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# TAXES AS A DETERMINANT FOR FOREIGN DIRECT INVESTMENT IN EUROPE

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## Introduction

Not even ten years ago, James Markusen's well-known survey on the motives for multinational firms to invest abroad concluded that "(t)here is little support for the idea that risk diversification or tax avoidance are important motives for direct foreign investment" (Markusen 1995, p. 171). Meanwhile, the evaluation of the importance of taxes as a determinant for foreign direct investment (FDI) has changed markedly. Following extensive theoretical research on tax competition for internationally mobile capital<sup>1</sup> a substantial body of empirical work has appeared in recent years which almost unanimously concludes that high taxes have a significantly negative effect on the likelihood of a country to attract FDI. Many of the empirical contributions have explored the determinants of US outward and inward foreign direct investment (see Hines 1999 for an overview), but recently there have also been several studies that analyze the location decisions of EU-based multinationals within Europe (De Mooij and Ederveen 2001).

The increasing policy interest in the link between taxes and FDI results from high unemployment in Europe, which governments hope to alleviate by attracting sufficiently large FDI inflows. Moreover, it is widely believed that FDI inflows into a country have positive productivity spillovers on domestic firms, and this proposition is generally supported by the existing econometric evidence (Görg and Strobl 2001). Taken together these presumably positive effects of FDI are able to explain the increasing willingness of potential host countries to grant tax breaks or outright subsidies to multinational firms that open up a new plant in their juris-

diction. At the same time, however, there is increasing concern both among academics and policymakers that multinational firms avoid taxes unduly through strategic tax planning and profit shifting to low-tax countries.<sup>2</sup>

In this research report we argue that the complex links between FDI and the tax systems of alternative host countries require a disaggregated empirical analysis that carefully distinguishes between different sectors in which FDI takes place, and between different motives for undertaking the investment. The results that have so far been obtained in the research project<sup>3</sup> indicate that investments undertaken in different sectors of the economy respond with very different elasticities to tax incentives (Stöwhase 2003). Moreover, an FDI activity undertaken for the purpose of production responds to a broad range of tax incentives whereas an FDI activity whose primary purpose is to supply internal services to the multinational enterprise (MNE) responds primarily to the statutory tax rate (Stöwhase 2002). This last finding is consistent with international profit shifting and it also demonstrates the need to distinguish between different measures of the tax burden in a given host country.

## Alternative tax rate measures

The natural starting point for a discussion of measures of corporate taxation is the statutory tax rate on corporate profits, summed over different levels of government in a given country. A major advantage of statutory tax rates is that data are readily available, both over time and across countries. However, statutory tax rates include neither different depreciation allowances nor any other specifics of the national tax codes and are therefore only a very incomplete measure of the tax incentives faced by multinational firms.<sup>4</sup>

More encompassing tax measures are so-called effective tax rates. Broadly speaking, effective tax rates take into account the differences between the theoretical concept of pure economic profits and

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<sup>1</sup> For recent overviews, see Wilson (1999) and Haufler (2001).

<sup>2</sup> See Hines (1999) for empirical evidence on profit shifting of US multinationals.

<sup>3</sup> The research is part of a project on "Fiscal federalism", which aims to devise fiscal rules for the EU taking account of both welfare-theoretic and political-economic arguments. The project is carried out jointly with Heinrich Ursprung (University of Konstanz) and is financed by the German Research Foundation (DFG).

<sup>4</sup> However, differences in statutory tax rates may be crucial when FDI is primarily driven by incentives for strategic profit shifting. This will be further discussed below.

**Table 1**

**Country ranking by tax rate**

|             | Backward-looking                        |                                      | Forward-looking                     |                                    |                              | Statutory<br>(2001 tax rate<br>in<br>parentheses) | Minimum of<br>[1] – [4] (%) | Maximum of<br>[1] – [4] (%) |
|-------------|---|--------------------------------------|-------------------------------------|------------------------------------|------------------------------|---|-----------------------------|-----------------------------|
|             | Average tax rates                       |                                      |                                     |                                    | EMTR <sup>c)</sup><br>(2001) |   |                             |                             |
|             | [1]<br>Macro <sup>a)</sup><br>(1991–97) | [2]<br>Micro <sup>b)</sup><br>(1998) | [3]<br>EATR <sup>c)</sup><br>(2001) | [4]<br>ETA <sup>d)</sup><br>(2001) |                              |   |                             |                             |
| Austria     | 2                                       | 1                                    | 3                                   | 3                                  | 3                            | 3 (34 %)  | 10.3 (micro)                | 27.9 (ETA)                  |
| Belgium     | 7                                       | 2                                    | 9                                   | 7                                  | 7                            | 8 (40.2 %)  | 20.6 (micro)                | 34.5 (ETA)                  |
| France      | 5                                       | 7                                    | 5                                   | 8                                  | 5                            | 6 (36.4 %)  | 23.6 (macro)                | 34.7 (ETA)                  |
| Germany     | 3                                       | 8                                    | 8                                   | 9                                  | 8                            | 7 (38.3 %)  | 19.9 (macro)                | 34.9 (ETA)                  |
| Ireland     | 1                                       | 3                                    | 1                                   | 1                                  | 1                            | 1 (28/10 <sup>6</sup> %)                          | 8.0 (EATR)                  | 23.5 (micro)                |
| Italy       | 8                                       | 9                                    | 4                                   | 2                                  | 2                            | 9 (40.3 %)  | 27.6 (ETA)                  | 43.9 (micro)                |
| Netherlands | 6                                       | 6                                    | 6                                   | 5                                  | 6                            | 4 (35 %)  | 24.7 (macro)                | 31.0 (ETA)                  |
| Spain       | 4                                       | 4                                    | 7                                   | 5                                  | 9                            | 4 (35 %)  | 20.6 (macro)                | 32.5 (EATR)                 |
| UK          | 9                                       | 5                                    | 2                                   | 3                                  | 4                            | 2 (30 %)  | 25.7 (EATR)                 | 38.4 (macro)                |

\* Split tax rate

<sup>a)</sup> = Macroeconomic tax rates based on a modified version of Mendoza et al. (1994) methodology. Source: OECD (2000, p. 31). – <sup>b)</sup> = Microeconomic tax rates based on firm level data. Source: CPB – Netherlands' Bureau for Economic Policy Analysis, The Hague. – <sup>c)</sup> = Effective average and effective marginal tax rates – base case. Source: Institute for Fiscal Studies, London. – <sup>d)</sup> = Effective average tax rates computed by the European Tax Analyzer. Source: Commission of the European Communities (2001, p. 202).

the taxable income on which firms are actually charged under the tax code of a given country. In the presence of special tax breaks, accelerated depreciation schemes and similar tax incentives, taxable profits may be substantially lower than pure economic profits, leading to diverging measures for statutory tax rates on the one hand and effective tax rates on the other.

Effective tax rates can be divided into two categories, backward and forward looking tax measures. Backward looking tax measures use historical information about past profits and paid taxes to compute effective tax rates. Mendoza et al. (1994) divide total tax revenue from corporate income by the reported surplus of the economy in any given year to estimate a macroeconomic effective average tax rate, which is also referred to as an implicit tax rate. Analogously, it is possible to derive microeconomic tax rates for individual firms using actual tax payments and accounting data. These firm-level data can then be aggregated to obtain microeconomic effective average tax rates for one or several industries.

Forward-looking measures of effective tax burdens consider expected tax payments associated with particular decisions made by the firm. King and Fullerton (1984) were the first who computed effective marginal tax rates (EMTR) with an approach based on neo-classical investment theory. Given the tax code of a country and the interest rate, they calculate the pre-tax rate of return of a

(hypothetical) marginal investment project that is required to earn an after-tax return equal to the interest rate. The EMTR is then defined as the difference between the required pre-tax rate of return and the interest rate (the so-called “tax wedge”), divided by the pre-tax rate of return.

By construction, the EMTR is especially relevant when analysing the effects of taxes on incremental investment decisions, for example plant expansions. It fails, however, to capture the effects of intra-marginal investments like the location decision of a multinational corporation. Devereux and Griffith (1998a, 1998b) have therefore extended the King-Fullerton methodology to account for discrete investment choices. This results in effective average tax rates (EATR), which can be roughly described as a weighted average of the EMTR on the one hand and the statutory tax rate on the other. A final, and methodologically different, instrument to calculate forward-looking tax measures is the European Tax Analyzer (ETA; see Jacobs and Spengel 1999). The ETA computes the tax burden of a model firm by simultaneously simulating all decisions of the firm, including production and financial planning, and is therefore somewhat closer to industrial management.

Table 1 shows the ranking of nine EU countries under different measures of corporate taxation.<sup>5</sup>

<sup>5</sup> The development of (different measures of) corporate taxation in the period 1982-2001 is summarized and discussed in Devereux, Griffith and Klemm (2002).

Rank one is given to the country with the lowest tax rate in the sample while rank nine labels the country with the highest tax rate. As can be seen, tax rates and the ranking of countries differ markedly with the underlying tax measure. One obvious case is Germany where the average tax rate based on the backward-looking macroeconomic approach is about 20 per cent, whereas the effective average tax burden calculated from the European Tax Analyzer is 15 percentage points higher (34.9 percent). These differences are the basis for the controversial discussion of whether Germany is a high-tax country for corporations, or not.<sup>6</sup> The reverse pattern can be found in the United Kingdom, where the tax rate on a hypothetical investment project is rather low when compared to other countries, but the macroeconomic effective average tax rate is the highest in our sample. There are a few countries which are ranked consistently under each of the different tax measures, such as Ireland and Austria (as low-tax countries), or the Netherlands (as an intermediate-tax country). However, for most countries in the sample the evaluation of its tax burden, relative to its neighbours, depends critically on the precise tax measure used.

### **Taxes and FDI: The need for disaggregation**

There are by now a great number of studies exploring the determinants of US outward and inward foreign direct investment (see Hines 1999). In contrast, there are still only a few analyses which focus on the location decision of EU-based firms inside Europe. Three examples of the latter are Bénassy-Quéré et al. (2000) and Büttner (2002), who use foreign direct investment flows as dependent variable, and Gorter and Parikh (2001), who measure the impact of taxes on the stock of foreign direct investment. Although the econometric models are specified differently, all these studies find a significantly negative correlation between tax rates and foreign direct investment on the basis of bilateral country-to-country data. Hence, the studies focusing on the distribution of FDI inside Europe generally confirm the result of earlier US studies that high taxes tend to deter foreign investment.

Beyond this general result, however, few conclusions are possible at this point. A severe constraint

for empirical work on FDI in Europe is data availability. Almost all existing studies on FDI in Europe rely on aggregated data, which are collected at the national level by the OECD and EUROSTAT. Since the underlying national statistics are generally not harmonized, this raises the problem of data comparability. Moreover, FDI is a very heterogeneous measure and using aggregate data for the relationship between taxes and FDI cannot answer the question whether some types of FDI, or some sectors in which FDI takes place, are more sensitive to tax differences than others.

For the United States, where data is often available at the firm level, there are several studies documenting the importance of a disaggregated approach. In an early study, Papke (1991) analyses the relation between state tax rates and new firm births in five distinct industries of the US manufacturing sector. While a negative correlation between taxes and new firm births is confirmed, on average, in his pooled sample, the five industries under consideration differ markedly in their response to tax rates, indicating a strong variance in the mobility of capital between the different industries. More recently, Swenson (2001) finds that although tax rates are generally negatively related to FDI, the tax-sensitivity depends crucially on the type of FDI. Analysing FDI into the United States, her results indicate that new plants and plant expansions appear to be deterred by high state taxes, while mergers and acquisitions are instead positively correlated with tax rates.

This more complex, but also more insightful, relationship between an appropriate tax measure and sector or transaction-specific FDI is the starting point for the empirical research project on which we report here. Stöwhase (2003) follows the disaggregated approach using sector specific data about outward foreign direct investment flows from Germany, the UK and the Netherlands into eight European countries for the years 1995 to 1999. This data set is constructed from EUROSTAT figures. EUROSTAT has been able to extend and improve the coverage of FDI flows throughout the last two years and can now provide more detailed data in some areas. However, the sample size is rather small so that results should be interpreted with due caution. The basic approach of this study is to separately estimate tax-elasticities for the primary, secondary and tertiary sector based on the assumption that differences in location factors determine

<sup>6</sup> See the debate between Hettich and Schmidt (2001, 2003) and Gutekunst, Hermann and Lammersen (2003).

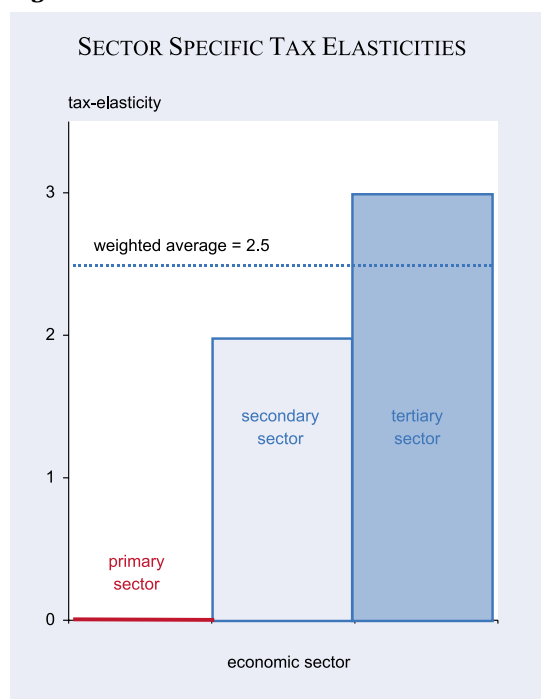
the decision of an MNE where to invest (see Dunning 1977; 1981). Thereby, the study controls for differences in market size and factor costs between host countries, and it also takes into account pairwise fixed effects between the source and the target country of the investment.<sup>7</sup> The study uses backward-looking microeconomic effective tax rates. The advantage of backward-looking tax measures is that these rates have been empirically observed, rather than theoretically derived. Additionally, focusing only on the tax payments of local firms overcomes the problem that backward-looking tax measures may be biased by cross-border profit shifting of MNEs.

The results of this study can be summarized as follows: (i) FDI in the primary sector (consisting of agriculture, fishing, mining and quarrying) has a tax elasticity of around zero, implying that FDI is not driven by tax incentives. (ii) Investment in the secondary sector (manufacturing) is negatively and significantly affected by an increase in effective taxation. The tax elasticity is around  $-2$ , implying that a one percent increase in the tax rate of the host country decreases FDI by roughly two percent. (iii) Compared to the secondary sector, FDI in the tertiary sector (consisting of investment in service industries such as transport, communication and financial intermediation) is even more strongly affected by an increase in tax rates and the tax elasticity for this sector is around  $-3$ .

By weighing sector-specific elasticities with the sector's share of total FDI, we obtain an average tax-elasticity of  $-2.5$ . This average tax elasticity is comparable to the results derived in more aggregated studies.<sup>8</sup> The results of the analysis are graphically summarized in Figure 1.

What are the policy implications of obtaining separate tax elasticities for the three sectors? When setting their tax rates, governments have to take into account the effects of FDI on the local economy. The spillovers most often mentioned are increased demand for labour in the presence of involuntary unemployment, and increases in productivity that affect long-term economic growth. Empirically, the existence of positive spillovers is

**Figure 1**



well documented (see Görg and Strobl 2001). Even though empirical work on the possible transmission channels for these spillovers has only just begun<sup>9</sup>, most observers argue that investments in the primary sector have fewer positive spillovers onto the rest of the economy than FDI in the other sectors, and that technological spillovers are particularly high in the service sector. Using an undifferentiated elasticity as the basis for tax planning may therefore underestimate the gains from attracting FDI, given the above-average tax elasticity of the sectors which are likely to produce most positive spillovers.<sup>10</sup>

### Disaggregated FDI and its sensitivity to tax burden measures

As pointed out above, the question of whether a given host country is an attractive location for FDI with respect to its corporate tax system will generally depend on the precise measure of the capital tax burden used. We have also seen that even if a unique tax measure is used, the response of FDI to tax rate

<sup>7</sup> Pairwise fixed effects capture the specific relation between two countries and include so called “weak” factors, such as culture and language, which are hard to measure empirically.

<sup>8</sup> De Mooij and Ederveen (2001) make the outcomes of several empirical studies comparable and compute a mean tax-elasticity around  $-3.3$ .

<sup>9</sup> Görg and Strobl (2002), for example, find empirical evidence that positive spillovers from FDI to the local economy are transmitted through worker mobility.

<sup>10</sup> This can be important in studies that quantitatively compare the tax concessions or subsidy payments granted to multinationals to the benefits for the host country in terms of additional employment or productivity spillovers. Haskel, Pereira and Slaughter (2002) make a first attempt in this direction and find that the British government has “oversubsidized” FDI in some recent high-profile cases.



differentials may differ across economic sectors. Taken together, these two results raise the further question of whether different types of FDI respond in different ways to alternative tax measures.

We have pursued this issue in a separate study (Stöwhase 2002), which divides FDI into two categories, labelled “production” and “services”. This study employs the database “Globalisation” collected by the Rheinisch-Westfälische Institut für Economic Research (RWI, see Döhrn 2001). Our dataset covers foreign activities of German multinationals in eight European countries<sup>11</sup> for the years 1991 to 1998 leaving us with a rather small sample size. The advantage of this database is that it is possible to distinguish between the economic functions of the activity so that we can divide FDI into investment intended to produce final or intermediate goods and investment intended to provide the German parent with overhead services (such as financial intermediation, or research and development). An effective tax rate based on microeconomic data and the statutory tax rate are taken as tax parameters. Again, we run separate regressions for the two categories of FDI.

The basic results of the two regressions are presented in Table 2. The coefficient of the effective tax rate shows a negative sign for FDI in production, but it is not significantly different from zero for investment that falls into the service category. This implies that an increase in the effective average tax rate decreases FDI in production facilities but it does not affect FDI undertaken to provide internal services to the MNE. Interestingly, we observe precisely the opposite results for the statutory tax rate. Here, FDI in production facilities seems to be independent of the statutory tax rate, whereas investment in the service category is deterred by a higher statutory tax rate.

<sup>11</sup> These countries are: Austria, Belgium, France, Ireland, Italy, the Netherlands, Spain and the United Kingdom.

**Table 2**

**Regression coefficients**

|                    | Production | Service  |
|--------------------|------------|----------|
| Effective tax rate | negative   | –        |
| Statutory tax rate | –          | negative |
| Market Size        | positive   | –        |

We can conclude from these findings that the two types of FDI are sensitive to different measures of the corporate tax burden. Investment undertaken for production purposes reacts to the broader measure of effective average tax rates rather than to the narrow measure of the statutory tax rate. This is consistent with our discussion above. It is somewhat more difficult to explain why FDI in the service category responds to changes in the statutory tax rate, but not to changes in the effective tax rate. Profit shifting is a possible explanation for this observation. According to Devereux (1992), there are two types of capital tax competition, competition for physical capital and competition for (paper) profits. This allows multinational firms to follow a two-step optimization strategy. In the first step, the multinational firm deploys (most) physical capital and hence production activities in the countries offering locational advantages, including a good public infrastructure. In a second step, the MNE can shift some of its taxable profits into a country that offers a low statutory tax rate and with which it maintains a nexus (though with perhaps only a minimal capital base).<sup>12</sup> Since no or little physical production takes place in the country to which profits are shifted, the decision involved in this type of tax arbitrage depends only (or at least primarily) on a comparison of the statutory tax rates. In this setting the MNE can thus have “the best of both worlds”, benefiting from location advantages in the country of production while transferring the economic rent of the investment to a tax haven where its profits are only lightly taxed.<sup>13</sup> If this interpretation is relevant for the FDI undertaken by German multinationals during the last decade, then our empirical analysis suggests that profit shifting has been an important motive behind the choice of host countries for service-related FDI.

Clearly, these results have to be interpreted with care, especially because the analysis is based on a relatively small sample of FDI activities, and

<sup>12</sup> The traditional instrument to shift profits from one country to another are transfer prices for intermediate goods traded between the subsidiary and its parent. However, transfer pricing strategies are limited by the arms-length principle which stipulates that internal trade prices have to be set such that they resemble common market prices. Moreover, using transfer pricing strategies requires that some production is carried out in both countries in which the multinational firm operates. For these reasons, profit shifting seems to have increasingly shifted to internal trade in services, including payments for overhead services, royalties and interest paid on intra-firm loans. See Mintz (2001) for a detailed discussion.

<sup>13</sup> See Haufler and Schjelderup (1999) for a theoretical analysis of this scenario.

because there may be other structural differences between the two categories that we cannot account for with our set of control variables. However, the basic result that service-related FDI reacts much more strongly to changes in the statutory tax rate than to changes in the effective average tax rate has so far proven to be robust with respect to changes in the precise specification of the empirical model. Moreover, the results for non-tax variables, in particular market size, also tend to confirm that traditional location advantages are important only for FDI of the production type, but do not matter for FDI that falls in the service category (see Table 2). This adds additional support to the presumption that some types of FDI are rather independent of the real variables of the host economy, and locational choices are made primarily in order to minimize the worldwide tax burden of the multinational firm.

## Conclusions

A large number of recent empirical studies have confirmed that high taxes in a potential host country tend to deter FDI, and some first “consensus estimates” for the elasticity with which aggregate FDI responds to tax incentives have been derived. In this report we have argued that future empirical work has to go one step further and try to understand the complex interrelationships that exist between individual elements of potential host countries’ tax systems and sector- or activity-specific FDI flows. We have reported on two sets of findings showing that (i) investments in different sectors respond with rather different elasticities to tax incentives and (ii) FDI undertaken for different purposes will respond in qualitatively different ways to specific tax incentives, such as a low statutory tax rate or generous depreciation allowances. We believe that further empirical work at a disaggregated level is needed in order to help governments devise tax policies that do not deter foreign direct investment while at the same time ensuring that host countries get a fair share of the location rents that multinational firms can earn in the integrated European market. The most important precondition for further research are improvements in data availability, including more detailed data on FDI stocks and flows, but also more adequate data on other location factors, such as public infrastructure or labour costs.

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