

Tax Competition in the European Union - Evidence from Panel Data

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Abstract

After the last EU enlargement the problem of tax competition is more complex and this article tries to reflect the amplitude of this phenomenon. Some factors have a positive influence of tax competition and one of this is capital mobility, but others have a negative impact like public debt or budget deficit. Using a panel data for EU countries, analyzed on 1995-2004, we find significant correlations between the implicit tax rate of business income and corporation profits and the budget deficit, public debt, GDP per capita and the degree of openness of countries, the last variable is used as a proxy for capital mobility. The tax competition is specific only for direct taxation and for this reason we choose as dependent variables an indicator which is reflecting the effective tax burden on business income and corporations profits - the implicit tax rate of business income and corporations profits.

The main conclusion is that every EU member states have a different degree of tax competition and this degree is limited by the EU requires concerning the budget deficit which have not exceed 3% of GDP and 60% for public debt.

Keywords: tax competition, panel analysis, harmonization, tax burden

1. INTRODUCTION

The European Union is the largest economic entity based on the union of 27 states with an area of 4,422,773 km². With more than 490 million inhabitants and a Gross Domestic Product of above EUR 11,500 billion¹, the European Union is a major economic player in the world.

After the last EU enlargement in 2007 the problem of tax competition is more complex and this article tries to reflect the amplitude of this phenomenon. Within the European Union space fiscal policy is situated at the border between harmonization and fiscal competition.

Policy actions in corporate taxation at the EU level are relatively infrequent. This reflects both an institutional design that promotes subsidiarity in tax matters and rather ambiguous results on both the existence and the likely effects of corporate tax competition in Europe (Nicodeme, 2006).

In now days the European Union is engaged in an intensified debate about international tax competition over capital income taxes. The controversy was determined by the series of competitive cuts in corporate income taxes that EU countries began to undertake shortly

¹ www.wikipedia.com

after the implementation of the reforms enhancing financial market integration in the early 1980s.

The first move was made by the United Kingdom with a cut of its corporate income tax rate from 52 to 35 percent, and since then other European countries have largely followed suit by lowering corporate tax rates and by adjusting other elements of their tax structure, like Ireland, for example, has cut its corporate tax rate down to 12.5%² and some of ex-communist countries which have adopted a flat tax at very low level (Mendoza & Tesar, 2003, p.1).

The supporters of harmonization consider that through harmonization is assuring the complete free of movements for capitals, goods, services and persons in European Union. The tax competition is criticized because is seen as a factor for tax base erosion in many countries, especially, in the old member states which have a high tax rate comparative with the new member states. But this argument is not sustained by the empirical studies; on the contrary in the long run time tax competition can determine an increasing of tax base because the reduction of tax rate let to the contributors more revenues which can be reinvested and more used efficient by the contributors comparative with the government.

The opponents of tax competition are afraid that tax revenue will be decreasing and the welfare state it will be affected, but this phenomenon is possible to happen only on the short time because tax competition leads to an increasing of tax base in the long run time.

Our study is based on the dual problem of *tax competition* - *tax harmonization*, which is the most controversial problem in the EU in now days. The harmonization is considered the optimal solution for tax policy in the EU, because through harmonization is assured the optimal level of tax revenues and the tax competition is seen harmful because determines a suboptimal level of public goods providing.

The result of tax competition may well be a tendency towards less than efficient levels of output of local services. In attempting to keep taxes low to attract business investment, local official may hold spending below those levels for which marginal benefits equal marginal costs (Oates, 1972).

2. REVIEW OF THE LITERATURE

The idea of tax competition is not new; it can be finding in the famous Wealth of Nations of Adam Smith. The debate on tax competition has started with the model developed by Tiebout (1956)³. The model examines competition among governments over mobile households and it is assumed that households select the region according to their preferences for the mix of taxes and public expenditures through voting with their feet. Tiebout argues that competition for mobile households is welfare

² Mendoza, E. G., Tesar, L.L., 2003, "Winners and Losers of Tax Competition in the European Union", Working Paper 10051, NATIONAL BUREAU OF ECONOMIC RESEARCH, <http://www.nber.org/papers/w10050>

³ Tiebout, C., 1956, "A Pure Theory of Local Government Expenditures", Journal of Political Economy 64, 416-24

enhancing. Integration of Europe follows the conclusions from Tiebout model applied at the government level, which are competing for capital and for firms.

In the literature are many points of views that try to reveal the fiscal externality generated by tax competition through the race of the bottom in tax rate and underprovision of public goods in equilibrium like in basics models of tax competition developed by Zodrow & Mieszkowski (1986), Wilson (1986), and surveyed by Wilson (1999).

This view is contrasting to the thinking of conservative policymakers and the Public Choice literature. Brennan and Buchanan (1980), or McLure (1986) have argued that competition in general, and competition among governments in particular, is beneficial because it reduces government waste and disciplines politicians.

After '90 many of the former communist economies adopt the idea of tax competition and a new model of tax competition is developed - **the new geographical model** - based on the idea that production concentration in some area leads to avoiding capital migration due to multiples rents can be obtained. The theory of geographical model of tax competition is developed by Ludema & Wooton (2000), followed by Andersson & Forslid (2003) and Baldwin & Krugman (2003). Krogstrup (2003), describes the important effects of agglomeration economies on tax competition through reducing the outflow of capital in the regions with so kind of economies.

Policymakers tend to overspend and absorb government resources for their own objectives and without efficiency for citizens. While this view is more popular in the U.S. than in Europe, it is shared to some extent by those Europeans who are concerned about too much spending and waste of resources at the European Union level.

If tax rates are cut in the process of competition, government expenditures have to be reduced; this helps to avoid waste and inefficiencies in the public sector. (Boss, 1999)

We can conclude that literature is divided in two views on tax competition. There are the models where tax competition leads to inefficiently low taxes due to positive externalities, and reduces welfare, may support the notion that international cooperation between countries (i.e. like in the EU) can alleviate the downward pressure in tax rates and leave all countries better off. But there is also a whole group of models which reveal the positive effects of tax competition through reducing the inefficiency in government spending and stimulate the optimal ratio *taxes-public goods* for contributors which have the possibility to choose the jurisdiction which offer the best ratio.

3. THEORETICAL BASIS

Liberalization of foreign exchange laws, which accelerated in 1980s led to increased capital mobility and as a result increased competition between countries over capital. This result holds although governments act in the best interest of their countries. Thus, tax competition is harmful and some tax coordination among countries may improve welfare.

Tax competition is referring to fiscal policies operated in one country (using as main instruments low tax rate but also some deductions or exemptions or even tax negotiating) which aimed for that country a competitive advantage in labor and capital attracting, and economic sustained growth.

The most complete definition of tax competition is given by Wilson & Wildasin (2001), "as noncooperative tax setting by independent governments, under which each government's policy choices influence the allocation of a mobile tax base among regions, represented by these governments".⁴

Tax competition exists when governments are encouraged to lower fiscal burdens to either encourage the inflow of productive resources or discourage the exodus of those resources. Oftentimes, this means a governmental strategy of attracting foreign direct investment, foreign indirect investment (financial investment), and high value human resources by minimizing the overall taxation level and/or special tax preferences. Although often presented as a benefit for capital, tax competition is generally a central part of a government policy for improving the lot of labour by creating well-paid jobs.⁵

Many countries begin to reformulates their fiscal policies for become more competitively. But not only the low tax rate can make a country more competitive, in now days another instrument seems to be more important and this is simplicity and operability of fiscal procedure with the reduction of bureaucracy.

Due to different grade of mobility for production factors the tax competition is more pregnant in the case of capital income taxation, because the capital is the most mobile production factor.

Tax competition describes a situation where the fiscal activities in one jurisdiction induce fiscal externalities in other jurisdictions (Winner, 2005).

We consider that a definition for tax competition can be formulate thus: tax competition is a fiscal reaction mechanism, which take place between many states, mechanism which use as main instruments changes of tax rate or tax base, with the aim of attracting new capitals or labor forces, or as a direct answer to the same behavior from to another state trying to avoid capital or labor forces migration.

Taking into account the field of manifestation we can distinguish between vertical tax competition (between the governments situated at different levels) and horizontal tax competition (between the governments situated at the same levels).

4. METHODS AND RESULTS

Using the panel methodology through a multiple regression with estimation by random effects we try to demonstrate some hypotheses that reveals the main arguments favorable for tax competition.

⁴ Wilson, J.D. and Wildasin, D.E., 2004, "Capital tax competition: bane or boon?" , Mimeo
⁵ http://en.wikipedia.org/wiki/Tax_competition

Based on the hypotheses demonstrated in our model we can affirm that the best solution for European Union is harmonization for indirect taxes and competition for direct taxes. Tax competition is necessary in the future tax policy of EU as while as tax competition is under some macroeconomic constraints as budget deficit and public debt. We can appreciate that this constrains are more efficient than other solution for eliminating and combating so called *harmful tax competition*.

Our analysis is for a period of ten years, based on annual data. The dependent variable is implicit tax rate on capital and business income. We introduce control variable - public expenditures as percentage of GDP. We estimate the impact of budget deficit and public debt on the tax burden of capital in a standard random effects model. This article analyzes 27 countries, EU members in the present, for 1995-2004 periods. We have taking into consideration all 27 countries even in that period weren't all EU members, but for our study is important especially for predicted what it would be in the future and taking into account the major differences between the old and the new member states.

Our start point was the study of Winner (2005), which demonstrated some of these hypotheses for OECD countries (*H1*. Higher capital mobility leads to a lower tax burden on capital).

We try to develop a specific model for EU taking into account the present day of EU countries, who are engaged in a race of tax competition under unequal starting conditions.

Unequal conditions means that although all EMU and prospective EMU Member States have to satisfy the two conditions of the stability pact (i.e. public debt lower than 60% of GDP and budget deficit lower than 3% of GDP) they do not start from equal starting positions concerning public debt and budget deficit (Halkos & Kyriazis, 2006)

Our motivation for this study was to confirm or not the impact of the two major constraints that have to accomplish EU members (3% for budget deficit and 60% for public debt as a ratio to GDP) on the degree of tax competition in which can be involved every EU member state. This idea it can be find at Halkos & Kyriazis (2006), but they are using game theory for demonstrate the limitation of tax competition under budget deficit and public debt in the EU countries.

A major limit of this study is to find the proper variable which indicates the measure of tax competition. In this case are many solutions. Because there isn't an indicator for tax competition we may consider the best measure for tax competition the evolution of tax burden. The tax burden also can be reveal using some indicators like - the statutory tax rate (but this rate is not so relevant because tax competition can use as instrument the changes in tax base without any change in tax rate).

But we consider the better indicator for evaluating the tax burden, the effective tax rate, calculated as a ratio between the effective tax and the tax base. At the European Union level data about the effective tax rate are very scarcely and in this case we choose an Eurostat indicator: **implicit tax rate an capital and business income** calculated

as a ratio between the effective tax on capital and business income and the effective tax base, taking into account all deductions or exemptions.

For our study is important to demonstrate four hypotheses to confirm or not the arguments in favor of tax competition:

H₁: Capital mobility is in favor of tax competition.

H₂: Budget deficit limit the degree of tax competition manifestation.

H₃: Public debt and public expenses are correlated with the degree of tax competition manifestation.

H₄: The most developed countries of European Union (the old members' states) are engaged in a low degree in the process of tax competition, compared with the new member states, which have a much lower GDP per capita.

Tabel 1. Estimation results from panel regression

Independent variable	DEPENDENT VARIABLE: IMPLICIT TAX RATE ON CAPITAL AND BUSINESS INCOME			
	(1)	(2)	(3)	(4)
Constant	19.39 (0.00)	24.48 (0.00)	28.89 (0.00)	-0.09 (0.99)
DB(Budget deficit)	0.31*** (0.00)	0.23** (0.02)	0.27** (0.01)	0.61*** (0.000)
DP(Public debt)		-0.06*** (0.005)	-0.06** (0.01)	-0.13*** (0.001)
PIBLOC (GDP per capita)		0.26*** (0.00)	0.23** (0.01)	-0.14 (0.30)
DESCH (Openness)		-0.06*** (0.000)	-0.06*** (0.000)	0.01 (0.42)
INF (Inflation)				-0.05 (0.29)
POP (Population)				0.16 (0.55)
UES (Country area as percentage of EU area)			-0.22 (0.53)	0.43 (0.79)
EXCH (Exchange rate)				-0.001 (0.21)
CONSPIB(Consumption as percentage of GDP)			-0.05 (0.64)	-0.06 (0.67)
GUVPIB(Government expenses as percentage of GDP)				-0.08 (0.72)
IPIB (Investments as percentage of GDP)				0.17 (0.25)
CREC (Economic Growth Rate)			-0.10 (0.37)	-0.02 (0.87)
CHPUBPIB (Public expenses % of GDP)				0.62*** (0.000)
Number of observations	212	203	203	170
R ²	0,78	0,81	0,81	0,85

Notes: p-values in parenthesis. ***Significant at 1%; **Significant at 5%; *Significant at 10%;

Tabel 2. Synthesis of independent variables

VARIABLES		EXPLICATIONS	SOURCE
DB	Budget deficit	As a percentage of GDP is the main constraint in front of tax competition.	Eurostat
DP	Public debt	For covering the budget deficit every country has two main solutions: raising the taxation or rising debt ratio. If the debt ratio is increase we are expected to have a lower taxation on the short time but in the long time the public debt it will be covered from rising taxation, and we can say that public debt is a delayed tax for contributors.	Eurostat
PIBLOC	GDP per Capita	It is an important difference between the old member states which have a high GDP per capita comparative with the new member and we expect to obtain some correlation between this variable and evolution of tax burden, implicitly the manifestation of tax competition.	PWT (Penn World Table)
INF	Inflation		Eurostat
POP	Population	Population of every member states as percentage of total EU population.	PWT
UES	Country area	Area of every member states as percentage of total EU area.	Wikipedia
EXCH	Exchange rate	For every national currency comparative with US \$.	PWT
CONSPIB	Consumption as percentage of GDP		PWT
GUVPIB	Government expenses as percentage of GDP	This variable has influence on the total tax burden.	PWT
IPIB	Investments as percentage of GDP		PWT
DESCH	Openness	Openness is used as a proxy for capital mobility, the main factor which is favorable for tax competition. Is calculated as a ratio between the sum of imports and exports to GDP.	PWT
CREC	Economic Growth Rate		PWT
CHPUBPIB	Public expenses as percentage of GDP		Eurostat

Equations used in our model are presented below:

- (1) $RIIK_{it} = c_0 + c_1 DB$
- (2) $RIIK_{it} = c_0 + c_1 DB + c_2 DP + c_3 PIBLOC + c_4 DESCH$
- (3) $RIIK_{it} = c_0 + c_1 DB + c_2 DP + c_3 PIBLOC + c_4 DESCH + c_5 UES + c_6 CONSPIB + c_7 CREC$
- (4) $RIIK_{it} = c_0 + c_1 DP + c_2 PIBLOC + c_3 DESCH + c_4 INF + c_5 POP + c_6 UES + c_7 EXCH + c_8 CONSPIB + c_9 GUVPIB + c_{10} IPIB + c_{11} CREC + c_{12} CHPUBPIB$

The starting equation (1) reveal the correlation between the dependent variable and the budget deficit and as we can see from the Table 1, the correlation is robustness and the independent variable is significant, but this is not the only variables which have influence of the tax competition. In the next equations we added more variables and for every variable we have been explicitly the result in the Table 3.

Tabel 3. Interpretation of model results

VARIABLES	
Budget deficit	Is the most significant variable and is direct correlated with the implicit tax rate and also with the tax competition. If one country have a high budget deficit, which is bigger than 3% from GDP it is very difficult for that country to engage in the tax competition race. One unit change in budget deficit is follow by 0.31 unit change in the same direction of implicit tax rate on capital and business income (from the first equation).
Public debt	It is a significant variable but the correlation is not so powerful like with budget deficit and the correlation is indirect because in most of the cases the budget deficit is covered by public debt and only after that by rising taxes. When taxes raising the public debt are lower and vice versa. From our study we can see that for countries like Italy, Greece, Belgium is difficult to engage in the tax competition because the level of their public debt is double for the level required by the EU.
GDP per Capita	It is significant variable only in the first three equations, the correlation is direct, and this confirm that we can see from descriptive analysis that the new members state which have a lower GDP per capita are more engaged in the tax competition comparative with the old members states (EU 15).
Inflation	It is not a significant variable but the correlation (even it is not relevant the result) is indirect that means that countries with the high inflation have are more engaged in the tax competition race.
Population	There is a weak and direct correlation; the large countries have high taxation than small countries.
Country area	The same situation like for the Population variable.
Exchange rate	Insignificant correlation.
Openness	This variable is significant correlated with tax competition because is a proxy for capital mobility which is an important factor in tax competition developing. If the capital mobility is very high there is the possibility to choose the jurisdiction with a lower taxation and this lead to reduce tax burden through tax competition.
Public expenses as percentage of GDP	Direct correlation and very strong, a low level a public expenses allow a lower taxation and this give the possibility for a country to be engaged in tax competition.

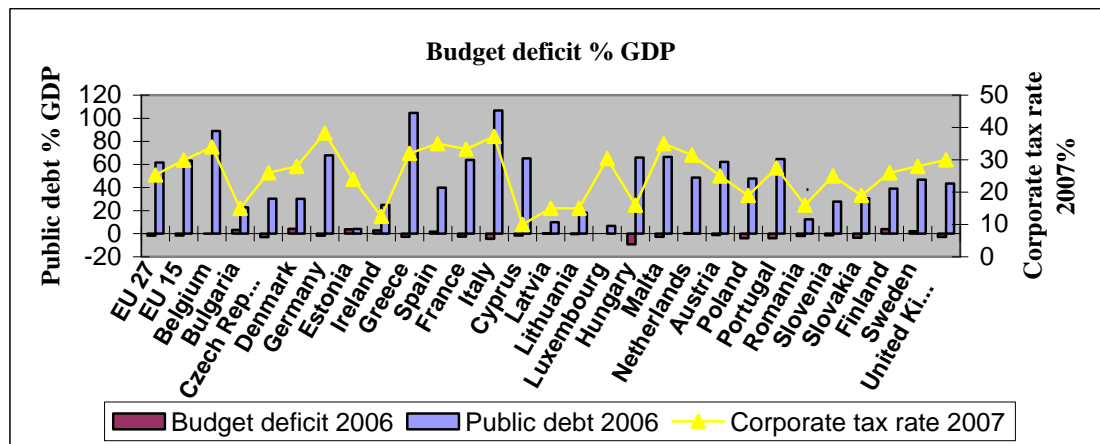
Note: The others variables (Consumption as percentage of GDP, Government expenses as percentage of GDP, Investments as percentage of GDP, Economic Growth Rate) have an insignificant correlation

From this empirical study we may conclude that the future of EU tax policy is based not only tax harmonization, but also on tax competition. The fight for combating the harmful tax competition is welcome but has to be done with the proper instruments and we consider that the satisfying the two conditions of the stability pact (i.e. public debt lower than 60% of GDP and budget deficit lower than 3% of GDP) are the best instruments for limiting the harmful tax competition.

5. DISCUSSION

Our empirical analysis is sustained by descriptive analysis. In the next figure we try to reflect the model correlation between corporate tax rate for 2007 and the main constraints for tax competition: budget deficit and public debt (dates for this are considered for 2006). We've been considered budget deficit and public debt for 2006 because the impact on corporate tax rate for the next year is more robust.

Figure 1 Correlation between statutory corporate tax rate and budget deficit and public debt.



Source: authors calculations based on Eurostat

From the figure above we can see that countries like Estonia, Latvia, Lithuania, Luxemburg, Romania accomplish the constraints concerning the level of budget deficit and public debt and this allow them to imply in the tax competition race through lower tax rate on capital, especially on corporate profits. In the opposite side are countries like Belgium, Greece, Italy or Hungary with a very high level for public debt and for budget deficit.

Also we've been analyzed the evolution of statutory corporate tax rate for EU countries between 2007-1995 and as we can see from Figure 2 there are important changes. Bulgaria and Ireland have registered the most important reductions almost 30 percentage points, followed by Poland, Romania and Slovakia with more than 20 percentage points reduction. Only Finland has increased their tax rate but only 1 percentage point.

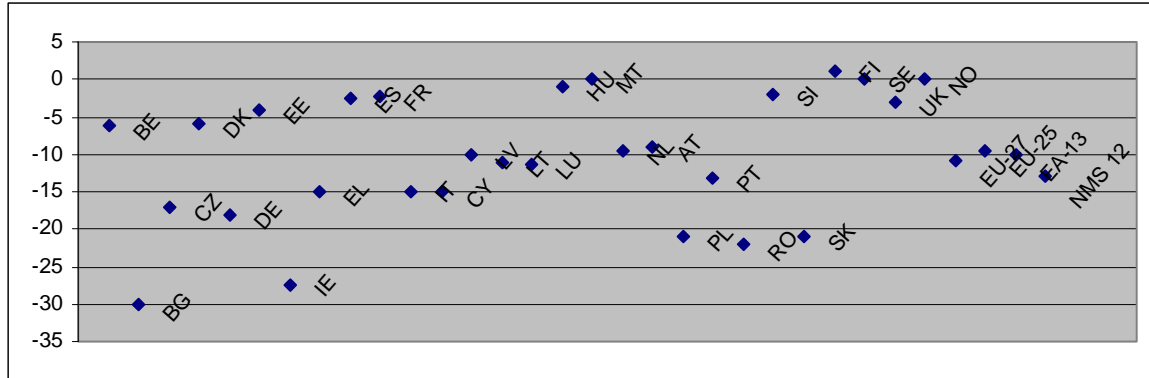
Tabel 4. Statutory tax rate on corporate income 1995-2007, in %

	1995	2000	2001	2002	2003	2004	2005	2006	2007	2007-1995
BE	40,2	40,2	40,2	40,2	34	34	34	34	34	-6,2
BG	40	32,5	28	23,5	23,5	20	15	15	10	-30
CZ	41	31	31	31	31	28	26	24	24	-17
DK	34	32	30	30	30	30	28	28	28	-6
DE	56,8	51,6	38,3	38,3	39,6	38,3	38,7	38,7	38,7	-18,1
EE	26	26	26	26	26	26	24	23	22	-4
IE	40	24	20	16	12,5	12,5	12,5	12,5	12,5	-27,5
EL	40	40	37,5	35	35	35	32	29	25	-15
ES	35	35	35	35	35	35	35	35	32,5	-2,5
FR	36,7	37,8	36,4	35,4	35,4	35,4	35	34,4	34,4	-2,2
IT	52,2	41,3	40,3	40,3	38,3	37,3	37,3	37,3	37,3	-15
CY	25	29	28	28	15	15	10	10	10	-15
LV	25	25	25	22	19	15	15	15	15	-10
LT	29	24	24	15	15	15	15	19	18	-11
LU	40,9	37,5	37,5	30,4	30,4	30,4	30,4	29,6	29,6	-11,3
HU	19,6	19,6	19,6	19,6	19,6	17,6	17,5	17,5	18,6	-1,1
MT	35	35	35	35	35	35	35	35	35	0
NL	35	35	35	34,5	34,5	34,5	31,5	29,6	25,5	-9,5
AT	34	34	34	34	34	34	25	25	25	-9
PL	40	30	28	28	27	19	19	19	19	-21
PT	39,6	35,2	35,2	33	33	27,5	27,5	27,5	26,5	-13,1
RO	38	25	25	25	25	25	16	16	16	-22
SI	25	25	25	25	25	25	25	25	23	-2
SK	40	29	29	25	25	19	19	19	19	-21
FI	25	29	29	29	29	29	26	26	26	1
SE	28	28	28	28	28	28	28	28	28	0
UK	33	30	30	30	30	30	30	30	30	-3
NO	28	28	28	28	28	28	28	28	28	0
EU27	35,3	31,9	30,7	29,3	28,3	27,1	25,5	25,3	24,5	-10,8
EU25	35	32,2	31,1	29,7	28,7	27,4	26,3	26	25,5	-9,6
EA13	38,5	35,8	34,1	32,8	32	31,4	30	29,5	28,5	-10
NMS 12	32,0	30,5	27,6	27,0	25,3	23,8	21,6	19,7	19,8	19,1

Source: Eurostat

The higher statutory corporate tax rate can be find in Germany, Italy, Belgium, Spain, France, Malta, where is above 30% and in the opposite side with the lower corporate tax rate are countries like Bulgaria, Cyprus, Latvia, Romania, with rates between 10 and 16 %. As we can see from the Table 4 in EU 27 the average statutory tax rate is higher with 5 percentage points comparative with the new member states NMS 12.

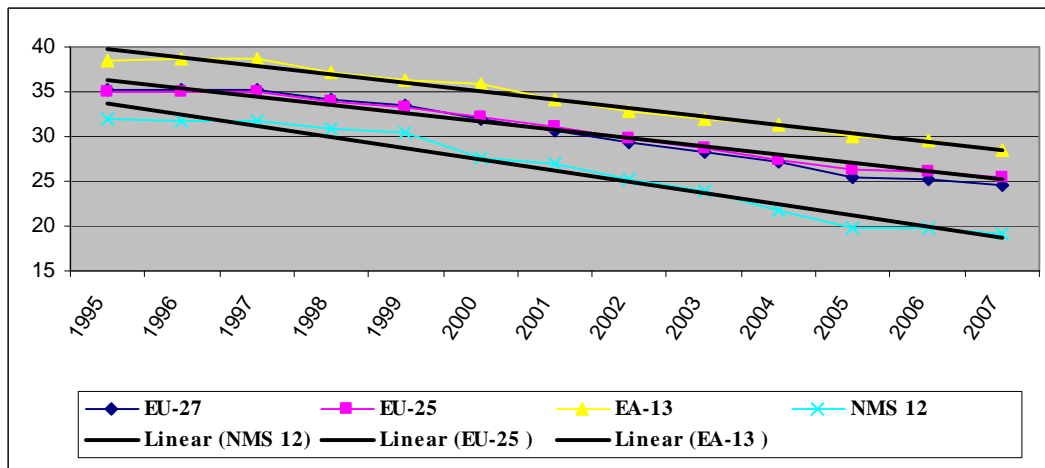
Figure 2. The statutory corporate tax reduction 2007-1995 in EU



Source: Eurostat

The Figure 3 reflect the decline trend of corporate tax rate comparative for EU members and for NMS 12 (new member states) the decline is more pregnant almost 13 percentage points comparative with the Euro area where is almost 10 percentage points.

Figure 3. Evolution of Corporate Tax Rate (calculated as average)



Source: authors calculations based on Eurostat

The most important measure to eliminate the diversity of company taxation in the EU (which causes several distortions and obstacles for the cross-border business activities) is introducing a Common Consolidated Corporate Tax Base (CCCTB) for the EU-wide activities of multinationals until the end of 2008. The minimum degree is a harmonized tax base which should be based on a single set of tax accounting principles using the International Financial Reporting Standards (IFRS) as a starting point.

If a common European tax base is introduced, common standards for loss offset will be necessary. As a general rule, accounting for potential losses should be the more liberal; the greater limitations in the field of inter-period loss compensation exist. The analysis shows that IFRS could provide elements of a common and harmonized European tax base in certain areas like

recognition of assets and liabilities, the determination of cost values, amortization, impairment and treatment of onerous contracts. (Oestreicher & Spengel, 2007, p. 28, p.39)

The CCCTB would contribute to greater efficiency, effectiveness, simplicity and transparency in company tax systems and should be based on International Accounting Standards and International Financial Reporting Standards (IAS/IFRS).

6. Conclusions

Taxes on capital should vanish in a world of increasing capital mobility or tend to be reduced to zero by national governments acting independently of one another. This is perhaps the most often result of standard tax competition theory. Further, tax competition should induce a shift of tax burden from mobile capital to immobile tax bases, especially labor.

Due to a "race to the bottom" taxes on capital income might no longer contribute sufficiently to the financing of public expenditure and it might become difficult or even impossible for governments to perform their usual tasks. An under supply of public goods and/or an erosion of the welfare state are feared to be the outcome of tax competition. At the very least, the tax burden might be shifted away from highly mobile capital towards immobile factors such as labour; this would raise labour costs and impede the reduction of unemployment especially in Western Europe. The harmonization of tax rates is thought to be the remedy at least for indirect taxes.

The opponents of tax competitions argues that this mechanism leads to a "race to the bottom" in corporate tax rate and other capital tax, but from the empirical model presented here results that this race to the bottom is not so easily to realized because of the two major constraints for EU member states: 3% budget deficit and 60% public debt from GDP. The conditions for competitors are not equal and the competition is not taking place in a perfect market. Only the tax competition in the perfect market can lead to disappearing of capital taxation under perfect mobility as predicted by the standard tax competition model.

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Education

2007-2003 Ph.D. Student in Finance, Babeş-Bolyai University
 Thesis title: *Tax havens and tax hells*
 2003-2002 Master in *Quantitative Economics and Finance*
 2002 Diploma Degree in Economics, Babeş-Bolyai University

Fields of Interest

Public Economics (Tax Competition, Tax Burden, Tax Havens, Income Redistribution, Political Economy)

International Economics (Foreign Direct Investment, Globalization)

Teaching Areas

Public Finance (Taxation, Comparative Public Finance, Company Financing and Management, Insurances)

Monetary policy