.000
reIEU	-0.221	0.001
term	-0.004	0.758
sex	0.023	0.318
educ	0.013	0.595
age	-0.0001	0.937
amendment	-0.0001	0.960
NEU	0.045	0.419
LR chi²(13)	395.62	
Prob>chi²	0.000	
Pseudo R²	0.6424	

affected by four variables including the tax benefit index, the views of the European political group to which a deputy belongs, the stance on the European Union in the group and the attitude of the citizens of

a country towards the European Union. All individual features of the MEPs turned out to be irrelevant. Similarly, there is no preference for any type of voting with respect to the division between new and old members of the EU. This effect can be mitigated by the strong correlation between this variable and two of the four indicators that make up the tax benefit index (indFDI and indCIT).

The higher value of indices related to the CIT rate, CIT revenues and the size of the economy, increases the likelihood of voting in favour of the CCCTB. Generally, the greater the benefit for the state, the greater the chance that a MEP will support the new regulation. It is also confirmed in Roggeman's study (2015), which used different measures to capture the effects of CCCTB on the economy.

The results corroborate that there is no fear of increased tax competition between MEP. If that were the case, a deputy from a country with higher tax rates should less likely vote for the proposal to prevent the decrease of tax rates and—consequently—the contraction of tax revenues.

It should be noted that the sign of FDI indicator is problematic. W. Orłowski (Orłowski, 2008) argued that the smaller the FDI share in the country's economy (the larger the indicator), the greater the state's benefits from the introduction of the CCCTB. The estimated regression shows that the smaller the FDI share in the country's economy, the lower probability of voting for the directive. Concluding, this indicator should not be taken into account in the analysis of the benefits or should be created in the opposite way—the larger the FDI share, the larger the tax benefit index. Perhaps it was wrong to assume that a low FDI share must mean that the country primarily plays the role of a consumer. Among the countries with the lowest share of FDI (with the highest FDI indicator) are Ireland and the Netherlands, i.e. the countries earnestly selected by international corporations. They may therefore perceive the implementation of CCCTB as a threat.

As expected, a negative coefficient appeared at the variable 'leftright'. The right-wing MEPs were more likely to vote against the directive. Similarly, the variable 'prosconsEU' stays in line with expectations. The deputies from parties supporting the integration of the European Union were more likely to vote for the directive.

However, the impact of the variable 'reEU' is opposite to the prediction. Estimates show that the better the citizens' concern for their country's

Tab. 5: Classification table

Classified	True		Total
	D	~D	
+	415	24	439
-	21	108	129
Total	436	132	568
Classified + if predicted $\Pr(D) \geq 0,5$			
True D defined as ¹⁰			
Sensitivity	$\Pr(- + \sim D)$		95.18%
Specificity	$\Pr(- - D)$		81.82%
Correctly classified			92.08%

membership in the EU, the greater the likelihood of voting against the directive. The opposite relationship was also expected. It is not easy to find an explanation for it. Perhaps the MEPs from countries with a low satisfaction with EU membership treat the CCCTB as a tool to increase the benefits of membership and to improve the satisfaction of EU membership.

The classification table (Table 5) was made for the p -value of 0.5, because for this value the model generates the least incorrectly classified failures and successes. The sensitivity of the model is 95.18%; which means that it is very likely to predict the success (vote in favour) for the observation for which success was observed. The specificity of the model is slightly lesser at 81.82%, but still the failure (vote against) is correctly predicted with high probability (Table 5).

To check the model's robustness, the two additional regressions were estimated: the first regression without 4 variables comprising the tax benefit index and second model without FDI indicator. The models were estimated to see whether removing the variables would improve the predictive power. The results (significant variables at 0.05 are bolded) are in Table 6:

Similarly to the base version of the model, in both cases we reject the hypothesis of the joined insignificance of variables. Compared to the basic model, the biggest difference is in the significance of the NEU variable. If all 4 indicators are excluded, the probability of voting for the CCCTB is lower for MEP of new member states. An inverse relationship of NEU variable is observed when the FDI indicator is excluded.

The pseudo R^2 McKelveya and Zavoina for base model explains 75.1% of the variation of the

Tab. 6: Logit models without selected indicators reported in the form of marginal effects

Variable	Model with 3 indices		Model without indices	
	Marginal effects.	p-value	Marginal effects.	p-value
indCIT	0.005	0.000		
Indcitincome	0.002	0.010		
Indeconsize	0.001	0.006		
leftright	-0.058	0.000	-0.080	0.000
prosconsEU	0.549	0.000	0.580	0.000
relEU	-0.264	0.000	-0.500	0.000
term	-0.001	0.946	0.011	0.486
sex	0.018	0.452	0.025	0.428
educ	0.016	0.510	0.007	0.826
age	-0.0004	0.756	-0.0003	0.858
amendment	-0.0004	0.851	-0.002	0.348
NEU	0.146	0.000	-0.142	0.008
LR $\chi^2(13)$	38.60		297.36	
Prob> χ^2	0.000		0.000	
Pseudo R^2	0.6293		0.4696	

Tab. 7: Comparison of pseudo R^2 for a model with and without selected indicators

Pseudo R^2	Model with 4 indicators	Model with 3 indicators	Model without indicators
McFadden	0,642	0,629	0,470
McKelveya and Zavoiny	0,751	0,750	0,630
Count R^2	0,921	0,910	0,894
Adjusted count R^2	0,659	0,614	0,558

latent dependent variable (Table 7). Without all four indicators, only 63% of the variance would be explained. The smaller difference is in the case of pseudo R^2 count. The model without four indicators classifies correctly 89.4% of cases, while with all indicators the accuracy rises to 92.1%. The elimination of FDI indicator decreases the pseudo R^2 very slightly, confirming that this variable is not crucial in explaining the voting behaviour of the deputies.

8 Conclusions

In summary, the components used for the tax benefit index accurately predict MEPs' voting behaviour on the implementation of the CCCTB and their impact is stronger than the impact of individual characteristics of the deputies. Three out of four indicators are sufficient to analyse the effects of the CCCTB introduction. The use of the FDI to GDP ratio remains problematic. It works contrary to the expectation and it slightly worsens the predictive power of the econometric model. However the elimination of this variable triggers another problem — the deputies of new member states are now more likely vote in favour of the CCCTB contrary to the interest of their countries. The model confirmed that MEPs, theoretically representing the EU political groups also pay attention to the interests of their country but at the same time they do not perceive the threat of international tax competition as an important factor.

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