Tax competition strategies in corporate income tax - the case of EU countries

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The process of globalization, which is ongoing in a variety of dimensions, the ever-increasing mobility of capital and production factors as well as the fiscal problems in many European countries make the debate over tax competition still relevant today. The article discusses the problem of tax competition in the corporate income tax in the context of inward foreign direct investment in the Member States of the European Union. The advantages and disadvantages of tax competition as well as its consequences for the revenues from corporate income tax and for the inward foreign direct investment have been presented for the years 2000-2013. On the basis of an analysis of the literature and a general statistical analysis, the authors identified and described three strategies of tax competition: aggressive, moderate and conservative. Furthermore, rankings of the countries were created on the basis of two elements, namely: changes to FDI and the share of CIT revenues in GDP. The authors have also estimated parameters of the dynamic panel model in order to find relations between the corporate income tax and the ratio of FDI to GDP and have found differences between crisis period and stable period and differences in results for two groups of countries (new members of the EU and old ones).

Introduction

Controversies over taxation as an instrument of fiscal policy stem, to a large extent, from the fact that taxation is, on the one hand, an instrument of broadly understood economic policy and, on the other hand, an instrument of social policy which involves redistribution of revenues (Stiglitz, 1988; Hillman, 2009). In a sense, a similar situation occurs with the phenomenon of tax competition. Although it originated as an instrument of economic policy to attract foreign capital and investment, tax competition resulted in a relative reduction in public revenues with ensuing numerous negative consequences. Traditionally, the literature on the subject has emphasized the importance of a fiscal policy founded on the tax structure which would promote growth of business investment (Musgrave and Musgrave 1980, Dalton 2003, Rosen and Gayer 2010), thereby promoting economic growth (Greene 2012). In this approach, taxation issues focus, first of all, on the scope of taxation, tax reliefs and exemptions as instruments of fiscal policy. Since the 1970s, the rapid growth of capital mobility, deregulation and liberalization of many economies as well as the information revolution have given rise to the issue of tax competition as one of the manifestations of globalization of economic activity.

Tax competition has usually been defined as all the attempts within a taxation policy at lower tax burdens in order to increase the attractiveness of a given tax jurisdiction for domestic or foreign investors. Wilson (1999) defines tax competition as an independent regulation of tax rates by the authorities of a given area which aims at a specific allocation of employees, enterprises and capital. According to Mitchell (2014), tax competition exists when people can reduce tax burdens by shifting capital and/or labour from high-tax

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jurisdictions to low-tax jurisdictions, which, as any other form of competition, produces beneficial economic effects. Krajewska (2010) defines tax competition as a reduction in domestic tax rates or an introduction of reliefs and exemptions in order to stimulate economic growth and improve the attractiveness and competitiveness of the country, especially for foreign investors. The present definitions of tax competition frequently assume that it is a horizontal competition phenomenon which is realized internationally. It is important, however, to be aware of the sources of horizontal tax competition and its connotations with vertical competition which, in turn, involves competition between public authorities at different tiers, and horizontal competition between various territorial units of the same tier (Tiebout, 1956; Oates, 1999).

Despite the many analyses and studies, the assessment of the phenomenon of tax competition, especially with regard to its consequences, is not unambiguous. The debate over various effects of tax competition has become particularly important in the face of the problems in the European Union (EU) countries with reducing budget deficit and rapidly growing public debt. The aim of this paper is to review the current achievements of the doctrine and the research into tax competition in the corporate income tax (CIT) in the Member States of the EU. The authors have conducted a general comparative analysis of the nominal tax rates, the levels and dynamics of foreign direct investment (FDI) and the share of revenues from the CIT in the GDP in the Member States of the European Union between 2000-2013. Due to the availability of the data, the analysis of the nominal CIT rates covers the years 2000-2012. On this basis, the characteristics of three models of tax competition and the rankings of the states according to the selected criteria have been created. The authors have used analysis of literature, general statistical analysis and have estimated parameters of the dynamic panel model in order to find relations between the corporate income tax and the ratio of FDI to GDP. The authors have found differences between crisis period and stable period and differences in results for two groups of countries (new members of the EU and old ones).

Tax competition - For or Against?

Tax competition is associated with mobility of capital across the national borders. The differences in tax rates between countries contribute to the flow of resources into the areas of highest return, which, in turn, makes it possible for the countries of low tax burdens to attract capital and people and thus to increase growth. As a result of the liberalization of the regulations concerning cross-border capital flows, both legal and physical persons can now search for places to invest their capital either at home or abroad. Furthermore, in order to increase investment in their countries, governments promote investment attractiveness by reducing nominal tax rates. Theoretically, a reduction in the level of taxes levied on capital does not necessarily lead to a reduction in tax revenues as, assumingly, the tax base should widen due to the inflow of foreign investors. A problem would arise if all the countries decided to reduce tax rates. The classical theory of tax competition assumes that, in the developed economies of unimpaired capital mobility, the tax on capital should near or equal zero as such economies rely largely on the taxation on immovables which, by definition, cannot be moved to other tax jurisdiction as easily as capital can be (Diamond and Mirrlees, 1971). The liberalization of the regulations concerning cross-border capital flows makes the classical theory of tax competition particularly valid for foreign direct investment (FDI), that is for the choice of the entrepreneurs to decide on the location of their businesses according to the level of taxation. This has been confirmed by Gordon and Hines (2002, p.43) who claim that *"Tax policies are obviously capable of affecting the volume and location of FDI, since, (…) higher tax rates reduce after-tax returns, thereby reducing incentives to commit investment funds"*.

Undoubtedly, tax competition may be beneficial. The acquired FDI may lead to an influx of new technologies, methods of management and qualified workforce. The implementation of tax competition increases the after-tax returns for the enterprises, which enhances economic growth and reduces the gap between the more and the less

developed economies. This has been confirmed in studies by Baldwin and Krugman (2004) which point to the reduction in economic disparities between the leading countries of the European Union and Portugal, Spain and Ireland where competitive nominal rates of the corporate tax have been applied. In addition, as it generates lower taxation, tax competition leads, in a way, towards a rationalization of public expenditure and a reduction in the scope of budgetary redistribution.

The literature also comprises contrary arguments which claim that tax competition is a negative phenomenon. According to Zodrow and Mieszkowski (1986), the phenomenon leads to the tax rates which are lower than their optimal level, which results in insufficient public goods provided by public legal entities. Competition leads to the equalization of taxes downwards, to the level which is lower than the optimum. Therefore, lower tax revenues are insufficient to finance the necessary level of public services. In addition, mobile means of production such as capital and qualified staff may migrate to avoid high taxes. Thus, tax competition between countries can take the form of a "race to the bottom", which, in extreme cases, will result in a reduction of the tax rate to zero. Sinn (1994) proposes to counteract this state of affairs through a higher level of harmonization of tax systems which would rely on the convergence of rates of various taxes levied on the mobile factors of production. The harmonization of tax rates and taxation rules eliminates the need for tax competition and makes the distribution of more public goods possible. Scharpf (1997, p.525) argues that *"Capital is free to move to locations offering the highest rate of return. (…)As a consequence, the capacity of national governments (…)to tax and to regulate domestic capital and business firms is now limited by the fear of capital flight and the relocation of production. Hence all national governments (…) are now forced to compete against each other in order to attract, or retain, mobile capital and firms".*

There are, however, numerous opponents to the concept of race to the bottom. Troeger (2013) believes that such a race will never occur due to the fact that capital is only marginally responsive to changing tax rates and it has limited flexibility. The author quotes the level of availability and qualifications of employees, labour costs and labour market regulations amongst the factors limiting mobility of capital. The doctrine lists the following conditions as important for investors: labour costs, labour market regulations and the degree of economic openness (Hajkowa et al., 2004). The problem of the level of taxation is considered as one of the last elements in the decision making process. The investor, that is a transnational corporation, first analyses the possibilities for the location of their investment in different regions of the world and the climate for this type of investment in the countries of the region. Market conditions such as the volume and accessibility of raw materials, various production factors and sales markets are essential for direct investment. Other important elements include start-up procedures for businesses, administrative solutions, transparency and stability of the tax law, reliability of tax administration and a stable political situation. Thus, tax considerations, although, of course, important from the point of view of reducing the cost of running a business, are not decisive, or the only factors (Bénassy-Quéré, Fontagné, and Lahrèche-Révil, 2003; San, Cheng, and Heng, 2012). Another intriguing problem, which goes beyond the scope of our discussion though, is the sources of tax competition in the CIT, which may arise from national or international specificities (Slemrod, 2004).

Tax competition in the member states of the European Union

The idea of a single economic space and currency, which is based on the free movement of capital and labour, is the linchpin of the European Union. The creation of a single internal market has made it possible for EU citizens to take up employment and to make investments in the Member States of their choosing. The abolition of tariff and the elimination of currency risks express the aspiration for complete economic integration. However, the creation of a single internal market requires the harmonization of tax systems between the Member States of the European Union. This is done through the

ongoing harmonization of taxes, particularly with regard to indirect taxes (VAT and excise duty). The harmonization process of direct taxes is far more difficult, which is partly due to the fact that the Member States are reluctant to lose their sovereignty in the area of tax policy. This can also be attributed to different structures of these taxes in the Member States. The concepts of how to harmonize the tax base in corporate taxes that have emerged so far range from the least interfering in the powers of taxation of the Member States (e.g. Home State Taxation) to the most radical ones (EUCIT) which assume the existence of a single, EU-wide tax that would contribute to the EU budget. As these concepts are rather unlikely in the current political situation, the tax policies of the Member States of the European Union nowadays focus on generating interest of foreign investors through a systematic competition in reducing tax rates. The research in tax competition and harmonization has indicated the impact of selected macroeconomic data (government deficit, government expenditures, openness) on tax competition strategies (Surugiu and Surugiu, 2012).

In the early 1990s, the average tax rate often amounted to 40%. It was even higher in such countries as Germany (58%), Italy (41.8%) and Finland (41.5%). The strategy of the Irish government, which reduced the nominal CIT rate from 50% in 1985 to 12.5% in 2003, is a classic example of tax competition. The beginning of the 21st century witnessed several common tendencies in the fiscal policies of the countries belonging to the European Union and then candidate states. First, lower direct tax revenues associated with the progressive mobility of labour and capital were compensated by higher indirect tax burdens resulting from the lower mobility of consumption. Second, the process of gradual reduction of nominal CIT rates, which is presented in Table 1, was initiated. The process was accompanied by expanding and raising the tax base through the abolition of tax preferences, which did not, however, result in a sharp decline of revenues from the CIT.

The decrease in nominal CIT rates, which has been presented here, reflects growing tax competition which stems from the rivalry between states to attract new foreign investment. In the analyzed period, only in Hungary was the tax rate higher in 2013 than in 2000. By contrast, the Maltese government maintained a relatively high rate of the corporate tax at 35% for many years. Apparently, Malta does not seem to be participating in tax competition. It should be noted, however, that Maltese tax law allows tax refunds for foreign legal persons amounting to 6/7 of the tax paid, which makes the effective CIT rate in Malta stand at 5% (*Malta...* 2012:9). For this reason, Malta is a very attractive tax jurisdiction which is often used for tax optimization. In other EU countries, the corporate tax rates were reduced, particularly after the year 2004, that is after the biggest enlargement of the European Union. This was due to the aggressive tax policies adopted by the new Member States which aimed at attracting foreign investment.

The data presented in Table 1 (see Appendix) demonstrate the process which was described by H.W. Sinn as "race to the bottom". They do not, however, present a reduction of tax rates to zero. This is due to the fact that Sinn's model needs to be supplemented by, at least, two new assumptions developed by Wróbel and Sepp (2004, p.40). Firstly, the flow of labour and capital (the mobile factors of production) is accompanied by some costs which need to be balanced with the potential profits resulting from lower taxation. Secondly, it is important to take into account the alternative costs of lowering taxes as every country that reduces tax rates may face the problem of lower supply of public goods. It is possible to define the optimal level of taxation by determining the intersection of marginal profits resulting from the lower tax with the alternative costs incurred by its reduction. Assuming that, despite lower CIT rates, budget revenues from taxes do not fall, other taxes (e.g. VAT) must be raised, which, in turn, reduces the income at the disposal of the taxpayer and thus reduces global demand. As a consequence, another alternative cost that should be taken into account appears. As a result of these relations, the competition in lowering tax rates never leads to a reduction of the rates to zero (Siebert, 1990, p.50).

Tax competition models and their impact on the CIT revenues and the level of FDI

There are three strategies/models of tax competition that can be distinguished on the basis of the changes to the CIT rates: aggressive, moderate and conservative. The last group includes the countries where the nominal CIT rate remained unchanged or showed a slight increase or decrease of up to 5 pp between 2000-2013. Thus, the conservative strategy of tax competition is pursued by Hungary, France, Estonia, Finland, Spain and Portugal. At the opposite end of the scale, there is the aggressive model of tax competition which is characterized by a decrease in the tax rate by 11 pp or more. This strategy is followed by Poland, Ireland, Czech Republic, Greece, Cyprus, Germany and Bulgaria. The moderate model of tax competition is characterized by a reduction of the tax rate within the 5.1-10 pp band. The model is most common amongst the EU countries as it is implemented in the fiscal policies of all the Member States that have not been listed before. There is, however, the problem of which model the tax policy followed by the Maltese government belongs to. Taking into account just the level of tax rate , Malta definitely pursues the conservative model. However, due to the tax regulations that have been mentioned before in this paper, the actual rate of the tax levied on foreign investors stands at 5%, the lowest in the European Union. With the above in mind, and taking into account the fact that it has been recognized by the OECD, the IMF, the Tax Justice Network and the US Senate as a tax haven, it is reasonable to place Malta within the aggressive model of tax policy. The question at this point is whether the scale and pace of lowering the nominal CIT rate reduce the revenues from the tax and whether that decrease has an impact on the volume of FDI stock. In other words, is the basic assumption of tax competition, which says that an increase in foreign direct investment can be generated through the incentive of a low rate of the tax on income, actually effective?

Table 2 presents the CIT revenues as a percentage of GDP in the Member States of the European Union. Some regularities can be noticed while assessing the impact of the reduced nominal tax rates on the amount of revenue from the CIT measured in this way. In the economic upswing of the years 2000-2007, the CIT revenues as a percentage of GDP increased noticeably in eighteen states out of the countries surveyed, while only eight of them recorded a decrease in the revenues. What should be noted is that the group of countries with the declining shares of revenues from the CIT in GDP did not include any of the countries that became Member States after 2004. In the analyzed period of time, apart from Malta, also Slovenia, Lithuania, Bulgaria and Spain observed the highest dynamics of growth in the CIT revenues.

A considerable decline in the revenues was recorded in Luxembourg, Finland and Greece. In contrast, in the years 2008-2012, that is during the financial crisis and the crisis of public finance in many Member States, the revenue situation of the EU countries was different. All the countries experienced a decrease in the revenues (except Malta, Germany and Sweden). Interestingly, the countries that excelled in the growth of revenue dynamics in the period of economic upturn now recorded significant declines. For example, in Lithuania the dynamics decreased by 1.4 pp, in Bulgaria by 1.3 pp and in Slovenia by 1.2 pp. This shows that, in a crisis, the countries of the "old" European Union retained a stable budgetary situation and their economies responded to the crisis better than the markets of the new Member States.

Table 3 shows the FDI stock as a percentage of GDP with its dynamics in two periods: 2000-2007 and 2008-2013. Foreign direct investment is a category of foreign investment in which an investor, who is a resident of a given state, has, at the same time, a relation with an enterprise located in another state, which manifests itself in the investor's power and control (at least 10% or more of voting stock) over this enterprise. FDI is a key element of economic integration as it establishes stable, long-term relationships between

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economies, allows for the transfer of technology and promotes international trade. The data presented in the table stand for the inward FDI stock, that is the value of the share of capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprise.

In the first of the analyzed periods, the highest dynamics of FDI were recorded in Bulgaria (429.91%) followed by Cyprus and the Czech Republic (269.71% each). Poland (210%) and Malta (190.67%) also achieved high dynamics, whereas other countries that pursued the aggressive strategy of tax competition occupied relatively distant places - from 17 (Greece - 155.49%) through 20 (Germany - 145.33%) to 25 (Ireland - 60.10%).

In the countries where fiscal policies adopted the conservative variant, the dynamics of FDI in the analyzed period were lower compared with the countries pursuing the aggressive model and ranged from 182.15% in Portugal to 142.28% in Hungary. In the countries that follow the moderate model of tax competition, the dynamics of FDI fluctuated from 266.96% in Austria to 113.63% in Denmark.

A significant decline of FDI in the EU countries could be noticed during the economic crisis. In 2013 Ireland recorded the highest dynamics of growth in the investment stock in comparison with the year 2008 (243.08% dynamics). Moreover, in the analyzed period, only the United Kingdom, Latvia and Hungary obtained higher dynamics of FDI than in the years 2000-2007. Other countries reported a sharp decline in the dynamics in comparison with the previous period, ranging from 313 pp in the case of Bulgaria, through 143.30 pp in Austria to 6.68 pp in Denmark. It is worth noting that, during the economic crisis, most countries that pursued the aggressive model of tax competition recorded higher dynamics of FDI than the average value for all the EU countries. Malta (171.63%), Poland (157.35%), Cyprus (146.30%) and the Czech Republic (136.58%) can serve as good examples here. A synthesis of the considerations has been included in Table 4.

This ranking has been created on the basis of the position the EU countries occupied in relation to one another with respect to the inflow of FDI in the periods 2000-2007 and 2008-2013 and the CIT revenues they collected in the periods 2000-2007 and 2008-2012. The rank has been determined on the basis of the arithmetic mean of individual positions that the countries occupied in these time frames and the quotient of the four specified periods. When the same results occurred, the order of places in the ranking was determined by a higher total rank of the FDI acquired by the state. Only three periods were taken into consideration in the cases of Belgium and Luxembourg due to the lack of data for all the four analyzed periods.

Results of empirical investigation

In order to find relation between the nominal rate of corporate income tax and the ratio of foreign direct investment to GDP, we estimate parameters of the following model:

$$FDI_{it} = \alpha_0 + \alpha_1 TAXRATE_{it} + \varepsilon_{it}, \quad i=1,\ldots,N, \quad t=1,\ldots,T. \tag{1}$$

In the first step order of integration of both variables is verified using panel unit root tests. Table 5 shows results of testing the presence of unit root in panel using Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (2003), ADF-Fisher and PP-Fisher test (Maddala and Wu, 1999; Choi, 2001).

In the case of all of these tests, H0 hypothesis assumes presence of unit root. Low p-values mean that in the case of both variables, H0 hypothesis about presence of unit root is rejected, so we can treat them as stationary variables.

In the case of panels with large number of cross-section units and low number of time periods, dynamic panel data model is an appropriate tool. Since linear trend turned out to

be significant in the equation of FDI, we consider panel data model with time fixed effects. In order to check, whether autocorrelation in static panel exists, we use tests proposed by Breusch and Godfrey (1981) and Bhargava, Franzini, and Narendrantham (1982). Table 6 presents the results of testing.

P-values are low in the case of both tests. H0 hypothesis assumes no serial correlation, so this hypothesis is rejected and we have the problem of the autocorrelation. Therefore we estimate parameters of dynamic panel model including trend variable:

$$FDI_{it} = \alpha_0 + \alpha_1 FDI_{it-1} + \alpha_2 TAXRATE_{it} + \alpha_3 t + \varepsilon_{it}, \quad i = 1, \ldots, N, \quad t = 1, \ldots, T. \qquad (2)$$

We use Arellano and Bond (1991) estimator with the Windmeijer (2005) correction of the estimated standard errors and obtain the following results presented in Table 7.

According to the results from Table 3, we notice that if the tax rate increases by 1 percentage point then the ratio of FDI to GDP decreases by 0.17 percentage points ceteris paribus and average yearly increase of the ratio of FDI to GDP equals 1.69 percentage points. Negative and significant parameter for variable $TAXRATE_{it}$, confirms that our hypothesis about negative relation between taxation and FDI to GDP ratio is valid. In the Sargan test for validity of overidentifying restrictions and in the Arellano-Bond test for autocorrelation of order 2, H0 hypotheses mean validity of restrictions and lack of autocorrelation respectively. Large p-values suggest that we do not reject H0 hypotheses so we neither have the problem of invalid overidentifying restrictions nor autocorrelation of order 2 in first differenced errors.

In our main model we obtained general result showing relation between the rate of the corporate tax and the ratio of FDI to GDP for period 2000-2013, for all countries (excluding Croatia) of the European Union. However we would like to verify this linkage in more specific cases and we consider estimation of parameters of the dynamic panel model for the following variants:

- old members of the European Union in years 2000-2007

- new members of the European Union in years 2000-2007

- old members of the European Union in years 2008-2013

- new members of the European Union in years 2008-2013.

Table 8 presents estimates of parameters for variables used in model (2) for all four variants. We report estimates for significant parameters (using 0.1 level of significance) and N.A. means insignificance at the 0.1 level of significance. For all four variants there was neither problem of overidentifying restrictions nor problem of autocorrelation of order 2. Standard errors of estimations as well as results of testing for validity of overidentifying restrictions and autocorrelation of order 2 are available upon request.

Obtained results show that there are large differences in reaction of the ratio of FDI to GDP to the fluctuation of the nominal rate of the corporate tax. Strong and negative relation was found for the group of old members of the EU in the pre-crisis period. In the case of the new members, we found even positive relation for the crisis period, which is not in line with expectations. This difference may result from the fact that new members of the EU are less stable countries and investors take into account other factors than the taxation rate, when they are planning the choice of their investment destination. In the case the old members the EU investors are not afraid of investing and these countries attract investors due to aggressive investment strategy. Stronger negative relation for the pre-crisis period may result from the fact that there was no threat of investment in the period of high growth of the rate of GDP and investors were searching for the most profitable option of investment abroad. In the crisis period, firms were forced to cut investment and aggressive taxation policies did not attract them.

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Higher estimate of parameter for variable t was noticed for the new members of the EU and in the pre-crisis period. This resulted from the fact the new members of the EU are catching up countries, have generally higher growth rates and attractiveness of investing in these countries was increasing in time. Difference between sub periods results from the fact that during the stability, firms were enlarging their investment since they expected profits. In the crisis period firms were cutting costs so investments were deteriorating.

Higher values of autoregressive parameter for the pre-crisis period may result from the fact that before the crisis investments were more predictable. In the crisis periods fluctuations of the FDI to GDP ratio were very large within countries. This result is in line with expectations.

Conclusion

The studies have demonstrated so far that the investor's decision depends on many different factors. However, with the following elements in view: a change to the nominal tax rate, the share of CIT revenues in GDP and the dynamics of FDI, three strategies of tax competition can be identified. They have been presented in Table 9.

In an economic upturn, tax competition generates more interest of foreign investors, which is expressed by FDI. Moreover, a reduction of the tax rate does not result in a significant loss in tax revenues, on the contrary, it may lead to their growth. However, in an unstable economic situation and a crisis of public finance, aggressive competition, particularly in the developing economies, may considerably reduce the inflow of FDI and the amount of tax revenues. Nevertheless, the growing problem of uniform CIT rates in the Member States of the European Union raises controversies and objections in the countries where lower tax rates are applied to attract foreign direct investment. It is particularly important for the countries that are not competitive enough in the field of labour productivity, innovative economy or modern technology to secure sovereignty of taxation levied on enterprises, as the only way to increase their competitiveness is to apply the solutions of fiscal nature. Nevertheless, bearing in mind all the positive aspects of tax competition, it is necessary to remember that, despite a relatively large margin for reductions in the nominal CIT rate, the possibilities for further widening of the tax base are limited. Therefore, in order to effectively compete for FDI in the field of the corporate income tax, it would be advisable to reform public finance in such a way as to curb and rationalize state expenditure. To rationalize public expenditure and to ensure a secure level of supplies of public goods are the indispensable conditions for a tax policy that would be both competitive and effective in terms of revenue. Therefore, further research and analyses should focus not only on describing the relation between the level of the tax rate and the level and dynamics of foreign investment, but also, and perhaps predominantly, on the fiscal consequences of tax competition. What should also be taken into consideration is that, in the majority of countries, the effective tax rate is lower than the nominal CIT rate. In Poland, for instance, which in our discussion presents the aggressive model of tax policy, the difference between the nominal and the effective CIT rate, according to the information from the Ministry of Finance, has amounted to approx. 1.8 pp in recent years. According to many economists, lowering income taxes and the disability pension rate in Poland contributed to the growth of budget deficit and public debt and consequently resulted in the need to raise the VAT from 2011 onwards. The coordination of the policy in this area seems now to be the greatest challenge for many countries of the European Union. This is also the field for further research.

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Appendix

TABLE 1. CHANGES TO THE NOMINAL CORPORATE INCOME TAX RATE IN 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	The difference between 2013-2000 in pp.
Austria	34.0	34.0	34.0	34.0	34.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	-9.0
Belgium	40.2	40.2	40.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	-6.2
Bulgaria	32.5	28.0	23.5	23.5	19.5	15.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	-22.5
Cyprus	29.0	28.0	28.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	12.5	-16.5
Czech Republic	31.0	31.0	31.0	31.0	28.0	26.0	24.0	24.0	21.0	20.0	19.0	19.0	19.0	19.0	-12.0
Denmark	32.0	30.0	30.0	30.0	30.0	28.0	28.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	-7.0
Estonia	26.0	26.0	26.0	26.0	26.0	24.0	23.0	22.0	21.0	21.0	21.0	21.0	21.0	21.0	-5.0
Finland	29.0	29.0	29.0	29.0	29.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	24.5	24.5	-4.5
France	37.8	36.4	35.4	35.4	35.4	35.0	34.4	34.4	34.4	34.4	34.4	34.4	36.1	36.1	-1.7
Germany	51.6	38.3	38.3	39.6	38.3	38.7	38.7	38.7	30.2	30.2	30.2	30.2	30.2	30.2	-21.4
Greece	40.0	37.5	35.0	35.0	35.0	32.0	29.0	25.0	35.0	35.0	24.0	20.0	20.0	26.0	-14.0
Hungary	19.6	19.6	19.6	19.6	17.6	17.5	17.5	21.3	21.3	21.3	20.6	20.6	20.6	20.6	1.0
Ireland	24.0	20.0	16.0	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	-11.5
Italy	41.3	40.3	40.3	38.3	37.3	37.3	37.3	37.3	31.4	31.4	31.4	31.4	31.4	31.4	-9.9
Latvia	25.0	25.0	22.0	19.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	-10.0
Lithuania	24.0	24.0	15.0	15.0	15.0	15.0	19.0	18.0	15.0	20.0	15.0	15.0	15.0	15.0	-9.0
Luxembourg	37.5	37.5	30.4	30.4	30.4	30.4	29.6	29.6	29.6	28.6	28.6	28.8	28.8	29.2	-8.3
Malta	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	0.0
Netherlands	35.0	35.0	34.5	34.5	34.5	31.5	29.6	25.5	25.5	25.5	25.5	25.0	25.0	25.0	-10.0
Poland	30.0	28.0	28.0	27.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	-11.0
Portugal	35.2	35.2	33.0	33.0	27.5	27.5	27.5	26.5	26.5	26.5	29.0	29.0	31.5	31.5	-3.7
Romania	25.0	25.0	25.0	25.0	25.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	-9.0
Slovakia	29.0	29.0	25.0	25.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	23.0	-6.0
Slovenia	25.0	25.0	25.0	25.0	25.0	25.0	25.0	23.0	22.0	21.0	20.0	20.0	18.0	17.0	-8.0
Spain	35.0	35.0	35.0	35.0	35.0	35.0	35.0	32.5	30.0	30.0	30.0	30.0	30.0	30.0	-5.0
Sweden	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	26.3	26.3	26.3	26.3	22.0	-6.0
United Kingdom	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	28.0	28.0	26.0	24.0	23.0	-7.0
UE	31.9	30.7	29.3	28.3	27.0	25.5	25.3	24.5	24.0	23.9	23.3	23.1	23.0	23.3	-8.6
UE-12	27.6	27.0	25.3	23.8	21.6	19.7	19.8	19.4	18.7	18.9	18.3	18.3	18.1	18.6	-9.0
UE-15	35.4	33.8	32.6	31.9	31.4	30.1	29.6	28.7	28.2	27.9	27.3	26.9	27.0	27.0	-8.3

Source: Eurostat Data and author's own calculations.

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TABLE 2. REVENUE FROM THE CORPORATE INCOME TAX AS A PERCENTAGE OF GDP IN THE EU COUNTRIES IN 2000-2012

	2000	2001	2002	2003	2004	2005	2006	2007
Austria	2.2	3.2	2.4	2.3	2.4	2.3	2.3	2.6
Belgium	3.2	3.1	3.0	2.9	3.1	3.2	3.6	3.5
Bulgaria	2.7	3.8	3.0	2.8	2.5	1.8	2.1	4.4
Cyprus	6.2	6.3	6.0	4.4	3.7	4.7	5.5	6.8
Czech Republic	3.3	3.9	4.2	4.4	4.4	4.3	4.6	4.7
Denmark	3.3	2.8	2.9	2.9	3.2	3.9	4.4	3.8
Estonia	0.9	0.7	1.1	1.6	1.7	1.4	1.5	1.6
Finland	5.9	4.2	4.2	3.4	3.5	3.3	3.4	3.9
France	2.8	3.1	2.6	2.1	2.4	2.3	2.9	2.9
Germany	2.9	1.7	1.6	1.8	2.2	2.5	2.9	2.9
Greece	4.1	3.4	3.4	2.9	3.0	3.3	2.7	2.6
Hungary	2.2	2.3	2.3	2.2	2.1	2.1	2.3	2.8
Ireland	3.8	3.6	3.7	3.8	3.7	3.5	3.9	2.5
Italy	2.4	3.2	2.7	2.3	2.4	2.3	2.9	3.3
Latvia	1.6	1.9	2.0	1.5	1.8	2.0	2.3	2.7
Lithuania	0.7	0.5	0.6	1.4	1.9	2.1	2.8	2.6
Luxembourg	7.0	7.3	8.0	7.3	5.7	5.8	5.0	5.3
Malta	3.5	3.3	3.5	4.2	3.6	3.9	4.3	6.2
Netherlands	4.3	4.2	3.6	3.0	3.3	3.6	3.7	3.5
Poland	2.4	1.9	2.0	1.8	2.2	2.5	2.4	2.8
Portugal	3.7	3.3	3.3	2.8	2.9	2.7	2.9	3.6
Romania	3.0	2.5	2.6	2.8	3.2	2.7	2.8	3.1
Slovakia	2.6	2.6	2.5	2.8	2.6	2.7	2.9	3.0
Slovenia	1.2	1.3	1.6	1.7	1.9	2.8	3.0	3.2
Spain	3.1	2.9	3.2	3.2	3.5	3.9	4.2	4.8
Sweden	3.8	2.6	2.0	2.2	2.9	3.6	3.6	3.8
United Kingdom	3.5	3.4	2.8	2.7	2.8	3.3	3.9	3.4
UE	3.2	3.1	0.0	2.9	2.9	3.1	3.3	3.6
UE-12	2.5	2.6	2.6	2.6	2.6	2.8	3.0	3.7
UE-15	3.7	3.5	3.3	3.0	3.1	3.3	3.5	3.5

Source: Eurostat Data and author's own calculations.

TABLE 2 (CONT-D). REVENUE FROM THE CORPORATE INCOME TAX AS A
PERCENTAGE OF GDP IN THE EU COUNTRIES IN 2000-2012

	2008	2009	2010	2011	2012	The difference between 2007-2000 in pp.	The difference between 2012-2008 in pp.
Austria	2.6	1.9	2.0	2.3	2.4	0.4	-0.2
Belgium	3.3	2.4	2.6	2.9	3.1	0.3	-0.2
Bulgaria	3.2	2.6	2.0	1.9	1.9	1.7	-1.3
Cyprus	7.1	6.5	6.2	6.9	6.3	0.6	-0.8
Czech Republic	4.2	3.5	3.4	3.4	3.3	1.4	-0.9
Denmark	3.3	2.3	2.8	2.8	3.0	0.5	-0.3
Estonia	1.6	1.8	1.3	1.2	1.4	0.7	-0.2
Finland	3.5	2.0	2.6	2.7	2.2	-2.0	-1.3
France	2.7	1.3	1.9	2.3	2.3	0.1	-0.4
Germany	2.7	2.0	2.2	2.6	2.7	0.0	0.0
Greece	2.5	2.5	2.5	2.1	1.1	-1.5	-1.4
Hungary	2.6	2.2	1.2	1.2	1.3	0.6	-1.3
Ireland	2.9	2.4	2.5	2.3	2.4	-1.3	-0.5
Italy	3.1	2.4	2.4	2.3	2.3	0.9	-0.8
Latvia	3.2	1.6	1.0	1.4	1.6	1.1	-1.6
Lithuania	2.7	1.8	1.0	0.8	1.3	1.9	-1.4
Luxembourg	5.4	5.8	5.9	5.1	5.3	-1.7	-0.1
Malta	6.1	6.1	5.9	5.8	6.3	2.7	0.2
Netherlands	3.4	2.1	2.3	2.2	2.1	-0.8	-1.3
Poland	2.7	2.3	2.0	2.1	2.1	0.4	-0.6
Portugal	3.7	2.9	2.8	3.2	2.8	-0.1	-0.9
Romania	3.0	2.7	2.3	2.4	2.2	0.1	-0.8
Slovakia	3.1	2.5	2.5	2.5	2.4	0.4	-0.7
Slovenia	2.5	1.8	1.9	1.7	1.3	2.0	-1.2
Spain	2.8	2.3	1.9	1.8	2.2	1.7	-0.6
Sweden	2.9	3.0	3.4	3.2	2.9	0.0	0.0
United Kingdom	3.6	2.8	3.0	3.1	2.9	-0.1	-0.7
UE	3.3	2.7	2.6	2.7	2.6	0.4	-0.7
UE-12	3.5	3.0	2.6	2.6	2.6	1.1	-0.9
UE-15	3.2	2.5	2.7	2.7	2.6	-0.2	-0.6

Source: Eurostat Data and author's own calculations.

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TABLE 3. INWARD FDI STOCK AS A PERCENTAGE OF GDP IN 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007
Austria	16.2	18.3	21.6	22.7	24.3	27.1	35.0	43.3
Belgium	..	..	90.8	112.8	12.,0	100.2	120.3	176.4
Bulgaria	21.0	21.2	25.5	30.8	40.0	47.9	70.7	90.1
Cyprus	31.0	39.3	46.1	51.3	54.3	50.2	74.7	83.7
Czech Republic	36.8	42.1	49.3	47.5	50.2	46.6	53.8	62.3
Denmark	46.0	47.0	47.6	47.1	47.7	45.2	48.8	52.2
Estonia	46.6	50.5	57.8	71.2	83.5	81.1	75.6	76.2
Finland	19.9	19.3	25.1	30.6	30.3	28.0	33.9	37.3
France	29.4	28.7	30.3	36.4	42.1	41.5	49.0	48.2
Germany	14.4	14.5	14.8	16.3	18.8	17.2	20.4	20.9
Greece	11.2	10.7	10.7	11.6	12.5	12.2	15.8	17.4
Hungary	49.3	52.0	54.6	57.9	60.4	55.4	71.2	70.2
Ireland	130.6	127.5	148.7	140.4	111.5	80.7	70.3	78.5
Italy	11.1	10.2	11.0	12.4	13.4	13.3	16.7	17.7
Latvia	26.8	28.3	29.8	29.4	33.0	30.9	37.7	37.8
Lithuania	20.3	21.8	28.0	26.5	28.2	31.5	36.4	38.3
Luxembourg	..	..	166.2	193.0	210.2	160.7	187.8	253.9
Malta	55.7	58.8	53.6	63.1	70.0	70.1	99.5	106.1
Netherlands	63.3	70.6	79.9	85.1	85.2	75.1	81.6	98.0
Poland	20.0	21.7	24.4	26.7	34.3	29.9	36.8	42.0
Portugal	27.3	29.9	33.7	37.4	36.1	33.0	43.8	49.8
Romania	18.6	20.5	17.1	20.5	27.0	26.0	37.0	36.9
Slovakia	34.2	38.5	50.8	65.4	66.8	61.8	69.1	63.6
Slovenia	14.5	12.7	17.8	21.6	22.4	20.3	23.1	30.4
Spain	26.9	29.1	37.5	38.4	39.0	34.0	37.3	40.6
Sweden	37.9	40.4	47.5	50.5	54.6	46.4	56.9	63.6
United Kingdom	31.0	35.5	33.9	33.8	33.3	36.7	45.6	43.0
UE	27.6	29.1	31.9	34.7	36.9	34.5	40.9	44.4

Source: UNCTAD STAT and author's own calculations.

TABLE 3 (CONT-D). INWARD FDI STOCK AS A PERCENTAGE OF GDP IN 2000-2013

	2008	2009	2010	2011	2012	2013	The value of FDI in 2007 to 2000 in percentages	The value of FDI in 2013 to 2008 in percentages
Austria	35.8	45.0	42.7	36.8	41.3	44.2	266.96%	123.56%
Belgium	168.2	204.4	185.2	183.3	188.6	182.4	..	108.44%
Bulgaria	85.0	101.4	99.0	88.5	96.6	99.2	429.91%	116.69%
Cyprus	66.3	78.6	75.8	83.2	92.4	97.0	269.71%	146.30%
Czech Republic	50.2	63.8	64.7	55.8	69.5	68.6	169.21%	136.58%
Denmark	44.9	50.5	46.1	43.3	47.6	48.0	113,63%	106.94%
Estonia	69.0	86.6	87.7	75.2	86.5	87.6	163.66%	127.00%
Finland	30.7	35.6	36.6	34.0	39.1	39.4	186.95%	128.38%
France	31.9	39.6	38.5	34.9	39.4	39.5	163.82%	123.95%
Germany	18.4	21.3	21.7	20.3	23.0	23.4	145.33%	127.09%
Greece	11.2	13.1	11.9	10.0	10.2	11.5	155.49%	102.81%
Hungary	57.1	78.0	71.2	62.2	83.1	83.8	142.28%	146.91%
Ireland	71.3	110.9	136.4	128.5	161.3	173.3	60.10%	243.08%
Italy	14.2	17.3	16.0	16.2	18.1	19.5	159.48%	137.11%
Latvia	34.5	44,9	44.6	42.5	47.8	50.6	141.21%	146.64%
Lithuania	27.3	35.7	36.2	33.1	37.9	35.8	188.73%	131.45%
Luxembourg	218.1	322.2	300.8	311.7	225.0	236.3	..	108.31%
Malta	90.7	109.4	191.8	167.8	185.8	155.7	190.67%	171.63%
Netherlands	74.1	80.9	75.4	73.0	81.1	83.8	154.77%	112.98%
Poland	31.0	43.0	45.9	39.4	48.0	48.8	210.00%	157.35%
Portugal	39.7	49.0	48.8	47.0	56.5	58.4	182.15%	147.20%
Romania	33.2	43.8	42.6	39.1	46.1	44.6	197.99%	134.21%
Slovakia	53.5	60.2	57.7	54.2	61.1	61.4	186.31%	114.82%
Slovenia	28.9	31.1	31.1	30.2	34.1	32.5	209.72%	112.55%
Spain	37.0	43.5	45.4	43.2	48.8	52.7	150.87%	142.59%
Sweden	57.3	81.9	75.0	64.8	69.6	67.8	167.54%	118.17%
United Kingdom	35.8	50.0	49.5	48.1	60.0	63.3	138.81%	176.77%
UE	36.5	45.5	44.7	42.3	48.1	49.4	160.91%	135.49%

Source: UNCTAD STAT and author's own calculations.

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TABLE 4. RANKING OF THE EU COUNTRIES

Countries which represent the conservative tax competition model	The difference in the nominal CIT rate between 2013-2000 in pp.	Inward FDI stock			
		The value of FDI in 2007 to 2000 in percentages	Position in the ranking	The value of FDI in 2013 to 2008 in percentages	Position in the ranking
Hungary	1.0	142.28	21	146.91	6
France	-1.7	163.82	14	123.95	17
Portugal	-3.7	182.15	11	147.20	5
Finland	-4.5	186.95	9	128.38	14
Estonia	-5.0	163.66	15	127.00	16
Spain	-5.0	150.87	19	142.59	9
Countries which represent the moderate tax competition model	The difference in the nominal CIT rate between 2013-2000 in pp.	Inward FDI stock			
		The value of FDI in 2007 to 2000 in percentages	Position in the ranking	The value of FDI in 2013 to 2008 in percentages	Position in the ranking
Slovakia	-6.0	186.31	10	114.82	21
Sweden	-6.0	167.54	13	118.17	19
Belgium	-6.2	..	NC	108.44	24
Denmark	-7.0	113,63	24	106.94	26
United Kingdom	-7.0	138.81	23	176.77	2
Slovenia	-8.0	209.72	5	112.55	23
Luxembourg	-8.3	..	NC	108.31	25
Austria	-9.0	266.96	3	123.56	18
Lithuania	-9.0	188.73	8	131.45	13
Romania	-9.0	197.99	6	134.21	12
Italy	-9.9	159.48	16	137.11	10
Latvia	-10.0	141.21	22	146.64	7
Netherlands	-10.0	154.77	18	112.98	22
Countries which represent the aggressive tax competition model	The difference in the nominal CIT rate between 2013-2000 in pp.	Inward FDI stock			
		The value of FDI in 2007 to 2000 in percentages	Position in the ranking	The value of FDI in 2013 to 2008 in percentages	Position in the ranking
Malta	0.0	190.67	7	171.63	3
Poland	-11.0	210.00	4	157.35	4
Ireland	-11.5	60.10	25	243.08	1
Czech Republic	-12.0	169.21	12	136.58	11
Greece	-14.0	155.49	17	102.81	27
Cyprus	-16.5	269.71	2	146.30	8
Germany	-21.4	145.33	20	127.09	15
Bulgaria	-22.5	429.91	1	116.69	20

Source: Author's own calculations and studies.

TABLE 4 (CONT-D). RANKING OF THE EU COUNTRIES

Countries which represent the conservative tax competition model	Revenue from the CIT as a percentage of GDP				Overall rank
	The difference between 2007-2000 in pp.	Position in the ranking	The difference between 2012-2008 in pp.	Position in the ranking	
Hungary	0.6	10	-1.3	21	19
France	0.1	17	-0.4	9	18
Portugal	-0.1	21	-0.9	18	14
Finland	-2.0	27	-1.3	21	24
Estonia	0.9	9	-0.2	5	6
Spain	1.7	4	-0.6	11	5
Countries which represent the moderate tax competition model	Revenue from the CIT as a percentage of GDP				Overall rank
	The difference between 2007-2000 in pp.	Position in the ranking	The difference between 2012-2008 in pp.	Position in the ranking	
Slovakia	0.4	13	-0.7	13	17
Sweden	0.0	19	0.0	2	13
Belgium	0.3	16	-0.2	5	14
Denmark	0.5	12	-0.3	8	23
United Kingdom	-0.1	21	-0.7	13	20
Slovenia	2.0	2	-1.2	20	12
Luxembourg	-1.7	26	-0.1	4	25
Austria	0.4	13	-0.2	5	4
Lithuania	1.9	3	-1.4	25	9
Romania	0.1	17	-0.8	15	11
Italy	0.9	8	-0.8	15	10
Latvia	1.1	7	-1.6	27	22
Netherlands	-0.8	23	-1.3	21	26
Countries which represent the aggressive tax competition model	Revenue from the CIT as a percentage of GDP				Overall rank
	The difference between 2007-2000 in pp.	Position in the ranking	The difference between 2012-2008 in pp.	Position in the ranking	
Malta	2.7	1	0.2	1	1
Poland	0.4	13	-0.6	11	2
Ireland	-1.3	24	-0.5	10	21
Czech Republic	1.4	6	-0.9	18	8
Greece	-1.5	25	-1.4	25	27
Cyprus	0.6	10	-0.8	15	3
Germany	0.0	19	0.0	2	16
Bulgaria	1.7	4	-1.3	21	7

Source: Author's own calculations and studies.

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TABLE 5. RESULTS OF TESTING UNIT ROOT IN PANEL

	FDI		TAXRATE	
Test	Statistic	P - value	Statistic	P - value
Levin, Lin, Chu (2002)	-8.667	0.000	-9.016	0.000
Im, Pesaran, Shin (2003)	-4.960	0.000	-2.935	0.002
ADF – Fisher	113.867	0.000	100.945	0.000
PP - Fisher	164.848	0.000	108.311	0.000

Source: Author's own calculations.

TABLE 6. RESULTS OF TESTING AUTOCORRELATION IN STATIC PANEL

Test	Statistic	P - value
Breusch-Godfrey (1981)	322.58	0.000
Bhargava, Franzini, Narendrantham (1982)	0.18	0.000

Source: Author's own calculations.

TABLE 7. RESULTS OF ESTIMATION OF DYNAMIC PANEL MODEL

Variable	Estimate	Standard error	z-statistic	p-value
cons	26.23	1.15	22.78	0.000
FDI_{it-1}	0.42	0.004	117.56	0.000
$TAXRATE_{it}$	-0.17	0.02	-6.93	0.000
t	1.69	0.02	68.39	0.000

Sargan test of overidentifying restrictions: chi-square=25.97, p-value=1.000
Arellano-Bond test for zero autocorrelation in first-differenced errors
Order 1: z=-1.62, p-value=0.1
Order 2: z=0.78, p-value=0.43

Source: Author's own calculations.

TABLE 8. RESULTS OF ESTIMATION FOR 4 VARIANTS

FDI_{it-1}		
	Old members of the EU	New members of the EU
2000 – 2007	0.400	0.208
2008 – 2013	-0.018	0.108
$TAXRATE_{it}$		
	Old members of the EU	New members of the EU
2000 – 2007	-2.000	N.A.
2008 – 2013	N.A.	1.480
t		
	Old members of the EU	New members of the EU
2000 – 2007	N.A.	3.620
2008 – 2013	-0.712	0.493

Source: Author's own calculations

TABLE 9. TAX COMPETITION MODELS

	CHANGES TO THE NOMINAL CIT RATE IN PERCENTAGE POINTS	SHARES OF REVENUE FROM THE CIT IN GDP	DYNAMICS OF FOREIGN DIRECT INVESTMENT
AGGRESSIVE	The aggressive model is characterized by a decrease in the tax rate by over 10 pp. It is represented by such countries as Poland, Cyprus, Greece, the Czech Republic and Bulgaria.	In a period of economic upturn, the reduction in the tax rate results in an increase in revenues from the CIT in the group of countries that follow this strategy. In a period of stagnancy, a decrease in the share of CIT revenues in GDP can be observed.	In both the periods: 2000-2007 and 2008 -2013, five of the countries that follow the model obtained the dynamics of FDI that were over the EU average. In the first period, the highest dynamics were recorded in Bulgaria, Cyprus and Poland. In the second period, the highest dynamics were observed in Ireland, Malta and Poland.
MODERATE	The distinguishing feature of the moderate model is a reduction of the tax rate in the range of 5 to 10 pp. This model is represented by such countries as the Netherlands, Italy, Austria, Great Britain, Slovakia and Sweden.	In an economic upturn, the countries where the reduction in the tax rate is close to 10 pp record a higher share than the countries where the reduction in the tax rate is near the lower threshold for this model.	In the period 2008-2013, the dynamics of foreign investment dropped markedly among the countries where the reduction in the tax rate did not exceed 7.5 pp. During the crisis, the dynamics of FDI in 11 out of 14 countries which belong to this model was below the EU average
CONSERVATIVE	In the conservative model, the tax rate is reduced by up to 5 pp. It is also possible to increase the rate. The model is represented by such countries as Hungary, France, Finland, Portugal, Spain and Estonia.	During the financial crisis and the crisis of public finance, in the countries which follow this model of tax competition, the decline in the share of revenues from the CIT in GDP was low.	In either the economic upturn or in the crisis, the dynamics of FDI fluctuates around the arithmetic mean for the EU. It is difficult to note clear trends in the group of countries representing this model in either of the periods.

Source: Own description.

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