COMPARATIVE ANALYSIS OF TAX POLICIES APPLICABLE IN THE NEW AND ORIGINAL EU MEMBER-STATES

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ABSTRACT

The objective of this paper is to compare the tax policies of the twelve new countries of the European Union with those of the existing fifteen members. These countries have sometimes been criticized because of their tax-favoring policies especially lower rates and revenues and various tax exceptions, namely, for capital tax. Critical comments have even been made about the establishment of the "flat tax" in some of these countries. The indicators monitored in this comparison are the tax quota, the tax mix and the tax rates of corporations, as the taxes are potentially most affected by tax competition. Moreover, the focus is on the effective taxation of capital, labor and consumption, measured by "implicit tax rates". The heteroscedastic and pair t-tests are used as the analysis tools, so that the statistical significance of the differences between the average values of the two compared groups can be tested. The tests confirmed the hypothesis of the non-statistically significant differences in the size of some of the pairs of researched averages.

This paper originated as part of the projects financed by the Czech Science Foundation "New Approaches to the Optimising Budgetary and Fiscal Policy with the Emphasis on Fiscal Discipline" (Project No. 402/08/1134) and "The analysis of the systems of delivering public services, and on the impact of the respective solution on the effectiveness of public expenditure" (Project No. 402/05/2644).

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INTRODUCTION

The objective of this paper is to describe the tax policies of the twelve new countries of the European Union and compare them with the existing fifteen members. A different approach to taxation by the original, industrialized member countries of the European Union compared to that of the new, less developed and moreover transitive countries is often pointed out. These new member countries are not afraid to experiment with competitive taxes and to reduce tax rates below a value unprecedented in the EU for a long time ago.

Economically the twelve mentioned countries have a different position than the original fifteen, as it is an exception to find a new member-state distinguished by a higher GDP per capita than the worst positioned of the old ones. The new members also differ from the original EU15 geographically (they are located more to the east), as well as due to their historical heritage (mostly post-communist states). Is it however actually true that the tax policies of new member countries are different to such an extent that could be statistically proven?

The similarity of the tax policy that would distinguish these two groups of countries may result not only from the historical heritage and a similar economic level but also the tax competition existing among them. The tax competition would probably lead to an overall decline of taxes, the transfer of the burden from the more mobile tax bases (capital) to the less mobile factors (labor, consumption). We shall try to confirm or invalidate these hypotheses.

The paper is organized as follows. First, the bibliography involved in comparing the tax indicators between the new and old EU member countries is summarized followed by the Data and Methodology section. The results themselves first compare the tax quotas and their structures and then corporate income tax is compared. Finally, there is the comparison of implicit tax rates. The conclusions section summarizes the analysis results including the specification of the overall comparison table.

LITERATURE REVIEW

The bibliography dealing with the comparison of the tax systems of the new and original 15 EU members is rather dated particularly because of the accession of new, mainly transient countries to the EU in 2004 and 2006. Only around the accession of the new EU members are the required statistical indicators using uniform methodology for analysis regularly monitored.

Usually, (Taxation trends, 2007), Gandullia (2005), Bernardi - Chandler (2005), (Markiewicz, 2008), Jakubiak - Markiewicz (2007) lower tax quotas and various structures are emphasized in the form of a lower proportion of direct taxes and a higher proportion of indirect taxes and social security contributions in the new EU member countries. Lower rates of personal income tax as well as corporate income tax are also highlighted in addition to the more frequent reduction of the personal income tax rate in the new EU member countries. Late in the nineteen-nineties, corporate income tax was significantly reduced, first in the new and then in the old EU member countries. Analyses also mention the situation and development of implicit tax rates for work, consumption and capital and state that the implicit rate applicable to work is much higher than consumption and capital, that the work taxation drop is negligible and since 2001, there has been a slight increase in the implicit rates applicable to consumption and capital. The new countries report lower effective capital taxation whereas for effective work and consumption taxation there is almost no difference.

The most detailed comparisons focused completely on the differences between the new and old EU member countries were conducted by Gaudullia (2005) and Bernardi – Chandler (2005). The former emphasizes that there were huge differences between the new and old EU member countries in the nineteen-nineties and the tax mixes are varied more frequently than for old members. The latter are deeply involved in the level and development of the tax rates for both the countries groups.

However, e.g. Barysch (2004) writes that the statement regarding lower corporation income taxes in Eastern Europe is a myth only because the tax burden is influenced by the tax base, adjusted differently both in the EU's Eastern countries as well as in the original member countries. According to her, another myth is harmful tax competition because "...taxes are only one factor in determining companies' investment plans. In the case of Eastern Europe, fast growth rates, improving business environments, low-wages and highly-skilled workers are at least as important in attracting foreign businesses." (Barysch, 2004, p. 2).

All the comparison methods have one thing in common which is the descriptive statistics method. The authors compare the differences and evaluate the development of the indicators but without verification using a statistical hypothesis. Considering the high variability of tax indicators - also inside the groups monitored (12 new and 15 old EU member countries) - their conclusions are not generally valid.

DATA AND METHODOLOGY

The indicators monitored in this comparison are the tax quota and its structure expressed as the share of direct taxes and the share of corporation income tax in the overall tax revenue. Furthermore, these are implicit tax rates imposed on capital, labor and consumption and corporate tax rates, as the taxes most

potentially affected by the tax competition. The new and old European Union member countries are compared on the basis of the arithmetic averages of the respective variables.

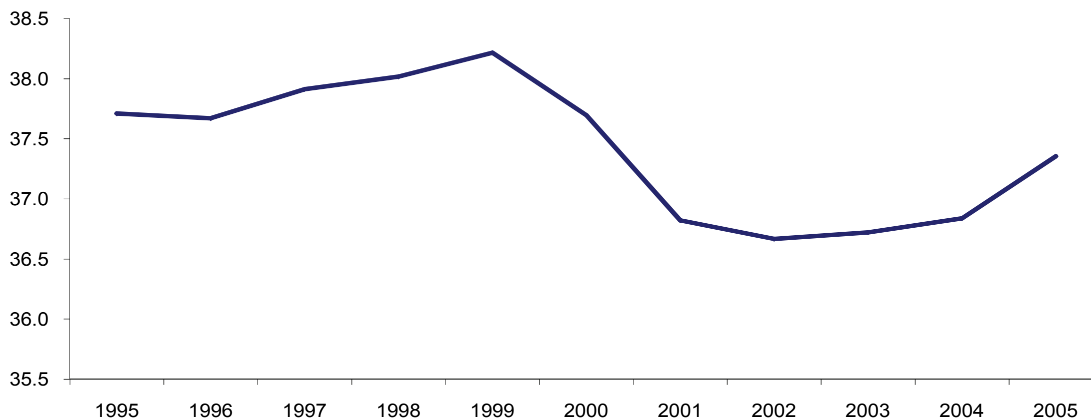
The basic statistics are the data from the statistics "Taxation Trends in the European Union", published by the European Commission together with Eurostat and the Directorate-General for Taxation and the Customs Union (Taxation Trends, 2007). The applied method is testing the statistical hypotheses on the average value by means of heteroscedastic (for comparing two files) and pair t-tests (for comparing the same file in different periods) on the 5%-significance level, using MS Office Excel 2003 software.

RESULTS

Tax Quota

In 2005, the average weighted tax quota in EU member countries was equal to 40 %, and the un-weighted average of tax quotas was equal to 37.4 %. Figure 1 illustrates the quota development from 1995 to 2005.

Figure 1: Development of the Average Tax Quota in the EU27 Member Countries 1995-2005, in %



This figure shows the arithmetic averages of the tax quotas of the European Union member countries. Un-weighted arithmetic average. Bulgaria has only been only included since 2000, Romania since 2001. Data source: Taxation Trends in the European Union (2007)

As mentioned by the Taxation Trends in the European Union (2007), traditionally the quotas in the new member countries are lower than those in the old member countries; however, there are also some exceptions. The total growth of the un-weighted average of the tax quota by a half a percent in 2005 is relatively high and it is the first growth since 1999, when the quota began to decline. Thus the average quota has practically returned to the level of 1995, so that the decline which took place in the late part of the last century has been eliminated.

The tax quotas were also naturally affected by cyclic development, which contributed to the moderation of the quota decline after 2002. The growth accelerated again in 2004, when the member countries tried to reduce their deficit which is why they probably postponed tax cuts. However, the quotas in 2005 grew in spite of a temporary decline in the pace of economic redevelopment (with a growth of 1.7% in 2005 compared to that of 2.4 % in 2004). In 2005 the tax quota only declined in seven EU member countries (including both the EU15 member countries and the new ones).

A typical feature of the tax quota development in separate countries from 1995 to 2005 is that where the quota has been relatively high, it changes, whether in the upward or downward direction, to the minimum extent. Larger variations may be observed in those countries in which the initial level of the tax quota is

low.This is apparently associated with the fact that lower taxation takes place only in the transitive countries, where the tax system is only "settling down" so that the quota is still "oscillating" so much then for the evaluation made by the European Commission. Let's focus our attention on the comparative analysis of EU27 tax policies proper, as expressed in the shape of the differences between the original and the new member countries.

Table 1 gives an overview of the conducted tests. According to the table there is indeed a statistically significant difference between the value of the average tax quota of the new and original member countries and this indicator is as expected, lower in the case of the new member countries. Rather surprisingly, however, no statistically significant growth or decline of the EU27 average tax quota has been substantiated but the difference between the two extremes, namely, 1999 and 2002, has been proven. This result indicates that there are movements in the average taxation in the EU27 countries over time but so far, we have been unable to prove any long-term trend, whether upward or downward.

Table 1: Testing the Statistical Significance of the Differences of the Average Tax Quotas in New and Original EU Member Countries and Changes To The EU27 Average Quota

Variables	Mean value 1	Mean value 2	*t* stat	Critical value - single tail t-test**	Critical value - double-tailed t-test**	Interpretation
Tax quota in 2005 new EU12, EU15	33.5639	40.38855	-11.3274	1.812461	2.228139	In 2005 new EU12 member countries quota is less than that of EU15
Tax quota in 1995 new EU12, EU15	34.10821	39.62363	-2.55175	1.710882	2.063899	In 1995 new EU12 member countries quota is less than that of EU15
EU27 tax quota 1995, 2005	37.17233	37.35537	-0.24588	1.705618	2.055529	Growth of EU27 average quota from 1995 to 2005 is statistically insignificant
EU27 tax quota 1999, 2002 (comparison of extreme values)	37.64117	36.66673	2.469006	1.705618	2.055529	In1999 EU27 the average quota is more than that of 2002 (extreme average values)

*This table shows the results of the tests for the statistical significance in the differences between the arithmetical averages of two files. The first column shows which data files are compared (e.g. the tax quota in 2005 in the new EU12 and the tax quota in 2005 in EU15); the 2nd and 3rd columns involve the arithmetic averages of respective files. The heteroscedastic t-test was applied to the different files in the same year, pair t-test for the same file in two different years.The data for the initial year is not available for Bulgaria, and/or Romania and therefore the nearest available data has always been applied for this year (for 2000, and/or 2001).The EU27 average tax quota is therefore in this calculation lower than the statistically stated average without Bulgaria and Romania.The change of the tax quota from 1995 to 2005 was not statistically confirmed even in the case of the new E12 member countries, and/or the original EU15. MS Office Excel 2003 software ** indicates the 5%-significance level Data source: Taxation Trends in the European Union (2007)*

Tax Mix – Share of Direct and Indirect Taxes

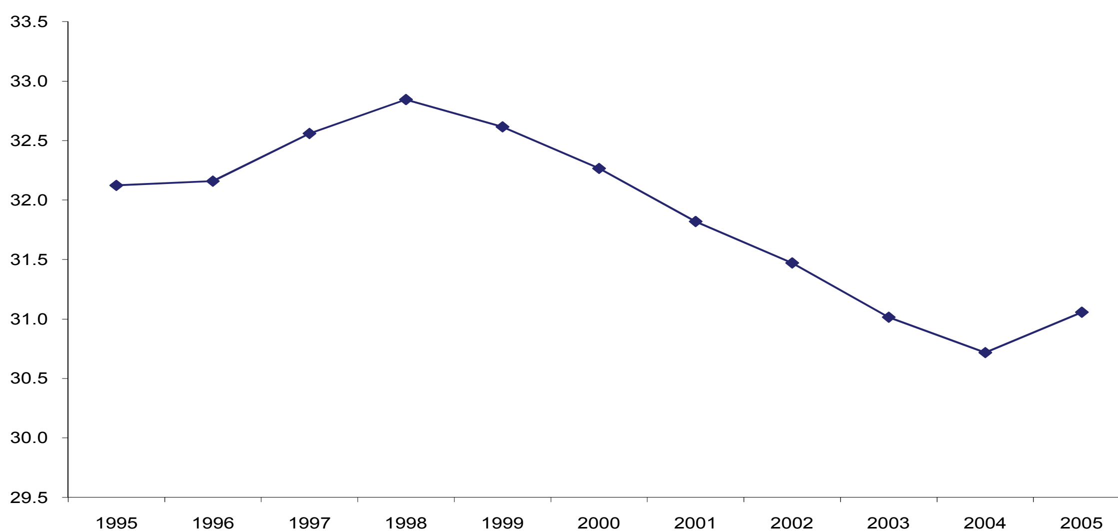
We are going to evaluate the tax mix by means of changes to the shares of direct taxes, provided that in most cases the mix changes by transferring the burden from direct to indirect taxes, and vice versa. Transfers to contributions paid to social security or from them to direct or indirect taxes do not vary so much, as they are linked to their expenditure requirements. The Government cannot change them without social security scheme reforms.

The share of direct taxes within the tax mix usually correlates to the level of the development of the country, as it emphasizes the transparency of the tax system and also reflects the high incomes of rich payers, which are subject to higher average rates (and which also apply to the so called "flat taxes", since even these are progressive). The maturity of the country is also reflected in its tax collection capability, so that the Government is not forced to resort to indirect taxes; the collection of which is less transparent, tax evasion is restricted and revenues are thus more certain. The transition from direct to indirect taxes can also mean that attempts are being made to maintain revenues or even to increase them in a less

conspicuous way than the growth of rates or the bases of direct taxes and, newly, this transfer has been observed in connection with the "flat tax" which reduces revenues from the rich. The Government then proceeds to the flat increase of the burden using VAT (see e.g. Kubátová, 2006).

Figure 2 of the development of the share of direct taxes reflects several of the present trends in taxation appearing at the turn of the century; even though it might appear that direct taxes are declining due to tax competition and the rate decline of corporate taxes, it is not so. Corporate taxes do not decline as to their share in the overall taxation and, on the contrary, the rate decline is compensated for by an extension of the bases due to the growth of corporate business, the flexible response of the bases in the years of growth and other factors. Even in years of economic recession, the share of this tax in the overall revenue need not always drop. Labor taxes did rather decline in the second half of the last century but this trend stopped in 2005.

Figure 2: Development of the Share of Direct Taxes within the Overall Tax Revenues in the EU27 Countries:1995-2005



This figure shows the arithmetic averages of the share of direct taxes (e.g. personal income, corporation income and property taxes) in the overall tax revenue (including social security contributions) of the 27 European Union member countries. Data source: Taxation Trends in the European Union (2007. Un-weighted arithmetic average

So how did the taxation policy manifest itself in respect to the share of direct taxes? Table 2 comprising the results of the t-tests shows the difference in the share of direct taxes in the tax quota. With regard to the new member countries, this share is lower. However, neither of the groups of member countries experienced any statistically significant change of this share in 2005 compared to 1995.

Share of Corporate Taxes and Rates

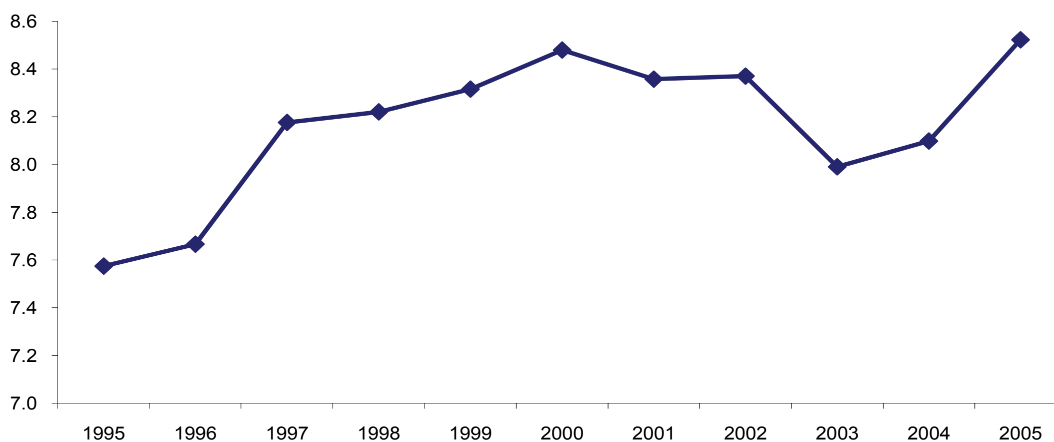
We are going to restrict the comparative analysis of the direct tax policy because of the limited scope of the paper in the following part to corporate taxes, considered to be the most affected by the competition among countries.

Table 2: Testing the Statistical Significance of Differences of the Share of Direct Taxes in the New and Original EU Member Countries and the Changes Taking Place from 1995 to 2005

Variables	*Mean value 1*	*Mean value 2*	*t stat*	*Critical value - single tail t-test***	*Critical value - double-tailed t-test***	*Interpretation*
Share of direct taxes of the EU27 - 1995, 2005	31.34635	30.83966	0.617758	1.705618	2.055529	The decline in the share of direct taxes in the EU27 from 1995 to 2005 is not statistically significant
Share of direct taxes 2005 - new EU12, EU15	24.58838	35.84068	-3.91988	1.717144	2.073873	The share of direct taxes in the new member countries in 2005 is less than that in the EU15
Share of direct taxes 1995 - new EU12, EU15	26.18785	35.47314	-2.98478	1.720743	2.079614	The share of direct taxes in the new member countries in 1995 is less than that in the EU15
Share of direct taxes in new EU12- 1995, 2005	26.18785	24.58838	1.034847	1.795885	2.200985	The decline in the share of direct taxes in the new EU12 from 1995 to 2005 is not statistically significant
Share of direct taxes in EU15- 1995, 2005	35.47314	35.84068	-0.46511	1.76131	2.144787	The decline of the share of direct taxes in the new EU15 from 1995 to 2005 is not statistically significant

*This table shows the results of the tests of the statistical significance in the differences between the arithmetical averages of two files. The first column shows which data files are compared (e.g. the share of direct taxes of the EU27 in 1995 and the share of direct taxes of the EU27 in 2005); the 2nd and 3rd columns involve the arithmetic averages of respective files. The heteroscedastic t-test was applied for the different files in the same year, pair t-test for the same file in two different years. Data for the initial year is not available for Bulgaria, and/or Romania and therefore the nearest available data has always been applied for this year (for 2000, and/or 2001). The change of the tax quota from 1995 to 2005 was not statistically confirmed even in case of the new E12 member countries, and/or the original EU15. MS Office Excel 2003 software ** indicate the 5%-significance level. Data source: Taxation Trends in the European Union (2007)*

Figure 3: Share of Revenues from Corporate Taxes in EU27 Countries from 1995 to 2005



This figure shows the arithmetic averages of the share of corporation income taxes in the overall tax revenue (including social security contributions) of the 27 European Union member countries. Data source: Taxation Trends in the European Union (2007). Un-weighted arithmetic average.

The share of the corporate taxes in the overall tax/internal revenues in the EU27 countries is growing on a long-term basis, as shown by Figure 3, in spite of the continuous decline of rates. It has already been mentioned that the causes consist of the growing role of corporate business and the growth of tax costs due to economic growth. This growth in the share of corporate taxes however is not statistically

significant, as shown by Table 3. Neither statistically significant as well, is the difference of the share of corporate taxes in the overall taxation of the new EU12, while the share of corporate taxes in the overall tax revenues of the original EU15 on average has grown. With regard to corporate taxes, these are distinguished by a very mobile base, affected by the tax competition. If so, the competition taking place in the original fifteen member countries is more successful than in the new E12. The question then is which competitive tools, in particular, are being applied by both these groups. These may include a larger than standard reduction of the rate, various other exemptions/relief associated with corporate taxation or non tax tools consisting of attracting and maintaining capital under one's own jurisdiction.

As far the rates of corporations are concerned, the results of the comparison differ and confirm the existing view of the tax policies of the new member countries, when compared to the original fifteen. The difference in the average rates in 2007 is statistically significant (see Table 3) and the new member countries have a rate which is lower on average by almost 10 percentage points according to the table. With regard to the development of the average rate of the EU27 countries, the rate during the period from 1995 to 2005 declined and this decline is once again statistically significant. Coincidentally, the average rate decline is once again almost 10 percentage points.

Table 3: Testing the Statistical Significance of the Differences between the New EU12 and the Original EU15 in Respect of Corporate Taxes from 1995 to 2005

Variables	*Mean value 1*	*Mean value 2*	*t stat*	*Critical value - single tail t-test***	*Critical value - double-tailed t-test***	*Interpretation*
Share of corporate taxes of the EU27- 1995, 2005	7.649937	8.52874	-1.81379	1.705618	2.055529	The growth of the share of corporate taxes in the EU27 is not statistically significant from 1995 to 2005
Share of corporate taxes 2005 - new EU12, EU15	8.742162	8.358003	0.328473	1.710882	2.063899	The difference in the growth of the share of corporate taxes between the new E12 and EU15 in the EU27 is not statistically significant in 2005
Share of corporate taxes of the new EU12- 1995, 2005	8.679867	8.742162	-0.07178	1.795885	2.200985	The statistically insignificant difference of the share of corporate taxes in the new EU12 from 1995 to 2005
Share of corporate taxes of original EU15- 1995, 2005	6.825993	8.358003	-3.1098	1.76131	2.144787	The growth of the share of corporate taxes in EU215 from 1995 to 2005
Rates of corporate taxes 2007 - new E12, original E15	19.13333	28.86667	-3.8388	1.713872	2.068658	The corporate rate tax in the new E12 in 2007 was lower than that in the EU15
Rates of corporate taxes 1995 - new E12, original E15	31.96667	38.02667	-1.97329	1.710882	2.063899	Difference in the rate of corporate taxes between the new E12 and the EU15 in 1995
Rates of corporate taxes of the EU27- 1995, 2007	35.33333	24.54074	6.435355	1.705618	2.055529	Decline in the average rate in the EU27 in 2007 compared to 1995

*This table shows the results of the tests of statistical significance in differences between the arithmetical averages of two files. The first column shows which data files are compared (e.g. share of corporate taxes of the EU27 in 1995 and in 2005), the 2nd and 3rd columns involve the arithmetic averages of the respective files. The heteroscedastic t-test was applied to the different files in the same year, pair t-test for the same file in two different years. Data for the initial year is not available for Bulgaria, and/or Romania and therefore the nearest available data has always been applied for this year (for 2000, and/or 2001). MS Office Excel 2003 software ** indicate the 5%-significance level. Data source: Taxation Trends in the European Union (2007)*

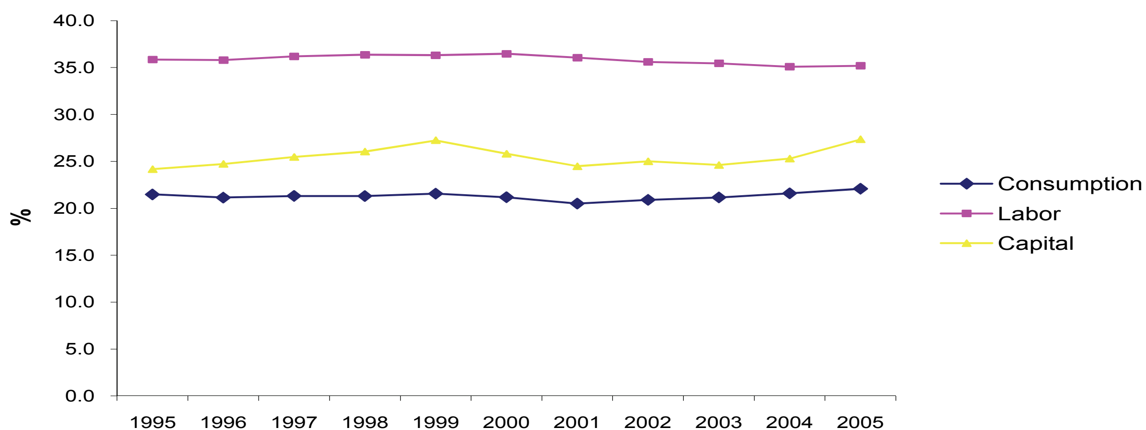
If we summarize what has been confirmed by the tests of the statistical hypotheses we reach the conclusion that the share of corporate taxes in the overall tax revenues does not differ between the new and old member countries and that it is maintained on the same level in the new member countries, while it had grown in the original E15. The rates differ significantly statistically and are also declining on a long-term basis. Is it possible to evaluate this development as so called "harmful tax competition" of the new EU member countries to the detriment of the original members? According to my opinion we must be very cautious in doing so, as the governments are not concerned with the rates but the revenues flowing into their budgets. Should the new member countries not reduce their rates, then the transfer of corporate profits to the original member countries could harm *ceteris paribus* the interests of their public finances.

Implicit Tax Rates

Implicit rates, sometimes also called effective rates, express the extent to which any given manufacturing factor or consumption is burdened. Compared to the average tax rate which is in its result the ratio of the tax revenue and stated base, implicit rates are defined as "...the ratio of the total tax revenues of the category (consumption, labor and capital) to a proxy of the potential tax base defined using the production and income accounts of the national accounts". (Taxation Trends, 2007, s. 415). Implicit tax rates are a better indicator of the tax burden than the nominal, as they are not deformed by various modifications of tax bases, such as exemptions, deductions and discounts. Their nature is purely economic and not technical. It is obvious that compared to the nominal rates which testify to the actual tax burden in a very limited manner and with their international comparison being of little purpose, the implicit rates are internationally comparable.

The calculation of implicit rates which is quite demanding in respect of the supporting data on taxes and national accounts has been monitored in the European Union only recently and the indicators from 1995 are available and the last statistics indicate the 2005 data (see Taxation Trends, 2007). In the case of certain countries, predominantly some of the new member countries from 2004 and 2006, certain data has been missing so far. Figure 4 gives a comparison of the development of the average values of three basic implicit rates for the EU27 countries in the monitored period (Eurostat now monitors other partial implicit rates, such as those for the capital in business, independently conducted trade and activities, etc. We shall not analyze these rates because of the limited scope of this paper.

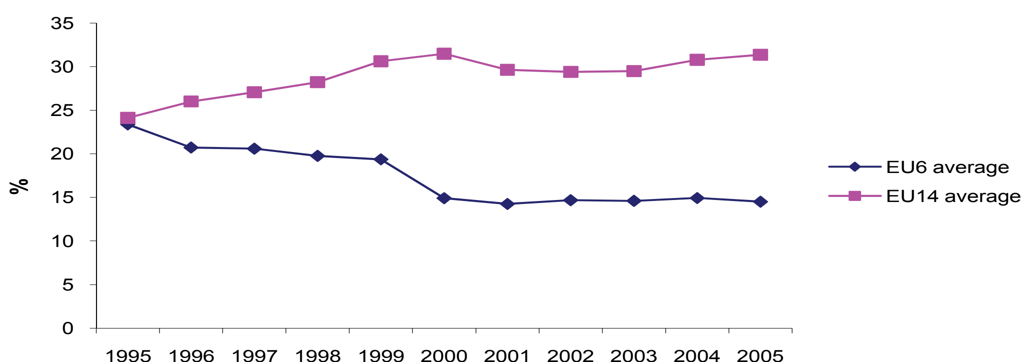
Figure 4: The Development of Implicit Tax Rates in EU Countries from 1995 to 2005



This figure shows the arithmetic averages of implicit tax rates in the 27 European Union member countries. Implicit rates, sometimes also called effective rates, express the extent to which any given manufacturing factor or consumption is burdened. They are defined as the ratio of total tax revenues of the category (consumption, labor and capital) to a proxy of the potential tax base defined using the production and income accounts of the national accounts. Un-weighted arithmetic average. Data source: Taxation Trends (2007)

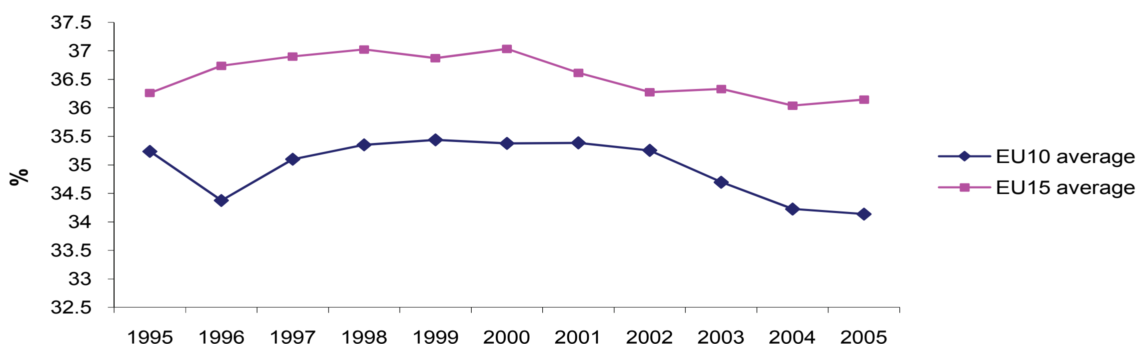
The highest implicit rates fall on labor and the lowest ones on consumption. The tax burden in the countries of the European Union did not change very much on average even within a longer period of eleven years. Figure 5, Figure 6 and Figure 7 then enable how these rates have respectively developed in the new and the old member countries to be compared. As regards consumption, we do not see any big differences in the development of implicit rates between these two groups of countries and even for labor. The development does not differ too much in both the groups, although in the latter case a lower burden may be seen in the new member countries, as well as it being a product of the development of the economic cycle (Figure 6). The apparent difference involves the implicit tax from capital, where the schisms between the new member countries (in this case based on the data available from six countries only) and the EU14 member countries (with the data for Luxembourg missing) are clearly opening out (Figure 5).

Figure 5: Implicit Tax Rates Relating to Capital in the New EU6 and the Original EU14 Member Countries from 1995 to 2005



This figure compares the arithmetic averages of implicit tax rates in the 6 new and 14 old European Union member countries. Implicit rates, sometimes also called effective rates, express the extent to which the capital factor is burdened. They are defined as the ratio of the total tax revenues of the capital to a proxy of the potential tax base defined using the production and income accounts of the national accounts. No data for Luxembourg is available. Data is only available for six new members (Czech Republic, Estonia, Lithuania, Latvia, Poland and Slovakia). The nearest available information instead of 2005 has been applied to Latvia, Greece, Portugal and Sweden and instead of 1995 for Lithuania. Note: un-weighted arithmetic average values. Source: Taxation Trends (2007)

Figure 6: Implicit Tax Rates Relating to Labor in the New EU10 and the Original EU15 Member Countries from 1995 to 2005*

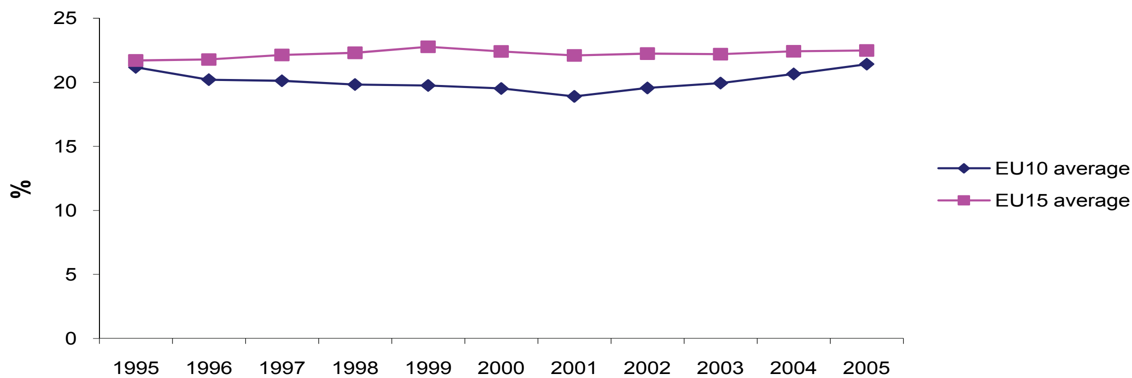


This figure compares the arithmetic averages of implicit tax rates on labor in the 10 new and the 15 old European Union member countries. Implicit rates, sometimes also called effective rates, express the extent to which the factor of labor is burdened. They are defined as the ratio of total tax revenues of labor to a proxy of the potential tax base defined using the production and income accounts of the national accounts.
The nearest available information instead of 2005 has been applied for Portugal and instead of 1995 for Bulgaria and Romania. Note: un-weighted arithmetic average values. Source: Taxation Trends (2007)

Table 4 shows the results of pair t-tests with average values (un-weighted arithmetic average values) of implicit tax rates relating to capital. We can see that while there was no significant statistical difference

between the implicit tax rates relating to capital in the new member countries when compared with the original EU member countries in 1995, the capital taxation in 2005 in these new member countries is much more moderate than in the original ones. In a period from 1995 to 2005, the capital taxation measured by the implicit rate had developed in these groups in the opposite way so that it grew in the original ones and declined in the new ones, and statistically significantly. The implicit tax rate declined from an average of 23% to 15% in the new member countries during the period in question, while it increased from an average of 24% to 31% in the new member countries.

Figure 7: Implicit Tax Rates Relating to Consumption in the New EU6 and the Original EU14 Member Countries from 1995 to 2005*



This figure compares the arithmetic averages of implicit tax rates on consumption in the 6 new and 14 old European Union member countries. Implicit rates, sometimes also called effective rates, express the extent up to which consumption is burdened. They are defined as the ratio of total tax revenues of the consumption to a proxy of the potential tax base defined using the production and income accounts of the national accounts. The nearest available information instead of 2005 has been applied for Portugal and instead of 1995 for Bulgaria and Romania. Note: un-weighted arithmetic average values. Source: Taxation Trends (2007)

Table 4: Testing the Statistical Significance of Differences between the New EU12 and the Original EU15 for Implicit Tax Rates ("ITR") Regarding Capital and Development From 1995 To 2007

Variables	*Mean value 1*	*Mean value 2*	*t stat*	*Critical value - single tail t-test***	*Critical value - double-tailed t-test***	*Interpretation*
EU ITR on capital - 1995, 2005	23.9012	26.31714	-1.03724	1.729133	2.093024	ITR on capital had not changed on average from 1995 to 2005
EU ITR on capital 2005 - new EU6, original EU14	14.51822	31.37382	-4.66353	1.782288	2.178813	ITR on capital in 2005 is statistically significantly lower in the new member countries
EU ITR on capital 1995 - new EU6, original EU14	23.37397	24.12715	-0.24717	1.833113	2.262157	ITR on capital 1995 in the six new member countries does not statistically significantly differ from EU14
EU ITR on capital in the new EU6 - 1995, 2005	23.37397	14.51822	2.704459	2.015048	2.570582	ITR on capital from 1995 to 2005 in the six new member countries had statistically significantly declined
EU ITR on capital in the EU14 - 1995, 2005	24.12715	31.37382	-3.83193	1.770933	2.160369	ITR on capital from 1995 to 2005 in the original twelve member countries had statistically significantly grown

*This table shows the results of the tests of statistical significance in differences between the arithmetical averages of two files. The first column shows which data files are compared (e.g. EU ITR on capital in 1995 and in 2005), the 2nd and 3rd columns include the arithmetic averages of the respective files. The heteroscedastic t-test was applied to the different files in the same year, pair t-test for the same file in two different years. Data source: Taxation Trends in the European Union (2007). No data for Luxembourg is available. Data is only available for six new members (Czech Republic, Estonia, Lithuania, Latvia, Poland and Slovakia). The nearest available information instead of 2005 has been applied to Latvia, Greece, Portugal and Sweden and instead of 1995 for Lithuania. MS Office Excel 2003 software ** indicate the 5%-significance level*

The tax burden imposed on labor in the new EU member countries is on average much higher than the burden imposed on capital and was equal to approx. 34% compared with 15% in 2005. This however does not apply to the original fifteen where the burden imposed on labor and capital is roughly the same, as the following difference, namely 36% of ITR on labor vs. 31% of the ITR on capital is rather not statistically significant (see Table 5).

While the capital-related burden shows significant differences, the labor-related burden in the new member countries does significantly differ from the EU15 neither at the beginning of the period, nor at its end in 2005. The labor-related burden in both the groups of countries had not at the same time changed on average during the researched eleven years, not even within the whole EU27 or any of the groups of countries. This supports an often stated hypothesis that the non mobile base – labor – is not subject to tax competition among the countries. However not all are convinced, that as a consequence of tax competition the elimination of revenues from corporate taxes and from capital must occur or that the impact of tax competition on the tax/internal revenues does not concern labor (for various views on tax competition, see e.g. Stults, 2004).

Table 5: Testing the Statistical Significance of Differences between the New EU12 and the Original EU15 for Implicit Tax Rates ("ITR") Regarding Labor and Development from 1995 to 2007

Variables	*Mean value 1*	*Mean value 2*	*t stat*	*Critical value - single tail t-test***	*Critical value - double- tailed t-test***	*Interpretation*
EU ITR on labor - 1995, 2005	35.79783	34.9758	1.444079	1.705618	2.055529	ITR on labor had not changed on average from 1995 to 2005
EU ITR on labor 2005 - new EU12, original EU15	33.51839	36.14174	-1.04286	1.708141	2.059539	ITR on labor in the new member countries does not statistically significantly differ from the EU15 in 2005
EU ITR on labor 1995 - new EU12, original EU15	35.21976	36.26028	-0.3788	1.713872	2.068658	ITR on labor in the new member countries does not statistically significantly differ from the EU15 in 1995
ITR 2005 in EU15 - labor, capital	36.14174	31.37382	1.622816	1.708141	2.059539	ITR on labor in the EU15 does not statistically significantly differ from ITR on capital in 2005

This table shows the results of the tests of statistical significance in the differences between the arithmetical averages of two files. The first column shows which data files are compared (e.g. EU ITR on labor in 1995 and EU ITR on labor in 2005), the 2nd and 3rd columns include the arithmetic averages of the respective files. The heteroscedastic t-test was applied for the different files in the same year, the pair t-test for the same file in two different years. The nearest available information instead of 2005 has been applied for Portugal and instead of 1995 for Bulgaria and Romania. Luxembourg, for which no data is available, is missing in the ITR on capital file. MS Office Excel 2003 software
*** indicate the 5%-significance level. Data source: Taxation Trends in the European Union (2007).*

The taxation of consumption is in both the original and the new member countries practically the same and does not even change during the researched period (namely, 1995 compared with 2005), see Table 6. Burdening consumption by taxes ranges on the average from 20% in the new EU12 in 1995 to 22% in the original EU15 in 2005 and as has already been mentioned earlier, the differences between the groups of countries or in time are not statistically significant.

Consumption is apparently one of the tax bases providing steady revenue (due to the wide-based VAT and consumption taxes on goods with an inflexible demand), with tax evasions restricted to the minimum, including the transfer of the base to a country with a more advantageous regime of taxes. As the increase of taxes affects the inflation measured by consumer prices and has a rather regressive affect, governments are reluctant for political reasons to tackle the increase in rates. Harmonization of consumption taxes may also affect the stabilization of revenues where the result is the stability of bases and rates, and/or implicit tax rates.

Table 6: Testing the Statistical Significance of Differences between the New EU12 and the Original EU15 for Implicit Tax Rates (ITR) Regarding Consumption and Development 1995-2007

Variables	*Mean Value 1*	*Mean Value 2*	*t stat*	*Critical Value - single tail t-test***	*Critical Value - double- tailed t-test***	*Interpretation*
ITR on consumption of the EU27- 1995, 2005	21.14829	22.00526	-1.6396	1.705618	2.055529	ITR on consumption had not statistically significantly changed from 1995 to 2005
ITR on consumption of – the new EU12, original EU15	21.43097	22.46469	-0.65731	1.713872	2.068658	ITR on consumption in the new member countries does not statistically significantly differ in 2005 from the EU15
ITR on consumption1995 - new EU12, original EU15	20.47089	21.69021	-0.63226	1.720743	2.079614	ITR on consumption in the new member countries does not statistically significantly differ in 1995 from the EU15.

*This table shows the results of the tests of statistical significance in the differences between the arithmetical averages of two files. The first column shows which data files are compared (e.g. EU ITR on consumption in 1995 and EU ITR on consumption in 2005), the 2nd and 3rd columns involve the arithmetic averages of the respective files. The heteroscedastic t-test was applied to the different files in the same year, pair t-test for the same file in two different years. The nearest available information instead of 2005 has been applied for Portugal and instead of 1995 for Bulgaria and Romania MS Office Excel 2003 software ** indicate the 5%-significance level. Data source: Taxation Trends in the European Union (2007)*

CONCLUSIONS

The article has attempted to contribute to the discussion on the difference in the tax policies of the twelve new member countries which acceded to the European Union in 2004 and 2007 and those of the original fifteen members. We have researched the tax quota and its structure, as regards direct and indirect taxes and the share of corporate taxes, which are mostly liable to tax competition among the countries. We have moreover researched the indicators of implicit tax rates in relation to capital and consumption and the statutory tax rates applicable to corporate taxes, which are most often talked about as the rates employed by the new member countries as a competitive tool. After completing t-tests of the statistic hypotheses about the equality of the average values of two groups and the equality of the average values with pairs of groups on the 5%-significant level we have found several interesting points. For the sake of clarity, we shall insert the basic points found from all the above tables in a single, systemizing. Table 7. The new countries have indeed a statistically significantly lower level of overall taxation measured by means of the tax quota in 1995 and also in 2005.

However, no statistically significant growth or decline in the average tax quota has been observed in the above period, either for the whole EU27, or the new twelve or the original fifteen members separately. Taxes measured by this indicator are thus considerably rigid so that the differences between both the groups tend to continue. Should it be true that the new member countries have effectively conducted so-called "harmful tax competition", the difference ought to increase, which we have not observed. Another indicator of tax policies is the share of direct and indirect taxes in the tax revenue. T-tests have substantiated that in the case of the new member countries the share of direct taxes is lower than that of the original fifteen members. No statistically significant change in this share in 2005 compared with 1995 has however taken place for either of the groups of member countries.

As far as the share of corporate taxes is concerned, this is not statistically significantly different for the new members than for the original member countries. In the case of the new member countries this share does not change on average in the long-term but it is growing in the case of the original fifteen member countries. The rate of this tax declined on average in 2007 compared to 1995 in both the groups of countries, while in the case of the new EU12 the rate is on average lower than in the original EU15. This means that for corporate tax, the new member countries tend to compete through their rates but in the

remaining areas (affecting the tax base) the competition is successful for the more advanced European fifteen (see e.g. Global Competitiveness, 2008).

Table 7: Summary of T-Tests for Tax Quota, Tax Mix, Implicit Tax Rates and Nominal Rates of Corporate Taxes In The EU- 1995-2005

Indicator	Average2) in 2005		Average2) in 1995		Evaluation of t-tests on man values
	New EU12	Original EU15	New EU12	Original EU15	
Tax quota	33.5639	40.38855	34.10821	39.62363	Both in 1995 and 2005 the tax quota in the new EU12 countries is lower on average than that of the original EU15. No statistically significant change of the tax quota took place in any of the group of countries from 1995 to 2005.
Share of direct taxes	24.58838	35.84068	26.18785	35.47314	Both in 1995 and 2005 the share of direct taxes in the new EU12 countries is lower on average than that of the original EU15. No statistically significant change of the share of direct taxes took place in any of the group of countries from 1995 to 2005.
Share of corporate taxes	8.742162	8.358003	8.679867	6.825993	In 2005 no statistically significant difference in the share of corporate taxes can be found between the new EU12 and the original EU15. No change in the share of corporate taxes in the new EU12 took place from 1995 to 2005 either. However, the share of corporate taxes in the original EU15 grew in this period *
Rate of corporate taxes	19.13333 (year 2007)	28.86667 (year 2007)	31.96667	38.02667	In 2007 the rate of corporate taxes in the new EU12 is lower than that of the original EU15 but this difference was not statistically significant in 1995.
ITR on capital 2)	14.51822	31.37382	23.37397	24.12715	ITR on capital in 2005 is statistically significantly lower in the new member countries. The original difference in 1995 was not statistically significant but ITR growth in the new countries caused the origination of a big difference. Tax competition by the new member countries is obvious. In 2005 the average burden imposed on capital does not statistically significantly differ from the burden imposed on labor which is taxed equally, in both the groups of countries.
ITR on labor 3)	33.51839	36.14174	35.21976	36.26028	ITR on labor does not differ in the new and original member countries and has not even changed in either of these groups of countries since 1995. As regards the taxes imposed on labor, no competition takes place, as the tax base is immobile.
ITR on consumption3)					ITR on consumption does not differ in the new and original member countries and has not even changed in either of these groups of countries since 1995. Taxes are harmonized; although the rates may differ, the bases specified by the regulations/directives cannot be changed. These taxes do not present a suitable competitive tool.

*This table summarizes the results of the tests of statistical significance in the differences between the arithmetical averages of tax quotas, tax mixes, implicit tax rates and the nominal rates of corporate taxes in the EU from 1995 to 2005. 1) Un-weighted arithmetic average. 2) No data for Luxembourg is available. Data is available for only six new members (Czech Republic, Estonia, Lithuania, Latvia, Poland and Slovakia). The nearest available information instead of 2005 has been applied to Latvia, Greece, Portugal and Sweden and instead of 1995 for Lithuania. The heteroscedastic t-test was applied to the different files in the same year, pair t-test for the same file in two different years. 3) The nearest available data instead of 2005 is used for Portugal, and instead of 1995 for Bulgaria and Romania. MS Office Excel 2003 software. ** indicate the 5%-significance level. Data source: Taxation Trends in the European Union (2007)*

We have moreover reached the conclusion that while for the taxation of labor and consumption, tax competition does not take place and has manifested itself in changes of the implicit tax rates or in their different development in the researched countries, it is quite the contrary, for capital. It can be seen that the effective capital taxation in the new countries is continuously declining but is growing in the original fifteen countries. If we take into consideration the development of the share of corporate taxes, which has

not changed in the case of the new member-countries, but has grown in the original fifteen, then there are, on the one hand, the efforts of the new members to attract capital by a low tax burden (ITR). However, on the other hand, stronger factors, which attract in the long-term, profits under the jurisdiction of the original member countries and do not allow tax collection to be moderated.

Quite a lot is known about these factors; see e.g. The Global Competitiveness Report (2008). They are the factors linked with the more advanced countries with a built-up infrastructure and a solid and steady legal framework, etc. The new EU member countries cannot compete in most cases with these factors and one of the easiest ways for them is apparently both the nominal and effective reduction of taxes. It is however hard to say, whether this procedure might be called "harmful" tax competition. To conclude, one may say that it could not be proven using the applied tools that the new EU member countries would effectively implement what the European Union calls "harmful tax competition".

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