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THE EMPIRICAL STUDY OF THE TAX COMPETITION IN THE EUROPEAN UNION

D. Nerudová, S. Kapounek

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Abstract

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The increase in the capital mobility forces the Member States to decrease tax burden on capital. Lower revenues from capital taxation have to be compensated by the increase in tax burden on labor. The aim of the article is verify the hypothesis that increasing capital mobility leads to the decrease in the tax burden on capital and also that decrease in the tax burden on capital leads to the increase in the tax burden on labor. The hypothesis will be tested for EU Member States in the time period 1991–2005 by using cointegration analysis.

tax competition, capital mobility, tax burden, cointegration analysis, correlation

Introduction

At present, there are 27 different systems of direct taxation in the European Union. This situation influences the Internal Market mainly in connection with the increase in capital mobility, which can very easily move across the borders into the countries with highest net-of-tax return. The Member States use the taxation policy in order to attract the capital which leads to the tendency to decrease the tax burden which is imposed on capital. The countries are attracting the capital for the savings in the country are not equal to the investments and therefore the savings needs to be covered by the foreign capital inflow. Expecting the level of the public expenses to be stable, the decrease in the tax yield from the capital taxation has to be compensated by the increase in the taxation of different factors – mainly immobile ones such as labor to avoid budget deficits. This situation which is in the tax competition theory called as *race to the bottom* can lead (in extreme situation) to the removing of capital taxation Sinn (1992).

The fear from "the race to the bottom" has become the impulse for approving the measurements for the fight against the harmful tax competition[1] in OECD as well as in the European Union.

OECD (1998) has identified the factors[2] which are typical for harmful preferential tax regimes[3] and tax havens. The main feature typical for preferential tax regime is considered to be "ring fencing" – i.e. situation, when the preferential tax regime is strictly separated from the domestic market. Domestic country protects its own economy against this kind of regime (e.g. under such systems the residents are exempted explicitly or implicitly from the possibilities of tax

1 Situation, when the principle of ability to pay does not force economic subjects to pay taxes in the country in which they use public services – on the contrary they try to pay taxes in low tax jurisdiction and to use public services in high tax jurisdiction (i.e. even they pay lower taxes, they use the same public services as economic subjects which pay higher taxes). This situation leads at the end to the deterioration of the situation of all the countries.

2 For details see Harmful Tax Competition – An Emerging Global Issue, OECD, 1998.

3 Regimes, which can cause harmful tax competition.

advantages or the companies which were granted tax advantages are forbidden to be active on the domestic market). Other features typical for preferential tax regimes are represented by very low or zero effective tax rate[4], the lack of tax system transparency and the lack of effective information exchange (mainly about the tax payers which were granted tax advantages). After the identification, the OECD has suggested the measurements which should help to remove provisions leading to the harmful tax competition. These measurements have served as the basis for the European Commission in the process of tackling the harmful tax competition.

In 1997 the European Council has adopted "tax package", which represents the set of measurements for the fight against the harmful tax competition and also the set of measurements which should support tax coordination in the European Union. The base of the tax package is created by Code of Conduct for Business Taxation in which the Member States has pledged not only to remove existing provisions causing harmful tax competition but also to abandon the future implementation of provisions of similar character.

Another part of the tax package is created by the obligation to adopt the measurements to reach higher level of approximation of savings income taxation, which was fulfilled by the adoption of Directive No. 2003/48/EC on taxation of savings income in the form of interest payments, which oblige Member States to exchange information about paid out interest payments.

The last part of the tax package represents the agreement on abolishing of withholding tax in case of royalty and interest payments which has led to the adoption of Directive No. 2003/48/EC on a common system of taxation applicable to interest and royalty payments made between associated companies of different Member States. Both of the above mentioned directives are at present implemented by Member States – in many cases with transitional periods.

The aim of the paper is to verify the hypothesis that the increase in capital mobility leads to the decrease of tax burden on capital in selected EU Member States[5] and further to verify, that the increase in capital mobility leads to the increase in tax burden on labor in selected EU Member States[6].

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Theoretical Background

In the tax competition theory there can be found two basic strands. First of them highlights the role of "tax game" and tries to identify tax reaction functions, which shows the dependence of the state on the tax policies of its neighbors. Most of the authors in that strand of literature have found out that the governments are adjusting the tax rates in reaction to the changes in the tax rates of its neighbors, which support to the standard tax competition theory.

As Redoano (2003) quotes corporate income taxes influence the corporations in their decisions about investments placements. From that reason the tax policy of the government tries to attract the tax bases in the frame of tax competition and not the voters, for the corporate income tax influences them only marginally.

Altshuler (2002) and Goodspeed (2002) have dealt in their research with the empirical estimation of tax reaction functions in case of corporate income taxes among OECD countries. They have proved the existence of positive correlation coefficient in all the cases – i.e. the decrease in tax rate of neighboring country was followed by the studied country.

Devereux (2002), Lockwood (2002) and Redoano (2002) quote that each country behaves strategically in the process of setting up the corporate income tax rates in respect to the corporate income tax rates set in neighboring countries. The authors point out another very important factor in the tax competition – voters and politics. The government policy makers are following the tax rates of other states, for in case that they would set higher tax rates than neighboring countries have the government need not to be voted again in elections.

The second strand in literature which can be found in tax competition theory is the influence of capital mobility on the level and structure of the tax rates. In that area the authors highlight the negative impact of

4 Effective tax rate differs from the nominal tax rate. Effective tax rate represent real tax burden of the tax payer, for it comprises all the differences of individual tax systems. From that reason effective tax rate is comparable.

5 Belgium, Denmark, Germany, Spain, France, Italy, Netherlands, Austria, Slovenia, Finland, Sweden, and United Kingdom.

6 Belgium, Czech Republic, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Austria, Poland, Portugal, Slovenia, Finland, Sweden, United Kingdom, Bulgaria, and Norway.

capital mobility on the capital tax rates and the level of public expenditures. Some authors as Garrett (2002) and Mitchell (2002) fined positive relation between capital mobility and the level of capital tax rates and public expenditures, which is in contradiction with the "race to the bottom" theory which was mentioned above. The compensation theory serves as the basis for the theoretical arguments of the authors finding the positive relation between the capital mobility and the level of public expenditures. The compensation theory is based on the idea that economic integration (and connected increase in the capital mobility) causes also secondary effects as for example recession in some sectors of economy or higher volatility in consumers incomes, which leads to the higher demand for the public expenditures, mainly in the form of social programs. The defenders of compensations theory as Rodrik (1998) suppose, that higher tax burden on labor as a result of increase in the capital mobility should be compensated to the tax payers in the form of special social programs, which would be financed from the increased tax revenues from that type of tax.

Bretschger (2002) and Hettich (2002) have proved while using empirical data the existence of negative relation between the openness of the economy and the level of capital tax rates and public expenditures. On the contrary they have proved positive relation between the openness of the economy and the level of tax burden on labor. The globalization process has negative influence on capital tax rates, which is in accordance with the tax competition theory.

Let us summarize the results reached by the above mentioned authors.

I: *The summary of the theoretical background*

Author	Year	Title of the paper	Time period	Methods used	Results
Winner	2005	Has Tax Competition Emerged in OECD Countries?	1965–2000	regression analysis	Negative relation between the capital mobility and tax burden on capital.
Redoano	2003	Fiscal Interactions Among European Countries	1980–1995	regression analysis	Positive relation between the tax rates of neighboring countries.
Deveraux, Lockwood, Redoano	2002	Is there a Race to the Bottom?	1983–2000	regression analysis	Positive relation between the tax rates of neighboring countries.
Altshuler, Godspeed	2002	Follow the Leader? Evidence on European and U.S. Tax competition	1968–1996	regression analysis	Positive relation between the tax rates of neighboring countries.
Bretchger, Hettich	2002	Gobalization, Capital Mobility and Tax Competition	1967–1996	regression analysis	Negative relation between the openness of the economy and tax burden on capital.
Rodrik	1998	Why Do More Open Economies Have Digger Governments?	1965–1991	regression analysis	Negative relation between the openness of the economy and tax burden on capital.

Source: research done by the authors

In the tax competition theory literature there can be found many theoretical models. The capital on the Internal Market of the European Union can be considered to fully mobile. If we apply the theoretical model of international tax competition on the European Union, we considered the model with countries which are similar. In those similar countries the good is produced with the usage of the capital and labor (e.g. Zodrow, 1986 and Mieszkovsky, 1986). The good are sold not only to the households but also to the governments which transforms it into the public good. If we consider the capital to be fully mobile, the households, firms and government can decide where to invest the capital which they own, to reach the highest net-of-tax return. The households then retrospectively from the wage and net capital profits finance its consumption. The aim of the households is to maximize their utility. The model expects that the public good in the country is finan-

ced by the government from the capital tax returns – only form the tax revenues from the capital situated in the country[7]. I. e. the government has to choose the tax rate which ensures the possibility to finance enough public good, but consequently does not cause the capital outflow (for the capital outflow would cause the decrease in the tax revenues from capital for the public good financing). When the openness of the economy is very high, the government is not able to set up such a capital tax rate to be able to provide enough sources for public good financing and therefore the government has to increase tax burden on other factors. The highest share of tax revenues appears to taxes on labor. The labor, on the contrary of corporations, is assumed to be immobile (Puhani, 1999). Capital taxes could be easy compensated by taxes on labor. In accordance with the compensation theory the higher tax burden on labor as a result of increase in the capital mobility is compensated to the households in the form of increased level of the public good[8] provided by the government.

Based on the above mention theoretical model, the following hypothesis can be formulated:

- The higher capital mobility is, the lower is tax burden on capital.
- The higher capital mobility is, the higher is tax burden on labor.

Bucovetsky (1991) and Wilson (1991) has further introduced another aspect of the model – they claim that country with a small open economy should have lower capital tax rates (capital supply is more elastic) than the country with large economy, for the large country has the power through its tax policy to influence world interest rates. In that connection, there can be formulated third hypothesis:

- The smaller country with the smaller economy is, the lower is tax burden on capital.

The authors maintain the second strand in the tax competition theory – they try to find out the empirical evidence of negative relation between the capital mobility and the level of capital tax rates. Therefore they formulate following hypothesis H1:

- The increase in the capital mobility leads to the decrease in the tax burden on capital in the selected countries of the European Union.

On the contrary, between the tax burden on capital and tax burden on labor they try to find negative relation, so they formulate following hypothesis H2:

- The decrease in the tax burden on capital leads to the increase in the tax burden on labor in the selected countries of the European Union.

The cointegration analysis is used from the reason of non-stationary time series. The results of the cointegration are tested on 5% and 10% significance level.

Data

Firstly, the authors focus on the testing of hypothesis H1 (the increase in the capital mobility leads to the decrease in the tax burden on capital in the selected countries of the European Union). In order to test the hypothesis the authors have to consider how the tax burden on capital can be measured (in relation to the capital mobility).

Instead of using the variable capital tax revenue as a percentage of GDP the authors have decided to keep the concept of effective tax rates, for this concept is commonly used in that types of economic analysis. The concept of using capital tax revenues as percentage of GDP is criticized by Bretschger (2002) and Hettich (2002) – they quotes that capital tax revenue as percentage GDP is no strategic variable for the government – the government can determine the tax burden by the tax rate and the tax base but not the GDP. The effective tax rates on the contrary to the statutory ones take into account the existence of other factors which influence the rate as tax exemptions, tax deductions, the methods used for tax base construction or tax credits.

In case of effective capital tax rate estimation following equation was used:

$$\frac{t\_rev}{tax\_base} \approx \frac{c\_rev}{n\_savings + n\_capital}, \qquad (1)$$

where t_*rev* represents revenues from the taxes, *tax_base* represents the tax base, *c_rev* represents tax revenues from capital taxes in national currencies, *n_savings* represents net national savings[9] and *n_capital* is defined as the balance of the capital flows of the country with the rest of the world.

The indicator of the capital mobility is based on the dynamic indicators arising from the balance of payments. The equation (2) is defined as the absolute

7 The authors do not consider the existence of double taxation elimination treaties between the EU Member States.

8 Public good is for example education, health service or police.

9 The gross national savings are defined as the part of disponsible income, that was not used for the consumption. The net savings are reduced to fixed capital usage.

amount of Financial Account balance as a percentage of GDP (Winner, 2005).

$$capital\_mobility = \left| \frac{FA}{GDP} \right| \quad (2)$$

Financial Account does not unambiguously represent the capital mobility. The indicator, which would better meet the needs of this paper, is represented by the balance of the Portfolio Investments (3). The authors have used both of the above mentioned indicators to measure capital mobility in the empirical analysis.

$$capital\_mobility = \left| \frac{portfolio\_investments}{GDP} \right| \quad (3)$$

On the contrary to the hypothesis H1, the authors have concentrated on the tax revenues from capital and individual income while testing hypothesis H2 (the decrease in the tax burden on capital leads to the increase in the tax burden on labor in the selected countries of the European Union). The authors did not use the effective tax rate in that analysis, for the differences (such as tax base constructions, tax exemptions, tax deductions, tax credits, different accounting systems, tax sales, etc.) in the taxation of individual incomes are so complicated that there can not exist unified method for effective tax rate calculation. The use of effective tax rate in the testing of hypothesis H1 was inevitable; in case of testing hypothesis H2 it would distort the results. The tax revenues are measured in national currencies.

The database for the empirical analysis represented quarterly time series of the variables in the monitored EU Member States and Bulgaria for the period 1991–2005. The selection of the countries and the number of the observations are influenced by the data accessibility. The source of the data was Eurostat.

Cointegration analysis

Macroeconomics time series used in the analysis involve nonstationary and trending variables. The cointegration analysis assume if two series are integrated to different orders, then linear combinations of them will be integrated to the higher of the two orders. *„If y_t and x_t are each drifting upward with their own trend, then unless there is some relationship between those trend, the difference between them should also be growing, with yet another trend. ... if the two series are both I(1), then this partial difference between them might be stable around a fixed mean. The implication would be that the series are drifting together at roughly the same rate"* as reports Greene (2003). Such as these time series are cointegrated.

There exists a cointegrating vector [1; –β]. In this paper will be used Johansen's approach, which is based on estimation of the Vector Error Correction Model (VECM) by maximum likelihood under various assumptions about the trend or intercept parameters and the number of cointegrating vectors, and then conduct likelihood ratio tests as states Johansen (1988), Johansen (1991) and Johansen (1994). The source data are natural logarithms of the series as quotes Seddighi (2000). The Hannan-Quinn and Schwarz information criteria were used to identify the lag order *p* (Bierens, 2004).

II: *Cointegration analysis of capital mobility I, 1991–2005*

Capital taxes rate	Capital mobility (financial account)				
	cointegration parameters	β parameter of cointegration vector	Ho: there exists a cointegration vector	number of observations	coefficient of correlation
Belgium	p=4, r=1	**-0,506397	Ho accepted	15	0,0443
Denmark	p=7, r=1	**-0,162053	Ho accepted	28	0,1871
Germany	p=2, r=1	**-0,847649	Ho accepted	59	***0,4610
Spain	p=8, r=1	-0,187912	Ho rejected	27	***0,7443
France	p=4, r=1	0,675176	Ho rejected	27	-0,0562
Italy	p=1, r=2	unsignificant result		47	**0,2882
Netherlands	p=1, r=2	unsignificant result		55	-0,1402
Austria	p=13, r=1	-0,767262	Ho rejected	43	-0,0474
Slovenia	p=13, r=1	-0,097165	Ho rejected	43	0,0490
Finland	p=8, r=2	unsignificant result		30	-0,0328
Sweden	p=1, r=1	**-0,007074	Ho accepted	47	*-0,2714
United Kingdom	p=15, r=1	**-0,816926	Ho accepted	52	0,1881

Notes: Conclusion in parantheses. *** significant at 1%, ** significant at 5%, *significant at 10%.
r is a number of cointegration vectors
Source: own calculation, software EasyReg 1.12, Statgraphics 5.1

Table II shows the cointegration analysis of capital mobility and capital tax rates. If the number of cointegrated vectors is equal to 1, the parameter β is tested on the 5% and 10% significance level. Null hypothesis is defined, there exists a cointegrating vector. In case that the hypothesis Ho is rejected, or the number of cointegrated vectors is equal to zero, no relation between the variables was found, the regression is only spurious. The Table shows also the coefficient of correlation for the comparison – in case of Spain the correlation coefficient is statistically significant, but the cointegration analysis indicates only spurious regression. The reason of that is nonstacionarity of the time series. In case that the number of cointegrated vectors is higher than 1, the existence of the relation between the time series can not be unambiguously identified. The reason of that can be the small number of observations or the character of the data, which does not allow the robust cointegration analysis.

In the table III, there is tested relationship between the capital taxes rate and capital mobility measured with portfolio investments. In comparison with table II there was found statistically significant negative relation between the capital mobility and the level of capital tax rate. This relation was not proved in case of Sweden and United Kingdom. The correlation coefficients of those countries show much lower closeness in table III. Statistically significant relation was proved in case of Germany, but the coefficient β shows lower impact of the capital mobility on the capital taxes. On the contrary, the impact of the capital mobility measured with the portfolio investment turned to be stronger in case of Belgium and Denmark – even though the number of the observation was very low.

III: *Cointegration analysis of capital mobility II, 1991–2005*

Capital taxes rate	Capital mobility (portfolio investments)				
	cointegration parameters	β parameter of cointegration vector	Ho: there exists a cointegration vector	number of observations	coefficient of correlation
Belgium	p=4, r=1	**-0,931450	Ho accepted	15	0,2793
Denmark	p=1, r=1	**-0,679020	Ho accepted	15	0,0279
Germany	p=2, r=1	**-0,211313	Ho accepted	59	0,1017
Spain	p=7, r=1	-0,171667	Ho rejected	27	*0,3673
France	p=8, r=1	-0,535257	Ho rejected	27	-0,1058
Italy	p=1, r=2	unsignificant result		47	0,1928
Netherlands	p=17, r=1	-0,121374	Ho rejected	55	***0,3825
Austria	p=13, r=1	**-0,718355	Ho accepted	43	-0,0491
Slovenia	p=7, r=2	unsignificant result		29	-0,1265
Finland	p=8, r=1	0,340961	Ho rejected	30	*-0,3108
Sweden	p=14, r=2	unsignificant result		47	-0,0441
United Kingdom	p=15, r=1	0,495780	Ho rejected	52	-0,0616

Notes: Conclusion in parantheses. *** significant at 1%, ** significant at 5%, *significant at 10%.
r is a number of cointegration vectors
Source: own calculation, software EasyReg 1.12, Statgraphics 5.1

The hypothesis H2 is tested in the table IV. In case that the Hannan-Quinn and Schwarz information criteria have identified different parameters of the cointegration analysis, the table shows both of them. Even though the correlation coefficients have very high values showing positive relation, it was not identified by the cointegration analysis except France, Austria and United Kingdom. In those three countries (on the contrary to the results of the correlation analysis) was identified statistically significant negative relation. The authors consider this correlation analysis as the typical example of the spurious correlation.

IV: *Cointegration analysis of EU timeseries, 1991–2005*

Taxes on income, receivable	Capital taxes, receivable				
	cointegration parameters	β parameter of cointegration vector	Ho: there exists a cointegration vector	number of observations	coefficient of correlation
Belgium	p=19, r=1	-0,905471	Ho rejected	60	***0,6295
Czech republic	p=4, r=1	-0,745441	Ho rejected	42	***0,7522
Denmark	p=19, r=1	0,381566	Ho rejected	60	***0,6488
	p=1, r=1	0,589172	Ho rejected	60	
Germany	p=19, r=1	-0,534046	Ho rejected	60	***0,4837
Greece	p=4, r=1	0,706018	Ho rejected	26	-0,1687
Spain	p=8, r=2	unsignificant result		28	***0,6892
France	p=17, r=1	**-0,957216	Ho accepted	58	***0,7631
Ireland	p=9, r=1	-0,533339	Ho rejected	39	***0,5759
Italy	p=18, r=1	-0,469383	Ho rejected	60	0,1114
Lithuania	p=7, r=1	0,783912	Ho rejected	26	-0,0339
Luxembourg	p=18, r=1	-0,531992	Ho rejected	60	***0,7781
Malta	p=8, r=1	0,117677	Ho rejected	28	**0,4723
Netherlands	p=17, r=1	-0,067843	Ho rejected	60	***0,7120
	p=1, r=1	0,3486602	Ho rejected	60	
Austria	p=1, r=1	**-0,929954	Ho accepted	60	***0,3850
Poland	p=18, r=1	-0,529722	Ho rejected	59	***0,7536
	p=17, r=1	-0,56074	Ho rejected	59	
Portugal	p=9, r=0	no cointegration vector identified		60	*0,2314
Slovenia	p=13, r=2	unsignificant result		44	-0,0034
Finland	p=19, r=1	-0,570387	Ho rejected	60	***0,8229
	p=2, r=1	-0,627589	Ho rejected	60	
Sweden	p=9, r=0	no cointegration vector identified		32	**0,3942
United Kingdom	p=18, r=1	**-0,97666	Ho accepted	60	***0,7866
Bulgaria	p=4, r=1	0,069865	Ho rejected	28	-0,1864
Norway	p=2, r=1	-0,783011	Ho rejected	59	***0,8796

Notes: Conclusion in parantheses. *** significant at 1%, ** significant at 5%, *significant at 10%.
r is a number of cointegration vectors
Source: own calculation, software EasyReg 1.12, Statgraphics 5.1

In case that the cointegration analysis has identified statistically significant relation (positive/negative) in tables II, III and IV, it has been in accordance with the assumptions of competition tax theory. This fact proves the ability of the cointegration analysis to identify the existence of the relation between data.

The result of the empirical analysis is that the authors unambiguously do not reject the hypothesis about the existence of negative relation between the capital mobility and the level of capital taxes in case of Belgium, Denmark and Germany. The relation has also been proven in case of Sweden, United Kingdom and Austria. The results in those countries are dependant on the methodology used for capital mobility measurement. The hypothesis was rejected in case of Spain, France, Slovenia, Netherlands and Finland. In case of Italy the existence of the relation can not be unambiguously identified by using cointegration analysis.

The existence of negative relation between the tax revenue from the capital taxation and tax revenue from the labor taxation was rejected in case of 19 out of 23 analyzed countries. In case of Portugal and Sweden the cointegration vector has not been identified. In case of France, Austria and United Kingdom the hypothesis was not rejected on 5% and 10% significance level. In case of Sweden the existence of the relation can not be unambiguously identified by using cointegration analysis.

Discussion

Garret (2002) and Mitchell (2002) report the positive relation between the capital mobility and the level of capital tax rates. In relation to the fact that in this study the regression analysis was used (which is based on the same principle as correlation coefficient) we assume that the research made by the above mentioned authors is influenced by the existence of spurious regression.

Another problem of the researches summarized in table I represents the length of the analyzed period. The relation between the capital mobility and the level

of capital tax rate is in such a long time period influenced by more factors than only the size of the country measured by GDP, unemployment, inflation rate or the amount of the state debt. Very important influence have factors as interest differential, exchange rate risk, risks connected with the integration of world capital markets, political risks, risks connected with balance of payments and the participation in the international trade, as reports Lacina (2001). All the factors acting in the long time period can not be included into the empirical analysis. The length of the analyzed period can cause the existence of the spurious regression. The probability of their existence is increased by the nonstationarity of the analyzed time series.

In case that the relation between the capital mobility and the level of capital tax was found, the relation has always been negative – as in the case of Belgium, Denmark, Germany, Sweden, United Kingdom and Austria. The results of the presented cointegration analysis, which are in accordance with the results of the empirical analysis done by Winner (2005), Bretschger (2002), Hettich (2002) and Rodrik (1998), can not be presented by the authors as generally valid for all the analyzed countries, for the level of the capital tax is also influenced by other factors than capital mobility. The influence of the capital mobility is statistically not significant in the rest of the analyzed countries.

The authors tried to prove the existence of the shift in the tax burden from capital on labor by using the variables in the form of the absolute amounts of tax revenues from that type of taxes. The results are not distorted by the factors as tax sales, tax exemptions or tax deductions (for there is an increase in the GDP without any influence on the tax revenue) and the time lag between GDP creation and payment of the tax. The main idea of the relation between the tax burden on capital and on labor is following: to maintain the same level of the sources for public good financing - the revenues from the capital tax (decreased as a result of increased capital mobility) has to be compensated by the increased tax burden on labor.

Winner (2005), Bretschger (2002), Hettich (2002) and Rodrik (1998) are using effective tax rates in their researches. However, the shift in the tax burden analyzed in the above mentioned studies can be only spurious. The empirical analysis made in the presented study has proved the shift in the tax burden from capital on labor (i.e. the negative correlation between the tax revenue from the taxation of capital and tax revenue from the taxation of labor) only in three countries (United Kingdom, Austria and France) out of 22. The cointegration analysis has not revealed the unambiguous result in case of Slovenia and Spain. The reason is the character of the data and the number of the observations in the time series.

Conclusion

The empirical analysis has proved the negative relation between the capital mobility and the level of capital tax rate in case of Belgium, Germany, Sweden and United Kingdom. While using the absolute amount of portfolio investment as a percentage of GDP as the capital mobility indicator, the negative relation was proved in case of Belgium, Denmark, Germany and Austria. The negative relation had different intensity in each state. In case of the rest of the analyzed countries, the statistically significant relation was not proved. The negative influence of capital mobility increase on the level of capital tax can not be generalized on the all the analyzed countries.

Based on the above mentioned, the general fears from the race to the bottom are not reasonable, because the negative relation was proved only in some of the analyzed countries. The existence of the one of the main factors, which is considered by OECD to be the indicator of the harmful tax competition, was not generally proved[10]. Because the fiscal and taxation policy of EU Member States is in the competence of each Member State, it is necessary to judge the harmfulness of the tax competition individually and according that to select the tools and measurements for the fight against it. The above mentioned is also related for the fight against the harmful tax competition on the field of the European Union.

In case of the analysis of the relation between the tax revenue from the taxation of capital and the tax revenue from the taxation of labor, the negative relation was proved only in three countries (France, Austria and United Kingdom) out of 22 analyzed countries. The results has not proved the validity of the compensation theory in tax competition theory – that the decrease in the tax burden on the capital (as a result of the increase in the capital mobility) is compensated by the increase in the tax burden on labor. The above mentioned proves that in the frame of theoretical model of international tax competition can not be claimed that the public good is financed by tax revenues from capital tax and tax on labor only. It is necessary to search for the relation also with the different type of taxes in order to avoid the underprovision of public goods.

10 See Harmful Tax Competition – An Emerging Global Issue, OECD, 1998.

SUMMARY

The paper is focused on the verification of the hypothesis that increasing capital mobility leads to the decrease in the tax burden on capital and also that decrease in the tax burden on capital leads to the increase in the tax burden on labor. The hypothesis is tested for EU Member States in the time period 1991–2005 with using cointegration analysis. In case that the cointegration analysis has identified statistically significant relation (positive/negative) in tables II, III and IV, it has been in accordance with the assumptions of competition tax theory. This fact has proved the ability of the cointegration analysis to identify the existence of the relation between data. The empirical analysis has proved the negative relation between the capital mobility and the level of capital tax rate in case of Belgium, Germany, Sweden and United Kingdom. While using the absolute amount of portfolio investment as a percentage of GDP as the capital mobility indicator, the negative relation was proved in case of Belgium, Denmark, Germany and Austria (see table III). The negative relation had different intensity in each state. In case of the rest of the analyzed countries, the statistically significant relation was not proved. The negative influence of capital mobility increase on the level of capital tax can not be generalized on the all the analyzed countries. The existence of the one of the main factors, which is considered by OECD to be the indicator of the harmful tax competition, was not generally proved. In case of the relation between the tax revenue from the taxation of capital and the tax revenue from the taxation of labor, the negative relation was proved only in three countries (France, Austria and United Kingdom) out of 22 analyzed countries (see table IV). The results has not proved the validity of the compensation theory in tax competition theory – that the decrease in the tax burden on the capital (as a result of the increase in the capital mobility) is compensated by the increase in the tax burden on labor. The above mentioned proves that in the frame of theoretical model of international tax competition can not be claimed that the public good is financed by tax revenues from capital tax and tax on labor only. It is necessary to search for the relation also with the different type of taxes.

SOUHRN

Empirická analýza daňové soutěže v Evropské unii

Příspěvek se zabývá testováním hypotézy, že růst kapitálové mobility vede k poklesu daňového zatížení kapitálu a dále že tento pokles daňového zatížení kapitálu vede k vyššímu daňovému zatížení práce. Hypotéza je testována pro členské země EU v letech 1991–2005 s využitím kointegrační analýzy. V případě, že v tabulkách II, III a IV kointegrační analýza identifikovala statisticky významný vztah, je výše uvedené v souladu s teorií daňové soutěže. Tato skutečnost dokazuje schopnost kointegrační analýzy identifikovat existenci vztahů mezi daty. Empirická analýza prokázala negativní vztah mezi kapitálovou mobilitou a daní z kapitálu v případě Belgie, Německa, Švédska a Velké Británie. V případě, že k měření kapitálové mobility bylo užito absolutní velikosti portfoliových investic v % HDP, byl negativní vztah v různé intenzitě prokázán u Belgie, Dánska, Německa a Rakouska (viz tabulka III). U ostatních zemí nebyla prokázána statisticky významná závislost. Negativní vztah mezi kapitálovou mobilitou a úrovní daní z kapitálu nelze zevšeobecnit na všechny země. Existence jednoho z hlavních faktorů škodlivé daňové soutěže dle OECD tedy nebyla všeobecně prokázána. V případě hledání závislosti mezi daňovým výnosem z daní z kapitálu a daňovým výnosem ze zdanění práce byla negativní závislost prokázána pouze u třech (Francie, Rakousko a Velká Británie) z 22 testovaných států (viz tabulka IV). Výsledky neprokázaly platnost kompenzační teorie, že pokles daňového zatížení kapitálu (jako důsledek růstu kapitálové mobility) je kompenzován růstem daňového zatížení práce. Výše uvedené dokazuje, že v rámci teorie mezinárodní daňové soutěže nelze tvrdit, že veřejné statky jsou financovány pouze z příjmů z daní z kapitálu a práce. Je proto třeba hledat vztahy i mezi jinými druhy daní.

daňová soutěž, kapitálová mobilita, daňové břemeno, kointegrační analýza, korelace

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Address

Ing. Danuše Nerudová, Ph.D., Ústav účetnictví a daní, Ing. Svatopluk Kapounek, Ph.D., Ústav financí, Mendelova zemědělská a lesnická univerzita v Brně, Zemědělská 1, 613 00 Brno, Česká republika