The Impact of Non-Profit Taxes on Foreign Direct Investment: Evidence from German Multinationals

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Abstract: This paper provides an empirical analysis of the impact of taxes other than income taxes on both the level and the location of FDI using a large panel of German multinationals. With regard to the level of FDI the results confirm an impact of the cost of capital but also indicate some further significant adverse effects of sales taxes and taxes on skilled labor. The analysis of location decisions reveals no significance of sales taxes or taxes on skilled labor. Apart from corporate income taxes, location decisions are only found to be affected by import duties, which exert a positive impact.

Key Words: FDI, Capital Input, Location Decision, Corporate Income Taxes, Indirect Taxes, Multinational Company

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1 Introduction

Numerous studies have shown that international differences in the taxation of corporate income exert an impact on location, investment, and financing decisions of corporations. Multinational corporations, in particular, engage in substantial tax-planning activities using their internal linkages in terms of intermediates, factor flows, and finance. Tax planning activities by means of transfer-pricing or intercompany loans have received much attention as they may be used to substantially reduce the burden of corporate income taxes by shifting profits to countries which offer favorable conditions. The corporations' search for favorable tax treatment has also led governments to pursue strategic tax policies providing special tax schemes which can be exploited for savings on corporate income taxes in order to attract multinationals' productive activities or taxable resources (*e.g.*, Devereux, Griffith, Klemm, 2002). As a consequence, many corporations pay little income taxes and the total revenue from corporate income taxes is typically only a small fraction of government revenue. Thus, governments will be tempted to rely on other tax instruments in order to raise fiscal revenue. However, it is often overlooked that the impact of tax policy on corporate decisions is not necessarily confined to corporate income taxes. In fact, a recent study by Desai, Foley, and Hines (2004) documents that tax payments other than income taxes such as general or specific sales taxes, import duties, property taxes, *etc.*, are usually much larger than income taxes for US multinationals. Each of those taxes will typically influence corporate decisions, and, again, it might be multinationals which are most sensitive to those taxes as they are carrying out production and sales in several countries. However, little is known about the consequences of taxes other than income taxes on decisions of multinationals. Desai, Foley, Hines (2004) provide empirical evidence for the case of U.S.multinationals pointing at a rather strong sensitivity of corporate decisions to differences in indirect taxes – roughly at the same degree as the sensitivity to differences in income taxes.

This paper reconsiders the empirical evidence of the impact of taxes other than income

taxes on corporate decisions. The focus is on multinationals' investment and location decisions where the impact of corporate income taxes is well established (for a survey see deMooij and Ederveen, 2003). Given the heterogeneity between the various types of potentially relevant taxes other than corporate income taxes the analysis uses a variety of tax indicators capturing sales, property, and excise taxes, import duties as well as taxes on skilled labor. While most studies focus on the decision about the distribution of investment among alternative locations, it is well recognized (*e.g.*, Devereux and Griffith, 1998) that taxes might have different effects on location choice, *i.e.* decisions concerned with the choice to carry out production activities in a specific country. Therefore, the analysis below considers both investment and location decisions.

The empirical analysis employs a large panel of German multinationals. The German case is of particular interest as this country usually follows the exemption principle of corporate income taxation. This offers some interesting comparisons with the US case studied by Desai, Foley, and Hines (2004), where the tax credit system might result in a relatively low sensitivity to corporate income taxes. Thus, one might, a priori, expect that the German case shows a stronger sensitivity to corporate income taxes as compared to other taxes. With regard to the level of FDI the results confirm a strong impact of the cost of capital but also indicate some further significant adverse effects of sales taxes and taxes on skilled labor which are of similar magnitude as the effect of the cost of capital. Apart from corporate income taxes, location decisions are only found to be affected by import duties, which exert a positive impact.

The paper is organized as follows. The next section provides some theoretical background on the determinants of investment and location. While we do not aim at deriving a comprehensive model of how corporation and other taxes influence corporate decisions, this background allows us to generate some empirically testable predictions about the potential impact of various taxes. Based on this discussion, Section 3 develops the empirical investigation approach. The data are described in Section 4 before the results are presented and discussed in Section 5. Section 6 provides our conclusions.

2 Theoretical Background

Foreign direct investments activities of a multinational basically involve the *location decision*, *e.g.*, the decision of where to locate production, and the *investment decision* of how much to invest into the production at a location. Following the standard theory of investment, the latter decision may be considered as a factor input decision. The corresponding view is that, given output, the firm adjusts its inputs in order to maximize the profits at a given location subject to the substitution possibilities of production. In difference to the traditional investment literature (*e.g.*, Hassett and Hubbard, 2002), however, the investment decision in the context of FDI is often interpreted more broadly in the sense that the decision to adjust inputs is combined with the output decision (*e.g.*, Grubert and Mutti, 1991). Taxes in this more general view would affect the amount of capital invested in the production, directly, by their influence on the choice of the input combination, and, indirectly, by their influence on the choice of the output level of a subsidiary. Following the seminal contribution by McFadden (1974), location decisions are usually considered as a choice among alternative locations based on the expected profits of an investment in each of these locations. This comparison involves not only cost including tax payments but also sales and market conditions for the company's product.

Investment as well as location decisions might be affected by various taxes. Some first, useful classification might distinguish *corporate income taxes*, *taxes on specific goods and services used as inputs* including property taxes and taxes on labor, *import duties*, and *general sales taxes*. All of these taxes may affect investment and location in a variety of ways, depending on the details of the tax, the production technologies as well as on the market conditions under which the firm operates on its input and its output side. Given the complexity of the tax effects it seems useful to derive testable predictions from somewhat more structured theoretical considerations of corporate location and investment decisions.

Let us first consider the investment decision starting with a cost-function of company k's

production in country i

$$C_{k,i} \;=\; C\left(\; w_i' \;,\; v_i' \;,\; \rho_{k,i} \;,\; q_i' \;,\; Y_{k,i} \;\right),$$

where w_i', v_i' is the effective wage rate for unskilled and skilled personnel, respectively, $\rho_{k,i}$ measures the effective cost of capital, q_i' is the effective price of intermediate inputs, and $Y_{k,i}$ is the level of output. Following Devereux and Griffith (1998), w_i', v_i', and q_i' are defined net of corporation taxes as the cost of those inputs are assumed to be fully deductible in corporate income taxation. For instance, if the gross wage rate paid is w_i the argument in the cost function is $w_i' = (1 - \tau_i)\, w_i$, where τ_i is the statutory corporation tax rate. For simplicity, we abstract from corporate debt and assume that all returns to capital are not deductible in corporate income taxation. Taking account of tax depreciation the cost of capital is defined as

$$\rho_{k,i} \equiv (r_{k,i} + \delta_k)\,(1 - d_i \tau_i)\,,$$

where the double index to the discount rate $r_{k,i}$ reflects the assumption that it is subject to some common factors at the level of the company and at the level of the host country. If the multinational has an internal capital market where one affiliate can borrow from the other, the common factor at the level of the company might dominate the discount rate such that $r_{k,i} = r_k$. If the capital markets were completely separated, the common factor at the level of the country would dominate the discount rate $r_{k,i} = r_i$. Economic depreciation δ_k is assumed to be equal across locations and $d_i \tau_i$ denotes the tax savings from the present value of depreciation allowances d_i.

Capital demand is obtained from the derivative with respect to the cost of capital and will, basically, depend on the same arguments as the cost function

$$K_{k,i} = K\left(\; w_i' \;,\; v_i' \;,\; \rho_{k,i} \;,\; q_i' \;,\; Y_{k,i} \;\right) \equiv \frac{\partial C_{k,i}}{\partial \rho_{k,i}}.$$

Making use of the demand function's zero homogeneity in factor prices we can rewrite this

expression to obtain

$$K_{k,i} = K\left(w_i \ , \ v_i \ , \ c_{k,i} \ , \ q_i \ , \ Y_{k,i} \right), \tag{1}$$

where $c_{k,i}$ denotes the usual term of the user cost of capital

$$c_{k,i} \equiv \left(r_{k,i} + \delta_k\right) \left(\frac{1 - d_i \tau_i}{1 - \tau_i} \right).$$

Following Devereux and Griffith (1998), the location decision will depend on the evaluation of profits at possible locations j=1,...,n.

$$y_{k,i} \ = \ 1, \ \text{ if } \Pi_{k,i} > \Pi_{k,j}, \ \forall j \neq i, \ \text{ and } \ y_{k,i} = 0 \ \text{ otherwise}, \tag{2}$$

where $y_{k,i} = 0, 1$ is a binary variable indicating whether or not the multinational holds an affiliate at location i, and $\Pi_{k,i}$ is the profit at location i in the view of firm k. Making use of the unit homogeneity of the cost function in prices, the level of profits at location i is determined by

$$\Pi_{k,i} \ = \ \left(1 - \tau_i\right) \left[p\left(Y_{k,i}\right) Y_{k,i} - C\left(w_i \ , \ v_i \ , \ c_{k,i} \ , \ q_i \ , \ Y_{k,i} \right) \right]. \tag{3}$$

Note that the profit equation as well as the capital input equation (1) include the level of output. Of course, the level of output is a choice variable of the company determined in order to maximize profits. It is usually determined by the optimality condition that marginal revenue equals marginal cost

$$p\left(Y_{k,i}\right) \left[1 - 1/\eta\left(Y_{k,i}\right)\right] - \frac{\partial C\left(w_i \ , \ v_i \ , \ c_{k,i} \ , \ q_i \ , \ Y_{k,i} \right)}{\partial Y_{k,i}} \ = \ 0, \tag{4}$$

where $\eta\left(Y_{k,i}\right)$ is the price elasticity of demand. The optimal level of output, hence, depends on all of the input-prices determining the marginal cost as well as on the demand conditions. Note that corporate income taxes exert an impact on output only via their influence on

the cost of capital.

Equations (1) and (4) can be used to determine output and capital input and thus provides a theoretical background for the analysis of the investment decision. Equation (3) defines the profits. Evaluated at all possible locations together with equations (2) and (4) it can be used to analyze the location decision. Let us discuss in the next two subsection how each of these decisions may be affected by taxes.

2.1 Taxes and FDI Levels

Conditioning on a positive location decision, equations (1) and (4) will allow us to determine the capital input at location i. We see that there are two ways in which the capital input is potentially affected by taxes. The first relates to the substitution possibilities in production, the second relates to the output effects.

Corporate income taxation will increase the cost of capital relatively and, hence, will cause a substitution away from capital. This effect is discussed and analyzed in the traditional literature on investment which has emphasized that not only the tax rate but also depreciation allowances matter and that the tax burden will differ for different sources of finance.

Taxes on goods and services used as inputs, in this setting might induce substitution effects towards capital. However, this is, first of all, a matter of tax incidence. If the inputs or services are inelastically supplied, changes in taxes would not affect the cost of production and, thereby, would not affect investment or location decisions. But if taxes on goods and services are not born by the suppliers of goods and services they might raise prices and hence affect the cost of production which in turn will cause factor substitution within the constraints of the production possibilities. Consider the case of a land tax. If land is supplied inelastically one might expect that land owners will carry the full burden of the tax such that the gross of tax price of land is unaffected by the tax. Then, taxes on

land would not affect investment. However, note that property taxes often tax not only land but real estate including structures. Depending on the relative importance of the latter those taxes might raise the cost of capital and cause substitution away from capital. Another example is labor taxation. If labor is supplied inelastically, because workers do not alter participation decisions or if workers are immobile, the burden of taxes on labor would fall on workers. Gross wages would be unaffected by the tax. A different prediction could be obtained under conditions of wage bargaining: if unions oppose to compensate higher labor taxes with lower after-tax wages, tax increases might raise the cost of labor and induce substitution towards capital. Taxes on labor would also affect the cost of labor if workers are internationally mobile and demand a competitive after-tax income. This might be relevant in the case of taxes on skilled labor. Due to the relatively large international mobility of the skilled (OECD, 2002), companies might need to compensate those employees for differences in personal income taxes and social security contributions experienced across locations. These taxes, then, would potentially cause substitution effects towards or against capital depending on the degree of capital-skill complementarity.

With regard to *import duties* we may note that for vertical FDI with important intermediate input linkages between subsidiaries the consequences are similar to those of taxes on goods and services. If the foreign subsidiary relies on imports of intermediate inputs, these taxes would affect factor demand depending on the substitution possibilities.

For *general sales taxes* no effect is expected on the input decisions if business to business transactions remain untaxed.

Taxes might, however, also exert a secondary impact on capital input as they affect the output decision of the firm. *Corporate income taxes* as well as other taxes will raise the cost and, therefore, lead to lower levels of output. This, in turn, exerts an adverse impact on capital demand. Of course, this also depends on the substitution possibilities. Generally, the output effects will be strongest with fixed input coefficients where the producer has little possibilities to avoid taxation such that the burden falls mainly on the producer.

Taxes on goods and services used as inputs are expected to have similar effects on output decisions. However, for those taxes the output effect works against possible substitution effects such that the total impact on capital input is ambiguous. Thus, the impact of taxes on labor could be positive, if production in countries with high labor cost tend to be more capital intensive. For taxes on skilled labor, if one is willing to assume some degree of capital-skill complementarity (see, for instance, Duffy, Papageorgiou, and Perez-Sebastian, 2004), a tax increase seems more likely to exert adverse effects on output.

For taxes on intermediate inputs such as *import duties* we should also expect some adverse impact on output, because it is more costly to produce. With horizontal FDI, however, the effects could be different. Here, import duties might represent the cost of entering a market from abroad providing an incentive to raise production within the protected markets.

Since *general sales taxes* may affect output prices and market conditions the imposition of those taxes might affect the marginal revenue in equation (4) and, therefore, the output decision of the firm. More specifically, we might expect general sales taxes or the value-added tax (VAT) to reduce the demand for the subsidiary's output at a given level of a country's income and, hence, exert a depressing impact on capital input. A further issue in this context is the existence of the destination or origin principle in sales taxation. Whether general sales and value-added taxes will affect location decisions also depends on whether the product of a foreign subsidiary is sold in the foreign country or exported somewhere else. Under the destination principle the output decision for production intended to be sold within the foreign country (horizontal FDI) might be affected adversely, as the tax reduces the demand for the goods and services provided and therefore exerts a downward impact on output. If it is intended just to produce in a foreign country and then to export to other places (vertical FDI) general sales taxes should not matter for output under the destination principle. One might even argue that the effect for multinationals could also be positive under these conditions as they experience some advantage against local producers.

2.2 Taxes and Location Choice

As we have seen above, location choice is affected by taxes due to their impact on the rate of profit earned at each location. *Corporate income taxation* exerts direct and indirect effects on profits. The direct effect is simply the reduction of profits after taxes which make a location less attractive. The indirect effect is related to the impact on the cost of capital. A reduction in depreciation allowances, for instance, will tend to raise the unit cost and thereby further reduce the profits of an investment project. Therefore, both the statutory as well as the marginal tax rate on investment will affect location decisions. Provided the channels of finance and the rate of profit are given, the effects may be combined using the effective average tax rate put forward by Devereux and Griffith (1998).

As in the above analysis of taxes and FDI, *taxes on goods and services used as inputs* will matter only if the tax burden is not shifted to suppliers. Thus, if taxes tend to raise input prices, the cost may rise and the location probability declines. Even if land taxes are completely born by land owners, property taxes might still exert an adverse impact on location if the tax is also imposed on structures. Depending on the relative importance of structures in the tax base, those taxes might also deter location decisions. Taxes on labor would affect the cost of production and, thus, location decisions, if workers are mobile, internationally, and demand a competitive after-tax income, or if other conditions allow labor to shift the tax burden to the employer.

Location decisions will also be affected by *general sales taxes*. Let us assume, for simplicity, that business to business transactions are untaxed (the VAT case), those taxes should not affect the demand for capital given output. But if they reduce the marginal revenue from output they will exert a depressing impact on output; the deterioration of demand conditions will further contribute to a reduction in profits. Hence, they should have a dampening effect on the location probability. Whether sales taxes will affect location decisions is again further determined by the destination and origin principle. Under the destination principle the location of production intended to be sold within the foreign

country (horizontal FDI) should be affected adversely, since the tax reduces the demand for the goods and services provided and therefore exerts a downward impact on profits. If it is intended to produce in a foreign country and then to export to other places (vertical FDI), sales taxes should not matter for location decisions under the destination principle.

For vertical FDI with important intermediate input linkages between subsidiaries the consequences of taxes on imports or *import duties* are similar to those of taxes on goods and services. If the foreign subsidiary relies on imports of intermediate inputs, these taxes would raise the cost of production and we would expect an adverse effect on location. With horizontal FDI, however, the effects will be different. Here, import duties might constitute cost of serving a market from abroad. This points at an incentive to locate production in the protected markets.

3 Investigation Approach

While the impact of corporate income taxes is explicitly taken into account, the impact of other taxes is only implicit in the above modelling of investment and location decisions. The discussion clarified that additional assumptions are needed in order to identify tax effects. What kind of assumptions are useful, however, also depends on the investigation approach taken. Therefore, let us postpone for a moment the issue of the identification of tax effects and first consider the empirical approach to investment and location decisions.

Following the capital demand equation (1) an empirical analysis should relate the level of capital of firm k in country i to its theoretical determinants. In the cross-sectional context, in order to distinguish company effects, indexed with k, from country-level variables, indexed with i, it is useful to evaluate this relationship using pooled cross-sections. A

linearized empirical specification is

$$\begin{aligned} \log K_{k,i,t} &= \alpha_1 \log w_{i,t} + \alpha_2 \log v_{i,t} + \alpha_3 \log q_{i,t} + \alpha_4 \tau_{i,t} + \alpha_5 d_{i,t} \tau_{i,t} \\ &+ \alpha_6 \log Y_{k,i,t} + \gamma_k + \zeta_t + \epsilon_{k,i,t}. \end{aligned} \tag{5}$$

where γ_k is a company-specific fixed effect and ζ_t is a fixed time effect. $w_{i,t}$, $v_{i,t}$, and $q_{i,t}$ refer to labor cost, skilled labor cost, and cost of other inputs, respectively. Since the relevant rate of return and the depreciation rate are not known, it seems useful not to employ a user cost of capital variable ($c_{k,i}$), or some related index of effective tax rates, but to separate out the role of corporation taxes, and to exploit the panel data property of the data. More specifically, as we consider a set of companies, which share the same parent location, the company level fixed effect will capture the company-specific component to the rate of return; industry effects at the level of the affiliate will capture differences in the depreciation rate. In the above specification, the contribution of taxes to the user cost of capital $\left(\frac{1-d_{i,t}\tau_{i,t}}{1-\tau_{i,t}}\right)$ is captured by the tax rate $\tau_{i,t} \approx \log(1-\tau_{i,t})$ and the present value of depreciation allowances $d_{i,t}\tau_{i,t} \approx \log(1-d_{i,t}\tau_{i,t})$, which makes use of the fact that, that the tax rate is an approximation to the log of unity minus tax rate.

A problem with this specification is that it contains the output on the right hand side. If we believe that variation in sales reflects changes in exogenous demand conditions this is useful. However, as is depicted by optimality condition (4), the output itself is chosen in the light of demand and cost conditions. Thus, estimation based on (5) runs into difficulties due to simultaneity bias. This suggests to employ a reduced form specification where output is dropped on the right hand side and replaced by some general indicators of the market size, as for instance the log of GDP.

$$\begin{aligned} \log K_{k,i,t} &= \beta_1 \log w_{i,t} + \beta_2 \log v_{i,t} + \beta_3 \log q_{i,t} + \beta_4 \tau_{i,t} + \beta_5 d_{i,t} \tau_{i,t} \\ &+ \beta_6 \log GDP_{i,t} + \gamma_k + \zeta_t + \epsilon_{k,i,t}. \end{aligned} \tag{6}$$

It is important to note, however, that the parameters in this specification differ from the

above specification since they capture the traditional factor demand as well as the output effects of local conditions.

In comparison to the capital demand the modelling of location decision is more complex as it involves the evaluation of expected profits across investment alternatives. In order to estimate location probabilities most of the empirical literature on location decisions employs some variant of the conditional logit model developed by McFadden (1974) (*e.g.*, Bartik, 1985, Coughlin et al., 1992) which allows for some cross-sectional distribution of the attractiveness of each location. Also Devereux and Griffith (1998) employ a nested conditional logit specification which captures the relationship with other decisions reflecting a firm's strategy towards the international markets. However, the conditional logit approach is limited to the cross-sectional differences in the determinants of location and conflicts with the observation that many companies, every second company in the dataset used below, hold more than just one subsidiary abroad, the location of which are hardly independent. Therefore, the analysis below follows Buettner and Ruf (2006) using a panel data approach which proved useful in order to identify the effects of local characteristics on the location probability. More specifically, we study location decisions by estimating a linearized equation for the propensity of firm k to hold an investment at i, which includes a full set of firm-specific location effects $\gamma_{k,i}$, formally:

$$\begin{aligned} y_{k,i,t} &= 1, \text{ if } \pi^*_{k,i,t} > 0, \text{ and } y_{k,i,t} = 0 \text{ otherwise,} \\ \pi^*_{k,i,t} &= \delta_1 \log w_{i,t} + \delta_2 \log v_{i,t} + \delta_3 \log q_{i,t} + \delta_4 \tau_{i,t} + \delta_5 d_{i,t} \tau_{i,t} \\ &+ \delta_6 \log GDP_{i,t} + \gamma_{k,i} + \zeta_t + \epsilon_{k,i,t}. \end{aligned} \tag{7}$$

where $\epsilon_{k,i,t}$ is an error term and ζ_t is a fixed time effect.

Note that the propensity to invest at location i is modelled without specific reference to the group of choice alternatives $j \neq i$. However, the firm-specific location effects will capture the cross-sectional distribution of the attractiveness of each location. The estimation follows Chamberlain's (1984) fixed-effects logit estimator and models the probability of

observing an investment of the firm under consideration in a specific country in a given year conditional on the observed frequency of corresponding investments in all years, *i.e.* conditional on the value of $\sum_{t=1}^{n} y_{k,i,t}$. Conditioning on this value removes the influence of the cross-sectional differences in the attractiveness of each location without further distributional assumptions.

While the impact of corporate taxes is explicitly taken into account, the impact of other taxes is only implicit in the two estimation equations. Consider first the case of *taxes on goods and services used as inputs*. Since the prices for inputs are defined as gross prices they would include taxes and, provided the tax incidence is on the demand side, differences in taxes would be reflected in differences in the gross prices. In order to identify tax effects directly, we might replace the gross prices of a factor input by a measure of the tax burden placed on this input. But, if not only taxes but also other country-specific conditions have an impact on gross prices, estimation might suffer from omitted variable bias. A restrictive albeit powerful assumption, therefore, is that the net-of-tax prices of the inputs are equal across countries due to trade or mobility. Thus, if $q_{i,t} = \left(1 + \tau_{i,t}^{q}\right) q_t$, we could replace $\log q_{i,t}$ in the two estimation equations by the tax rate on the input $\tau_{i,t}^{q}$ in combination with the time-fixed effect. The same approach might be taken in the case of skilled labor, where we would need to assume that mobility is sufficient in order to ensure equal net-of-tax earnings for skilled workers. This would allow us to replace $\log v_{i,t}$ by the tax rate on skilled labor $\tau_{i,t}^{h}$, again, in combination with the time-fixed effect. *Import duties* might be captured in the same way as taxes on goods and services used as inputs assuming that net-of-tax import prices are equal across countries. Note that in all the cases where identification relies on trade and mobility it is useful to introduce some distance variable if no country fixed effects are imposed. The conditions for the identification of the effects of *general sales taxes* are somewhat more straightforward. So far, the estimation equations above only use GDP in order to capture the market conditions in the host country. This might well be augmented by an additional term capturing the tax burden on sales. However, whether or not an impact of taxes can be identified empirically, also depends on the data available. Therefore, we will come back to this issue in the following data section.

4 Data

The empirical analysis employs a micro database for FDI provided by the German Bundesbank which includes a comprehensive annual database of foreign direct investment positions of German enterprizes held abroad. In its current version, firm-level panel data are available for the period 1996 to 2003. The collection of the data is enforced by German law, which determines reporting mandates for certain international activities. For further description the interested reader might consult Buettner and Ruf (2006) and Lipponer (2006). In the current study, we exclude FDI in the financial sector as well as investments in holdings, since we are basically interested in the tax effects of the location of productive capital. We also exclude firms which report zero investment or zero sales. Also branches or partnerships are excluded as different tax rules apply in these cases. Table 1 provides some descriptive statistics on the size and distribution of FDI stocks of German multinationals.

Tax data are taken from a variety of sources. Statutory tax rates for corporate taxation are taken from Devereux, Griffith, and Klemm (2002). Another variable taken from this source is the present value of depreciation allowances. A further variable related to corporate income taxes is an indicator of whether a special tax credit is available for research and development. The corresponding variable (R&D Tax Credits) is taken from a recent IBFD survey and shows a value of unity in this case.

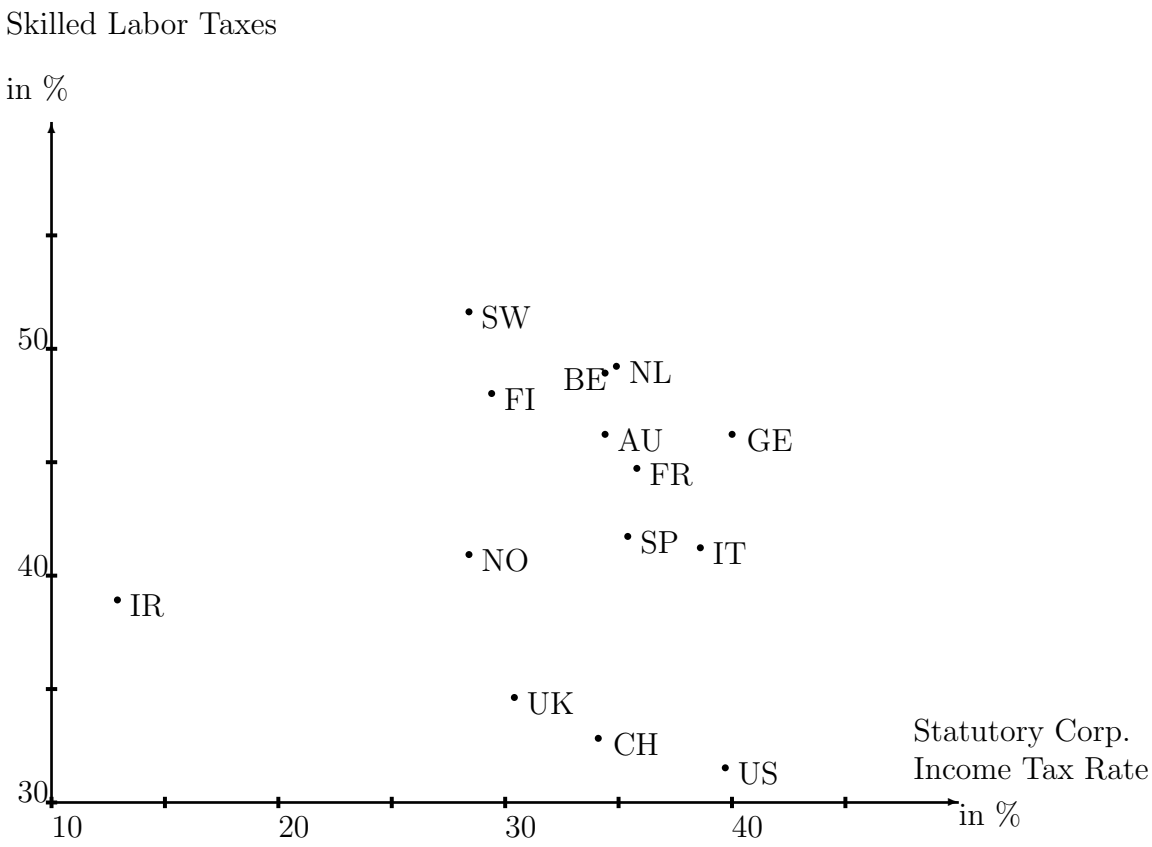
Sales Taxes & VAT, Excises, Import Duties, as well as Property Taxes are all taken from revenue data and follow the usual OECD classification. The source is the OECD Revenue Statistics and all of these variables are expressed as percentage of GDP. *Sales Taxes & VAT* (OECD category: 5110) include all taxes levied on the production, leasing, transfer, delivery or sales of goods and services. For this category it does not make any difference whether the goods or services are imported or produced domestically; it covers value-added taxes, sales taxes and multi-stage cumulative taxes. *Excises* (OECD category: 5121) are all taxes on particular products other than general sales taxes and import or export duties, respectively. This includes, in particular, taxes on energy sources. *Import Duties* (OECD

category: 5123) are customs and duties to imported products. Not included are, however, general sales taxes or excises (see above). *Property Taxes* (OECD category: 4000) comprises taxes on the use, ownership or transfer of property. Not included are, for example, taxes on capital gains from sales of property, or property taxes taking into account personal circumstances of the taxpayer - these are classified as income taxes. Of course, all these tax indicators capture only some potential determinants of input cost, which may or may not show up in the gross prices, depending on the tax incidence. Whether or not the empirical specification is able to detect the effects of these taxes also hinges on the problem whether there are further conditions which cause international differences in the input prices. For excises and import duties this may not be a big problem if the former is mainly related to fuel prices and the latter refers to traded goods both of which might show similar pre-tax prices across countries. The approach, however, might be less convincing with regard to property taxes given the strong heterogeneity in the markets for real estate.

With regard to labor taxes it seems particularly difficult to argue that gross wage differences are only driven by differences in the tax burden. For instance, unions or unemployment insurance might exert further important effects on the gross wages. Hence, with regard to labor we do not attempt to identify the impact of labor taxes, and instead use a comprehensive indicator of labor cost including gross wages as well as taxes on labor input at the level of the employer. The corresponding labor cost data is taken from U.S. Bureau of Labor Statistics. It reports hourly compensation costs for production workers in manufacturing including taxes paid by the employer and before taxes paid by the employee expressed in U.S. Dollars. However, controlling for the average cost of labor, the analysis below tests for an impact of taxes on skilled labor. Here, the assumption is that skilled labor may receive rather similar remuneration after taxes across countries or locations. This is related to the much higher mobility of the skilled, in particular, within multinational corporations (expatriates). Building on this hypothesis, Elschner and Schwager (2005) develop an indicator of the effective average tax rate for skilled labor. The measurement method is comparable to the OECD (1992) *Taxing Wages* approach. The tax wedges are calculated by taking

the difference between labor cost to the employer and a uniform level of net income of the employee. In doing so, the method combines the effects of personal income taxes, social security contributions and family cash benefits on net incomes of employees. Figure 1 shows the values for several EU countries plotted against the statutory corporation tax rate.

Figure 1: Corporate Income and Skilled Labor Taxes



"IBC Taxation Index", source: BAK Basel Economics, 2005.

A final source of tax data used in the empirical analysis is more similar to Desai, Foley, and Hines (2004). Using a large microdataset for companies (Worldscope) we calculated indicators based on individual income and cost statements for companies which include the amount of (corporate) income taxes and other taxes paid. While income taxes are scaled

with pre-tax profits, other taxes are scaled by the total amount of sales; a third indicator is simply based on the ratio of other to income taxes. The resulting indicator in each case is the median of the figures reported by all companies located in a country in the respective year. As is depicted in Table 2 the data points at large differences across countries and periods. The mean across countries and years confirms the finding of Desai, Foley, and Hines (2004) that other taxes usually amount to larger figures than income taxes.

Apart from tax data, the analysis uses controls for GDP, distance, and the level of corruption in order to capture other potentially relevant determinants of investment and location. As in Egger and Winner (2006) we use corruption perception data from Transparency International. See appendix for further description.

5 Results

The empirical analysis is concerned with the determinants of the level of PPE (property, plant, and equipment) invested by a German parent company in a foreign subsidiary as well as with the underlying location decision for a sample of 18 countries for which sufficient data on taxes and other relevant local conditions is available over a period of 8 years (1996-2003). Consider first the determinants of the stock of PPE following specification (6). Table 3 reports corresponding results. In order to avoid the Moulton (1990) problem, standard errors are robust against random firm-specific and country effects using the usual Huber-White sandwich formula.

In column (1) the impact of corporation taxes is captured by the statutory corporate income tax rate and the present value of tax depreciation allowances, interacted with the tax rate. While the signs match theoretical expectations, the statutory tax rate is insignificant. GDP exerts the usual strong positive effect, and also the corruption index confirms expectations indicating that investment is lower in countries with high levels of (perceived) corruption. Specification (2) adds a dummy variable indicating the presence of special tax privileges for

R&D expenditures. This specification yields some significance for the statutory tax rate and also for the presence of R&D tax credits. Remarkably, both specifications support a positive impact of the local lending rate. This is somewhat puzzling at first sight, but we should note that multinationals may use intercompany loans in order to circumvent adverse lending conditions in one country (Desai, Foley, and Hines, 2004b). One might speculate whether this gives multinationals an advantage against local firms. Specification (3) to (7) report the results of estimations including various indirect taxes. Sales taxes, but also excise taxes exert significant negative effects. Import duties on the other hand exert positive effects. While the property tax rate proves insignificant, joint estimation (7) supports adverse effects for property taxes as well as for Sales Taxes & VAT. This last specification shows the best fit. In this specification, the similarity in the absolute value of the coefficients for the statutory tax rate and its interaction with the present value of depreciation allowances conforms with the view that FDI is affected by corporate income taxes via their impact on the cost of capital. In the light of the theory, the significance of the sales taxes would indicate that horizontal FDI is important where the sales taxes exert an adverse effect on demand conditions.

Let us briefly consider the magnitude of effects. Evaluated at the mean, the tax elasticity of FDI with regard to the statutory corporation tax rate implied by specification (7) is at 0.83 which is larger than the average figure of 0.6 found in the literature (*cf.*, Hines, 1999). The elasticity with regard to Sales Taxes & VAT taxes is at about 0.73. However, it should be noted that the tax variable relates to revenue data and, therefore, combines the tax code with the activities of the tax payers and the tax administration. This makes it difficult to compare the magnitudes.[1] Nevertheless, the results support the finding of Desai, Foley, and Hines (2004) that indirect taxes exert effects on FDI which are as strong as those of the corporation tax. While some strong effects of R&D Tax Credits on R&D expenses

[1] As there are always difficulties to enforce the tax code and since agents typically adjust their activities in order to avoid taxation we should expect that the use of revenue data underestimates the tax rate elasticities.

have been documented in the literature (*e.g.*, Hall, 1993, Hines, 1994), the results for the tax credit variable suggests that the level of PPE invested is about 50 % higher if a R&D Tax Credit is granted. For comparison consider the estimated impact of tax depreciation allowances. Evaluated at the sample mean of its tax value of 28 %, the point estimate (2.42) suggests that the granting of depreciation allowances boosts PPE by about 67 %. This would imply that the impact of the R&D Tax Credit, which usually amounts to 20 % of R&D expenses, exerts three fourth of the impact exerted by depreciation allowances. Even though the R&D Tax Credit is likely to be very effective as it generally determines a deduction from the tax bill rather than from the tax base, this effect seems rather strong. However, it is difficult to precisely compare the results since the R&D variable is only a rather crude indicator of the corresponding tax incentives and since we lack information about R&D intensity and PPE productivity of the multinationals. Furthermore, it might be the case that the dummy captures not so much the impact of the specific measure but rather the attention devoted by a host country's government to the attraction of multinationals and their investment.[2]

Table 4 reports results where, in addition, the tax burden on skilled labor is included. Note that this variable is not available for the whole sample; 5 countries had to be excluded resulting in a considerable loss of variation in taxes. Nevertheless, the results support a significant adverse effect of this tax rate. Again, the specification including all taxes shows the best fit. It also confirms the adverse effects of sales taxes. While this specification no longer supports an impact of property taxes, excise taxes now show a significant effect.

Tables 5 and 6 provide results for the location decision. While the tables display, basically, the same set of determinants as in the case of the analysis of the FDI-level, it is important to note that a fixed-effects logit estimation is reported which removes the cross-sectional differences in the locational attractiveness. This constraints our ability to detect significant impacts of taxes, since the available variation is reduced. Nevertheless, the results

[2]We are grateful to Jim Hines for pointing this out in his discussion of our paper.

support a significant effect of all control variables (Distance and R&D Tax Credit are removed as these variable shows only cross-sectional variation). As above, standard errors are robust against group effects and heteroscedasticity. Not only is the level of corruption found to exert adverse effects on location probability, but also the local lending rate shows significant effects. The latter result is remarkable as we know from the study of corporate finance decisions of multinationals (Desai, Foley, Hines, 2004b) that multinationals have some advantage against local firms due to the possible substitution of local debt by means of intercompany loans.[3] The positive coefficient suggests that this advantage might induce multinationals to locate in countries with less favorable credit market conditions. Furthermore, we find an impact of the statutory corporation tax, while depreciation allowances do not matter. Note that this is, to some extent, in accordance with Devereux and Griffith (1998) who argue that location decisions are not driven by the marginal tax rate but by the effective average tax rate, which is a combination of marginal and statutory tax rates. The finding is also in accordance with Buettner and Ruf (2006) who find that the statutory tax rate has a stronger predictive power for location decisions than effective tax rates. All other tax indicators prove insignificant, except for the import duties. This finding is consistent with the view that barriers to trade induce multinationals to locate production in the protected countries.

As a final empirical exercise further estimations have been carried out using the income and other tax variables generated from company accounts. While the results presented in Table 7 support some adverse effect of income taxes in addition to the statutory corporate income tax rates, other taxes failed to show a significant effect on both investment (columns (1) and (2)) and location (columns (3) and (4)). However, this might well be attributable to the rather strong variation of those tax measures within countries together with a serious reduction in the samples size resulting from the lack of data availability.

[3] A companion paper (Buettner, Overesch, Schreiber, Wamser, 2006) shows that the local lending rate variable exerts similar effects on the corporate finance of the German multinationals under consideration.

6 Conclusions

This paper has reconsidered the empirical evidence for an impact of taxes other than corporate income taxes on the level and location of FDI of German multinationals. Based on a standard theoretical framework of investment and location decisions, the paper started with a discussion of the potential impact of various taxes on input allocation, output as well as location decisions. The discussion emphasized the role of tax incidence for the consequences of taxes other than corporate income taxes and the necessity of further assumptions in order to identify tax effects empirically.

The panel data analysis of the level of capital invested in property, plant, and equipment by German multinationals in 18 foreign OECD countries adds some support to the study of Desai, Foley, and Hines (2004) who found significant effects not only of direct but also of indirect taxes for the case of US multinationals. The results for corporation income taxes are consistent with the conventional view that their impact is basically due to an increase in the cost of capital. Moreover, the results indicate some further significant adverse effects of sales taxes on the investment position. The magnitude of effects on the level of capital invested is found to be comparable to those of the corporation tax. The impact of sales taxes points at some adverse demand effects of those taxes. Another tax variable which proves significant is the tax on skilled labor. The results point at a negative impact of similar magnitude as that of the corporate income tax. This impact of taxes on skilled labor conforms with theoretical predictions if we assume that this type of labor is mobile internationally and if there is some capital-skill complementarity. Some further significance of other tax variables is detected only in single specifications but proves not to be robust across specifications.

In contrast to the analysis of the level of FDI, the analysis of location decisions reveals no significance of taxes other than corporate income taxes. Location decisions are only found to be affected by import duties, which, however, exert a positive impact. This is consistent with the view that multinationals show a higher propensity to place production in markets

which are protected from imports.

We cannot preclude, however, that some of the other tax variables used in the investigation failed to show significant effects not because they were irrelevant for location and investment but because there are other important determinants of cost or output market conditions which are not taken into account in the investigation approach. It is also quite possible that some of the tax variables which do show significant effects capture not so much a definite impact of the specific tax instrument but rather the attention devoted by a host country's government to the attraction of multinationals and their investment which may show up in a variety of unobserved host country characteristics. Nevertheless, the results suggest that policies devoted to attract investments of multinationals already present in their country should care for low cost of capital, low sales taxes, as well as low taxation of skilled labor. Policies aiming at an attraction of subsidiaries of foreign multinationals should reduce corporate income tax rates. Abolition of import duties, however, might exert adverse effects on the location propensity.

Datasources and Definitions

Firm-level data are taken from the micro-dataset of the Bundesbank, see Lipponer (2006) for an overview.

GDP in U.S. Dollars, nominal. Source: OECD.

Hourly compensation of workers: Hourly compensation costs in U.S. Dollars for production workers in manufacturing. Source: U.S. Bureau of Labor Statistics.

Corporate taxation data are taken from Devereux, Griffith, and Klemm (2002). The data are kindly provided by the authors at the IFS website including an update of the figures.

Other Taxes are taken from Worldscope Database.

Excises, Taxes on Sales, Imports, and Property Taxes are taken from OECD revenue statistics.

Skilled Labor Taxes as put forward by Elschner and Schwager (2005) are issued as part of the "IBC Taxation Index" various years, by BAK Basel Economics.

Distance is taken from "www.etn.nl/distance.htm".

Research and Development Tax Credits are taken from IBFD study *Tax Treatment of Research and Development Expenses* (2004) available at:
http : *//europa.eu.int/comm/taxation_customs*.

Lending Rate is the lending rate for credits to private sector taken from the IMF International Financial Yearbook (2005) augmented with corresponding ECB figures.

Corruption Perception Index is published annually by Transparency International which ranks countries in terms of perceived levels of corruption, as determined by expert assessments and opinion surveys. The scores used range from 10 (country perceived as virtually corruption-free), down to close to 0 (country perceived as almost totally corrupt).

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Table 1: Reported PPE and Sales of German Multinationals by Country

Country	Subsidiaries	PPE (in € 1000)	PPE Share	Sales (in € 1000)
Australia	108.16	534 235	0.008	3 077 626
Austria	435.24	3 860 740	0.058	21 100 000
Belgium	209.91	2 858 317	0.043	16 400 000
Canada	86.98	960 493	0.014	4 390 838
Finland	38.9	296 875	0.004	1 737 016
France	612.46	3 968 746	0.059	33 800 000
Great Britain	420.33	3 067 507	0.046	24 300 000
Greece	44.4	228 828	0.003	1 369 406
Ireland	41.96	289 973	0.004	1 019 994
Italy	420.02	3 193 196	0.048	18 700 000
Japan	120.58	1 636 821	0.024	9 425 363
Netherlands	269.8	1 842 274	0.027	11 600 000
Norway	42.93	577 920	0.009	1 583 370
Portugal	80.17	734 891	0.011	3 168 669
Spain	347.68	3 787 204	0.057	18 600 000
Sweden	118.36	898 929	0.013	4 123 472
Switzerland	335.33	1 594 843	0.024	13 600 000
USA	501.58	11 100 000	0.166	42 000 000
Other countries	*2391.61*	*25 568 210*	*0.382*	*92 004 246*
Total	*6626.40*	*67 000 000*	*1*	*322 000 000*

Subsidiaries: annual average number of subsidiaries, PPE and turnover reported in the period 1996 to 2003 in the countries under consideration. PPE: average volume of investment in terms of property, plant, and equipment. PPE Share: fraction of all PPE investments allocated to the respective country or group of countries. Due to lack of covariates the category "other countries" is not included in the empirical analysis below. Furthermore, we only take into account direct investments in corporations where the majority is held by the German mother. Holdings are excluded as well as Financial Corporations. Companies reporting zero PPE or zero sales are removed.

Table 2: Descriptive Statistics

Variable (def.)		Mean	Std. Dev.	Min.	Max.
Investment level	(PPE, stocks in € million)	9.893	111.8	0.001	14 400
Labor cost	(in US Dollar)	18.61	4.088	5.06	31.55
GDP	(in US Dollar)	1 977	2971	356	11 000
Lending rate	(local lending rate)	.061	.020	.018	.210
Distance	(flying distance in km)	2 175	3 321	307	16 470
Corruption	(Corruption Percep. Index)	7.39	1.34	3.42	10.0
STR	(stat.profit tax rate)	.361	.053	.1	.532
R&D Tax Credit	(binary)	.879	.326	0	1
PVD	(pres.val. of dep. allow.)	.767	.115	.281	.864
PVD × STR		.277	.059	.077	.428
Sales Taxes & VAT	(as percentage of GDP)	5.96	2.08	1.47	9.39
Excise Taxes	(as percentage of GDP)	2.62	.833	1.82	6.25
Import Duties	(as percentage of GDP)	.108	.151	-.014	.735
Property Taxes	(as percentage of GDP)	2.52	.973	.545	8.60
Skilled Labor Taxes[a]	(effective tax rate)	.427	.079	.308	.605
Other Taxes [b]	(as percentage of sales)	.023	.022	.001	.189
Income Taxes [c]	(as percentage of earnings)	.371	.131	.043	.998
Tax Ratio [b]	(other taxes / income taxes)	10.5	27.0	.011	271

31999 ([a]: 29064, [b]: 26302, and [c]: 29064) observations for subsidiaries in 18 host-countries in the period from 1996 to 2003.

Table 3: Taxes and FDI: Basic Results

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Tax Variables	STR	-.235	-.800 *	-.791 *	-2.02 **	-2.22 **	-1.14 **	-2.31 **
		(.479)	.457	(.453)	(.442)	(.450)	(.441)	(.477)
	STR × PVD	1.20 **	1.84 **	1.83 **	2.11 **	2.46 **	2.22 **	2.42 **
		(.340)	.352	(.351)	(.357)	(.361)	(.371)	(.380)
	R&D Tax Credit		.270 **	.267 **	.402 **	.514 **	.322 **	.511 **
			.075	(.077)	(.059)	(.047)	(.067)	(.046)
	Property Taxes			-.006				-.041 **
				(.018)				(.019)
	Excises				-.183 **			-.014
					(.026)			(.033)
	Sales Taxes & VAT					-.118 **		-.123 **
						(.008)		(.017)
	Import Duties						.506 **	-.016
							(.122)	(.121)
Control Variables	log GDP	.180 **	.151 **	.155 **	.123 **	.092 **	.155 **	.109 **
		(.018)	(.016)	(.019)	(.017)	(.014)	(.018)	(.017)
	log Labor Cost	-.180 **	-.010	-.019	-.177 **	-.028	-.036	-.101
		(.077)	(.075)	(.069)	(.070)	(.081)	(.083)	(.065)
	log Lending Rate	.172 **	.144 **	.145 **	.149 **	.260 **	.123 **	.272 **
		(.052)	(.054)	(.054)	(.041)	(.038)	(.053)	(.038)
	log Distance	-.021	-.021	-.022	-.074 **	-.147 **	-.063 **	-.159 **
		(.017)	(.017)	(.017)	(.017)	(.015)	(.023)	(.017)
	log Corruption	.452 **	.480 **	.489 **	.540 **	.453 **	.393 **	.530 **
		(.090)	(.093)	(.091)	(.086)	(.078)	(.094)	(.082)
R^2		.2474	.2491	.2491	.2529	.2569	.2505	.2574
Observations		31999	31999	31999	31999	31999	31999	31999
Companies		3483	3483	3483	3483	3483	3483	3483

Estimation includes fixed time, company, and industry effects. Standard errors robust against heteroscedasticity and group effects in parentheses. **(*) indicate significance at the 5%(10%) level.

Table 4: Taxes and FDI, including Skilled Labor Taxes

		(1)	(2)	(3)	(4)	(5)	(6)
Tax Variables	STR	.052	-.220	-1.56 **	-1.32 **	-.237	-1.70 **
		(.525)	(.514)	(.557)	(.511)	(.518)	(.554)
	STR × PVD	1.34 **	1.12 **	1.90 **	2.01 **	1.61 **	1.98 **
		(.369)	(.374)	(.372)	(.381)	(.376)	(.417)
	R&D Tax Credit	.530 **	.458 **	.638 **	.617 **	.560 **	.616 **
		(.058)	(.062)	(.046)	(.054)	(.056)	(.065)
	Skilled Labor Taxes	-1.76 **	-1.94 **	-1.66 **	-.826 **	-1.54 **	-1.15 **
		(.216)	(.232)	(.201)	(.230)	(.217)	(.259)
	Property Taxes		-.099 **				-.032
			(.040)				(.033)
	Excises			-.162 **			-.076 **
				(.022)			(.037)
	Sales Taxes & VAT				-.086 **		-.057 **
					(.011)		(.019)
	Import Duties					.445 **	.028
						(.113)	(.101)
Control Variables	log GDP	.100 **	.207 **	.087 **	.069 **	.094 **	.108 **
		(.025)	(.050)	(.019)	(.025)	(.025)	(.047)
	log Labor Cost	.246 **	.083	.121	.193 **	.208 *	.098
		(.107)	(.136)	(.088)	(.094)	(.110)	(.105)
	log Lending Rate	-.180 **	-.204 **	-.074	.011	-.149 **	-.011
		(.067)	(.064)	(.065)	(.065)	(.068)	(.065)
	log Distance	.027	-.055	-.050 **	-.051 **	.018	-.087 **
		(.021)	(.042)	(.023)	(.023)	(.021)	(.037)
	log Corruption	.376 **	.442 **	.431 **	.405 **	.348 **	.440 **
		(.128)	(.141)	(.099)	(.092)	(.126)	(.096)
R^2		.2529	.2534	.2556	.2557	.2535	.2562
Observations		29064	29064	29064	29064	29064	29064
Companies		3380	3380	3380	3380	3380	3380

Estimation includes fixed time, company, and industry effects. Standard errors robust against heteroscedasticity and group effects in parentheses. **(*) indicate significance at the 5%(10%) level.

Table 5: Taxes and Location, Basic Results

		(1)	(2)	(3)	(4)	(5)	(6)
Tax Variables	STR	-3.51 **	-3.50 **	-3.52 **	-3.00 **	-3.38 **	-2.83 **
		(1.34)	(1.34)	(1.35)	(1.32)	(1.34)	(1.32)
	STR × PVD	1.85	1.85	1.86	1.50	1.98	1.62
		(1.24)	(1.24)	(1.23)	(1.20)	(1.23)	(1.20)
	Property Taxes		-.010				.008
			(.054)				(.054)
	Excises			-.012			-.087
				(.140)			(.147)
	Sales Taxes & VAT				.102		.123
					(.078)		(.082)
	Import Duties					.480 *	.498 *
						(.261)	(.260)
Control Variables	log GDP	2.22 **	2.23 **	2.21 **	2.11 **	2.21 **	1.98 **
		(.645)	(.647)	(.643)	(.649)	(.643)	(.658)
	log Labor Cost	-2.21 **	-2.21 **	-2.14 **	-2.20 **	-2.14 **	-1.85 *
		(.656)	(.656)	(.655)	(.660)	(.655)	(.670)
	log Lending Rate	.401 **	.400 **	.400 **	.427 **	.391 **	.415 **
		(.122)	(.122)	(.123)	(.122)	(.122)	(.123)
	log Corruption	.562 **	.568 **	.564 **	.554 **	.602 **	.604 *
		(.239)	(.236)	(.239)	(.239)	(.237)	(.234)
LogL.		-14109.9	-14109.8	-14109.9	-14108.0	-14106.2	-14103.8
Observations		35745	35745	35745	35745	35745	35745
Firm-Country Cells		5652	5652	5652	5652	5652	5652

Logit estimation with fixed effects for each firm-country cell. Time-specific effects included. Standard errors robust against heteroscedasticity and group effects in parentheses. **(*) indicate significance at the 5%(10%) level.

Table 6: Taxes and Location, including Skilled Labor Taxes

		(1)	(2)	(3)	(4)	(5)	(6)
Tax Variables	STR	-2.42 *	-2.43 *	-2.45 *	-2.31 *	-2.48 *	-2.33 *
		(1.38)	(1.38)	(1.39)	(1.38)	(1.38)	(1.38)
	STR × PVD	1.22	1.15	1.27	1.09	1.38	1.17
		(1.27)	(1.27)	(1.27)	(1.25)	(1.26)	(1.24)
	Skilled Labor Taxes	-.414	-.437	-.499	-.257	-.492	-.371
		(1.33)	(1.33)	(1.32)	(1.39)	(1.32)	(1.38)
	Property Taxes		.063				.087
			(.084)				(.086)
	Excises			-.045			-.060
				(.160)			(.163)
	Sales Taxes & VAT				.045		.081
					(.100)		(.101)
	Import Duties					.337	.401
						(.273)	(.275)
Control Variables	log GDP	2.66 **	2.61 **	2.58 **	2.62 **	2.66 **	2.41 **
		(.738)	(.744)	(.746)	(.745)	(.737)	(.765)
	log Labor Cost	-2.53 **	-2.51 **	-2.46 **	-2.45 **	-2.49 **	-2.25 **
		(.732)	(.733)	(.742)	(.744)	(.730)	(.756)
	log Lending Rate	.422 **	.425 **	.418 **	.439 **	.419 **	.446 **
		(.132)	(.132)	(.133)	(.132)	(.132)	(.133)
	log Corruption	.637 **	.613 **	.650 **	.622 **	.644 **	.600 **
		(.248)	(.244)	(.246)	(.248)	(.248)	(.242)
LogL.		-12431.0	-12430.5	-12430.9	-12430.8	-12429.4	-12428.0
Observations		31457	31457	31457	31457	31457	31457
Firm-Country Cells		4968	4968	4968	4968	4968	4968

Logit estimation with fixed effects for each firm-country cell. Time-specific effects included. Standard errors robust against heteroscedasticity and group effects in parentheses.. **(*) indicate significance at the 5%(10%) level.

Table 7: Results for Company Accounts Tax Data

		(1)	(2)	(3)	(4)
Tax Variables	STR	-2.26 **	-1.73 **	-3.60 **	-3.23 **
		(.617)	(.579)	(1.36)	(1.42)
	STR × PVD	2.35 **	1.74 **	1.86	1.35
		(.397)	(.412)	(1.27)	(1.32)
	R&D tax credit	.201 *	.628 **		
		(.108)	(.092)		
	Skilled		-2.04 **		-.175
			(.322)		(1.90)
	Other Taxes	.684	1.34	.188	1.14
		(.709)	(1.34)	(1.14)	(1.95)
	Income Taxes	-.366 **	-.239 **	.058	-.031
		(.146)	(.110)	(.126)	(.148)
Control Variables	log GDP	.148 **	.072 **	2.26 **	3.49 **
		(.023)	(.027)	(.842)	(1.02)
	log Labor Cost	.148 *	.423 **	-2.18 **	-3.36 **
		(.081)	(.108)	(.854)	(1.02)
	log Lending Rate	.137 **	-1.18 *	.329 **	.429 **
		(.058)	(.092)	(.153)	(.170)
	log Distance	.013	.072 **		
		(.022)	(.030)		
	log Corruption	.231 **	.098	.555 **	.500 **
		(.104)	(.104)	(.244)	(.240)
R^2		.2540	.2549		
Observations		26302	23726	26324	22818
Companies		3268	3161		
Firm-Country Cells				4447	3853

(1) and (2) OLS estimation results with the log of the FDI level as dependent variable including fixed time, company, and industry effects. (3) and (4) logit estimation results of the propensity to locate at i with fixed effects for each firm-country cell; time-specific effects included. Standard errors robust against heteroscedasticity and group effects in parentheses. **(*) indicate significance at the 5%(10%) level.