TAXATION AND ECONOMIC SUSTAINABILITY

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Abstract. *Macroeconomic theory says that taxes play a repressing role in an economy. Introduction of new forms of taxation, the increase of tax rates and augmentation of tax income of the Government puts a downturn risk on consumption and therefore on economic growth. Knowing that, governments of different countries start to competing among themselves by lowering corporate tax rates and trying to boost economic growth by using foreign investments. On the other hand governments are pushed to lower personal tax rates in order to satisfy their electorate. It has been strongly believed that countries with lower tax rates have better prospects for the future growth. However, small tax income is limiting governmental spending and might cause serious imbalances in the economy. As the Irish example shows, smaller taxes cannot guarantee a sustainable growth of the economy. Thus, the relationship between taxation and economic development needs rethinking.*

This study aimed to test the efficiency of taxation in terms of sustainable economic development and to discuss the factors that are the most important here.

A comparative analysis of EU countries was used in the research. The results suggest that the harmfully small tax rates could have violated the sustainability of some European economies.
Key words: *taxation, economy sustainability, fiscal policy*

Introduction

Government budget and government debt crises have recently questioned the sustainability of government finances and entire economy in many European countries. The social welfare that European governments are aiming at puts a downturn risks on the budget, government debt as well as on economic sustainability. The economic growth, which lasted over a decade, boosted tax income and resulted in the illusory idea of governments about loosening the budget. This has led to a massive expansion of the public sector in most of the economies. However, the economic downturn which was expected to happen changed the situation to the worse. The countries that seemed to be most competitive in the aspect of taxation found themselves in the unfavorable situation when the government commitments to electorate and public could not be relieved so easily. This situation in the global economy tried the budgets and sustainability of government finance as well as the short-sightedness of governments in most of the countries. At the moment, one of the

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hottest topics among both economists and politicians is the prospects of public finance, first of all taxation.

This **paper aims** to contribute to the discussions by testing the efficiency of taxation in various EU countries in terms of the sustainability of economy. Economic sustainability is understood as sustainable public finance when there is no downturn risk for the public budget and the entire economy.

The paper begins with an overview of the research in the field of efficient taxation. It includes discussions and empirical research on the link between taxation and economic growth, optimal tax rates that foster economic activities of individuals and firms, etc. Adopting the general framework, we take the main idea that tax rates can be not only too high, but also too low for the sustainable development of the economy and the fiscal budget. The research starts from a comparative analysis of corporate tax rates and their changes as well as taxation income in the EU countries. Then, we apply the HP filter to extract the trend and cyclical behaviour of taxation income in these countries. The results highlight the countries with the most risky behaviour in terms of tax rates and taxation income.

Theoretical background

The optimal taxation level and tax structure has been an issue for discussions and empirical research for a long time. Probably every questioning starts from the Laffer curve which theoretically suggests that there should be an optimal tax rate in an economy, which contributes the maximum taxation income to the public budget. This should be the tax rate that every government is aiming at, because at this level taxes do no harm the economy and the budget income is maximized, allowing a maximization of government spending. The further explanation of the Laffer curve includes cases when the tax rate is higher or lower than the optimum rate. In both cases, it is clear that taxation income is not maximized, this suggests losses for the public budget. When the tax rate is higher than the optimum, the taxation income is low because of a slowdown in the economy. Taxes in this case have a direct negative impact on the economy. In the case when tax rates are lower than the optimum, there is an indirect negative impact on the economy because of a smaller taxation income which harms the public budget, fosters the growth of public debt, etc. Thus, the main idea of empirical research in the field is to estimate the optimum level of taxation, which could lead to a sustainable economy development.

There is a big range of theoretical models and empirical research on the impact of taxation on economy growth. Most of these researches apply long-term economic growth models such as the Solow or AK endogenous growth models. Lee and Gordon (2004) summarize the theoretical ways in which taxation can affect the long-term economic growth. Economic growth is dependent on the accumulation of human and

physical capital. So, taxes can affect the accumulation of these production factors. Lee and Gordon (2004) note that lower corporate tax rates (especially on investment) suggest a boom in the short-term growth because of increasing corporate investments. This can be considered as one of the risks for the sustainability of economic growth because of the distortions and excessive investment that might cause an oversupply in the economy in a medium term.

The other way in which taxes make an influence on economy growth rates is the initiatives to do business and to invest. When following the Schumpeterian and the endogenous growth logics, a bigger emphasis is on the structure of taxes than on the size of tax rates. In this case, a comparison of personal and corporate tax rates, schedules of personal income taxes and similar questions matters. The results of previous research (Cullen, Gordon, 2002) show that corporate tax rates should be lower as compared with a personal tax in order to encourage creation of private business and foster the growth of the economy.

We should note that the majority of research on taxation and economy growth concentrates on outcomes for a single country. The theoretical models suggested by the authors are applicable to the analysis of a separate economy. Thus, the aim is to find the optimal tax rate in accordance with the peculiarities of a particular economy. A comparative analysis is quite rare. Though, we suggest that economies and their governments compete on tax rates in order to attract more investment and foreign business into a country and thus to promote the development of economy. Our approach is supported by M. Koethenbuerger and B. Lockwood (2010) who question the decentralization of tax administration and its impact on economy growth. The authors propose only a theoretical model for a single country, which analyses the relationship between tax competition within the country and growth in an endogenous growth model. The results are ambiguous. The impact of tax decentralization and competition on economy growth depends on what taxes we are talking about. Koethenbuerger and Lockwood (2010) conclude that the results might be different in terms of welfare.

Another group of relevant research is related with the estimation of effective tax rates (Markle, Shackelford, 2011; Patry, Lester, Lemay, 2006; Mendoza, Razin, Tesar, 1994). One of the recent and most extensive researches in this area was presented by a group of British and German economists in 2008 (Devereux et al., 2008). They apply the methodology of calculating the effective average tax rate (EATR) for taxes on domestic investment, cross-border investment within the EU, and tax rates for small and medium-size enterprises in all EU countries. “Given a post-tax real rate of return required by the company’s shareholder, it is possible to use the tax code to compute the implied required pre-tax real rate of return, known as the cost of capital. The proportionate difference between the cost of capital and the required post-tax real rate of return is known as the effective marginal tax rate (EMTR)” (Devereux et al., 2008). The idea of the effective

average tax rate is somewhat different in terms of its explanation. Companies compare the taxation environment in different countries when taking decision on their location. "If two locations are mutually exclusive, then the company must choose between them. In this case, the impact of taxation on the choice is measured by the proportion of total income taken in tax in each location" (Devereux et al., 2008). This proportion in called the effective average tax rate.

We should note that in this case the researches are more often empirical and multinational. As the authors do not emphasize the tax competition among the countries, their research is more often static and does not reveal the changes in tax rates. One more important conclusion from the analysis of these empirical researches is related to the type of taxes. The authors concentrate their research on various forms of corporate taxation. This finding suggests that corporate taxes could be most important when comparing countries. So they are most important for tax competition among the countries. Despite the importance of labour taxation for the economy growth, corporate taxation is much more important for a cross-country comparison. Therefore, we suggest that inappropriate changes in corporate taxation might harm the economy sustainability.

Comparative analysis of taxes in the EU

Our study begins with a comparative analysis of tax rates and tax income in selected EU countries. Its results should show the dynamics of tax rates and tendencies in tax income. On the other hand, a comparison of the indicators of different countries could describe the relative situation in a specific country. A corporate income tax rate was chosen for the analysis as it is one of the main indicators that EU countries are competing on. Table 1 presents corporate income tax rates in selected EU countries and their evolution since 1990.

As one can see in Table 1, since 1990 the corporate tax rate has been reduced in all major EU countries. This finding suggests that EU countries are competing on corporate tax rates in order to attract more foreign investment and spur the growth of their economies. The biggest decrease during 20 years was observed in Ireland where the corporate income tax rate decreased from 43% in 1990 to 12.5% since 2003. Another leading country in this case is Germany where the tax rate was diminished by 29.6 p.p. It was caused not only by government policies, but also by the integration of the former GDR in 1991. However, if we look at the second half of the period, in Germany the decrease of the corporate tax rate since 2000 was sharpest. We can also see that the countries that faced met the most serious public finance problems in 2010 (Greece, Portugal, Ireland) lowered the corporate income tax most significantly.

Overall, the analysis results imply that competition on tax rates has even increased since 2000, because the reduction of tax rates is even bigger. This period was also followed by a constant and increasing economic growth which was favorable for governments to

TABLE 1. **Corporate income tax rates in some of the EU countries, %**

	2010	2008	2006	2004	2002	2000	1998	1996	1994	1992	1990
Austria	25	25	25	34	34	34	34	34	34	30	30
Belgium	33.99	33.99	33.99	33.99	40.17	40.2	40.17	40.17	40.17	39	41
Czech Republic	19	21	24	28	31	31	35	39	42	-	-
Denmark	25	25	28	30	30	32	34	34	34	34	40
Finland	26	26	26	29	29	29	28	28	25	n.a.	n.a.
France	34.43	34.43	34.43	35.43	35.43	37.76	41.66	36.66	33.33	34	42
Germany	15.83	15.83	21.89	21.89	21.89	35.02	39.73	41.35	39.13	45.11	45.45
Greece	24	25	29	35	35	40	40	35	35	46	46
Hungary	19	20	17.33	16	18	18	18	18	36	40	40
Ireland	12.5	12.5	12.5	12.5	16	24	32	36	40	40	43
Italy	27.5	27.5	33	33	36	37	37	53.2	53.2	52.2	46.4
Netherlands	25.5	25.5	29.6	34.5	34.5	35	35	35	35	35	35
Poland	19	19	19	19	28	30	36	40	40	40	n.a.
Portugal	25	25	25	25	30	32	34	36	36	36	36.5
Slovak Republic	19	19	19	19	25	29	40	40	40	–	–
Spain	30	30	35	35	35	35	35	35	35	35	35
Sweden	26.3	28	28	28	28	28	28	28	28	30	40
United Kingdom	28	28	30	30	30	30	31	33	33	33	34

Source: OECD Tax Database.

have an increasing tax income, even though the tax rate was lower. This situation might have fooled the governments about having positive tax returns based on the Laffer curve and helped them to increase budget spending without a negative impact on the balance and debt.

The effect of tax lowering policy in the EU countries can be suggested by analysing budget income. First of all, we should note that tax income is of a great importance for government budgets in all EU countries. The share of tax income is biggest in Belgium, Italy and the UK. On average, tax income in these countries makes more than 90% of total budget inflow. The share is smallest in Bulgaria, Greece, Latvia, Malta, Poland and Finland where tax income on average makes less than 85% of the total budget inflow. These findings imply that public finance and economic sustainability are very much dependent on taxation and tax income of the government.

The second issue deals with tax rates of the other major taxes – personal income tax and value added tax. A brief analysis of their rates indicated that the value added tax rate was increasing only in new EU member states because of the Union regulations. In other countries it remained much more stable, as did also personal income tax rates. The

average standard deviation of the corporate income tax during 1990–2010 is 5.8, and the average of the same ratio of the personal income tax is 1.2. This suggests that, despite a great importance of these two taxes on tax income in the countries, governments do not compete on them, and the possibility of these two taxes to become too low is much smaller. These findings support our preliminary derision to study the corporate income tax in this research.

Table 2 presents shares of income of taxes in the income or profits of corporations in the total taxation income in some of the EU countries. We can see that on average corporate taxes contribute only about 8% to the total taxation income of the budget although the average correlation between corporate tax income and total taxation income in economies is 0.87 and varies from 0.55 in Italy to 0.99 in Romania. This suggests

TABLE 2. **Share of income of corporate income tax in the total taxation income, %**

	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Belgium	5.62	7.39	7.73	7.78	7.00	6.67	6.21	6.50	6.71	6.92
Bulgaria	8.15	9.19	12.42	5.95	5.22	7.41	8.09	10.00	11.86	8.25
Czech Republic	10.62	11.80	13.52	13.19	12.15	12.56	12.77	12.31	12.03	10.27
Denmark	5.03	6.76	7.66	8.66	7.64	6.37	5.97	5.93	5.68	6.53
Germany	1.67	2.72	3.38	3.39	2.75					
Ireland	8.30	9.07	10.33	11.30	10.63	11.39	12.28	12.50	11.61	11.49
Greece	7.42	7.35	7.41	8.12	9.72	9.04	8.61	9.58	9.72	11.51
France	2.91	6.21	6.48	6.38	5.12	5.24	4.81	5.73	6.79	6.16
Italy	5.62	7.11	7.56	7.00	5.78	5.35	5.25	6.11	7.03	5.59
Cyprus	18.52	18.11	16.65	15.10	13.15	11.14	13.05	19.23	20.08	20.57
Latvia	5.86	10.81	8.93	7.54	6.93	6.14	5.29	7.03	6.57	5.22
Lithuania	6.28	9.14	8.68	9.42	7.36	6.57	4.90	2.08	1.86	2.26
Luxembourg	14.41	14.04	14.53	13.58	15.13	15.05	18.90	20.14	18.19	17.67
Malta	17.10	15.91	14.37	11.49	10.23	9.50	12.26	9.82	9.21	8.72
Netherlands	5.55	8.72	9.05	9.33	9.58	8.70	8.03	9.31	10.85	10.81
Austria	4.22	6.01	6.01	5.39	5.36	5.39	5.16	5.30	6.99	4.88
Poland	7.26	7.96	7.97							
Portugal	8.55	10.32	10.08	8.29	7.73	8.55	8.10	9.76	9.90	11.26
Romania	9.43	10.49	10.35	9.75	9.52	11.42	9.98	9.21	8.73	9.68
Slovenia	4.90	6.74	8.59	7.74	7.16	5.03	4.54	4.11	3.33	3.10
Slovakia	8.73	10.73	10.27	9.98	8.74	8.23	8.33	7.60	7.82	7.64
Sweden	6.37	6.28	8.00	7.49	7.31	6.02	4.57	4.29	5.29	7.28
United Kingdom	7.44	8.84	8.47	9.90	8.59	7.57	7.37	7.57	9.09	8.79

Source: calculations based on Eurostat data.

that, despite their small share, the corporate tax income is important for the total taxation income fluctuations. In smaller countries, such as Luxembourg, Malta, Cyprus and Czech Republic, corporate taxes are more important. Corporate income tax share is the smallest in Germany, the biggest economy of the EU. As noted above, Ireland was the country where the corporate income tax rate was diminished most significantly and we can see in Table 2 that the share of corporate taxes was decreasing since 2003 when the new tax rate was introduced. In absolute terms, the corporate tax income started falling in 2007 in Ireland.

In general, since 2004–2005, the share of income from corporate taxation in the total taxation income was increasing in most of the EU countries. However most likely it was related to economic growth and a favourable economic situation for companies to make large profits than to lower tax rates. In 2008–2009, the income of corporate taxation decreased in both absolute and relative terms in all EU countries except Luxembourg and Malta. This suggests that the cyclical fluctuations of economies might have misled the governments when making decisions on taxation. Despite the knowledge that smaller taxes lead to a faster economic growth, there is a great risk for economic sustainability.

For a more detailed and comprehensive understanding of these fluctuations in tax rates and taxation income, we suggest an empirical research. A short comparative analysis of taxes in the EU countries suggested that there might have been a competition among them to diminish corporate tax rates in order to attract foreign investment and business (in case of Ireland and new member states) or in order to maintain the existing investment and business inside the country (in case of the EU founders). On the other hand, the politicians might have mistaken when taking taxation decisions because of the favorable business cycle fluctuation that caused a steady growth of most economies in the EU. So, in this study we have atteonpted to test the importance of a business cycle for corporate taxation income and to identify the countries where corporate income tax rates were too low and therefore harmful for public budget and economy sustainability.

Methods

In this paper, we suggested to analyse the sustainability of economic development by considering the public budget deficit / surplus. As the recent development of European economies shows, the most challenging problems that governments face are related to steeply increasing budget deficits and debts. This hurts economic development most. This paper considers budget income – the taxation that sometimes governments compete for by lowering tax rate in order to promote the growth of economy.

The results of a comparative analysis of taxation in the EU countries suggest that, because of the favourable business cycle situation in economy, the governments are misled when making decisions on taxation. The biggest risk in terms of decreasing corporate income tax rates and taxation income was observed in Ireland, Portugal, and

Greece. These are the countries that faced severe public finance problems during the recent economic downturn. We suggest analysing the cyclical fluctuations of government taxation income in order to understand when the diminishing tax rates became harmful to economic sustainability.

The idea to estimate the cyclical trend in fiscal data (including taxation income) is not completely new. This approach is often used in research on political and budget cycles (for example, Veiga, Veiga, 2007; Shi, Svensson, 2006; Buti, Noord, 2004; Andrikopoulos, Loizides, Prodromidis, 2004). The methodologies used in their research suggest that common methods for the estimation of the cyclical behaviour of macroeconomic variables are applicable not only to GDP and other indicators of a real economy, but also to fiscal indicators or monetary data. We should note that researches on political and budget cycles address the total taxation income, and in this paper we are also going to concentrate on corporate income taxation. Thus, we shall apply the same method to total and corporate taxation incomes in order to estimate their cyclical behaviour and trend.

The most common and most widely used method for estimating the cyclical behaviour of a macroeconomic variable and its trend is the Hodrick–Prescott (HP) filter filter. Initially, it was used for the estimation of the GDP potential and for analysing its cyclical behaviour (estimation of the business cycle of an economy). However, at present, the application of the HP filter is much wider. It was used also for fiscal data in the researches that were mentioned above.

The HP filter helps to separate a cyclical behavior from the log-run path of an economic series. It decomposes the economic series of interest into a slow-changing trend and a transitory deviation that is called "cycle":

$$s_t = r_t + c_t,$$

where s is the economic series observed, r is the trend component; c and is a cyclical component.

Usually, the HP filter extracts the trend from a time series by solving the following problem:

$$\min_{\{r_t\}} \sum_{t=1}^{T} (s_t - r_t)^2 + \lambda \sum_{t=2}^{T-1} [(r_{t+1} - r_t) - (r_t - r_{t-1})]^2,$$

where the smoothing parameter λ controls the smoothness of the adjusted trend series. The larger its value, the smoother is s. When $\lambda \to 0$, the trend is close to the actual series, and when $\lambda \to \infty$, the trend becomes linear. For the analysis of annual data, it is recommended to use $\lambda = 100$. The HP filter has some shortcomings and drawbacks, but, as Ahumada and Garegnani (1999) note, they do not appear to affect its wide use in empirical research.

There is one more important thing to note when aiming to apply a HP filter to fiscal data. For an HP filter to give accurate results, the macroeconomic indicators should be

real (no impact of prices). All the fiscal data, including taxation income, are nominal. So, we follow Andrikopoulos, Loizides, Prodromidis (2004) and convert the nominal data on taxation income into real terms with the help of a GDP deflator:

$$TI_R = \frac{TI_N}{GDP_{def}} \times 100,$$

where *TI* indicates taxation income, *R* stands for real and *N* for nominal data.

The research presented in this paper has two steps. First of all, we apply an HP filter to corporate taxation income ("taxes on the income or profits of corporations") in the EU countries with data available in the Eurostat for 1995–2010. For most of the countries, data from 2010 were not yet available. Corporate taxation income was chosen because of higher deviations observed previously and suggested that governments compete on the corporate income tax rate most in order to attract more foreign investment and foster the economic growth. We analyse the trend curves of corporate taxation income in public budgets in the EU countries in order to estimate the possible turning points in the budget.

Secondly, after the cyclical component of corporate taxation income has been extracted, we estimate its variance and analyse the other descriptive statistics of the derived time series. In this way, we aim to assess the risk which can be addressed to unsustainable corporate taxation income in a public budget. After then, that we may come back to the comparative analysis of corporate income tax rates in EU countries presented in the beginning of this paper. As a result of the research, we expect to elucidate the countries that have a diminishing corporate taxation income trend together with a very volatile cyclical behaviour of income. This could mean that the country is facing a great risk of a diminishing budget income. A comparison of the turning points in the corporate taxation income trend and the tendencies of corporate tax rates could imply the fact that tax rates are too low in terms of collecting taxation income.

Results

With the help of the HP filter, we decomposed the corporate taxation income in some of the EU countries during 1995–2010 into trend and cycle data. The derived trend line shows the implicit behaviour of the corporate taxation income in the countries. Our results suggest the basic behaviour of taxation income, which summarized in Table 3.

One can see in Table 3 that in most of the EU countries there is an increasing tendency of a corporate taxation income. The slope of trend curves differs, indicating a faster or slower growth of budget income from corporate taxation, but they are not the object of this paper. Two countries – Italy and Slovakia – have an upward parabola trend curve which means that till 2001 the corporate taxation income was decreasing and afterwards started to increase. In the Italian case, it might be partly related to a solid reduction of the

TABLE 3. **Shape of trend curves of corporate taxation income in EU countries**

Trend curve				
Linear	Parabola			
Increasing	Upward		Downward	
		Break point		Break point
Austria	Italy	2001	Ireland	2004
Belgium	Slovakia	2001	France	2006
Bulgaria			Greece	2004
Czech Republic			Luxembourg	2002
Denmark			The Netherlands	2001
Cyprus				
Latvia				
Lithuania				
Malta				
Portugal				
Romania				
Slovenia				
Sweden				
United Kingdom				

corporate income tax rate in 1998, which might have helped to motivate the corporate activity. In Slovakia, as well as in many other formerly Soviet countries, the taxation income growth might be caused by economic development, foreign investment growth, and the increasing reliability of a country. Initially, these countries on average had lower tax rates which might have been attractive for investors and foreign companies.

The estimated corporate taxation income trend lines suggest that in Ireland, France, Greece, Luxembourg and the Netherlands income has a downward trend. This situation is not very favourable, because it indicates that corporate taxation income in public budget has a tendency to decline, but because of the favorable situation in the business cycle the governments of these countries might have not noticed this changing situation.

Two countries from the list are those that have recently met fiscal difficulties. For both of them, the preliminary break point could have occurred in 2004. As noted previously and presented in Table 1, Ireland and Greece made serious reductions of corporate income tax rates. In Ireland, the tax rate was reduced to 12.5% in 2003, and in Greece the reduction started in 2004 from 35% and stopped in 2010 at a 24% tax rate. These results suggest that in Greece and Ireland the reduction of tax rates was too big and harmful for their budget and economic sustainability.

The cyclical component of corporate taxation income in the EU countries under analysis was extracted by subtracting the estimated trend from the actual corporate tax income series. Afterwards, the descriptive statistics of the cyclical component time series was calculated and analysed. Table 4 presents the results. The countries in

TABLE 4. **Descriptive statistics of cyclical fluctuations of corporate taxation income**

Country	Mean	Median	Maximum	Minimum	SD	Skewness	Kurtosis	Obs.
Malta	-2.52E-12	7.789912	24.34387	-30.9368	20.60712	-0.57593	1.78926	10
Latvia	-4.26E-12	-6.26673	100.0362	-63.8456	38.06619	0.977248	4.529738	15
Slovenia	-5.48E-12	-16.4453	185.7643	-211.681	95.51617	0.014233	3.452984	15
Cyprus	-1.04E-11	-1.24709	126.8631	-203.493	96.04829	-0.55428	2.457553	15
Luxembourg	-3.34E-11	-27.5928	249.3524	-179.7	118.9503	0.545779	2.735886	15
Slovakia	-1.77E-11	-16.7609	314.9455	-140.629	124.304	1.120166	3.714627	15
Lithuania	-1.34E-11	49.07337	367.4569	-391.429	254.2167	-0.20884	1.776564	15
Bulgaria	-9.21E-12	-42.7128	572.3312	-411.589	308.1328	0.378304	2.07895	15
Ireland	-7.29E-11	41.08132	711.9086	-929.753	384.4896	-0.60806	3.727514	15
Romania	-6.84E-11	-30.6158	895.2681	-749.05	487.4661	0.256474	2.081641	14
Portugal	-1.14E-10	10.69455	755.71	-684.026	501.7726	0.251679	1.703174	15
Greece	-1.02E-10	-197.996	1447.154	-721.644	533.3476	1.287998	4.657081	15
Austria	-9.40E-11	-85.6613	1806.92	-1106.45	691.912	0.96451	4.341494	15
Belgium	-1.26E-10	-75.4632	1074.436	-1861.71	798.366	-0.55189	3.117056	15
Netherlands	-3.28E-10	1121.182	1878.179	-4249.32	1983.119	-0.98285	2.57904	15
UK	-5.74E-10	578.6042	7046.344	-5389.45	4094.428	0.107397	1.793997	15
Italy	-6.09E-10	-1790.23	10844.97	-6117.78	5545.978	0.577093	2.014391	15
France	-8.05E-10	-291.24	8481.147	-16945.2	6677.428	-0.837	3.822132	15
Denmark	-1.03E-09	-396.99	14214	-14352.3	6718.723	0.072801	3.457222	15
Czech Rep.	-1.94E-09	881.6359	14839.62	-19541.1	9361.315	-0.39988	2.483785	15
Sweden	-1.34E-09	-2209.94	20603.81	-20049.3	11342.78	0.013276	2.462332	15

Table 4 are listed with regard to a standard deviation of the cyclical component. First of all, we note that the mean value of the cyclical component of corporate taxation income is much lower than the median in all EU countries. This finding suggests that corporate taxation income was more often above than below the trend. In other words, it shows that corporate taxation income in public budgets more often was bigger because of the favourable economic situation but not because of the good decisions of the governments. Such a situation in economies might have led to inappropriate governmental decisions.

The values of the standard deviation coefficient indicate the variability of the cyclical component and are used to assess the risk. The research results presented in Table 4 show that Ireland, Portugal and Greece list in the middle among the other EU countries, indicating that the risk of an unexpected downturn of the corporate taxation income, which is harmful for the budget, is on the upper side. The results suggest that the situation of France is most risky. As noted earlier in this paper, the corporate taxation income in

France has a downward trend, and the variance of the cycle is one of the biggest. This indicates a high risk of an unexpected sharp decrease of the corporate taxation and total budget income, which might deteriorate economic sustainability.

Conclusions

The government budget and government debt crises have recently questioned the sustainability of public finance and entire economy in many European countries. Social welfare the European governments are aiming at puts downturn risks on the budget, government debt as well as on the sustainability of the whole economy. On the one hand, governments are competing on tax rates in order to attract foreign investments and business into the country and to promote economic growth. On the other hand, the decreasing taxation income in the public budget leads to increasing public debts and harms the economy.

The previous researches in this field are of two kinds. One part concentrates on taxation effect on economy growth. They use endogenous growth models and question the optimum rate of taxation of production factors. These researches are broader because they include not only corporate but also private (labour) taxation, but usually they concentrate on creating a theoretical growth model for a single country.

This paper contributes to the field of research on effective taxation in which the existing analyses are more often empirical and multinational. It suggests that corporate taxes could be most important when comparing countries as they are most important for tax competition, although the method we apply in our research differs from the calculation of effective tax rates. Following the methodology of research on political and budget cycles, we propose to use HP the filter, to estimate the cyclical behaviour of corporate taxation income in the public budget, and to determine its trend. In this way, we could assess the risk of a too low corporate income and profit tax rates, which is harmful for total income in public budget as well as for sustainability of entire economy.

The results of the research indicate that some of EU countries compete by lowering their corporate income and profit tax rates and trying to be more attractive for investors. The leading country in this case is Ireland where the reduction of the corporate income tax rate was most significant. Although the share of corporate taxes in total taxation and budget income is not big, its high variation, which is strongly related to budget income, is indicative of its importance for public finance sustainability.

The research has revealed Ireland, France, Greece, Luxembourg, and the Netherlands to show a downward corporate taxation income trend. The break points of the trend lines are very close to the dates of tax rate reduction. These findings suggest the harmfully small tax rates that could hit the sustainability of public finance and economy. Ireland and Greece have already faced some public finance problems, and the situation of France can be considered to be most risky because of a high variation of its corporate taxation income cycle.

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