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Capital mobility and tax competition in the EU after enlargement

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draft, comments welcomed

Abstract

Accession of new member states with lower corporate taxation has raised fears on tax competition within enlarged Europe. This paper addresses the issue by calculating effective tax rates and showing relative tax burden in the new and old member states. Then, the issue of tax competition and its effects on investment is examined indirectly by looking at the responsiveness of FDI to effective taxation. The panel data is analyzed with investors from old member states and EU-8 as receiving countries. The study does not find strong evidence that comparative tax advantage of the new member states expressed by lower statutory and effective corporate tax rates influences the location of FDI coming from EU-15.

Keywords : corporate taxation, FDI determinants, tax competition, effective rates

Capital mobility and tax competition in the EU after enlargement

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On the back of the recent EU enlargement the topic of corporate income tax competition and potential harmonization has gained renewed attention. The main reason for this debate is observed fall in corporate tax statutory rates. In the environment of increasingly mobile capital it is believed that freedom in setting corporate tax rates can produce a harmful tax competition between member states because differences in tax regimes can influence companies' investment decisions and distort competition.

This debate is not new. Although corporate taxation remains within the competences of individual member states, there have been various attempts over the years to seek harmonization in this area. Numerous studies have been carried out¹ all concluding that large variations in corporate tax rates hampered the functioning of the internal market and that harmonization was desirable. However, these recommendations were rejected at the political level and little progress has been observed. Instead, some small steps have been taken, notably three corporate tax directives have been adopted: the parent/subsidiary directive, the mergers directive and the interest and royalties directive. More recently, efforts have shifted toward harmonizing the tax base (EC, 2004a).

With the EU enlargement the potential tax competition between old and new member states heated the debate. This paper will try to shed some light on this topic by taking a closer look at issues related to corporate income taxation in the new member states and FDI flows within enlarged Europe. Particularly, the objective is to calculate measure of effective taxation and examine empirically whether tax competition actually exists between old and new EU member states.

This paper is organized as follows. Section 1 summarizes the main hypotheses from tax competition theory. Section 2 presents some stylized facts about new and old member states to identify how different are new member states and their corporate tax pattern from the EU-15 countries. Section 3 addresses a number of methodological issues concerning effective taxation. Calculations of corporate effective tax rates are presented for the whole sample. Section 4 presents existing empirical work on relation between FDI and effective taxation looking for signs of tax competition between old and new EU member states. The last section concludes.

1. Tax competition theory

Tax competition debate has started with model developed by Tiebout (1956). The model examines competition among regions over mobile households. It is assumed that households select the region according to their preferences for the mix of taxes and public expenditures. Tiebout argues that competition for mobile households is welfare enhancing. Subsequent works have applied similar ideas to competition for mobile firms. Integration of Europe follows the conclusions from Tiebout model applied at the government level.

Liberalization of foreign exchange laws, which accelerated in 1980s led to increased capital mobility and as a result increased competition between countries over capital. At the same time theoretical models of tax competition identified fiscal externalities among countries competing over mobile capital. Standard tax competition model assumes that rise in capital tax rate of one region brings benefits to other regions by increasing their capital supplies, and hence their revenues. As a

¹ Including the 1953 Tinbergen Report, the 1962 Neumark Report, the 1970 van Tempel Report, and the 1992 Ruding Report.

result taxes are set too low resulting in underprovision of public goods and fall in welfare. 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 (Janeba, Schjelderup). Unemployment may provide an additional incentive for wasteful tax competition, since governments benefit from the employment generated by additional capital (Huang, 1992).

The negative effects of tax competition may be mitigated if governments increase those public inputs that enhance productivity of capital. Resulting spillovers may reduce the undersupply of public goods but not alleviate it. Hence, the analysis should differentiate between the sizes of competing countries. Tax competition among small countries drives tax rates to zero, but equilibrium tax rates will be positive if large regions compete. If regions are large enough to influence the equilibrium after-tax return on capital, then the governments have weak incentives to bid for capital. Thus, a large region's optimal tax system includes a tax on capital income higher than in small countries, which set lower tax rates. Finally, theory indicates that any country playing host to an agglomeration can have higher tax on capital and that countries may gain from tighter economic integration.

Recent theoretical contributions identify efficiency enhancing roles for tax competition. Positive effects appear in the models with imperfectly competitive market structures, government commitment problems and political economy considerations (Wilson, 1999). If two governments compete by offering subsidies to firms, some tax competition improves welfare, as the governments recognize its policy affects not only output decisions, but also location decisions (Janeba, 1998). Commitment problems provide another possible role for tax competition as an efficiency-enhancing activity. When the government has commitment problems the equilibrium outcome is excessive firm turnover, which may be mitigated by tax competition.

Tax competition is welfare improving also in political economy branch of the literature, which presents tax competition as curbing the rent-seeking activities of government officials. Tax competition improves welfare, because the size of government would be excessive in the absence of this competition (Wilson, 1999). Precisely, the outcome of tax competition models based on public choice theory depends on an assessment of the relative strength of Leviathan versus Benevolence (Janeba, Schjelderup). The good indicator of rent seeking behavior is the corruption level.

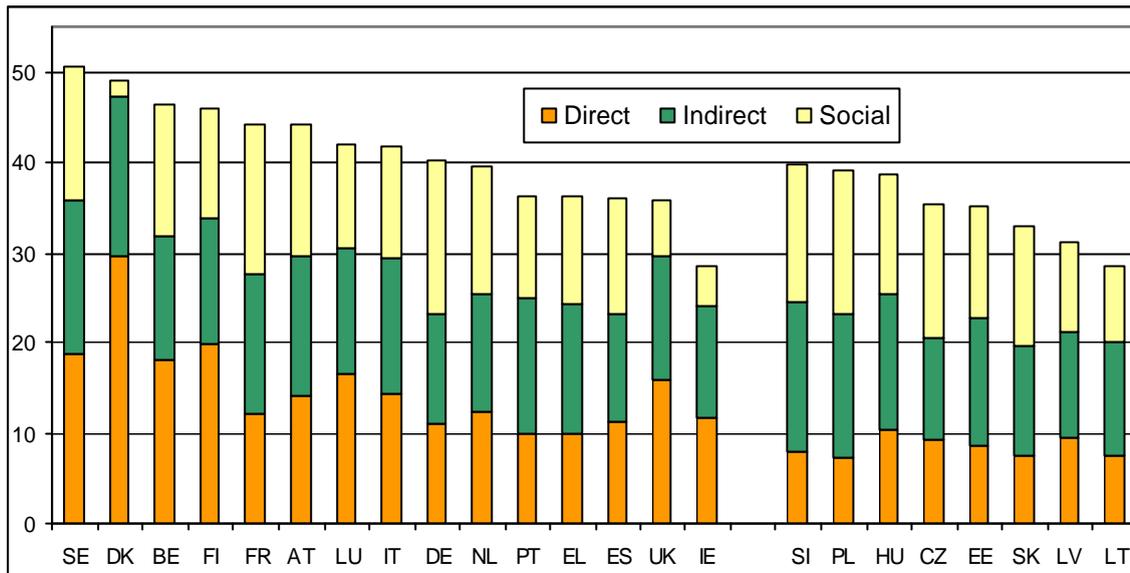
Tax competition not always results in low taxation. Literature identify two types of tax competition producing inefficiently high taxes: vertical (between different levels of government, each level imposes taxes on the same tax base, tax increases now create negative externalities, rather than positive) and with double taxation conventions. However, Wilson (1999) examining recent works finds that these conclusions may be too hasty.

To sum up, literature is divided in the view on tax competition. Only 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 with welfare-improving effects of tax competition.

2. How different are new member states?

The new member states are generally characterized by lower tax to GDP ratios than the old members (Figure 1). The average ratio of tax-to-GDP in the EU-8 countries was 35% in 2002 compared to 41% in the EU-15 (all new member states were below the average of the old member states). The tax structure differs as share of direct taxes is lower in new member states, at the expense of higher social and subsequently indirect taxation. In Czech Republic, Slovakia, Poland and Slovenia the share of social taxes in total tax revenues is higher than in any EU-15 countries but Denmark.

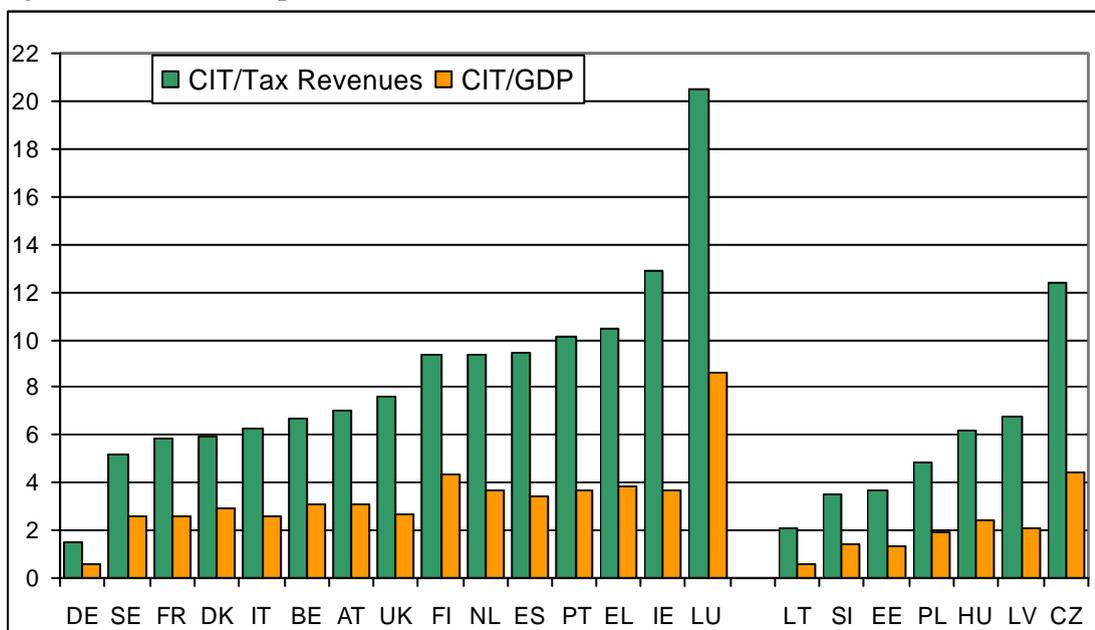
Figure 1 General government tax burden in the EU and some candidate countries in 2002 (% of GDP)



Source: EC, 2004b

The share of corporate taxes in tax revenues in new member states is below the average level of EU-15 with one exception of Czech Republic (Figure 2). The new member states bring corporate tax revenues in the amount lower than 2% of their GDP, while old member states collect between 2 and 4% of GDP (with the exception of Luxemburg). In Germany and Lithuania the role of corporate taxation is exceptionally limited: in 2002 corporate tax revenues raised only 0.6% of GDP in any of these countries. It should be kept in mind the corporate tax revenues are highly cyclical. Therefore it should be verified how these conclusions hold in time. It seems that for Germany the amount raised with corporate taxes to GDP is the lowest in EU-15 group over the cycle.

Figure 2 The role of corporate taxation in the EU and some candidate countries, 2002



Source: EC, 2004b

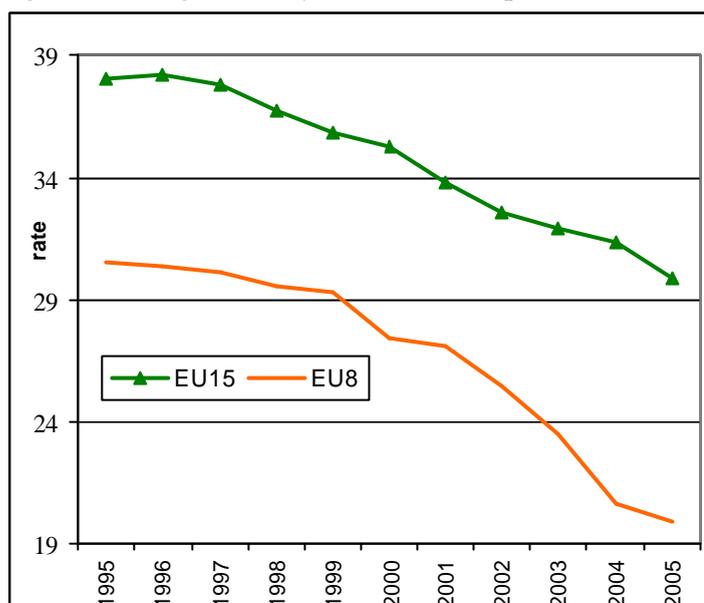
It is worth to stress that companies are taxed also under the PIT system: in Germany 85% of companies do not pay corporate taxes (Nicodeme, 2001) and for example in Poland the figure is 93%.

Conclusions on corporate tax burden should combine these two effects, however in this paper we concentrate on corporate taxation only.

Over the last decade both old and new member states decreased statutory CIT rates and broadened the tax bases, but while this move was associated with declining tax revenues in the EU-8, they remained broadly stable as proportion of GDP in EU-15. For old member states effective tax rates fell for profitable projects but remained fairly stable for projects that just break even or make low profits (Griffith and Klemm, 2004). The effective taxation in new member states have fallen (WB, 2004).

In 2005, average nominal tax rate in the new member states is by ten percentage points less than in the old member states, with the difference growing over the last decade (Table 1). During 1995-2005 the average statutory rate in old member states fell by 8.1 percentage points and in new member states by 10.8 percentage points (Figure 3). One of the reasons was the motivation of new member states to adjust their tax systems and cancel many of tax incentives which were in conflict with the European Law. The EU-8 pattern of capital allowances and treatment of losses is converging to EU practices. There are some differences in valuation of

Figure 3 Average statutory tax rates on corporate income, 1995-2005



Source: EC, 2004b, 2005; OECD Tax Database and country sources

inventories for tax purposes, although they have also decreased (WB, 2004; Jacobs 2003, 2004). EU-8 countries granted various tax incentives to foreign investors, but as far as most of them were in conflict with the European law, they had to be abandoned. With this remark in mind, the fall in statutory rates to some extent had to compensate for broadening of the tax base. It means that some convergence in tax bases between old and new member states is taking place and this may facilitate efforts toward harmonization in this area.

In 2005 some old member states lowered their corporate taxation level, for example Austria cut its rate from 34% to 25%, Finland from 29% to 26% and Greece from 35% to 32%. The trend to decrease statutory rates will continue: the Czech Republic will reduce its rate to 24% in 2006, Estonia will reduce its rate by 2 percentage points annually over the next two years to 20% in 2007, and among the old member states cuts are planned in Germany: the government approved a fall in state tax from 25% to 19%. The motivation behind all these cuts is the expected growth in investments and fall in unemployment. Judging by numbers one could note that we observe some kind of *race to the bottom* in corporate taxation. The dynamics of this process accelerates. The potential accession of Romania and Bulgaria in 2007 will increase the competition for investments and jobs as the corporate taxation rates in these countries are below the EU level: in Bulgaria the government reduced the corporate tax rate from 19.5% in 2004 to 15% in 2005 and in Romania a flat rate of 16% for income and corporate taxes was introduced in 2005. Although the cuts in statutory corporate rates are significant it is not clear if the result is higher inflow of capital.

There is no clear link between statutory CIT rates and revenues raised from corporate taxes, what indicates the role of effective taxation. The good example is Germany with high tax rates and limited revenues and on the opposite Ireland with low rates and relatively high revenue level. It indicates the potential role of effective taxation in generating budgetary revenues. However, the effective tax rates are not observed and therefore do not influence the common perception of the real tax burden.

Table 1: Top statutory tax rates on corporate income in the EU-15 and EU-8, 1995-2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Belgium	40.2	40.2	40.2	40.2	40.2	40.2	40.2	40.2	34	34	34
Denmark	34	34	34	34	32	32	30	30	30	30	30
Germany	56.8	56.7	56.7	56	51.6	51.6	38.3	38.3	39.6	38.3	38.9
Greece	40	40	40	40	40	40	37.5	35	35	35	32
Spain	35	35	35	35	35	35	35	35	35	35	35
France	36.7	36.7	36.7	41.7	40	36.7	36.4	35.4	35.4	35.4	35
Ireland	40	38	36	32	28	24	20	16	12.5	12.5	12.5
Italy	52.2	53.2	53.2	41.3	41.3	41.3	40.3	40.3	38.3	37.3	33
Luxemburg	40.9	40.9	39.3	37.5	37.5	37.5	37.5	30.4	30.4	30.4	30.4
Netherlands	35	35	35	35	35	35	35	34.5	34.5	34.5	31.5
Austria	34	34	34	34	34	34	34	34	34	34	25
Portugal	39.6	39.6	39.6	37.4	37.4	35.2	35.2	33	33	27.5	27.5
Finland	25	28	28	28	28	29	29	29	29	29	26
Sweden	28	28	28	28	28	28	28	28	28	28	28
United Kingdom	33	33	31	31	30	30	30	30	30	30	30
Czech Republic	41	39	39	35	35	31	31	31	31	28	26
Estonia	26	26	26	26	26	26	26	26	26	26	24
Latvia	25	25	25	25	25	25	25	22	19	15	15
Lithuania	29	29	29	29	29	24	24	15	15	15	15
Hungary	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	17.7	16
Poland	40	40	38	36	34	30	28	28	27	19	19
Slovenia	25	25	25	25	25	25	25	25	25	25	25
Slovakia	40	40	40	40	40	29	29	25	25	19	19

Existing surcharges and local taxes are included. There is only flat corporate taxation in the sample of EU-8.

Source: 1995-2004: EC, 2004b, 2005: OECD Tax Database and country sources

3. Effective tax rates

Statutory rate is only one factor among the total that determine tax burden. Regulations concerning the tax base are even more important as they provide instruments to differentiate between types of activity and operations. To capture real effects of corporate taxation one should apply the nominal rates to real tax base. Following OECD (2002) for the purpose of computing taxable profits, income may be subject to adjustment for exemptions (income excluded from the tax base), allowances (amount deducted from the gross income to arrive at taxable income), rate relief (a reduced rate of tax applied to a class of taxpayers or activities), tax credits (amount deducted from tax liability), and tax deferral (a relief which taxes the form of a delay in paying taxes). It is common to apply all above mentioned measures. As a result the tax base is influenced by depreciation schemes, treatment of losses and valuation of inventories among others. Another factor determining real tax burden is efficiency of tax revenue office. Thus, effective corporate tax rates differ from announced statutory rates.

Methodology

There are different methodologies for computing effective corporate tax rates, which may be divided into backward- or forward-looking approach. Backward-looking measures use historical data from firms' financial statements (micro) or from national accounts (macro). Using macro data, effective corporate tax rates are calculated as ratios of taxes paid by corporations from the national accounts on a measure of the tax base which can be aggregate domestic corporate profits, corporate gross operating surplus, gross domestic product, or gross profits reported by CIT payers in tax

settlements (Jacobs et al, 1999). This approach was applied first by Mendoza et al. (1994) and subsequently by Martinez-Mongay (1997). It is also possible to compute effective tax rates using a micro forward-looking approach, where the tax burden is calculated for a hypothetical future investment project over the assumed life of the project: the effective marginal tax rate (EMTR) measures the extra tax of a marginal investment project (King and Fullerton 1984). Such calculations are based on the assumption of capital market equilibrium and optimal investment behavior where the marginal benefits equal the marginal cost (the project generates only market interest rate). The EMTR can be calculated for the corporation alone or including shareholders, using alternative shareholder taxation, asset types and financing sources. When a project earns more than the capital cost, the effective average tax rate (EATR) can be calculated as the ratio of future tax liabilities to pre-tax financial profits (present value terms) over the estimated life of the project. The EATR can also be calculated for an existing capital stock.

Any approach has its shortcomings. As concerns macro approach the following caveats should be raised: (i) there might be mismatching problems regarding numerator and denominator of the ratio (Nicodeme, 2001); (ii) unincorporated companies often fall under the PIT leading to underestimation of effective corporate taxation; (iii) the corporate operating surplus may include interest, rents, and royalties paid by corporations, while taxes on these sources of income are paid by private owners and do not appear in the numerator; (iv) aggregate gross operating profit usually also includes revenues from agriculture and forestry, royalties or rentals, capital assets and tax-exempt institutions, which blurs the results as some of these taxes are paid by private savers; (v) there may be timing problems in data collection as taxes are levied on previous year profits, and tax receipts can be reduced by loss carry-forwards; and (vi) aggregate profit data includes loss-making firms, leading to overestimation of effective tax rates. While there may be forces biasing the results in different directions, on the whole such measures are likely to be downward biased, underestimating effective taxation.

The forward-looking approach is the most appropriate when analyzing incentives for undertaking new investment projects, but application of the EMTR is limited by the fact that in practice only those projects with a rate of return above the cost of capital are realized. EATR is a more suitable concept when an investor has to choose between few projects generating economic rents, but it can also be used to evaluate the choice of a country for foreign investors (WB, 2004). EMTR aims to assess the allocation efficiency of a tax system, when EATR measures the impact of taxation on managerial decisions. Both forward-looking measures are derived from models and conclusions are valid only under the assumptions of these models. Forward-looking studies can not control for tax enforcement.

In theory, in order to measure the impact of taxes on future earnings, forward-looking measures should be preferred as an investment consists of present and future cash flows. However, in practice there may be reasons why backward-looking measures capture important variation in tax rates (Devereux, Griffith, 2002). Applying forward looking measures may result in difficulties to reflect certain complexities of the tax system. Concluding, none of forward-looking concepts is good for the purpose of tax competition, it rather applies to investment choice problems. Therefore, in further analysis we concentrate on macro-backward approach, keeping in mind all the shortcomings and potential downward bias.

Existing calculations

There are number of studies on effective taxation applying forward-looking approach. These studies mostly refer to old member states (i.e. Chennells et al, 1997; Devereux et al, 2002). Calculations involving the use of new member states data are so far limited.

There are only few comprehensive studies on new member states providing limited time series. Jacobs et al (2003, 2004) calculated the effective marginal and average corporate rates for new member states at the subsidiary level and at the parent company level located in Germany. The results indicate that the effective tax rates at the subsidiary level are lower than statutory rates with the

exception of Hungary in 2004 (Table 2). With data for 2003 and 2004 we observe that in the group of new member states only in Czech Republic the effective rate is growing (whereas the nominal rate fell). Other countries decreased the effective taxation but to lesser extent than the fall in nominal rates what indicates some tax base increase. The underlying reason for the fall in effective taxation from the German company level is cancellation of withholding taxes on dividends as of 1 May 2004.

Table 2 Effective marginal tax rates in the new EU member states, 2003-2004

	EATR at subsidiary level		EATR at German parent company level	
	1 Jan 2003	1 Jan 2004	1 Jan 2003	1 Jan 2004
Czech R.	24.18	24.73	31.86	26.70
Estonia	22.52	22.52	24.57	24.53
Hungary	19.37	18.08	24.85	20.18
Latvia	17.76	14.35	23.36	16.53
Lithuania	13.11	12.82	15.36	15.03
Poland	24.73	18.02	29.84	20.13
Slovakia	22.10	16.67	27.39	18.80
Slovenia	21.60	21.60	33.42	23.63

Source: Jacobs et al (2003), Jacobs et al (2004)

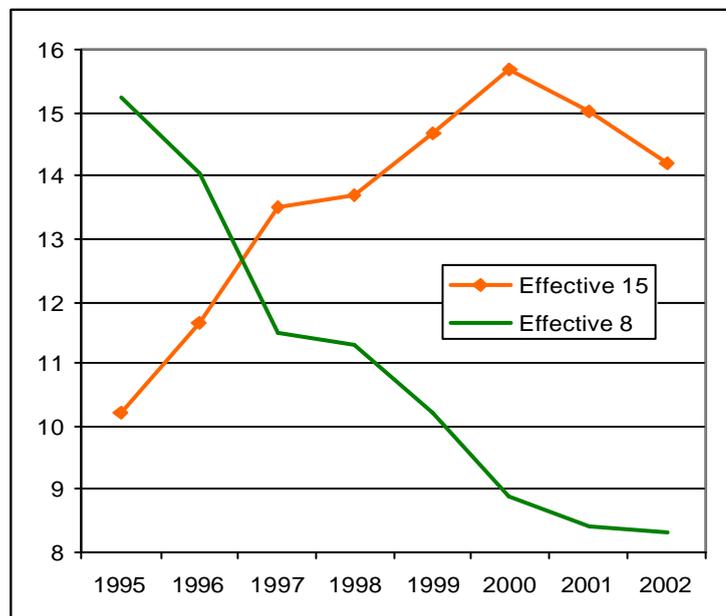
Bellack et al (2005) calculated effective average bilateral tax rates for seven home countries and five new member states for the period 1996-2004; however, the data set is not available. The main message is substantial differences in the variability of the statutory and bilateral average effective tax rates.

Effective tax rates with macro backward-looking approach

Similarly, while there is a bulk of empirical literature on effective tax rates applying the macro backward-looking approach, only two studies that were found refer to the new member states (for the period 1993-98 see Leibrecht et al, 2002; WB, 2004). In this section we present our own results using the same approach on the most recent available data. The data on corporate tax revenues were extracted from the European Commission database (EC, 2004b), while the tax base is represented by the gross operating profit of financial and non-financial corporations from the AMECO database of the EC (both using ESA95). The gross operating surplus measures profits before depreciation, thus eliminating the distortion from differences in depreciation rules. The same concerns interest, and consequently the method of financing does not matter for the results. Keeping in mind the pitfalls of this measure and its likely downward bias, the results are shown in Table 3.

The results confirm conclusions from other studies: in the second half of the 1990s, effective corporate tax rates were growing in the EU-15, but falling in the EU-8 countries. Since then, both trends appear to have reversed and some convergence taking place. This reflects falling statutory CIT rates and broadening tax base. Note that at the beginning of the analyzed period, effective rates in the EU-15 were lower than in the EU-8, although nominal rates would suggest the opposite picture.

Figure 4 Effective tax rates on corporate income in EU-15 and EU-8: macro backward-looking approach (%), 1995-2002



Source: Authors' calculations

Table 3: Effective corporate tax rates in the EU (macro backward-looking approach), 1995-2003

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Belgium	10.8	12.1	13.0	14.8	14.7	14.5	14.9	14.4	13.3
Denmark	9.3	10.8	12.0	13.7	14.3	10.5	14.0	13.1	12.5
Germany	4.4	6.0	6.2	6.4	7.0	8.2	2.9	2.8	---
Greece	14.1	12.9	17.7	20.9	22.2	27.5	22.1	22.5	18.6
Spain	8.6	9.9	13.1	12.2	14.5	15.4	14.1	16.2	---
France	9.6	11.1	12.6	12.3	14.5	14.8	16.6	14.0	12.2
Ireland	---	---	---	---	---	---	---	---	---
Italy	12.2	13.6	15.5	9.4	10.6	9.0	11.1	9.9	8.7
Luxemburg	---	---	---	---	---	---	---	---	---
Netherlands	12.8	15.9	17.6	17.5	18.3	17.0	17.3	15.0	13.1
Austria	9.0	11.2	10.4	10.6	9.2	9.7	14.7	13.5	9.9
Portugal	10.4	12.3	13.9	14.1	16.8	19.4	17.0	18.1	16.5
Finland	8.7	10.8	13.2	15.4	16.5	20.9	15.5	15.9	---
Sweden	11.2	12.5	14.2	14.2	16.4	21.1	18.8	16.2	14.7
United Kingdom	11.5	12.8	16.1	16.2	15.6	16.0	16.2	12.7	12.3
Czech Republic	18.6	15.2	13.0	12.9	13.7	12.9	14.8	17.1	---
Estonia	---	---	7.9	9.0	8.0	3.2	2.4	4.2	5.6
Latvia	9.5	11.2	8.6	8.6	6.8	5.8	6.1	5.6	4.2
Lithuania	5.4	4.7	6.6	5.4	3.5	2.5	1.5	1.8	4.2
Hungary	---	---	7.7	8.7	9.4	10.5	---	---	---
Poland	21.3	23.0	22.7	20.3	17.4	15.8	14.9	12.9	---
Slovenia	---	---	---	---	---	---	---	---	---
Slovakia	21.3	16.0	14.2	14.1	12.7	11.5	10.8	---	---

Source: Ameco: update 4 April 2005, Eurostat – authors' calculations

Notes: '---' denotes lack of data

4. Is allocation of investment vulnerable to differences in corporate tax rates?

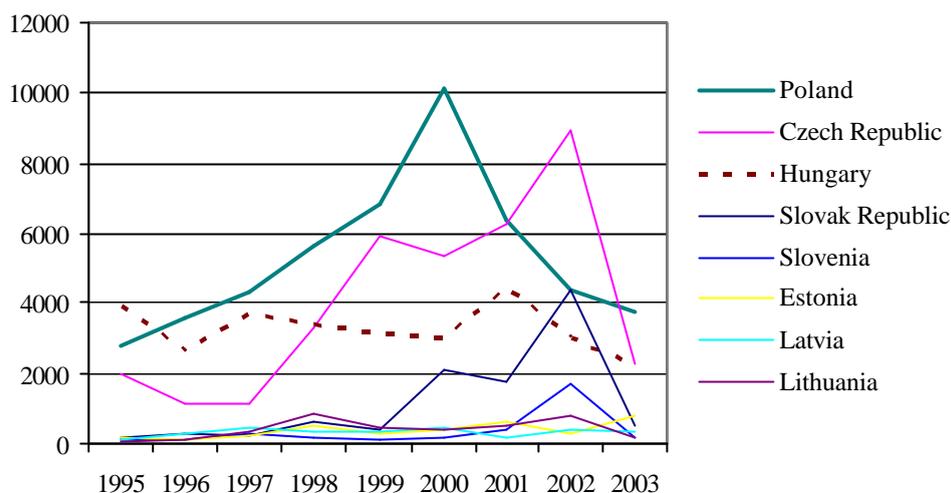
The issue of tax competition can be examined indirectly by looking for the responsiveness of investment to corporate tax rates. It is also possible to estimate direct interdependence in tax setting behavior as an indicator of tax competition. This paper applies indirect approach.

The empirical literature on the effects of taxes on FDI focuses almost exclusively on the US and the EU-15 data. There are only a few studies on FDI determinants in the new member states and none of them applies effective taxation. Carstensen and Toubal (2003) apply difference between statutory rates of two countries as variable determining FDI flows for the sample of 1993-1999 and CEECs and recorded that estimated parameter value is small and not significant at the 5% level. The potential explanation was that they did not take into account special tax regimes designed to attract FDI. Application of effective tax rates would address these shortcomings. Tax rates were also examined as FDI determinant by Edmiston et al (2003) who apply two variables: number of special tax rates and the highest statutory profits tax rate. The results indicate that imposition of an additional special tax rate reduces FDI as a percent of GDP and higher tax rates lead to lower inflows of FDI in FSU and CEECs. Again, the variable applied is statutory rate.

FDI inflows into EU-8

Along with progress in development, foreign investment flows into Central and Eastern Europe boosted at the end of 1990s, in some countries reaching EUR9 billion a year (see Figure 5). UNCTAD reports that even in 2000-2002, when overall FDI flows were shrinking each year reflecting slowdown in world largest economies, inflows to Central and Eastern Europe increased (UNCTAD, 2004), and overall during 2000-2003 remained broadly stable (UNCTAD, 2005).

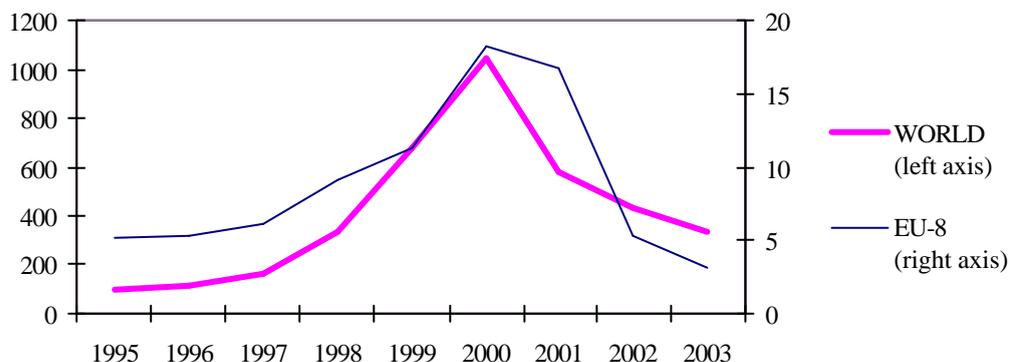
Figure 5: FDI inflows into EU-8 in millions of ecu/euro, 1995-2003



Source: UNCTAD data converted into USD/EUR at average exchange rate

EU-15 countries have been very active in acquiring assets in Central and Eastern Europe until 2001, often winning large privatization tenders. FDI from old member states going to the eight largest new members totaled EUR18 billion in 2000. However, the significance of direct investment flows to the current EU-8 group was negligible for all outward FDI of Western European economies. Even the high result of 2001 was only about 2% of total outward FDI investment into equity capital and loans of EU-15 (see Figure 6). In 2003, EU-15 investment into equity capital and loans in eight new members was around 1% of total outward EU-15 FDI.

Figure 6: EU-15 FDI outflows to eight new member states, equity investment and loans only, in billions of ecu/euro, 1995-2003



Source: EUROSTAT

Germany is the largest EU investor in the group of EU-8, with reported FDI outward stock in 2002 of over EUR27 billion, followed by France (EUR13 billion), Austria (EUR11 billion) and Netherlands (EUR10 billion). Inflows of direct investment from Western Europe constituted over 50% of total incoming FDI to EU-8 in 2001-2002 (see Table 4), and in the case of smaller EU-8 countries have been significant part of overall investment outlays.

Table 4: FDI outward stock in EU-8 by largest investing countries, in millions of ecu/euro, 1995-2002

	1995	1996	1997	1998	1999	2000	2001	2002
Germany	5636	7402	10084	14262	17650	23179	27217	27272
France	1151	1426	1987	2731	4821	8843	12408	13310
Austria	2451	2777	3316	3861	4665	6804	9116	11390
Netherlands	1866	2697	3481	4584	6639	8781	9585	10282
UK	429	756	2165	2499	1390	2270	6425	7641
Sweden	0	232	573	1055	1752	3248	4922	5476
Denmark	:	523	:	1628	1323	2464	3110	3166
Italy	:	:	:	:	:	2967	3108	2778
Portugal	0	2	15	53	174	262	641	546
Finland	16	60	70	224	819	1364	1505	1660
Greece	:	:	:	:	:	:	40	47
Ireland	:	:	:	:	:	:	0	7
EU15/world*	71%	75%	39%	39%	80%	79%	57%	62%

Source: calculations on the basis of the EUROSTAT investment position data

Notes: No data on Belgian, Spanish and Luxemburg FDI outward stocks for EU-8 were available

* Last row shows the share of FDI inward stock in all EU-8 in percent of total FDI

Model

The issue of tax competition is examined indirectly by looking for the responsiveness of investment to effective taxation. Specifically, we want to find out if the FDI flows react on changes in effective taxation applying methodology developed by Buettner (2002) and Gorter and Parikh (2000). With data on FDI outward stock in EU-8 (Table 4) we identified the main investors from old member states. Our regression equation is thus:

$$s_{ijt} = a_j + b_{j1}(t_{jt} - \bar{t}_t) + b_{j2}X_{jt} + e_{jt}$$

where s_{ijt} denotes the flow of direct investments from country i to country j observed as of period t , t_j is effective tax rate in country j , \bar{t}_t is the average effective rate in EU in period t , and X_j is an array of control variables such as: country size, economic potential, labor costs, trade links etc. The slope parameter β_{j1} captures the relationship between fiscal incentives and FDI flows. If there is some tax competition observed this parameter will be negative and significant. Standard panel data technique is applied to 4 main investors and 6 new member states where these investments are located. For every couple of countries the bilateral FDI flows are identified. All the variables are logarithmically transformed.

Dependent variable

The aim of this research was to estimate the determinants of the FDI flows into new member states with special attention paid to effective corporate taxation, hence we defined dependent variable as flows of investment rather than investment positions (as in Buettner, 2002). The dependent variable is thus FDI outward flows financed with equity and other capital per capita of the host country population. The flow statistics are taken from old member states balance of payments. These are investments of equity capital in branches, shares in subsidiaries and associates, various contributions in kind (such as provision of machinery), and lending between investors and direct investment enterprises. In other words, these are total FDI flows from “old” to “new” member states, without reinvested earnings and investment income.

The problem that such data cause is that “loans” are often repayments, hence negative flows. For this reason, the panel estimation was made in an unbalanced sample, made with positive flows only (following Buettner, 2002). Unfortunately, it practically excluded use of Hungarian data, because of negative flows.

The other possibility would be to use stocks – i.e. investment positions, as in Hines (1996) and Gorter and Parikh (2000). However, as noted above, we were primarily interested in finding determinants of current investment decisions, and less interested in the determinants of stocks accumulated from the beginning of 1990s. Secondly, it is impossible to have EUROSTAT data on stocks without reinvested earnings; only total positions are reported. But the dynamics of reinvested earnings have highly influenced total FDI figures in Central and Eastern Europe, and from the point of view of this paper, it was desirable to exclude it. On the top of this, the latest available year for stocks was 2002, and with using flows data we were able to have one year longer time series that included the most recent observations.

As noted above, data on FDIs were taken from EUROSTAT. EUROSTAT compiles data mainly from the member states' balance of payments, making necessary adjustments so the statistics are more comparable than national data.

Direct investment flows into EU-8 were divided by respective host country's population in order to get rid of country size effects. Right-hand side variables were constructed so that the country effect was excluded, hence the same was done with dependent variable.

Tax variable

The effective tax rates were calculated for the whole sample with macro-backward approach (see section 3 of this paper). In order to capture the effect of permanent changes of statutory rates and tax bases we measure the difference between the effective tax rate of a host country and the EU average effective tax rate for all the combinations. As new member states' level of effective taxation was usually below the EU average we used the ratios of these two indicators for the log specification in order to avoid negative numbers.

Control variables

When deciding about control variables, we looked through the factors suggested by the theory of the determinants of foreign direct investment (usually reflecting determinants of "North-North" type of investment) and on available evidence on FDI determinants specific for transitional countries. Moreover, there was a need for parsimonious specification. With few observations the number of control variables had to be reduced to the ones of critical importance.

Along the lines of "eclectic theory of FDI" by Dunning, direct investment goes where it can possess specific advantages (ownership, location, internalization). Later works of the same author suggest that FDI flows can be characterized according to the predominant motives of investors as ones that seek markets, resources, and/or efficiency (Dunning, 1993, after Kinoshita, 2004). Assuming that all these motives have influenced FDI flows into CEECs, they should influence aggregate FDI figures as well.

Thus, we decided to include market size variable, as the one that motivates horizontal FDI flows into CEECs. We expected that this variable should positively and significantly influence FDI inflows, as most of this kind of investment that has been flowing into new member states since mid-1990s has been of the horizontal nature.

The resource-seeking motive and the empirical works on FDI determinants in CEECs suggest that low-cost East European labor should also influence aggregate investment flows. Hence, we included labor cost variable in our model, measuring also the relative abundance of labor in each of the host countries².

² For details on construction of variables see Appendix 1.

The relative cost of capital was ignored, as it has been often found as insignificant even in the “North-North” type of FDI (see: de Santis *et. al.*, 2004). Similarly, we do not expect human capital neither R&D achievements of CEECs relative to old member states to play any role while locating investment in EU-8 during 1995-2003.

Efficiency-seeking motive suggests that trade and investment liberalization plus proximity in terms of economic relations should play a role when deciding about opening a plant in a Central European country. As trade and investment regimes of EU-8 vis-à-vis EU-15 were in large part liberalized before the considered period, we did not control for them in our model. However, we included a variable that measures trade proximity, at the same time reflecting partly the effects of liberalization. Bilateral trade indicator shows the importance of trade of a given new member state with a given economy of EU-15. Bilateral trade variable has been often found significant in empirical research on the subject (Kinoshita, 2004, Buettner, 2002).

We also tried to introduce “transition index” measuring the general level of development. However, it was highly correlated with our market size variable, and was excluded from the model.

Last but not least, we checked what have been the motivations of foreign investment decisions in the EU-8 over the last years. The predominant drive, as declared by foreign investors, has been – at that time – future EU membership (UNCTAD, 2004), followed by other factors that we included in the model. The perspectives of EU membership are controlled here by the choice of host countries, with all of them having the prospects of EU membership during the considered period.

Results

Estimations were carried on the unbalanced sample covering annual data on six new member states³ for the period 1996-2003. The employed technique was fixed-effects and random-effects model. While the choice of fixed-effects model was obvious in this case, the random-effects specification is conditional on the fact that unobserved variables are not correlated with explanatory variables. We also report OLS estimates for comparison.

The research concentrated on finding determinants of aggregate EU-15 flows to new member states and the role of taxation as explanatory variable. However, we also performed individual estimations for the largest EU-15 investors in the region (Germany, Netherlands, France and Austria), taking into account trade between a given investing country and a given receiving country. The results for individual investing countries are shown in the Appendix 2.

Both fixed and random effects specifications show that the predominant and only motive of locating FDI from EU-15 in the new member states since the mid-1990s has been local market potential. Elasticity of market size variable shows that 1% increase in the GDP per capita yields about 2% increase in the FDI per capita inflows.

Effective CIT rates relative to the EU average are not significant for the EU-15 investment in EU-8. Labor cost and trade proximity also do not seem to play any role in West European investment decisions, which makes us to conclude that the FDI coming to the new member states in 1996-2003 have been predominantly of horizontal nature, involving replication of production facilities in the host country. No signs of integration in multinational value chains have been visible in aggregated data.

³ Hungary and Slovenia had to be excluded because lack of data.

Table 5: Estimation results for EU-15 FDI outflows, 1996-2003

	OLS		fixed effects		random effects	
Relative effective CIT rates	0.2578*	(0.1505)	0.1791	(0.3588)	0.2557	(0.1832)
Labor costs	0.8346	(0.9093)	-3.3244	(2.4588)	0.3529	(1.0912)
Market size	2.0059**	(0.4437)	1.9185*	(0.7995)	2.1797**	(0.4828)
Bilateral trade	0.6983*	(0.3633)	0.4903	(0.9544)	0.5573	(0.4391)
Adjusted R2	0.502		0.535		0.534	
Number of observations	32		32		32	
Number of cross sections used	6		6		6	

Notes:

- (1) Dependent variables = logarithm of FDI flows into NMS per capita
- (2) Receiving countries: Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovak Republic
- (3) Constant was included
- (4) Standard errors are in parentheses; * and ** denote 10% and 5% significance, respectively

Equations for individual countries do not have good statistical properties, reflecting primarily data weaknesses. However, the specification for Austrian FDI into EU-8 confirms horizontal nature of FDI as being the only motive driving Austrian investors' attention to the new members. Perhaps interesting results appeared for Dutch outward investment, where relative effective CIT rates turned out significant. A decrease in effective CIT rates in new member states of 1% below the EU average was bringing a 2% increase of FDI flows from Netherlands to Czech Republic, Poland and Slovakia per capita. It can be explained either by the specific nature of Dutch investment in Eastern Europe (financial intermediation) that is possibly highly influencing additional FDI flows or simply by the spurious regression done on a small sample (20 observations). Too few observations did not allow for random effects specification to confirm it.

What do these results mean for potential tax competition within enlarged Europe? Empirical research on EU-15 indirectly examining tax competition confirm significant role played by effective taxation in allocation of cross-country investments. Gorter and Parikh (2000) conclude that an EU country (EU-15 in this case) typically increases its FDI position in another EU country by approximately four percent if the latter decreases its effective corporate income tax rate by one percentage point relative to the EU mean. The same conclusions are reported by Buettner (2002). We do not refer to papers on EU-8 countries like Edmiston et al (2003) or Carstensen et al (2003) as they apply statutory rates, which we find misleading. If we believe in externalities of tax setting behavior we should support the stronger coordination of corporate income taxation. However, on the grounds of our results it is difficult to claim that some stronger capital tax coordination is necessary within enlarged Europe as there is no strong evidence of tax influence on bilateral FDI flows between old and new member states.

These weak results may be also the consequence of available data. Time series are short and sample is additionally limited by the fact that not every old member state invested in every new member state in any year and may not even reported a small investment, which results in missing values. The results may be biased by the effective taxation measure applied. The analysis should be repeated with forward-looking effective average corporate tax rates calculated at the parent company level, which was left for further research. As of now, there is no empirical evidence that comparative tax advantage of the new member states expressed by lower statutory and effective corporate tax rates significantly influences the location of FDI coming from "old" EU.

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Appendix 1: Description of variables

FDI flows per capita	FDI outflows from “old” member states to a given new member state in millions of euro, per capita of receiving country population FDI flows are only investment in equity and loans, without reinvested earnings FDI and population of new member states are taken from EUROSTAT
Relative effective CIT rates	Effective CIT rate of a given receiving country divided by effective CIT average rate for the whole European Union Data on effective CIT rates are calculated by authors with data extracted from EUROSTAT and AMECO database
Labor costs	Share of labor costs in GDP Data are from EUROSTAT
Market size	GDP per capita, in millions of euro Data are from EUROSTAT and AMECO database
Bilateral trade	Average of import and export with investing country divided by the receiving country’s GDP Data on trade flows in euro and on GDP are from EUROSTAT

All variables are in logarithms.

Appendix 2: Results for individual countries

Dependent variable: logarithm of FDI flows per capita

Table 6: Estimation results for Dutch and German FDI into EU-8, 1996-2003

	Netherlands				Germany					
	OLS		fixed effects		OLS		fixed effects		random effects	
Relative effective CIT rates	-1.4236	(0.9539)	-2.0332*	(0.9924)	0.0570	(0.3574)	-0.4944	(0.9019)	-0.2368	(0.0314)
Labor costs	1.7370	(1.2394)	-1.8922	(3.5539)	2.6226	(1.6056)	-5.0181	(4.0371)	4.9224	(0.1625)
Market size	0.5960	(1.1561)	-1.5754	(1.4513)	-0.4293	(0.8812)	-1.3913	(1.2686)	-1.5568	(0.1189)
bilateral trade	0.1538	(1.5141)	1.1663	(1.3777)	1.8026	(0.5988)	0.5130	(1.5159)	2.5936	(0.0626)
Adjusted R2	0.125		0.352		0.397		0.452		0.325	
Period	1996-2002		1996-2002		1996-2003		1996-2003		1996-2003	
Number of observations	20		20		32		32		32	
Number of cross sections used	3		3		6		6		6	

Notes:

- (1) Dependent variables = logarithm of FDI flows into NMS per capita
- (2) Countries receiving German FDI: Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovak Republic
- (3) Countries receiving Dutch FDI: Czech Republic, Poland, Slovak Republic
- (4) Constant was included
- (5) Standard errors are in parentheses; * and ** denote 10% and 5% significance, respectively

Table 7: Estimation results for French and Austrian FDI into EU-8, 1996-2003

	France						Austria					
	OLS		fixed effects		random effects		OLS		fixed effects		random effects	
relative effective CIT rates	0.5450*	(0.3026)	-0.8820	(0.6924)	-0.0464	(0.5282)	0.2458	(0.7622)	0.8841	(1.2418)	0.2131	(0.5522)
Labor costs	4.7925**	(1.5108)	-5.0607	(5.4763)	3.3122	(3.0100)	2.3892	(2.9002)	5.4979	(5.5951)	2.4512	(2.0896)
Market size	1.4833	(1.2745)	2.5266	(1.6745)	2.5794	(1.5841)	2.8991**	(1.0225)	3.1219*	(1.8008)	2.6806**	(0.7548)
bilateral trade	1.4700	(1.0175)	0.6324	(1.4883)	1.0195	(1.3657)	0.9461*	(0.4497)	2.6736	(2.4217)	0.9651**	(0.3194)
Adjusted R2	0.470		0.616		0.592		0.667		0.610		0.663	
Period	1996-2003		1996-2003		1996-2003		1996-2003		1996-2003		1996-2003	
number of observations	28		28		28		30		30		30	
number of cross sections used	6		6		6		6		6		6	

Notes:

- (1) Dependent variables = logarithm of FDI flows into NMS per capita
- (2) Receiving countries: Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovak Republic
- (3) Constant was included
- (4) Standard errors are in parentheses; * and ** denote 10% and 5% significance, respectively

Appendix 3: Correlation matrix

	FDI inflows per capita					labour costs	relative effective CIT rates	market size
	FDI EU15	FDI NL	FDI DE	FDI FR	FDI AT			
FDI inflow per capita	..							
labour costs	-0.005	0.219	0.013	0.395	0.017	..		
relative effective CIT rates	-0.048	-0.382	0.484	0.377	0.367	0.524	..	
market size	0.775	0.413	0.587	0.359	0.670	0.056	0.061	..
bilateral trade EU15	0.387					-0.604	-0.368	0.349
bilateral trade NL		0.408				-0.280	-0.462	-0.202
bilateral trade DE			0.679			-0.292	0.311	0.510
bilateral trade FR				0.250		-0.218	-0.140	0.766
bilateral trade AT					0.726	-0.364	0.326	0.548

Appendix 4: Summary statistics

		Mean	Maximum	Minimum	Std. Dev.	Observations	Cross sections
	FDI from EU15	0.110	0.730	-0.297	0.147	60	7
FDI inflow per capita	FDI from DE	0.027	0.366	-0.133	0.061	63	7
	FDI from NL	0.017	0.104	-0.044	0.024	35	4
	FDI from FR	0.017	0.290	-0.001	0.044	60	7
	FDI from AT	0.011	0.105	-0.017	0.021	63	7
	relative effective CIT rates	0.833	1.866	0.120	0.472	52	7
Labour costs	0.592	0.811	0.477	0.093	40	6	
Market size (GDP per capita)	0.004	0.008	0.001	0.002	70	7	
	bilateral trade EU15	0.288	0.538	0.133	0.097	70	7
bilateral trade ((X+M)/2)/GDP	bilateral trade DE	0.110	0.216	0.050	0.055	70	7
	bilateral trade NL	0.018	0.050	0.008	0.009	70	7
	bilateral trade FR	0.016	0.031	0.007	0.006	70	7
	bilateral trade AT	0.021	0.072	0.002	0.021	70	7