Foreign Direct Investment in the Enlarged EU: Do taxes matter and to what extent?

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Abstract

Foreign direct investment is of increasing importance in the European Union. This paper estimates the effect of taxes on foreign direct investment (FDI) flows and three sub-components of these flows for the countries of the enlarged European Union. We show that the different subcomponents of FDI should and indeed do react differently to taxes and that sample selection needs to be addressed in the estimation. The model in the spirit of gravity equations robustly explains FDI flows between the 25 member states. Market size factors have the expected signs. Non-productivity adjusted wages as determinants of FDI are less robust. After controlling for unobserved country characteristics and common time effects, the top statutory corporate tax rate of both, source and host country, turn insignificant for total FDI and investment into equity. However, high source country taxes clearly increase the probability of firms to re-invest profits abroad.

JEL: F3, F2, F4, E6, H2, H8

Keywords: Foreign direct investment, FDI, corporate taxes, fixed set-up costs, sample selection model

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1 Introduction

In the last 15 years, Europe has witnessed many fundamental changes of her economies. An important tendency was the increased integration of those economies that were once separated by an "iron curtain". After the fall of the Iron curtain, the 10 new member states of the European Union have witnessed profound changes of their economies. While GDP levels have significantly dropped in most countries until the mid 1990s, the economic performance has been quite dynamic in the second half of the 1990s. This dynamic evolution together with the prospective EU membership have also attracted significant foreign direct investment (FDI) inflows. Against the background of relatively low tax rates in the new EU member states, the political debate in Europe focusses especially on the effect of taxes on FDI flows.

Increased FDI flows are a global trend and have been extensively investigated in the economics literature. Bloningen (2005) provides a survey of the two main motives of FDI. Vertical FDI serves to allocate different steps of the production to those countries, where the corresponding production costs are lowest. Horizontal FDI represents just a duplication of the entire production process to a second country in order to be closer to the foreign market. Empirical studies therefore explain FDI by firm level factors and external factors such as the market size to capture horizontal FDI motives and labor costs and taxation to capture vertical FDI motives.

The empirical literature on tax effects is surveyed by de Mooij and Ederveen (2003), who calculate a median semi-elasticity of FDI to taxes of -3 and document a wide range of empirical estimates. Important recent contributions include Bénassy-Quéré, Fontagné, and Lahrèche-Révil (2005), Desai, Foley, and Hines Jr. (2004), Devereux and Griffith (2003), and Devereux and Griffith (1998).

So far, almost all studies on the empirical effects of taxes on FDI have either focused on the discrete decision to invest, or on the amount of investment. Buettner and Ruf (2004), for example, study in how far discrete location decisions are affected by taxes with a panel of German multinationals. The statutory tax rate significantly influence the probability to locate in a country. Bénassy-Quéré, Fontagné, and Lahrèche-Révil (2005), on the other hand, estimate the reaction of FDI flows to corporate taxation in a gravity model of 11 OECD countries abstracting from discrete location decision problem. The authors find that tax differences negatively affect FDI flows.

Devereux and Griffith (1998) show that factors determining the discrete location

decisions of multinational firms can differ from the factors relevant for the size of the investment. Similarly, Razin, Rubinstein, and Sadka (2004) argue that a representative firm takes two sequential decision, first whether to invest and second, how much to invest. The first decision is governed by total profitability conditions, whereas the second decision is the result of marginal conditions. In their model, fixed set-up cost might prevent the firm from making an investment which, based on marginal conditions, should be done. The existence of fixed investment set-up costs requires the separation of these two steps in an empirical investigation. Razin, Rubinstein, and Sadka (2005) apply this idea to macroeconomic FDI data. To our knowledge, they are the first to simultaneously estimate the determinants of the discrete investment choice and the amount of FDI. With OECD data, they show that high source country taxes increase the probability of observing FDI, while high host country taxes lower the amount of FDI to that particular country. This is evidence in line with fixed set-up costs of investment.

Only few papers study FDI in transition countries. Carstensen and Toubal (2004) examine the determinants of FDI into the Central and East European countries (CEECs). Traditional determinants of FDI such as market potential, low relative unit labor costs, and relative factor endowments have plausible effects. Buch, Kokta, and Piazolo (2003) do not find significant evidence for the relocation of FDI to Eastern Europe. Bevan and Estrin (2000) present evidence that country risk, unit labor costs, host market size and gravity factors determine FDI. Frenkel, Funke, and Stadtmann (2004) find that FDI flows from developed countries to emerging economies depend on market size, distance and host country risk and economic growth. Kinoshita and Campos (2003) focus more narrowly on transition countries and show that the main determinants of FDI inflows are institutions, agglomeration and trade openness.

We contribute to the literature in several ways. To our knowledge we are the first to simultaneously estimate the determinants of the flow size and the decision to invest with four bilateral FDI measures (total FDI flows, equity capital flows, reinvested earnings, and other FDI). With the data provided by Eurostat, we are able to show, that these different components of FDI react differently to taxes and basic macroeconomic determinants. For the estimation, we explicitly address sample selection problems. This is of particular relevance in the enlarged EU, as many source-host country pairs (still) report zero FDI flows. Furthermore, we are among the first to separate the differential effects of host and source country taxes on FDI.

The remainder of the paper is organized as follows. The next section presents theoretical considerations on the effects of taxes on the different FDI components. Section 3.1 discusses the structure of FDI relationships in the EU of 25 countries, and its evolution. It also provides summary information on the tax data. Section 3.2 discusses the empirical strategy, while Section 4 presents the empirical results and interprets the findings. The final section concludes.

2 Theoretical framework

Economic theory points at numerous factors, that influence the amount of FDI and the decision to undertake FDI. In our empirical part, we follow very closely the specification of Razin, Rubinstein, and Sadka (2005), which is similar to the standard way of modelling FDI proposed by Markusen, Venables, Kohan, and Zhang (1996). In this section, we therefore focus the discussion on the effect of host and source country taxes on FDI, equity FDI, retained earnings and other FDI. Especially the different impact of taxes on equity and retained earnings investment has not been discussed so far.

Our theoretical framework extends the framework by Razin, Rubinstein, and Sadka (2004) and Razin, Rubinstein, and Sadka (2005). The second paper looks specifically at the the role of source and host corporate tax rates on FDI. In this model, two decisions are taken: First whether to engage in FDI, second, how much to invest. Razin et al (2005) assume that fixed set-up costs of new FDI projects accrue in the source country of FDI. The representative firm can use transfer pricing to incur fixed set-up costs in the source country.[1] Thus, any local cost for setting up a new plant can be transferred to the source country. Moreover, large parts of the fixed cost in terms of assembly line planning, R&D and similar activities occur in the the source country of FDI anyway. This implies that the investment is only undertaken if the present discounted profits in the host country, which depend negatively on the host country tax rate, is larger than the fixed set-up cost, which is tax deductible in the source country., i.e.

$$c(1-\tau_s) \leq v(\tau_h) \tag{1}$$

[1]Razin, Sadka, and Tong (2005) discuss the relevance of firm level heterogeneity. They show that firm level heterogeneity can explain, why FDI flows in both directions. Helpman, Melitz, and Yeaple (2004) show that productivity differences across firms determine whether firms choose to serve only the domestic market, export or engage in FDI.

Larger source country tax rates τ_s reduce the fix cost c, thereby lowering the threshold at which an investment will be undertaken and increasing the probability to invest. Larger host country tax rates τ_h, on the other hand, reduce the marginal return on investment and thereby the net present value of the investment v. This reduces the amount of FDI.

For the amount of FDI, source country taxes on the other hand should matter little, as any investment project, whether abroad or at home, is subject to the same source country tax rate upon repatriation of the profit. In this sense, source country corporate tax rates can be expected to impact on the investment decision as fixed costs are source country tax deductible, but not on the amount of FDI in particular.

Following Razin, Rubinstein, and Sadka (2005), host country tax rates should negatively affect the amount of FDI as they reduce the marginal return of an investment project and thereby the present value of income streams from abroad. The validity of this hypothesis, however, largely depends on the precise tax system. The majority of world's countries exempt from tax most of the income earned by foreign affiliates of domestic multinational corporations (Hines 2001). In this case, host countries should matter strongly for FDI amounts while source country taxes matter only to the extent that foreign source income is taxed. Several major countries permit tax credits. If a tax credit is given on taxes paid abroad, host country taxes should matter little since they reduce the tax payment in the source country. However, many source countries only grant partial tax credit. Thereby the relevance of host country taxes increases. On the other hand, many countries in Europe, especially the 10 NMS, attract foreign investment by granting tax breaks for some initial period. In such a case, host country corporate tax **rates** probably matter only little for the amount of investment, because the profits earned are exempted from tax payments. Source country taxes should still play a role for the discrete investment decision because of set-up costs.

The discussion so far has made no distinction between different components of FDI. Razin, Rubinstein, and Sadka (2005) use total FDI flows to test their empirical hypothesis. In the following, we will argue, that the different parts of FDI should depend differently on tax rates. We will also show that the empirical predictions concerning total FDI can be distorted by the different reactions of sub-components of total FDI.

Investment into new equity constitutes the largest part of FDI. It also approximates best the part of FDI flow, to which Razin et al (2005) refer. Set-up costs,

e.g., relate to new investment projects, which are contained in equity FDI, but, by definition, not in retained earnings or inter-company credits. Razin et al therefore predict that the amount of equity FDI depends negatively on host, while the decision depends positively on source country taxes through the channel of tax deductibility of fixed set-up costs. We have already pointed out, that the relevance of these predictions crucially depends on the tax system in place. Deductability of taxes already paid in the host country against the source country tax payments reduce the relevance of host country tax rates. Also, granted tax breaks probably reduce the importance of host tax rates for FDI flows. On the other hand, exemption of foreign source income for increases the relevance of host country taxes and reduces the importance of source country taxes. The empirical predictions concerning the relevance of host country tax rates for equity FDI flows are thus unclear and left to empirical investigations.

Reinvested earnings (RE) help to clarify the importance of taxes for FDI. RE can only happen, after a profitable FDI has been effectuated. Profits that are redistributed to the source country of FDI are most likely to be taxed somehow in the source country. We therefore predict, that the likelihood of re-investing profits abroad should increase in the source country corporate tax rate, holding constant the host country tax rate. In addition, transfer pricing can be used to shift profits abroad. This will be recorded as RE and is a direct reaction to source country taxes leading to a larger amount of RE. We also expect RE to most robustly depend on taxes as they presuppose a profitable investment. Overall, RE are probably much more guided by tax considerations than equity investments, which strongly depend on other economic factors, such as market acquisition, production cost advantages and the like.

Concerning the residual FDI category, "Other"[2], empirical predictions are difficult. Probably, companies will extend less funds to countries, where taxes are higher, as investments in the country are less profitable. They might also want to use debt instruments instead of equity to a larger extent if host country taxes are high, since interest payments resulting from financial credits are not taxed in the host country, but in the source country.[3] In other words, financial credits and the like are probably also extended to shift costs from the source to the host country

[2]Other consists of inter company debt transactions: covering the borrowing and lending of funds, including debt securities and trade credits and land acquisitions. More details are given in the appendix.

[3]See Hines (2001) for a description of increased debt financing because of corporate taxation.

and profits from the host to the source country. Overall, the effects go in opposite directions and the predictions for other FDI are unclear.

We summarize the predictions of source and host taxation of the different components of FDI in the following table. The table shows that the effects of taxes

Table 1: The effect of corporate tax rates on different FDI categories in the flow and selection equation.

	flow		select		
	host	source	host	source	reason
equity	-	?	?	+	fixed cost (Razin et al)
	?	?	?	?	other determinants more "fundamental"
	0	?	0	+	tax breaks
re-invested earnings	-	+	-	+	avoid high source country taxes
	-	0	0	0	profits lower
	0	+	0	+	profit shifting
other	-	?	-	?	standard
	+	-	+	-	cost shifting
total FDI	-?	+??	-??	+	

Notes: From discussion above.

on FDI flows are not always unambiguous. We expect the results for tax effects to be most explicit for retained earnings because they should be independent of more fundamental investment considerations and ultimately reflect decisions on where to allocate profits.

3 Data summary and empirical strategy

3.1 Data

Foreign direct investment has increased worldwide and this trend is also prevalent in Europe. In our analysis, we focus on the years 1994-2003, as data before and after that period are not available. We include data for the EU 25 and Bulgaria and Romania, no data for Belgium and Luxembourg are included. We rely on Eurostat data as they provide a comprehensive and comparable data set. The details of the data sources are given in the appendix A.

Total FDI flows consist of equity, reinvested earnings, and other direct investment capital. Equity investment comprises equity in branches, all shares in subsidiaries and associates and other capital contributions such as provisions of machinery, etc. Reinvested earnings consist of the direct investors share in proportion to direct equity participation of earnings not distributed. Other FDI is inter company debt

transactions such as covering the borrowing and lending of funds, including debt securities, trade credits, and land acquisition.

Figures 1 to 4 provide information on the evolution of FDI flows in the period 1994-2003. As Figure 1 shows, gross FDI flows among the EU15 countries has evolved dynamically, amounting to 80 billion Euros in 2001 after a peak in 2000 of 350 billions.[4] FDI flows from the EU 15 countries to the 10 NMS have steadily increased in this period to reach almost 14 billion Euros in 2001 (Figure 2). The share of these FDI flows in percent of intra EU 15 FDI has considerably increased from virtually zero to almost 16 percent in 2001. It is interesting to note that

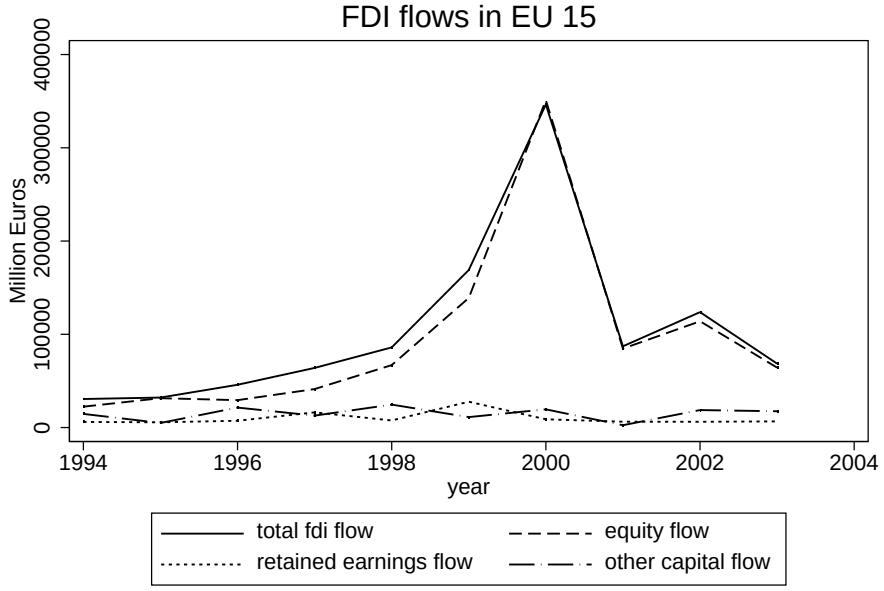

Figure 1: Evolution of intra-EU 15 FDI flows, Million Euros, *Source:* Eurostat, authors' calculations from the data set.

FDI flows from the 10 new member states to the old 15 are still quantitatively small. However, in recent years they have increased in importance (Figure 3). Also, bilateral FDI flows among the 10 new member states have picked up (Figure 4). As regards the different kinds of FDI, we see that the predominant share of FDI comes from investment into equity capital. Reinvested earnings and the residual FDI "other capital flow" are also relevant, especially for the aggregate flows to the 10 new member states. A separate investigation into the determinants of these different FDI flows therefore appears justified.

[4]The peak in 2000 is a world-wide phenomenon. Global FDI flows according to UNCTAD data peaked at almost 1500 billion US$ in 2000, falling back to less than 800 in 2001. It reflects a merger wave.

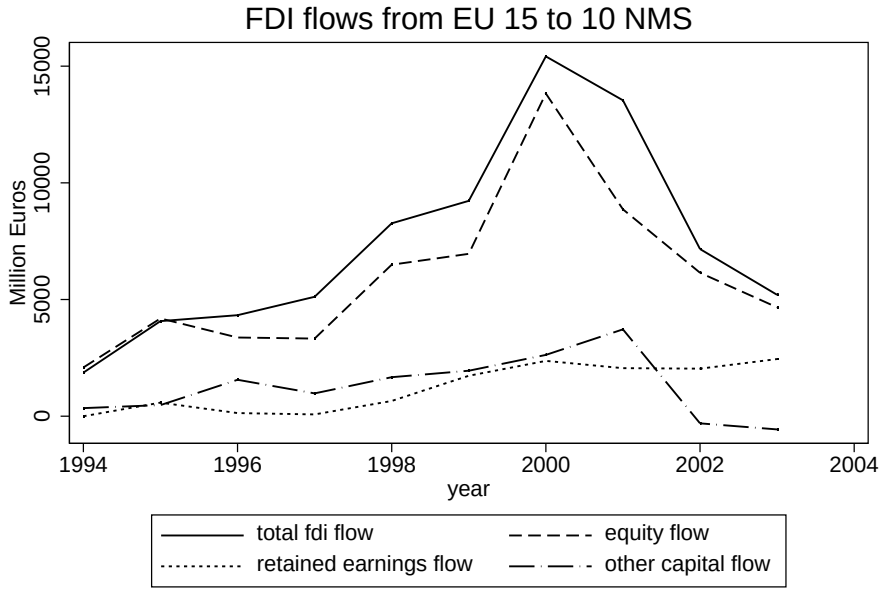

Figure 2: Evolution of FDI from the EU 15 countries to the 10 NMS, Million Euros, *Source:* Eurostat, authors' calculations from the data set.

An important characteristic of bilateral FDI data in general and especially in the present sample concerns zero FDI flows between countries. Table 2 shows that more than 33 percent of the bilateral relations, for which data are available, report that the FDI flow was zero.[5] In the earlier years, few East European countries were

Table 2: Structure of the data for the EU25, 1994-2003

	Total FDI		Equity		Reinvested		Other	
		%		%		%		%
#	1996		2724		1772		2314	
equal zero	661	33.1	991	36.4	991	55.9	1073	46.4
greater 0	1335	66.9	1733	63.6	781	44.1	1241	53.6
mean	637.19		402.74		111.16		163.23	
std. dev.	4763.98		3978.91		471.69		629.41	

Source: Author's calculations from Eurostat data.

recipients of FDI. But also in the EU 15, there are numerous country pairs without an FDI flow. Recently, East European countries have also started to invest in other EU countries. FDI flows have not only increased in amount, but more country pairs have established positive FDI relationships. The mean annual FDI flow from one

[5]Eurostat does properly differentiate between zero and missing observations.

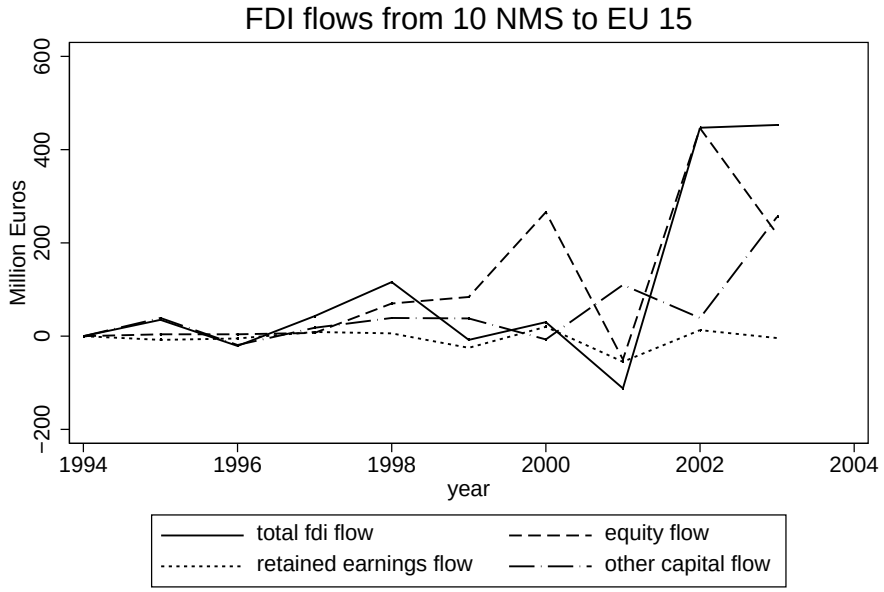

Figure 3: Evolution of FDI from the EU 15 countries to the 10 NMS, Million Euros, *Source:* Eurostat, authors' calculations from the data set.

to another country, where observations are available, amounts to 637 million Euros. An empirical analysis of FDI flows in Europe should therefore take into account the structure of the bilateral FDI flows and especially the information contained in the zero bilateral FDI flows.

Concerning our main explanatory variable, the tax burden, the literature has seen different approaches towards its measurement. One can distinguish between backward and forward looking measures and between effective tax rates, tax quotas and legal tax rates. All measures have advantages and disadvantages. The most widely used measure is the statutory tax rate, which is given by law. Devereux and Griffith (2003), Devereux, Griffith, and Klemm (2002) Devereux and Griffith (1998) argue in favor of rather complex measures of forward looking effective tax rates and distinguish between average and marginal concepts. This measure is not available for the enlarged EU on one coherent definition. Furthermore, it presupposes an asset and financing structure of an investment project. However, firms adjust their asset portfolios and their way of financing investments to tax burdens. This tax measure thus has an endogeneity problem and Razin, Rubinstein, and Sadka (2005) therefore suggest to instrument it by the corporate tax rate. While Bellak, Leibrecht, and Römisch (2005) argue in favor of the theoretical superiority of the Devereux et al measures, they also show that the cross sectional information contained in statutory

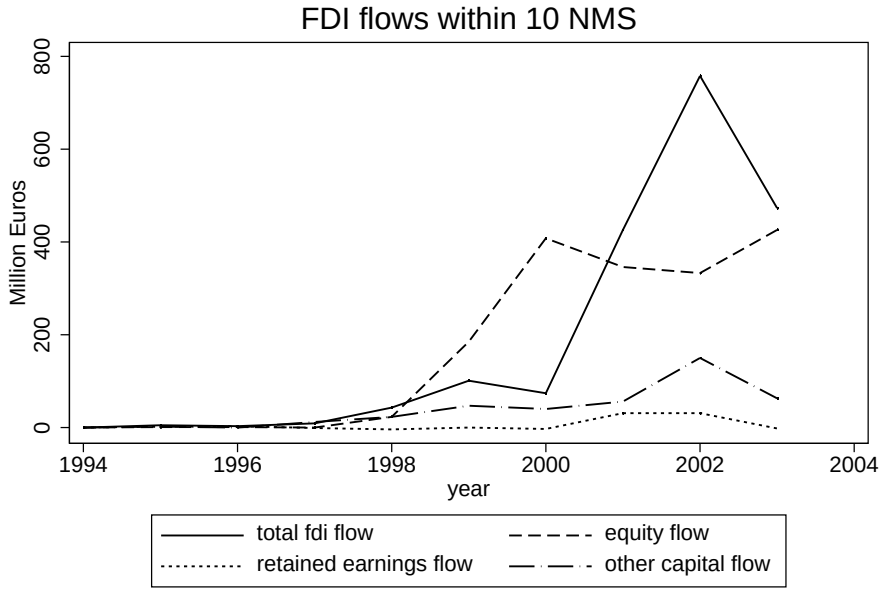

Figure 4: Evolution of FDI from the EU 15 countries to the 10 NMS, Million Euros, *Source:* Eurostat, authors' calculations from the data set.

tax rates is close to the more complex measures. Moreover, it is well known, that the more complex effective measures converge to the statutory rates with increasing returns. Wolff (2005) computes effective ex-post tax rates for most countries in the EU 25 following a methodology developed in Mendoza, Razin, and Tesar (1994). This measure gives a very rough prices wedge for capital income, which takes into account all possible tax exemptions and base reductions. However, it is measured for all capital income in a country and is therefore not well suited for FDI flow determinants. In this study, we follow Razin, Rubinstein, and Sadka (2005) and restrict our analysis to the top statutory tax rate given by legal texts.

The corporate tax rates of corporations in Europe differ substantially. Especially the new member states can be characterized by relatively low levels of taxation. Figure 5 shows the top statutory tax rates in the EU countries in 1995 and 2004. Most countries have experienced a reduction in the tax rate, the average tax rates are lower in the 10 new member states compared to the older members of the EU.

3.2 Methodology

In the theory part, we have given reasons, why the decision to engage in FDI might depend differently on explanatory variables than the amount of FDI. The data description of the FDI flows in the 25 EU countries further confirms that some country

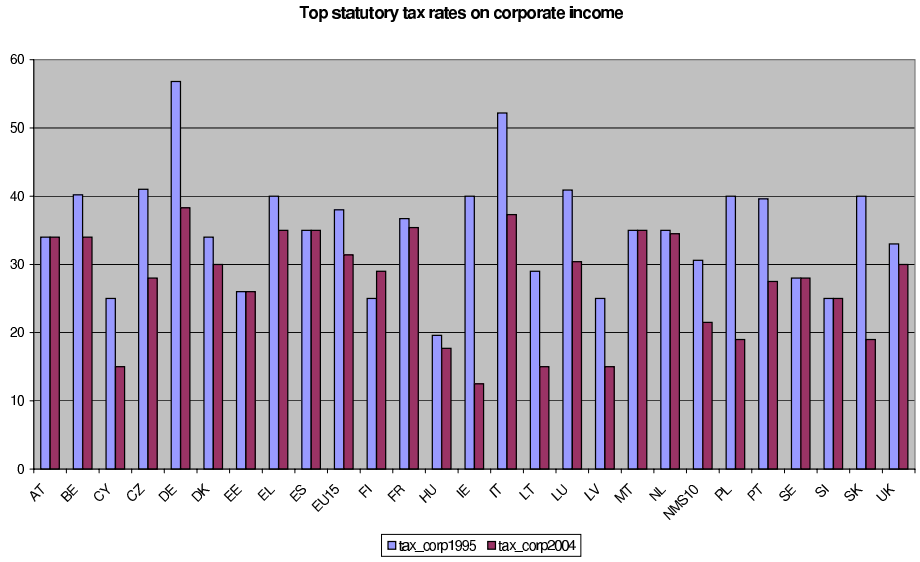

Figure 5: Comparison of the top statutory tax rate on corporate income, *Source:* Eurostat

pairs do not choose to engage in FDI. We show that about one third of the observations have zero FDI flows.[6] When estimating the effect of taxes and other variables on FDI flows, these "zeros" have to be taken into account. Standard OLS estimation will yield biased results for the effect of the independent variable on the actual flow.

A standard procedure in the international trade and FDI literature is to treat all zero observations as resulting from a censored process. The appropriate econometric model is then Tobit estimation. The Tobit estimator assumes that the effect of the independent variable x on E(y) is the same as the effect of x on P(y>0). If this assumption is violated, the Tobit estimator is inappropriate. In terms of our theoretical part, the Tobit model is too restrictive. Tobit requires host and source country tax rates to matter equally for the amount and the probability of FDI.

A more flexible estimation approach, which allows for the possibility of endogenous selection, is the sample selection model (Heckman 1979, Kyriazidou 1997). In this model, the probability of being selected, i.e. of observing a positive FDI flow depends differently on the same explanatory variables than the amount of FDI. In particular, it is possible, that taxes matter for selection, but not for the amount. The model is thus more flexible than Tobit and is better suited for estimating differential effects of taxes. More specifically, in a sample selection approach the following

[6]It is possible to have a positive FDI flow, which is exactly offset by an equal negative FDI flow, resulting in a zero aggregate FDI flow. The probability of this to happen is however very low.

empirical model is estimated (see, e.g., Verbeek (2000, p 209)).

$$FDI^*_{ijt} = X_{1ijt}\beta_1 + \varepsilon_{1ijt} \tag{2}$$

$$h^*_{ijt} = X_{2ijt}\beta_2 + \varepsilon_{2ijt} \tag{3}$$

$$FDI_{ijt} = FDI^*_{ijt}, h_{ijt} = 1 \quad \text{if } h^*_{ijt} > 0 \tag{4}$$

$$FDI_{ijt} = 0, h_{ijt} = 0 \quad \text{if } h^*_{ijt} \leq 0 \tag{5}$$

where h_{ijt} is one in case of a positive FDI flow from country i to country j, while it is zero if no FDI is observed. The two error terms are assumed to be normally distributed with a covariance σ_{12} and correlation coefficient ρ. Equation 3 determines the probability of investing, while equation 2 measures the impact of the x_1 variables on the amount of FDI. Note that β_1 measures the impact of X_1 on the latent variable. The marginal effect of the common regressors X_1 in the observed sample consists of two components. There is a direct effect on the mean given by β_1. In addition, the respective variable will influence FDI through its presence in the inverse Mills ratio $\lambda = \frac{\phi(X_2\beta_2)}{\Phi(X_2\beta_2)}$ (Greene 2000, p.929). If ρ is positive, the OLS estimate of equation 2 will understate the effect of X on FDI flows. Note that the selection equation is a non-linear Probit estimator. The probability of investment is thus a non-linear function of the source country tax rate and given by

$$P(\tau_s) = \int_{-\infty}^{c+\beta_2 * \tau_{it}} (2\pi)^{-1/2} exp(-y^2/2) dy \tag{6}$$

where c is the effect of all other variables at their averages.

Even though our theoretical model predicts that Tobit has too restrictive assumptions, we want to test empirically, whether this is the case. Furthermore, the Tobit estimator is more efficient than the sample selection model given that its restrictions are valid. We therefore test its restrictions with a likelihood ratio test developed by Fin and Schmidt (1984) and described in Greene (2000, p.915). The likelihood ratio statistic can be computed as

$$\lambda = -2[\log L_T - (\log L_P + \log L_{TR})] \tag{7}$$

where L_T is the likelihood given by the Tobit model, L_P is the likelihood of the Probit model and L_{TR} is the likelihood for the truncated regression model. The test results clearly reject the null hypothesis that the restrictions are valid. The test thus shows that the independent variables have different effects on the probability to observe FDI and the amount of FDI. A sample selection approach seems to be justified.

A further important issue when estimating a sample selection model concerns identification. If X_1 and X_2 are identical, the model is only identified through the fact that the inverse Mills ratio depends on the same variables in a non-linear fashion. Some authors therefore suggest, that X_2 should at least include one additional variable. However, this variable is always subject to criticism, since the variable might also be relevant for the flow equation. In addition, even if a variable was known, that clearly influences only the probability and has no effect on the amount of FDI, we still have to rely on the functional form assumption underlying the Heckman regression model. Using an additional variable thus appears dispensable. We rely on the functional form for identification and present our empirical results with the same variables for both, selection and flow equation. We also present robustness checks where we include one additional identifying variable, a dummy for previous FDI flows, suggested by Razin, Rubinstein, and Sadka (2005). However, we doubt that it influences only the probability.

When estimating a gravity model, the role of country and time fixed effects needs to be discussed. In a first step, we present estimation results without fixed effects. These estimates give information on the effects of the main explanatory variables. It is, however, possible that unobserved country characteristics determine the results. Note that the estimation of fixed effects (within estimator) is not possible if one wants to identify the importance of distance and other time invariant country pair characteristics. Also, the sample selection estimation procedure involves non-linearities making the computation of a within estimator impossible. Therefore, Matyas (1997, 1998) argues that a proper specification of the gravity model should include source and host country and time dummies. In general, we expect these fixed effects to significantly weaken the impact of the other explanatory variables. This holds especially, as FDI flows react to long term characteristics of countries. The macroeconomic control variables capture well the long term characteristics. However, at the same time, they change relatively little in the short time period investigated. Therefore identification of the effects of macroeconomic aggregates on FDI flows, when country dummies are included, will be more difficult. Time dummies also appear necessary, as the flows reveal common time effects.

Our empirical specification is in the tradition of the gravity model. Besides the standard gravity factors like distance and population size, we include variables for X_{1ijt} such as cost advantages, market access and agglomeration effects identified by economic theory. The following Equation specifies the set-up of the estimation

Equation 2:

$$log(FDI)_{ijt} = \gamma_1 TAX_{jt} + \gamma_2 TAX_{it} + \gamma_3 log(L)_{jt} + \gamma_4 log(L)_{it} + \gamma_5 log(Y/L)_{jt} + \gamma_6 log(Y/L)_{it} + \gamma_7 Z^1_{ij} + ... + \epsilon_{ijt} \quad (8)$$

where L is population size, and Y is nominal GDP. The tax variables is the top statutory tax rate in the recipient country and in the investing country. γ_3 gives the effect of population size holding constant the degree of development of a country. The total effect of the population size can be tested with an F-test on the coefficient difference $\gamma_3 - \gamma_5$ for the recipient country, while the effect of income levels is given by γ_5. The same holds - mutatis mutandis - for the investing country. Z^1_{ij} is a vector of variables varying across country pairs, but not in time, such as distance, common language, and border dummies.

As discussed, we use four different measures of FDI as dependent variable: total FDI, equity capital FDI and retained earnings from country i to country j. Equity capital FDI constitutes the largest part of total FDI in our sample. Data coverage is greatest for this measure. For retained/reinvested earnings, the least data are available. The top statutory tax rate is used as the main tax measure.

Our specification allows to separate the effect of population size and GDP. Both should be positively associated with FDI flows and should capture factors determining horizontal FDI. GDP per capita is a measure of economic development. Standard neoclassical growth models predict, that the return on capital should be higher in countries with lower income as these have a lower capital stock given the same level of technological progress. We therefore expect that countries with large GDP per capita values will engage in a lot of FDI. FDI should flow to countries with lower GDP per capita as the return to capital is probably larger. GDP in the host country is a measure of market potential and should be positively associated with FDI. A high level of GDP in the investing country measures the ability to engage in significant amounts of FDI. We therefore expect the coefficient on GDP per capita to be positive in both, the host and the source country. Differences in magnitude of the coefficient size can furthermore be used to assess the impact of relative GDP per capita values on the **net** FDI flows. If the coefficient is larger for source country GDP per capita than for host country GDP per capita, net FDI will flow from the richer to the poorer country.

We furthermore include the monthly wage rate, measured as monthly labor cost in total industry and construction.[7] We also used the hourly wage rate as an al-

[7]For the precise definition of this wage rate see appendix.

ternative measure without any substantial change in the results. The wage rate is used to capture cost arguments embedded in vertical FDI. As an additional control variable, we include total government expenditure in percent of GDP of the host and investing country. We expect a larger (and unproductive) government sector in the host country to reduce investment opportunities and expect a negative coefficient, while a large government in the source country might encourage firms to invest abroad. Alternatively, productive government expenditure should positively influence FDI. Buettner (2002) argues that government expenditure might be productive and thereby even offset the negative impact of higher taxes.

We include the distance between two countries as a standard gravity measure. We expect a negative coefficient to reflect increasing transaction costs (e.g., longer travel times for executive personnel, greater cultural differences), however, a positive coefficient might be explained by the fact that trade costs become to high so that investment is chosen instead. A dummy for a common language should be positively related to FDI flows as transaction costs are significantly reduced. However, in the present data set of 25 EU countries only few such common language matches exist (Germany and Austria, Ireland and UK), and the coefficient is therefore insignificant and not reported. A dummy for bordering countries should have a positive effect on FDI as transaction costs are significantly lower.

4 Results

4.1 Baseline results

The basic empirical results are presented in Tables 3 to 6. We present three sets of regressions, one without country and time fixed effects, one with country fixed effects, and one with country and time fixed effects. For each set of dummy control variables, we present three different specification. Besides the baseline regression, we show the results after controlling for government expenditure and the results for an additional variable to improve the identification of the Mills ratio. The three different specifications broadly yield the same results. Finally, in Tables 7 and 8, we present the results for an additional control variables often used in the FDI literature, the wage.

In the regression excluding country and time effects, the control variables have the expected signs. Distance is detrimental to FDI flows and probability, while

bordering countries have more FDI. GDP in host and home country increases FDI flow and probability. The coefficient on the home country GDP is roughly three times the size of the host country GDP coefficient. This implies that, on average, net FDI flows from rich to poor countries. Countries with larger GDP size invest more in small sized countries than small sized countries in large ones. The coefficient for population is significant and of similar size for both, source and host country after controlling for GDP per capita. Large government expenditure to GDP values in the host country lower the amount and the likelihood of FDI flows, while source country government expenditure affects the probability of FDI flows positively. Regarding the effects of wages, the results are less clear cut. Wage differences, a factor very often cited as a prime determinant of FDI, are significantly negative only in some specifications. The insignificance might be explained by the fact, that GDP per capita is a variable closely related to wages.

For total FDI and equity FDI, we can confirm the empirical results for OECD countries by Razin, Rubinstein, and Sadka (2005). Higher host country taxes are associated with lower FDI flows. Higher source country taxes are insignificant in the flow equation, but significantly increase the likelihood of observing a positive FDI flow. These results are in line with the fixed set-up cost argument given by Razin et al. Higher source country taxes reduce fixed set up costs, which are tax-deductible and thereby increase the likelihood to observe investments.

For retained earnings and other FDI, the estimated coefficients give a different picture. While for the control variables the results are essentially the same as for equity FDI, the coefficients on source and host country taxes are less intuitive. In particular, source and host country tax rates reduce the amount of retained earnings. For other capital, host country taxes appear to lower the amount and the probability of the intercompany credits and the like.

These empirical results are, however, based on regressions without country and time dummies. The coefficients might therefore reflect other unobserved country characteristics. In the following, we therefore present the estimation results of the sample selection model specified with the necessary dummies. An F-test on the dummies further shows, that they have to be included. The dummies dramatically reduce the significance of the other coefficients.

The most robust variables across all specifications is the distance measure and the border dummy. More distant countries have less FDI flows and are less likely to engage in FDI.

For total FDI, the only control variables besides distance and border dummy staying significant is GDP in the host country. An F-test on the difference between the population and GDP per capita coefficient can not reject the null hypothesis that population in the host country significantly matters for FDI after controlling for GDP. For the selection equation, we find that source country taxes increase the probability of FDI at a 10 percent level.

Equity FDI represents the largest part of FDI. Also, any firm intending to start production abroad has to start by acquiring equity. We therefore expect equity FDI to most strongly depend on market size and cost factors. This holds for both, the selection and the flow equation. This view is confirmed by our regression results. We find that especially source country GDP per capita and population size matter for the amount of FDI. Population and GDP in the host country, on the other hand, are not significant. For the selection equation, population in the source country and GDP per capita in the host country are significant at a 7 percent significance. Larger government expenditure in percent of GDP in the source country increases the amount of FDI, but does not operate on the selection process. Higher wages in the source country lower the amount and the probability of equity FDI, after one has controlled for GDP per capita. The wage difference is statistically insignificant. For equity FDI, source and host country statutory tax rates do not matter significantly. These results indicate that equity FDI seems to be mostly determined by fundamental source country characteristics and unobserved country characteristics, while statutory tax rates do not matter.

Retained earnings seem to be driven by different factors than equity FDI. Here, the regression results indicate that GDP and population as well as wages are insignificant, while source country taxes very significantly increase the probability of observing re-investments of profits abroad.

Finally, for other FDI we do not find significant tax effects after appropriately controlling for country and time fixed effects. Other capital FDI is significantly influenced by host country GDP per capita.

4.2 Robustness checks

To check the robustness of the results, we perform two further sets of regressions. First, to check that the difference in the effects of source country taxes on equity respectively retained earnings is not driven by the sample, we re-estimated the

model with equity FDI as the dependent variable for the sample, for which retained earnings observations were available. The coefficients for source and host country taxes stayed insignificant. We also estimated the regressions with retained earnings as the dependent variable for only those observations, for which equity flows are available. The source country tax rate stays significant in the selection process.

Since the 10 new member states have arguably a different history, and different characteristics than the old EU members and since they are probably have less funds for investment, we present in Table 9 the estimates for EU 15 source countries only. The estimation results broadly confirm the picture obtained with the data for the EU 25. In particular, only for retained earnings, the source country tax increases the probability to re-invest abroad significantly. Also, for equity FDI, the macroeconomic fundamentals are significant in explaining amount and decision of FDI. The basic empirical results are therefore not driven by the fact, that the 10 new member states do not invest in the other new member states. We also excluded the 10 new member states as sources countries of investment altogether, without any change in results.

4.3 Interpretation

Our empirical results give a more differentiated picture on the tax and market effects on FDI. In the specification without country and time dummies, we find that host country corporate taxes reduce the amount of FDI, in particular equity FDI. Source country taxes, on the other hand, very robustly and strongly significant operate on the selection. Thus, higher source country taxes increase the probability of observing FDI. These results are in line with a fixed set-up cost argument put forward in Razin, Rubinstein, and Sadka (2005). Higher source country taxes reduce the cost of set-up costs if they are incurred at home and thereby increase the probability of FDI flows. These results have to be taken with great caution, as they might be driven by unexplained country characteristics.

After controlling for source and host unobserved country characteristics and common time effects, the significance of the tax measure disappears in this EU data set for equity FDI. Equity FDI, the largest part of total FDI, is however still determined by source country characteristics such as GDP per capita and population size. For the decision to establish an FDI flow, host country GDP matters significantly. We do, however, observe very significantly positive source country tax effects for the probability of observing re-invested earnings. On the other hand, for re-invested

earnings, population size and GDP are insignificant.

We interpret these empirical results as showing that FDI is mostly determined by country characteristics and source country fundamentals. Host country corporate tax rates do not matter for equity FDI. This result might be driven by the fact, that many countries grant generous tax breaks to attract FDI, anecdotal evidence for the 10 new member states points at that. However, the insignificance remained for the reduced EU 15 sample, where less tax breaks exist. The result might also be driven by the fact that corporate tax rates do not include information on international tax treaties. However, no convincing measure for these treaties exists. At this point we do not want to argue that taxes do not matter for FDI. The empirical results however clearly indicate, that top statutory corporate tax rates have no explanatory power for equity FDI in the enlarged EU. This tax measure, however, has very strong and significant effects on the probability of firms to retain profits abroad. Evidence for increased financial transactions to avoid source country taxes is also presented in Hines and Hubbard (1990). Top statutory tax rates therefore do not appear to matter for the more fundamental decisions of where and how much to invest. They, however, prevent firms from re-distributing their profits.

5 Conclusion

The empirical determinants of FDI are a hotly debated issue. In the policy debate, high corporate tax rates are often mentioned as one of the key reason for low investment rates from aborad, while low tax rates abroad are claimed to explain FDI abroad. The available empirical evidence, however, shows a rather wide range of estimates of tax elasticities.

The empirical results presented in this paper indicate that the importance of top statutory corporate tax rate for FDI is overstated in policy circles. After appropriately controlling for unobserved country characteristics and common time effects, the tax rates of both, source and host country, turn insignificant. However, high source country taxes clearly increase the probability of firms to re-invest profits abroad.

The results must be interpreted cautiously. The insignificant coefficient might reveal, that taxes do not matter for FDI flows. This interpretation is also supported by a recent survey study of German manufacturing firms, in which tax considerations are mentioned by a relatively small percentage of firm as decision variable for shift-

ing production abroad.[8] The main determinants in this study are cost factors and market acquisition arguments. Our empirical results confirm this view as macroeconomic fundamentals remain significant for the main FDI category, investment into equity.

The insignificance of the top statutory tax rate might also result from an identification problem. In the regressions without country and time controls, we find the expected signs for host and source statutory tax rates. An insignificant tax coefficient after controlling for country and time fixed effects can be explained by the fact that tax incentives cannot empirically be distinguished from the additional unobserved country and time characteristics.

The insignificant coefficient might also mean, that company taxation is met by an equivalent provision of public goods improving location advantages. However, Buettner (2002) does not find evidence in support of significant public spending effects for FDI flows. Our admittedly very broad measure of government expenditure also contradicts this hypothesis as its appears to indicate that spending deters FDI and encourages FDI in other countries. Finally, it is unlikely, that a direct equivalence between company taxation and public goods exists, as revenue from corporate taxes constitutes only a minor share of public revenue.

Alternatively, corporate tax rates might be a bad measure of actual tax burdens on FDI. In particular, tax breaks, exemptions and the like cannot be captured well by any measure of tax burdens. If this is a valid argument, the immediate conclusion is that the policy discussion should not be about tax rates, but about real tax burdens. Real tax burdens are however difficult to measure. The existing effective measures each suffer from various drawbacks and are not available for all countries. Bellak, Leibrecht, and Römisch (2005) show that ex ante effective average tax rates essentially give the same country ranking as statutory tax rates and thus contain similar cross section information as simple tax rates, even though their time series variability is larger. We are therefore confident, that top statutory tax rates capture tax burden to a good extent. Finally, our empirical evidence shows that the corporate tax rate significantly influences the decision to re-invest profits. We therefore believe that our empirical results are not an artefact of the precise tax measure but rather reveal that in Europe of 1994-2003, equity FDI is driven by other factors than taxes.

[8] Kinkel, Lay, and Maloca (2004)

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Table 3: Estimation results for the effect of taxes on total FDI.

tax_{jt}	**-1.80**	**-0.94**	**-1.79**	**-0.37**	**-0.41**	**-0.34**	**-0.65**	**-0.55**	**-0.62**
	-2.27	-1.1	-2.29	-0.28	-0.3	-0.25	-0.48	-0.39	-0.46
tax_{it}	**0.29**	**0.30**	**0.16**	**2.19**	**2.55**	**2.16**	**2.14**	**3.35**	**2.06**
	0.35	0.35	0.2	1.64	1.84	1.62	1.34	1.98	1.29
$\log(\text{population})_{jt}$	**0.74**	**0.69**	**0.71**	**2.89**	**2.39**	**2.92**	**3.18**	**1.77**	**3.26**
	13.18	12.07	12.74	0.68	0.54	0.68	0.73	0.4	0.75
$\log(\text{population})_{it}$	**0.61**	**0.55**	**0.59**	**0.80**	**-0.80**	**0.48**	**-0.49**	**-7.16**	**-0.56**
	9.35	8.29	9.07	0.1	-0.09	0.06	-0.05	-0.69	-0.06
$\log(\text{GDP/population})_{jt}$	**0.71**	**0.80**	**0.70**	**1.20**	**1.35**	**1.19**	**0.92**	**0.93**	**0.94**
	10.45	10.94	10.45	2.98	3.24	2.95	1.85	1.86	1.87
$\log(\text{GDP/population})_{it}$	**2.54**	**2.37**	**2.30**	**1.89**	**1.82**	**1.92**	**1.13**	**0.71**	**1.19**
	12.84	14.19	13.42	2.7	2.37	2.72	1.35	0.82	1.42
dist	**-1.97**	**-1.91**	**-1.82**	**-2.44**	**-2.35**	**-2.36**	**-2.43**	**-2.34**	**-2.35**
	-10.28	-10.79	-10.47	-13.24	-12.57	-13.04	-13.53	-12.79	-13.28
border	**0.32**	**0.28**	**0.31**	**0.63**	**0.63**	**0.62**	**0.64**	**0.64**	**0.63**
	2.09	1.79	2.06	4.55	4.37	4.52	4.61	4.44	4.57
G/Y_{jt}		**-0.02**			**-0.02**			**-0.01**	
		-2.85			-1.16			-0.5	
G/Y_{it}		**-0.01**			**0.00**			**0.01**	
		-0.81			-0.5			1.22	
cons	**-2.86**	**-0.17**	**-2.97**	**-42.76**	**-1.81**	**-38.49**	**-35.30**	**86.04**	**-35.37**
	-2.06	-0.1	-2.14	-0.35	-0.01	-0.32	-0.24	0.57	-0.24
select									
tax_{jt}	**-0.51**	**0.42**	**0.21**	**-0.09**	**-1.62**	**-0.15**	**-0.09**	**-1.80**	**0.02**
	-0.63	0.45	0.23	-0.05	-0.77	-0.08	-0.05	-0.8	0.01
tax_{it}	**2.96**	**3.65**	**2.71**	**5.56**	**5.26**	**5.39**	**6.19**	**6.74**	**6.50**
	2.66	3.34	2.49	1.56	1.34	1.56	1.65	1.63	1.77
$\log(\text{population})_{jt}$	**0.47**	**0.41**	**0.38**	**3.40**	**-2.29**	**2.10**	**1.90**	**-5.99**	**1.00**
	7.74	6.47	5.96	0.65	-0.37	0.41	0.35	-0.88	0.19
$\log(\text{population})_{it}$	**0.27**	**0.16**	**0.24**	**9.52**	**10.99**	**10.72**	**2.73**	**-1.84**	**5.20**
	4.34	2.4	3.85	1.17	1.3	1.3	0.28	-0.18	0.52
$\log(\text{GDP/population})_{jt}$	**0.28**	**0.32**	**0.21**	**0.46**	**-0.06**	**0.10**	**-0.23**	**-1.32**	**-0.46**
	4.28	4.42	3.05	0.76	-0.09	0.17	-0.31	-1.42	-0.63
$\log(\text{GDP/population})_{it}$	**1.66**	**1.55**	**1.45**	**1.13**	**1.26**	**0.70**	**-0.67**	**-1.27**	**-0.97**
	16.12	15.56	13.91	1.35	1.34	0.84	-0.49	-0.91	-0.71
dist	**-1.55**	**-1.54**	**-1.41**	**-2.62**	**-2.57**	**-2.32**	**-2.69**	**-2.63**	**-2.37**
	-10.29	-9.9	-9.08	-6.41	-6.27	-5.9	-6.52	-6.23	-6.07
border	**0.84**	**0.97**	**0.88**	**0.93**	**1.01**	**0.95**	**0.95**	**1.04**	**0.97**
	3.18	3.53	3.64	3.9	4.15	4.17	4	4.24	4.27
G/Y_{jt}		**-0.02**			**0.00**			**0.01**	
		-2.02			0.23			0.71	
G/Y_{it}		**0.01**			**0.00**			**0.00**	
		2.14			0.48			0.12	
previousfdi			**0.66**			**0.61**			**0.63**
			5.11			4.17			4.21
cons	**-1.78**	**0.10**	**-1.85**	**-171.25**	**-105.58**	**-175.55**	**-69.57**	**0.27**	**-95.81**
	-1.35	0.07	-1.37	-1.38	-0.72	-1.45	-0.47	10.35	-0.66
dummies	no	no	no	country	country	country	c+time	c+time	c+time
N	1552	1436	1552	1552	1436	1552	1552	1436	1552
censored	461	409	461	461	409	461	461	409	461
χ^2	7.99	7.24	4.30	3.99	3.41	1.17	4.21	3.52	1.29
p	0.005	0.007	0.038	0.046	0.065	0.279	0.040	0.061	0.256

Notes: t-values below the coefficient. *Source:* Corporate tax from European Commission - DG Taxation and Customs Union (2004).

Table 4: Estimation results for the effect of taxes on equity FDI.

tax_{jt}	**-2.73**	**-1.58**	**-2.74**	**0.08**	**0.89**	**0.11**	**-0.27**	**0.74**	**-0.26**
	-4.03	-2.13	-4.11	0.07	0.72	0.1	-0.23	0.59	-0.21
tax_{it}	**-0.77**	**-0.74**	**-0.89**	**3.06**	**2.97**	**3.03**	**1.71**	**2.08**	**1.69**
	-0.98	-0.92	-1.14	2.32	2.25	2.3	1.11	1.33	1.1
$\log(\text{population})_{jt}$	**0.84**	**0.79**	**0.79**	**1.09**	**0.02**	**1.51**	**0.35**	**-1.50**	**0.66**
	15.99	15.19	15.65	0.3	0	0.42	0.1	-0.41	0.18
$\log(\text{population})_{it}$	**0.73**	**0.63**	**0.66**	**8.52**	**8.46**	**7.74**	**13.63**	**12.29**	**13.07**
	10.56	8.73	10.3	1.45	1.37	1.33	2.07	1.75	1.98
$\log(\text{GDP/population})_{jt}$	**0.71**	**0.75**	**0.70**	**0.87**	**0.99**	**0.86**	**0.59**	**0.81**	**0.56**
	11.95	11.67	11.97	2.49	2.73	2.42	1.35	1.86	1.29
$\log(\text{GDP/population})_{it}$	**2.37**	**2.31**	**2.05**	**2.40**	**2.16**	**2.44**	**2.36**	**2.11**	**2.38**
	12.49	15.65	14.09	3.94	3.34	3.98	3.23	2.8	3.26
dist	**-2.14**	**-2.11**	**-1.96**	**-2.66**	**-2.61**	**-2.55**	**-2.66**	**-2.65**	**-2.57**
	-12.69	-13.36	-12.51	-13.55	-14	-13.78	-14.55	-14.71	-14.39
border	**0.41**	**0.38**	**0.39**	**0.59**	**0.57**	**0.59**	**0.58**	**0.55**	**0.58**
	2.8	2.53	2.72	4.55	4.19	4.55	4.55	4.14	4.54
G/Y_{jt}		**-0.02**			**-0.02**			**-0.01**	
		-2.26			-1.85			-0.81	
G/Y_{it}		**-0.02**			**-0.01**			**0.02**	
		-1.73			-0.7			2.05	
cons	**-6.97**	**-2.92**	**-6.29**	**-117.95**	**-130.17**	**-114.00**	**-178.66**	**-171.24**	**-176.08**
	-5.46	-1.55	-5.03	-1.35	-1.19	-1.31	-1.73	-1.32	-1.71
select									
tax_{jt}	**-0.68**	**0.25**	**-0.35**	**0.47**	**0.21**	**-0.06**	**0.66**	**0.55**	**0.19**
	-1.11	0.36	-0.51	0.32	0.13	-0.04	0.47	0.35	0.13
tax_{it}	**1.99**	**2.43**	**1.73**	**1.94**	**1.03**	**2.82**	**1.60**	**-0.61**	**2.62**
	2.29	2.85	2.08	0.72	0.36	1.02	0.56	-0.2	0.89
$\log(\text{population})_{jt}$	**0.44**	**0.38**	**0.34**	**-1.62**	**-3.90**	**-2.11**	**0.71**	**-0.54**	**0.69**
	9.58	8.22	7.22	-0.36	-0.79	-0.46	0.15	-0.11	0.14
$\log(\text{population})_{it}$	**0.41**	**0.33**	**0.37**	**6.85**	**7.68**	**11.68**	**11.61**	**14.83**	**16.66**
	8.33	6.62	7.29	1.27	1.36	2.08	1.87	2.21	2.58
$\log(\text{GDP/population})_{jt}$	**0.19**	**0.25**	**0.14**	**0.59**	**0.87**	**0.17**	**1.05**	**1.71**	**0.70**
	3.72	4.57	2.83	1.25	1.7	0.35	1.81	2.74	1.17
$\log(\text{GDP/population})_{it}$	**1.41**	**1.36**	**1.15**	**0.63**	**0.27**	**0.52**	**1.24**	**1.34**	**1.20**
	19.2	16.98	14.83	1.18	0.48	0.95	1.5	1.55	1.44
dist	**-1.28**	**-1.29**	**-1.18**	**-2.42**	**-2.42**	**-2.15**	**-2.46**	**-2.49**	**-2.19**
	-12.68	-12.13	-10.94	-8.07	-7.63	-7.44	-8.15	-7.7	-7.52
border	**0.54**	**0.74**	**0.43**	**0.70**	**0.86**	**0.62**	**0.70**	**0.85**	**0.62**
	3.19	3.76	2.45	3.88	4.46	3.49	3.9	4.46	3.46
G/Y_{jt}		**-0.01**			**0.01**			**0.01**	
		-1.8			0.5			0.7	
G/Y_{it}		**0.01**			**0.01**			**0.01**	
		2.05			0.79			1.68	
previouseq y			**0.80**			**0.55**			**0.56**
			7.94			4.68			4.69
cons	**-5.45**	**-3.75**	**-5.09**	**-82.73**	**-31.99**	**-161.18**	**-202.06**	**-183.58**	**-292.18**
	-5.31	-3.26	-4.75	-0.73	-0.29	-1.38	-1.43	-1.38	-2.05
dummies	no	no	no	country	country	country	c+time	c+time	c+time
N	2057	1915	2057	2057	1915	2057	2057	1915	2057
censored	676	594	676	676	594	676	676	594	676
χ^2	9.34	12.74	3.73	6.95	8.57	5.32	9.54	10.73	6.75
p	0.002	0.00	0.054	0.008	0.003	0.021	0.002	0.001	0.009

Notes: t-values below the coefficient. *Source:* Corporate tax from European Commission - DG Taxation and Customs Union (2004).

Table 5: Estimation results for the effect of taxes on retained earnings FDI.

tax_{jt}	**-2.46**	**-1.16**	**-2.16**	**-1.30**	**-1.14**	**-1.23**	**-1.29**	**-0.92**	**-1.19**
	-2.44	-1.07	-2.17	-0.76	-0.64	-0.72	-0.74	-0.5	-0.68
tax_{it}	**-2.42**	**-2.10**	**-1.78**	**-2.11**	**-2.82**	**-2.42**	**-2.01**	**-2.11**	**-2.55**
	-2.04	-1.72	-1.49	-1.44	-1.81	-1.65	-1.06	-0.99	-1.32
$\log(\text{population})_{jt}$	**0.54**	**0.43**	**0.43**	**-7.91**	**-6.56**	**-7.72**	**-8.09**	**-7.59**	**-7.72**
	7.07	4.95	5.62	-1.64	-1.31	-1.61	-1.69	-1.51	-1.63
$\log(\text{population})_{it}$	**0.62**	**0.54**	**0.56**	**1.94**	**1.14**	**1.70**	**1.44**	**-0.34**	**2.05**
	7.88	6	6.78	0.18	0.1	0.15	0.12	-0.03	0.17
$\log(\text{GDP/population})_{jt}$	**0.66**	**0.68**	**0.58**	**1.27**	**1.06**	**1.20**	**0.85**	**0.76**	**0.86**
	7.47	6.77	6.52	2.53	1.84	2.33	1.3	1.09	1.31
$\log(\text{GDP/population})_{it}$	**2.12**	**2.15**	**1.52**	**1.42**	**0.86**	**1.35**	**0.69**	**0.28**	**0.74**
	9.11	7.02	6.6	2.07	1.2	1.93	0.81	0.32	0.87
dist	**-1.41**	**-1.24**	**-1.16**	**-2.21**	**-2.01**	**-2.04**	**-2.32**	**-2.15**	**-2.14**
	-6.78	-5.48	-5.79	-8.67	-7.14	-8.04	-9.34	-8.33	-8.44
border	**0.42**	**0.45**	**0.35**	**0.55**	**0.54**	**0.53**	**0.49**	**0.49**	**0.48**
	2.47	2.64	2.04	3.22	3.11	3.1	2.93	2.86	2.83
G/Y_{jt}		**-0.01**			**-0.01**			**-0.02**	
		-1.36			-1.24			-1.3	
G/Y_{it}		**-0.06**			**-0.04**			**-0.01**	
		-3.18			-1.37			-0.32	
cons	**-1.97**	**4.60**	**-1.90**	**80.60**	**75.54**	**82.33**	**84.32**	**108.03**	**70.42**
	-1.27	1.81	-1.18	0.43	0.41	0.44	0.42	0.51	0.35
select									
tax_{jt}	**-0.81**	**0.62**	**0.18**	**-1.31**	**0.67**	**-1.85**	**-1.58**	**-0.04**	**-2.27**
	-1.15	0.81	0.24	-0.75	0.36	-1.05	-0.89	-0.02	-1.24
tax_{it}	**-1.56**	**-1.42**	**-1.10**	**2.90**	**1.69**	**2.68**	**7.11**	**6.25**	**6.05**
	-1.93	-1.8	-1.29	1.6	0.86	1.41	3.21	2.54	2.67
$\log(\text{population})_{jt}$	**0.39**	**0.39**	**0.33**	**-4.06**	**-6.67**	**-5.36**	**-7.14**	**-10.66**	**-7.62**
	8.53	8.22	6.87	-0.88	-1.33	-1.13	-1.42	-1.99	-1.49
$\log(\text{population})_{it}$	**0.18**	**0.10**	**0.09**	**-1.19**	**1.99**	**2.74**	**-22.75**	**-24.29**	**-14.68**
	3.3	1.64	1.65	-0.14	0.22	0.34	-2.14	-1.99	-1.36
$\log(\text{GDP/population})_{jt}$	**0.26**	**0.34**	**0.24**	**0.71**	**0.67**	**0.03**	**-0.35**	**-0.38**	**-0.71**
	4.44	5.14	3.93	1.3	1.18	0.05	-0.52	-0.53	-1.03
$\log(\text{GDP/population})_{it}$	**1.52**	**1.39**	**1.27**	**1.09**	**0.78**	**0.76**	**-1.27**	**-1.84**	**-1.01**
	16.5	15.28	13.3	1.62	1.12	1.18	-1.22	-1.53	-0.93
dist	**-0.89**	**-0.99**	**-0.70**	**-2.01**	**-2.01**	**-1.84**	**-1.96**	**-1.97**	**-1.80**
	-7.12	-7.64	-5.35	-7	-6.93	-6.25	-7.07	-7.14	-6.22
border	**0.31**	**0.33**	**0.38**	**0.35**	**0.41**	**0.40**	**0.39**	**0.44**	**0.45**
	1.69	1.59	1.99	1.72	1.81	1.96	1.96	2.02	2.18
G/Y_{jt}		**-0.02**			**-0.05**			**-0.04**	
		-3.6			-3.32			-2.64	
G/Y_{it}		**0.03**			**0.04**			**0.09**	
		4.76			3.74			2.39	
previousre			**1.24**			**0.95**			**0.96**
			11.67			6.79			6.42
cons	**-0.20**	**0.10**	**0.14**	**76.86**	**100.05**	**33.43**	**401.25**	**462.96**	**293.66**
	-0.16	0.07	0.11	0.6	0.68	0.27	2.48	2.54	1.79
dummies	no	no	no	country	country	country	c+time	c+time	c+time
N	1379	1269	1379	1379	1269	1379	1379	1269	1379
censored	754	674	754	754	674	754	754	674	754
χ^2	1.48	0.004	7.81	2.72	0.177	0.01	6.03	2.40	0.04
p	0.224	0.95	0.005	0.099	0.67	0.905	0.014	0.121	0.833

Notes: t-values below the coefficient. *Source:* Corporate tax from European Commission - DG Taxation and Customs Union (2004).

Table 6: Estimation results for the effect of taxes on other capital FDI.

tax_{jt}	**-2.40**	**-1.73**	**-1.96**	**1.05**	**0.71**	**1.10**	**0.79**	**0.45**	**0.83**
	-3.19	-2.16	-2.71	0.85	0.55	0.88	0.62	0.34	0.66
tax_{it}	**-0.94**	**-0.55**	**-0.89**	**2.24**	**2.66**	**2.19**	**2.48**	**3.17**	**2.39**
	-1.08	-0.63	-1.05	1.52	1.77	1.49	1.46	1.79	1.41
$\log(\text{population})_{jt}$	**0.69**	**0.67**	**0.58**	**6.38**	**5.25**	**6.36**	**5.17**	**3.64**	**5.23**
	11.25	11.07	9.68	1.57	1.27	1.57	1.26	0.87	1.28
$\log(\text{population})_{it}$	**0.53**	**0.47**	**0.44**	**6.30**	**4.61**	**6.13**	**3.77**	**0.54**	**3.89**
	7.85	6.52	6.59	0.95	0.64	0.93	0.48	0.06	0.5
$\log(\text{GDP/population})_{jt}$	**0.98**	**1.07**	**0.93**	**1.95**	**1.87**	**1.92**	**1.45**	**1.43**	**1.45**
	14.9	15.62	14.54	5.15	4.81	5.09	3.09	2.99	3.1
$\log(\text{GDP/population})_{it}$	**2.50**	**2.54**	**2.04**	**1.23**	**1.31**	**1.23**	**0.34**	**0.51**	**0.38**
	13.62	14.19	12.51	1.83	1.77	1.84	0.4	0.58	0.46
dist	**-1.69**	**-1.64**	**-1.41**	**-1.81**	**-1.71**	**-1.75**	**-1.82**	**-1.71**	**-1.76**
	-10.33	-10.42	-9.16	-10.4	-9.92	-10.19	-10.6	-10.06	-10.42
border	**0.01**	**0.03**	**0.00**	**0.38**	**0.38**	**0.38**	**0.39**	**0.40**	**0.39**
	0.07	0.17	-0.02	2.56	2.49	2.54	2.64	2.59	2.63
G/Y_{jt}		**-0.04**			**-0.01**			**0.00**	
		-4.59			-0.95			0.05	
G/Y_{it}		**-0.02**			**-0.01**			**0.00**	
		-2.09			-1.24			-0.07	
cons	**-0.31**	**3.95**	**0.88**	**-160.07**	**-155.86**	**-156.94**	**-111.04**	**-60.84**	**-113.08**
	-0.23	2.29	0.66	-1.63	-1.22	-1.61	-0.97	-0.38	-0.99
select									
tax_{jt}	**-1.93**	**-2.00**	**-1.21**	**0.08**	**-2.14**	**0.13**	**0.31**	**-1.76**	**0.41**
	-3.08	-2.9	-1.82	0.05	-1.3	0.09	0.2	-1.05	0.26
tax_{it}	**0.08**	**-0.36**	**-0.28**	**1.76**	**1.91**	**1.43**	**1.90**	**3.28**	**1.81**
	0.11	-0.48	-0.38	0.61	0.66	0.53	0.57	1	0.58
$\log(\text{population})_{jt}$	**0.41**	**0.38**	**0.31**	**9.96**	**9.06**	**9.25**	**7.09**	**5.98**	**6.69**
	9.78	8.57	6.99	2.1	1.75	1.98	1.32	1.02	1.29
$\log(\text{population})_{it}$	**0.32**	**0.37**	**0.25**	**5.38**	**2.57**	**6.95**	**-4.66**	**-9.67**	**-2.10**
	7.02	7.43	5.17	0.93	0.43	1.2	-0.7	-1.4	-0.32
$\log(\text{GDP/population})_{jt}$	**0.24**	**0.25**	**0.15**	**1.97**	**1.37**	**1.73**	**1.02**	**0.44**	**0.90**
	4.6	4.69	3.01	3.96	2.53	3.47	1.6	0.63	1.42
$\log(\text{GDP/population})_{it}$	**1.13**	**1.23**	**0.99**	**-0.07**	**0.01**	**-0.32**	**-1.86**	**-1.72**	**-1.91**
	16.65	15.96	13.57	-0.12	0.02	-0.55	-2.21	-1.96	-2.34
dist	**-0.94**	**-0.94**	**-0.78**	**-2.11**	**-2.07**	**-1.95**	**-2.11**	**-2.07**	**-1.95**
	-9.68	-9.37	-7.32	-6.78	-6.47	-6.53	-6.82	-6.47	-6.63
border	**0.13**	**0.23**	**0.22**	**0.97**	**0.94**	**0.93**	**1.02**	**1.00**	**0.97**
	0.9	1.5	1.42	5.25	4.84	5	5.4	5.04	5.16
G/Y_{jt}		**0.00**			**-0.01**			**0.00**	
		-0.67			-0.58			-0.02	
G/Y_{it}		**-0.01**			**-0.01**			**-0.01**	
		-2.8			-1.39			-1.08	
previousoc			**1.08**			**0.53**			**0.53**
			11.84			4.55			4.49
cons	**-4.12**	**-3.17**	**-3.25**	**-215.81**	**-189.69**	**-236.17**	**-18.98**	**24.22**	**-58.88**
	-4.2	-2.92	-3.06	-1.92	-1.61	-2.11	-0.14	0.16	-0.43
dummies	no	no	no	country	country	country	c+time	c+time	c+time
N	1766	1639	1766	1766	1639	1766	1766	1639	1766
censored	749	675	749	749	675	749	749	675	749
χ^2	22.44	26.55	1.85	11.04	8.34	8.03	11.26	7.84	8.63
p	0.000	0.000	0.174	0.001	0.004	0.005	0.001	0.0051	0.003

Notes: t-values below the coefficient. *Source:* Corporate tax from European Commission - DG Taxation and Customs Union (2004).

Table 7: Estimation results for the effect of taxes on total FDI and equity FDI, control for wage effects.

	Total FDI				Equity FDI			
tax_{jt}	**-1.92**	**-2.09**	**-2.65**	**-2.82**	**-2.73**	**-2.76**	**-2.34**	**-2.38**
	-1.84	-2.03	-1.45	-1.56	-2.84	-3.25	-1.39	-1.43
tax_{it}	**0.12**	**0.16**	**1.76**	**2.03**	**-0.88**	**-0.58**	**2.05**	**2.21**
	0.11	0.15	0.95	1.11	-0.83	-0.61	1.1	1.19
$\log(\text{pop})_{jt}$	**0.85**	**0.88**	**11.38**	**10.80**	**0.93**	**0.89**	**4.00**	**3.59**
	10.84	13	1.53	1.57	12.09	13.58	0.57	0.52
$\log(\text{pop})_{it}$	**0.70**	**0.60**	**0.48**	**1.95**	**0.82**	**0.75**	**5.63**	**12.22**
	9.33	8.43	0.04	0.18	9.58	8.09	0.69	1.67
$\log(\text{gdp/pop})_{jt}$	**0.19**	**0.88**	**1.47**	**1.72**	**0.43**	**0.67**	**1.11**	**0.80**
	0.36	4.2	1.33	2.12	0.89	3.65	0.99	1.01
$\log(\text{gdp/pop})_{it}$	**4.27**	**2.50**	**2.71**	**1.47**	**2.82**	**2.45**	**3.53**	**1.95**
	7.07	8.34	1.64	1.32	5.26	7.33	2.89	2.24
dist	**-2.31**	**-2.18**	**-2.48**	**-2.48**	**-2.37**	**-2.17**	**-2.78**	**-2.80**
	-11.59	-10.98	-12.72	-12.69	-12.62	-9.61	-14.05	-14.1
border	**0.48**	**0.47**	**0.80**	**0.80**	**0.60**	**0.60**	**0.66**	**0.67**
	2.73	2.68	5.12	5.11	3.56	3.44	4.43	4.45
$\log(\text{wage})_{jt}$	**0.35**		**0.33**		**0.22**		**-0.33**	
	0.73		0.3		0.5		-0.32	
$\log(\text{wage})_{it}$	**-1.25**		**-1.40**		**-0.09**		**-2.20**	
	-2.35		-0.99		-0.19		-1.92	
wage diff		**0.00**		**0.00**		**0.00**		**0.00**
		-1.51		0.19		-0.14		1.3
cons	**5.83**	**-4.40**	**-174.25**	**-202.15**	**-10.34**	**-8.01**	**-127.16**	**-259.27**
	0.76	-2.81	-0.76	-0.9	-1.55	-5.3	-0.66	-1.5
select								
tax_{jt}	**-1.03**	**-1.18**	**-0.75**	**-0.01**	**0.03**	**-0.34**	**1.16**	**0.60**
	-0.93	-1.07	-0.29	0	0.04	-0.46	0.56	0.29
tax_{it}	**3.38**	**3.76**	**6.01**	**6.01**	**1.16**	**1.11**	**3.71**	**4.48**
	2.5	2.84	1.32	1.33	1.09	0.94	1.12	1.34
$\log(\text{pop})_{jt}$	**0.46**	**0.50**	**-0.24**	**0.09**	**0.42**	**0.49**	**-3.95**	**-6.95**
	6.3	7.77	-0.02	0.01	7.79	8.77	-0.42	-0.75
$\log(\text{pop})_{it}$	**0.18**	**0.17**	**5.26**	**3.42**	**0.44**	**0.43**	**0.49**	**9.37**
	2.54	2.64	0.43	0.28	7.27	6.67	0.05	1.13
$\log(\text{gdp/pop})_{jt}$	**-0.30**	**0.39**	**-1.28**	**-1.21**	**0.18**	**0.41**	**0.11**	**0.39**
	-0.59	2.01	-0.69	-0.9	0.44	3.16	0.08	0.38
$\log(\text{gdp/pop})_{it}$	**1.46**	**1.48**	**-4.47**	**-0.82**	**1.95**	**1.19**	**3.93**	**0.81**
	3.03	7.58	-1.46	-0.51	5.12	6.77	2.23	0.75
dist	**-1.60**	**-1.61**	**-3.50**	**-3.51**	**-1.31**	**-1.31**	**-3.22**	**-3.20**
	-9.88	-10.18	-7.45	-7.42	-11.15	-12.15	-9.74	-9.79
border	**1.04**	**1.05**	**1.04**	**1.02**	**0.74**	**0.67**	**0.69**	**0.70**
	4.6	4.64	3.94	3.93	4.57	3.62	3.62	3.68
$\log(\text{wage})_{jt}$	**0.44**		**0.02**		**-0.09**		**0.39**	
	0.93		0.02		-0.24		0.32	
$\log(\text{wage})_{it}$	**0.21**		**3.61**		**-0.50**		**-3.79**	
	0.5		1.35		-1.5		-2.33	
wage diff		**0.00**		**0.00**		**0.00**		**0.00**
		-1.3		-0.47		-2.03		1.93
cons	**-8.36**	**-1.03**	**-118.98**	**-60.64**	**0.97**	**-6.25**	**76.67**	**-46.60**
	-1.27	-0.68	-0.43	-0.22	0.19	-5.25	.	.
mills-lambda	**1.57**	**1.43**			**1.64**		**0.83**	**0.87**
	6.02	5.22			5.91		3.83	4.05
dummies	no	no	c+t	c+t	no	no	c+t	c+t
N	1243	1243	1243	1243	1625	1625	1625	1625
censored	374	374	374	374	552	552	552	552
χ^2			2.19	1.96		3.61		
p			0.14	0.16		0.06		

Notes: t-values below the coefficient.

Table 8: Estimation results for the effect of taxes on retained earnings and other FDI, control for wages.

	RE				OC			
tax_{jt}	**-2.81**	**-2.29**	**0.21**	**-0.24**	**-1.26**	**-1.41**	**0.78**	**0.97**
	-2.25	-1.91	0.08	-0.1	-1.31	-1.49	0.43	0.55
tax_{it}	**-3.11**	**-3.48**	**-2.63**	**-2.89**	**0.16**	**0.46**	**3.82**	**3.84**
	-2.16	-2.49	-1.2	-1.31	0.16	0.44	1.87	1.9
$\log(\text{pop})_{jt}$	**0.79**	**0.69**	**-12.18**	**-14.75**	**0.69**	**0.78**	**4.89**	**6.81**
	8.55	8.48	-1.23	-1.6	7.91	10	0.56	0.81
$\log(\text{pop})_{it}$	**0.59**	**0.54**	**-5.34**	**-8.54**	**0.46**	**0.43**	**3.82**	**3.67**
	5.93	5.94	-0.36	-0.58	5.34	5.16	0.38	0.39
$\log(\text{gdp/pop})_{jt}$	**2.03**	**1.19**	**-0.57**	**0.50**	**0.25**	**0.98**	**1.39**	**1.10**
	3.41	4.6	-0.38	0.46	0.5	4.52	1.17	1.27
$\log(\text{gdp/pop})_{it}$	**2.52**	**1.65**	**-2.93**	**-1.22**	**2.66**	**2.37**	**0.87**	**0.87**
	3.25	4.85	-1.32	-0.96	4.07	6.01	0.59	0.79
dist	**-1.42**	**-1.42**	**-2.28**	**-2.30**	**-1.74**	**-1.79**	**-1.94**	**-1.93**
	-6.59	-6.68	-8.47	-8.68	-8.61	-8.57	-8.54	-8.66
border	**0.65**	**0.59**	**0.67**	**0.67**	**0.21**	**0.20**	**0.58**	**0.58**
	3.53	3.22	3.64	3.67	1.09	0.96	3.27	3.28
$\log(\text{wage})_{jt}$	**-1.34**		**1.37**		**0.49**		**-0.45**	
	-2.47		0.97		1.06		-0.39	
$\log(\text{wage})_{it}$	**-0.09**		**1.99**		**-0.14**		**0.22**	
	-0.13		1.06		-0.24		0.2	
wage diff		**0.00**		**0.00**		**0.00**		**0.00**
		-2.49		-0.44		-0.94		-1.5
cons	**12.76**	**-2.75**	**193.76**	**308.13**	**-5.06**	**-1.58**	**-140.65**	**-174.53**
	1.31	-1.64	0.85	1.43	-0.66	-1.02	-0.65	-0.86
select								
tax_{jt}	**-1.52**	**-1.56**	**-2.83**	**-3.49**	**-1.36**	**-1.48**	**3.83**	**4.19**
	-1.61	-1.69	-1.11	-1.39	-1.7	-1.89	1.7	1.86
tax_{it}	**-2.82**	**-2.64**	**8.30**	**9.45**	**0.10**	**-0.12**	**5.74**	**5.35**
	-2.78	-2.66	3.22	3.88	0.12	-0.15	1.63	1.49
$\log(\text{pop})_{jt}$	**0.44**	**0.47**	**-3.44**	**-8.11**	**0.43**	**0.43**	**-9.43**	**-7.06**
	6.84	8.57	-0.42	-1.04	7.4	8.28	-0.87	-0.66
$\log(\text{pop})_{it}$	**0.22**	**0.18**	**-45.60**	**-40.30**	**0.30**	**0.30**	**-6.57**	**-7.57**
	3.41	2.85	-3.56	-3.08	5.03	5.28	-0.7	-0.94
$\log(\text{gdp/pop})_{jt}$	**0.00**	**0.73**	**-1.87**	**-0.47**	**0.07**	**-0.14**	**0.77**	**-0.01**
	-0.01	4.29	-1.3	-0.45	0.18	-1.09	0.54	-0.01
$\log(\text{gdp/pop})_{it}$	**1.34**	**1.03**	**-0.24**	**-3.88**	**1.62**	**1.56**	**-1.85**	**-1.55**
	2.66	5.79	-0.1	-2.97	4.64	9.35	-1.13	-1.51
dist	**-0.88**	**-0.88**	**-2.32**	**-2.31**	**-0.96**	**-0.99**	**-2.23**	**-2.22**
	-6.07	-6.3	-6.82	-7	-8.88	-8.88	-5.5	-5.47
border	**0.47**	**0.45**	**0.47**	**0.47**	**0.27**	**0.26**	**1.10**	**1.10**
	2.15	2.11	2.14	2.14	1.56	1.54	5.41	5.39
$\log(\text{wage})_{jt}$	**0.19**		**1.95**		**0.08**		**-1.07**	
	0.46		1.4		0.22		-0.91	
$\log(\text{wage})_{it}$	**0.27**		**-4.09**		**-0.39**		**0.41**	
	0.61		-1.87		-1.21		0.25	
wage diff		**0.00**		**0.00**		**0.00**		**0.00**
		-3.67		1.37		2.56		-0.73
cons	**-6.26**	**-1.04**	**859.74**	**779.87**	**-0.74**	**-4.05**	**236.03**	**216.30**
	-0.91	-0.73	3.1	3.08	-0.15	-3.42	1.02	1
dummies	no	no	c+t	c+t	no	no	c+t	c+t
N	1096	1096	1096	1096	1372	1372	1372	1372
censored	602	602	602	602	603	603	603	603
χ^2	4.9	5.2	9.4	12.6	9.6	8.1	5.3	5.8
p	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes: t-values below the coefficient.

Table 9: Estimation results for the effect of taxes on different FDI components, EU 15 source countries only.

	Tot FDI	equity	RE	other
tax_{jt}	**-0.10**	**0.22**	**-0.67**	**1.43**
	-0.08	0.19	-0.4	1.13
tax_{it}	**2.00**	**1.02**	**-2.08**	**3.12**
	1.22	0.66	-1.06	1.78
$\log(\text{pop})_{jt}$	**3.22**	**2.24**	**-7.39**	**5.28**
	0.83	0.62	-1.51	1.31
$\log(\text{pop})_{it}$	**-6.43**	**17.85**	**-3.43**	**-3.03**
	-0.75	2.65	-0.26	-0.38
$\log(\text{gdp/pop})_{jt}$	**0.69**	**0.44**	**0.92**	**1.38**
	1.4	1.02	1.37	2.93
$\log(\text{gdp/pop})_{it}$	**1.63**	**2.15**	**0.99**	**0.61**
	1.96	3	1.04	0.7
dist	**-2.25**	**-2.61**	**-2.23**	**-1.79**
	-12.84	-11.87	-8.61	-10.18
border	**0.51**	**0.46**	**0.40**	**0.24**
	3.61	3.43	2.22	1.57
cons	**50.11**	**-277.46**	**194.38**	**-2.73**
	0.36	-2.59	0.97	-0.02
select				
tax_{jt}	**-2.59**	**-0.41**	**0.12**	**-0.11**
	-0.94	-0.22	0.06	-0.06
tax_{it}	**6.54**	**-0.47**	**6.17**	**4.68**
	1.27	-0.13	2.47	1.06
$\log(\text{pop})_{jt}$	**-0.09**	**7.05**	**-0.78**	**7.96**
	-0.01	1.17	-0.12	1.33
$\log(\text{pop})_{it}$	**2.59**	**25.32**	**-17.68**	**1.60**
	0.19	2.94	-1.26	0.2
$\log(\text{gdp/pop})_{jt}$	**-1.19**	**0.53**	**-1.75**	**0.73**
	-1.15	0.69	-2.12	0.99
$\log(\text{gdp/pop})_{it}$	**-2.43**	**1.59**	**-1.76**	**-2.78**
	-1.24	1.49	-1.31	-2.77
dist	**-2.03**	**-2.63**	**-1.60**	**-1.86**
	-5.69	-9.98	-5.32	-7.96
border	**1.28**	**1.20**	**0.17**	**1.08**
	2.04	3.34	0.68	3.78
cons	**-63.58**	**-550.40**	**229.80**	**-142.21**
	-0.23	-2.91	.	-1.02
dummies	c+t	c+t	c+t	c+t
N	1332	1796	1158	1525
censored	323	504	564	567

Notes: t-values below the coefficient. *Source:* Corporate tax from European Commission - DG Taxation and Customs Union (2004).

A Data

A.1 On FDI

The data on foreign direct investment (FDI) stem from Eurostat available at the New Cronos database system. They cover the years 1995 − 2003. The data follow the benchmark definition of FDI as given by the IMF Balance of Payments Manual and being fully consistent with the OECD guide.[9] According to the IMF and OECD definitions, direct investment reflects the aim of obtaining a lasting interest by a resident entity of one economy (direct investor) in an enterprise that is resident in another economy (the direct investment enterprise). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the latter. Direct investment involves both the initial transaction establishing the relationship between the investor and the enterprise and all subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated. Despite the consensus among all countries on this definition there may exist bilateral discrepancies in country specific FDI statistics, that is between inward and outward data of two partner countries: A country‘s recorded FDI inflow does not necessarily correspond to the partner country‘s statistics on FDI outflow to this country. Main reasons for such differences are found in country specific registration practices.[10] We employ FDI inflow data.

The fifth Edition of the IMFs Balance of Payment Manual defines the owner of 10% or more of a companys capital as a direct investor. Even though this definition is somewhat arbitrary, the IMF recommends using this percentage as the basic dividing line between direct investment and portfolio investment in the form of shareholdings.

As for the instruments, direct investment capital comprises the capital provided (either directly or through other related enterprises) by a direct investor to a direct investment enterprise and the capital received by a direct investor from a direct investment enterprise. Direct investment capital transactions are made up of three basic components: (i) **Equity capital**: comprising equity in branches, all shares in subsidiaries and associates (except non-participating, preferred shares that are treated as debt securities and are included under other direct investment capital) and

[9] IMF (1993) and OECD (1996).

[10] For a detailed discussion on reasons for discrepancies in FDI statistics with special focus on Germany see for example Jost (1997).

other capital contributions such as provisions of machinery, etc. (ii) **Reinvested earnings**: consisting of the direct investors share (in proportion to direct equity participation) of earnings not distributed, as dividends by subsidiaries or associates and earnings of branches not remitted to the direct investor. If such earnings are not identified, all branches earnings are considered, by convention, to be distributed. (iii) **Other direct investment capital** (or inter company debt transactions): covering the borrowing and lending of funds, including debt securities and trade credits, between direct investors and direct investment enterprises and between two direct investment enterprises that share the same direct investor.

A.2 On taxation

The data on the top statutory tax rate on corporate income are taken from European Commission - DG Taxation and Customs Union (2004). The tax rates taken from the European Commission‘s publication cover the perod 1995 − 2003.

A.3 The other data

Distance data are measured in 1000 miles (Rose's data are divided by 1000).

Table 10: Sources of main data

data	source
GDP	Eurostat
wage	Eurostat
	Nace sectors varying across country and year
population	Eurostat
distance	Andrew Rose's data set
	http://faculty.haas.berkeley.edu/arose/
border dummy	Andrew Rose's data set
	http://faculty.haas.berkeley.edu/arose/
common language dummy	Andrew Rose's data set
	http://faculty.haas.berkeley.edu/arose/