"Taxes and Location of Foreign Direct Investments: an Empirical Analysis for the European Union Countries,"

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TAXES AND LOCATION OF FOREIGN DIRECT INVESTMENTS: 
AN EMPIRICAL ANALYSIS 
FOR THE EUROPEAN UNION COUNTRIES 

by Roberta De Santis, M. Cristina Mercuri and Claudio Vicarelli*

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Fiscal Issues 

1. Introduction 

Productive internationalisation is one of the principal features of world 
economic globalisation. The main vehicle of this phenomenon consists of 
investments flows made by operators in countries other than those in which 
their activities are located (Foreign Direct Investments or FDI)\(^1\). 

Indeed, the implementation of internal market processes-over the past 
thirty years in Europe has already reduced such impediments to foreign trade 
and investments in goods and services markets as tariff and non-tariff barriers 
to trade, and foreign ownership restrictions. Differences among domestic 
fiscal policies, regulatory policies, education and training systems, and infra-
structure investments play an increasing role in determining the global pat-
terns of trade and investment.

Policies may affect trade and investment:

i) directly, by influencing access to markets or changing the costs of trading 
or investing abroad (i.e. custom union, tariffs, FDI restriction, taxation); 
ii) indirectly, by affecting some of the structural factors that influence trade 
and FDI (i.e. investment in human capital and infrastructure).

In an environment now characterised by full mobility of capital, cross-
border differences in corporate tax rules are likely to exert a major influence 
on patterns of international investment.

This paper’s focus on capital mobility driven by fiscal conditions is moti-
vated by the relative scarcity of empirical studies on this topic as regards the 
EU. The aim is to investigate the relative importance of cross-country diffe-

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* ISAE. 
\(^1\) On the basis of the OECD, Eurostat and IMF definitions, Foreign Direct Investments (FDI) 
are international investments made to acquire durable participations (control, on an equal basis 
or on a minority basis) in a foreign firm (M&A) or to create a foreign branch (greenfield invest-
ments) with a certain degree of involvement of the investor in the direction and management 
of the created or acquired firm.
rences in corporate taxation as a determinant of FDI patterns, conditional on a set of other relevant determinants. The findings may be of interest to current debate on fiscal harmonisation versus competition in the EU.

Unlike other (and rare) empirical works on this topic, we include some policy-related factors in our set of control variables, the purpose being to take account of important aspects that influence firms’ localisation decisions, like the presence of physical infrastructures and “knowledge capital”, and thereby reflect recent findings in the theoretical literature.

Moreover, by estimating our equation using a fixed effects methodology, we are able to capture the effects of non-observed heterogeneity exerted by all the other factors linked to the pairs of countries involved in the investment (investing and host country).

The paper is organised as follows. Section 2 presents an analysis of FDI and the main fiscal variables trends in European Union countries during the period 1990-1998, with particular regard to the relationship between “taxation” and FDI inflows. Section 3 presents a survey of the theoretical and empirical literature on FDI inflows determinants among industrialised countries, with particular focus on fiscal ones; the model specification and the description of the variables are presented in section 4, while results of the empirical analysis are set out in Section 5. Section 6 makes some concluding remarks.

2. FDI and taxation: trends in European Union

Long-term trends in FDI inflows and various measures of the fiscal variables examined here seemingly point to a negative relationship between “taxation” and FDI inflows. In the period examined (1990-1998), FDI localisation decisions in the EU countries were strongly influenced by fiscal variables. In that period of time, low-taxation countries experienced larger FDI inflows as a percentage of GDP than did medium- and high-taxation countries.

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2 The period 1990-98 was chosen for homogeneity with that the one used for the econometric analysis (see note 28).
3 Note that the presence of Ireland, which is characterised by a “preferential tax rate” on entrepreneurial income, strongly influences the average of the FDI inflows to low-taxation countries (see note 37). When Ireland is excluded from the group, the average value of FDI inflows diminishes considerably.

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The chart reports the yearly averages of FDI inflows divided by GDP (%) for each of the three groups considered: high, average and low tax wedge countries selected by considering their average tax rates for the entire period (1990-98). Low tax wedge countries were: Ireland, Portugal, United Kingdom and Spain; medium tax wedge countries were: Austria, Belgium, France, Germany, Greece, Italy and Netherlands; high tax wedge countries were Denmark, Finland and Sweden.

Source: our calculations on OECD data (various years), World Bank data (various years) and Martínez-Mongay (32).

Fiscal burden and fiscal wedge are calculated on the basis of macroeconomic variables as recorded by the National Accounts of the individual EU Member States. The FDI/taxation ratio can also be outlined using the corporate tax rate (Chart 3)\(^5\), which is a more immediate, albeit incomplete, indicator of the fiscal burden on FDI.

Charts 1 and 2 highlight two different features. The first concerns the dynamics of FDI inflows (as a percentage of GDP) in the three groups of countries chosen on the basis of their total fiscal burdens; the second concerns their level. During the 1990s, countries with high and average fiscal burdens and tax wedges received increasing investment flows from abroad, while countries with low fiscal burdens and tax wedges became less attractive to FDI. While taxation played an important role in firms’ localisation choices in the 1980s, in the years that followed it probably became less influential than other factors.

Nevertheless, in the case of the tax wedge, the ratio of FDI to GDP was higher in the low taxation group than in the average and high groups, and quite similar in the case of the fiscal burden. Although the gap existing at the beginning of the 1990s diminished, it was still substantial (1% of GDP).

Source: our calculations on World Bank data (various years) and Gropp and Kostial (2000).

An important aspect left unfocused by this fiscal variable is the specific FDI incentives introduced in individual Member Countries. The anomalous positions in chart 3 of Netherlands and Belgium – two Member States with high FDI inflows in spite of a high corporate tax rate – indicates the presence of specific fiscal incentives for foreign investors. Indeed, analysis of these two countries’ fiscal provisions confirms this assumption\(^6\).

\(^5\) Chart 3 does not include Greece, because there are no data on the corporate tax rates on company taxation in that country which are homogeneous with those of the other countries.

\(^6\) Corporate tax rate analysis alone does not take account of numerous aspects of taxable income computation: interest deduction, capital allowance, inventory computation methods, loss apportionment, industrial group taxation.

\(^7\) For thorough examination of fiscal incentives to FDI in the European Union see Schlitzer and Zaghini (43).
Furthermore, it should be noted that a major determinant of FDI fiscal treatment is the presence of bilateral tax treaties:9 indeed, through taxation or exemption, these provide for reimbursement (partial payment or total exemption) of a wide tax percentage, thereby reducing the double taxation of incomes obtained in countries other than that of origin.

The presence in the European Union of countries which have adopted different taxation systems for foreign incomes (tax credit versus tax exempt countries) may be crucial for analysis of international investment decisions: investors in countries with tax credit regimes, in fact, are less sensitive to the tax rate differential than those residing in countries with exemption schemes.10

In order to limit this heterogeneous treatment, which might give rise to distortions, the European Union has introduced regulations to harmonise the taxation system which apply to parent companies and their subsidiaries in different Member States (previously regulated by bilateral treaties), particularly as regards the distribution of profits (Directive of the European Council 90/435/EEC).11

3. Trade, FDI and fiscal variables: A brief survey of the literature

This paper focuses on FDI inflow determinants, with particular emphasis on fiscal variables, in a panel of European Union countries. It is therefore mainly concerned with theories explaining FDI among industrialised countries.12

The analytical frameworks used to examine the activities of Multinational Corporations (MNCs) comprise structural as well policy-related factors. A classification of these approaches might be the following:

- The "OLI" approach13 (Ownership, Location, Internalisation) (Dunning [18] [19]). A MNC engages in FDI when three sets of advantages are present: 1) ownership advantages pertaining to products or production processes to which other firms do not have access, such as patents or intangible elements like reputation for quality or brand names; 2) location advantages pertaining to the quality of the host country's business environment like low factor prices or customer access, together with relatively low trade barriers or transport costs which make FDI more profitable than exporting. 3) internalisation advantages deriving from the firm's interest in keeping its knowledge assets internal.14
- The "Gravity" approach (Linnemann [31]). Developed in the 1960s, this has proved suitable for explaining trade flows in recent years and, in particular, the tendency of developed countries to have tighter trade relations with countries possessing similar economic characteristics (intra-industrial trade). This approach has been used by many empirical studies on FDI location determinants.
- The "Factor proportions" approach (Helpman [27], Helpman and Krugman [28]), which explains the presence of MNCs in a foreign country in terms of differences in relative factor endowments among countries. Transport costs being nil, the location of MNCs abroad is determined by the differences in endowments. The main shortcoming of this approach is that it can explain "vertical" FDI (when firms locate different production stages in different countries, taking advantage of differences in factor costs), but it cannot explain "horizontal" FDI (when firms locate similar types of production activity). The latter phenomenon has been observed among industrialised countries in recent years. It therefore seems that this approach is unable fully to explain recent FDI trends.15
- The "Proximity-concentration" approach (Brainard [7]). The proximity advantage stems from firm-level economies of scale whereby any type of "knowledge capital" (like R&D activity) is transferable to the affiliates and allows MNCs to be closer to the foreign market. The concentration

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9 By way of example, the United Kingdom - which in recent years has been one of the main investors and one of the main FDI receiving countries among the developed countries - has signed bilateral agreements allowing for considerable tax reimbursements with 11 Member States (including Italy).

10 The Directive states that profits distributed to non-residents are not subject to taxation if the share ownership of a foreign company exceeds 25%. Moreover, only 5% of gross profit is computed as taxable income in the company's country of legal residence.

11 For a classification of FDI determinants by host country, see UNCTAD [46], Chapter IV. A review of econometric studies on determinants is also contained in UN [45]. A survey of research on theory of multinational enterprise is in Markusen [33].

12 It is widely agreed that multinational companies (MNCs) engage in FDI when three sets of determining factors are simultaneously in place: 1) ownership-specific competitive advantages, ii) location advantages in the host countries, and iii) better trade benefits in intra-firm as opposed to arm's-length relationships between investor and recipient (internalisation advantages).

13 This theoretical approach, introduced by Dunning [18] [19], is known as the OLI framework. This may happen for several reasons. For instance, markets for assets or production inputs (technology, knowledge, management) may involve significant transaction costs or time-lags.

14 The gravity approach takes its theoretical bases from physics. According to gravitational theory, the attraction between bodies is directly proportional to the mass product, and inversely proportional to the squared distance. Bilateral trade flows in this kind of model are positively influenced by the overall market dimensions of the origin and destination countries, by the destination market size and by its growth potential. Indeed, geographical distance as a proxy for transport costs has a negative impact on trade flows.

15 For an estimate of FDI bilateral flows using the gravitational equation see Eaton and Tamura [20], Di Mauro [17], Brenton and Di Mauro [9], Brenton et al. [10].

16 Markusen and Maskus [36] provide strong empirical support for the predominance of the horizontal model.
advantage derives from traditional plant-level economies of scale which make it more profitable to concentrate production in one location and supply foreign markets by exports. Whenever the proximity advantage outweighs the concentration advantage, FDI flows arise. This is the more likely to happen, the higher the intangible assets relative to the fixed costs of opening up an affiliate, and the higher the transport cost17.

The "Unified" approach (Markusen [34]). The activities of MNCs (and their location to trade) depend both on gravity and country (dis)similarity factors and on other, mostly policy-related, ones affecting market access and international investment costs. These factors -- for instance, fiscal regimes, the presence of R&D activities and physical infrastructures -- are able to attract FDI flows, thereby generating proximity advantages.

Our aim here is to analyse the impact of cross-country differences in fiscal regimes on FDI flows. To this end, a prior overview of the past and recent empirical literature on this topic will be useful.

Empirical studies on the relationship between FDI and fiscal conditions produced before 1990, following Hartman's [26] seminal paper8, focused mainly on US MNCs, using aggregated data for the purpose. In the majority of cases, they found mixed evidence on the impact of taxes on FDI localisation (Boskin et al. [6], Young [49], Dveereux and Pearson [13]).

A number of subsequent papers extended, modified or criticised Hartman's approach by using longer sample periods, different specifications, alternative tax indicators and revised investment data. In 1990, Slemrod [44] criticised Hartman's specification for lacking a perfectly specified model. He raised doubts about FDI data constructed from periodic benchmark surveys (his own study included dummies for the gap between a year and the benchmark year to avoid mismeasurement) and considered bilateral investment flows in order to control for the tax system in the home country of the parent firm (i.e. credit versus exemption).

Slemrod's criticisms of the previous literature prompted researchers to abandon aggregate time series data à la Hartman; indeed, aggregate time series have rarely been used in subsequent studies.

Hines [29] built on Slemrod's idea of using information on individual countries' FDI in the USA to explore the impact of state corporate income taxes. He used bilateral FDI flow data to compare among the inter-state distributions of investments from seven foreign countries, taking their fiscal schemes into account (credit versus exemption). He showed that firms in countries offering credit schemes are less likely to invest in countries imposing low taxation.

After 1990, various studies were also carried out on OECD countries as host countries. Devereux and Freeman [15] pooled bilateral FDI flows in order to construct a panel of bilateral FDI flows between seven OECD countries (five EU countries: Germany, France, UK, Italy and the Netherlands; and US and Japan) during the period 1985-1989. Using a linear specification, they estimated the tax elasticity of FDI, finding that tax matters in determining how total outward FDI is allocated across alternative locations. It is worth noting that the tax rate proved important for the choice between in Europe, but not for the choice between investing in Europe or elsewhere.

In the more recent literature, the main empirical papers can be distinguished among those which use: i) panel data, ii) alternative measures of the effective tax rate20, iii) alternative sets of control variables.

Devereux and Griffith [16] have confirmed Devereux and Freeman's [15] results by exploiting a panel of US multinationals. They find that European taxes do not affect the total amount of outward FDI by US investors as a share of total investment. However, tax differentials across EU countries do matter for the allocation of US investment abroad across EU states. Indeed, a higher average effective tax rate significantly reduces the probability that a multinational will locate in a country21.

17 This model seems better suited to explanation of horizontal FDI flows (i.e. FDI among industrialised countries). Markusen has contributed to the theory by endogenising multinational firms in general-equilibrium trade models and predicting the relationship between affiliate production and parent-country and host-country characteristics. In particular, the knowledge-capital approach to the multinational enterprise identifies motives for both horizontal and vertical multinational activity and predicts that affiliates will be related to such variables as country sizes and relative-endowment differences. Vertical multinationals predominate when countries are very different in their relative factor endowments; horizontal multinationals predominate when countries are similar in size and in relative endowments and trade costs are moderate to high.

18 Hartman calculated the aggregate inflow of FDI into the US as a ratio of GDP between 1965-1979 by using: I) the after-tax rate of return on US investment for foreign investors, ii) the gross rate of return on investment in the US, reduced by the US tax on FDI, iii) a relative tax term capturing a valuation effect.

19 For an exhaustive survey see de Mooij and Edelwein [11].

20 An effective tax rate is a rough proxy variable that summarises the influence of various tax rules on an investment. The effective tax rate can be computed in several ways: i) as the average effective tax rate, which measures the taxes paid by firms divided by a measure of operating surplus; this has the advantage of taking of tax planning activities into account; ii) as the marginal effective tax rate: this measures the wedge between the pre and post tax return on a marginal investment project; iii) the effective average tax rate: this is the wedge between the pre and post tax return on a typical investment project, which is important for the location decisions of firms. For an exhaustive analysis of effective tax rate properties and comparisons with other tax indicators see Martinez-Mongay [32].

21 A different strand of literature on taxation and FDI analyses the impact of host country taxes on the probability that a multinational will choose a location for an investment. In particular, Bartik [4] explains the probability of new plants being located in each of the 50 US states by: amongst others, the state's statutory corporate income tax. He reports a significantly negative elasticity. Papke [41] explains the location of plant births in 50 US states by the effective tax rates on specific industries, reporting very different elasticity values for the various industries.
Gorter and Parikh [23] use bilateral flow data to estimate the relation between the FDI positions of eight investing EU countries and the effective corporate income tax rates of fifteen EU countries, controlling for population and per capita GDP as proxies for size and level of development respectively.

Gropp and Kosial [25], and Benassy-Quéré et al. [5] both use a panel of bilateral FDI flows between OECD countries to explore the effect of tax schemes on FDI, reporting significant tax effects on FDI by exemption countries.

The former use the statutory corporate tax rate in the host country and a vector of macroeconomic control variables including indicators of the country’s growth prospects and its expected real exchange rate, and an openness indicator proxyd by the share of trade in GDP.

The latter consider the relationship between FDI and effective tax rates and nominal tax rates. They control for three types of determinants: i) macroeconomic ones like market access and transportation costs, ii) policy related determinants like taxes, social contributions and exchange rate regimes, iii) “gravitational” determinants like distance, GDP and the differential size of investing countries.

Both studies find strong evidence that FDI flows are significantly affected by the tax system in host and home countries, and by various measures of corporate tax. In particular, the latter also accounted for FDI flows between EU countries and Japan or the USA.

4. Model specification and description of variables

A “unified” approach à la Markusen struck us as best suited to explaining differences in the geographical distribution of investment flows in European countries.

We accordingly used a gravitational model in which we considered both mainly macroeconomic and geographical explanatory variables and a set of policy-related factors, on the assumption that the relative advantage accruing to a firm from investing abroad rather than in the home country (and the choice among potential destination countries) depends not only on macroeconomic and geographical conditions but also on structural and fiscal ones. Of the latter we used effective average tax rate measures rather than a marginal effective tax rate measure, since the former seemed better suited to investigating different location decisions. In fact, the marginal effective tax rate refers to the incentive effects of taxes on marginal investment decisions (the size of investment), while the average effective tax rate measures the overall fiscal burden on a typical investment: its cross country differences may have a significant impact on the location of FDI.

With respect to other recent empirical studies mentioned in section 3, we used a different set of policy-related control variables, the purpose being to take account, in accordance with the recent theoretical literature, of important aspects like the presence of physical infrastructures and “knowledge capital”.

The following types of variable were included in the equation:

- “Gravitational” and macroeconomic variables such as the market potential of the investing country compared to the receiving country, and the degree of bilateral openness[22];
- “policy related” variables such as the degree of technical innovation of the receiving country and expenditure on transport infrastructures;
- fiscal variables such as the fiscal burden and the total tax wedge on labour.

The estimated equation was:

\[
\text{FD}_{ijt} / \text{GDP}_{j} = b_1 \text{ABS} (\text{gdppc}_i - \text{gdppc}_j) + b_2 \text{biltrade}_i + b_3 \text{innov}_i + b_4 \text{infra}_j + b_5 \text{fiscal variable}
\]

where:

- \( i \) is the market (receiving country), \( j \) is the investor country and \( t \) is the year.
- \( \text{FD}_{ijt} / \text{GDP}_{j} \) is bilateral FDI inflows (in dollars) divided by the receiving country’s GDP (in dollars)[23];
- \( \text{ABS} (\text{gdppc}_i - \text{gdppc}_j) \) is the absolute value of the differential between per capita GDP in dollars of the investing and host country, as a proxy for the differential between the development level;
- \( \text{biltrade}_i \) is per capita GDP;
- \( \text{gdp}_i \) is the degree of bilateral openness computed as the sum of bilateral export-import flows between investor and receiving countries as a percentage of the receiving country’s GDP;
- \( \text{innov}_i \) is the number of patents issued in the receiving country’s resident population per 10,000 inhabitants, a proxy for R&D;
- \( \text{infra}_j \) is the transport infrastructures proxied by the ratio between the road-railway length and the receiving country’s total area.

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[22] Exchange rate volatility was also among the macroeconomic variables included in the equation. The impact of exchange rate volatility on FDI flows is theoretically ambiguous. If a foreign firm intends to sell on the local market, higher nominal exchange rate volatility may induce higher FDI; if the production is partially re-exported, this benefit vanishes. If market-seeking determinants drive the multinational firm’s choice of localisation, then we may expect there to be a positive relationship between FDI flows and exchange rate volatility. It should be stressed that exchange rate volatility among European currencies and against the dollar diminished dramatically during the 1990s; and this determinant reduced its impact in the period of our econometric analysis. Our results showed a positive relationship, but because this variable is significant at a low level in all the specifications reported, we have dropped it.

[23] These variables were taken from Martinez-Mongay. For the sources of the variables see the Annex.
We considered fiscal variables\(^{24}\) (separately or jointly included in alternative estimates, either referred to the receiving country or as differentials between receiving and investing countries):
- fiscal burden (personal income taxation, indirect taxation, capital account taxation and social contributions)/GDP, (pref\(_{i,j}\))\(^{25}\);
- tax wedge on labour, given as the sum of social contributions, income taxes and consumption duties (wed\(_{l}\))\(^{26}\);
- corporate tax rate (ale\(_{g}\)).

Thirteen FDI-host countries were included in the panel (the EU countries, data for Belgium and Luxembourg aggregated\(^{27}\), with Greece excluded because homogeneous data were unavailable), and fourteen investing countries (the EU countries with the exception of Greece and Ireland, data on Belgium and Luxembourg aggregated, and including the United States and Japan). The estimate referred to the period 1990-98\(^{28}\).

Bilateral FDI inflows were expected to be positively influenced:
- by the degree of bilateral openness. The relationship between FDI and trade is an empirical question. If trade and FDI are substitutes, the more "open" an economy is to trade, the less bilateral FDI flows will arise (and vice versa). In the case of the industrialised countries however, most empirical studies seem to highlight a relationship of complementarity. In the light of these studies\(^{29}\), therefore, we expected that a higher degree of trade openness would increase FDI;
- by the transport infrastructures (infra\(_{i}\)) and
- by the number of patents issued in the receiving country's resident population per 10,000 inhabitants (innov\(_{i}\)). Technology and innovation have become crucial for competitiveness, allowing for rapid response to variations in demand. FDI and technology flows, combined with deregulation and privatisation, have facilitated the access of firms to goods and services markets and to immobile factors of production. Complementary to these determinants is the availability of physical infrastructures able to improve productivity at firm level.

Bilateral FDI flows were expected to be negatively correlated:
- with the absolute value of the per capita GDP\(^{d}\) differential between the investing and the host country (gdppctic-gdpdpct). In a setting of "horizontal" investments and market seeking determinants, like FDI between industrialised countries, investments flows arise when countries are similar in size and in development level.
- with the different types of fiscal variable adopted. According to empirical studies (see section 3), tax differentials across EU countries can influence the localisation choice between alternative sites. A heavier fiscal burden in the potential host country discourages FDI inflows to that country.

5. Results of the estimates

The empirical results are summarised in table 1.

The estimation methodology adopted was a data panel with fixed effects which included specific regression constants for the observations on different market-investor pairs (market and investor countries)\(^{30}\).

The introduction of these constants captured the effects of non observed heterogeneity, such as other "institutional" or political variables linked to the pairs of countries involved in the investment (market country and investor).

Diagnostic tests on the proposed specification (Hausman test\(^{31}\)) indicated that the fixed-effect methodology was appropriate.

With few exceptions, the estimated coefficients were statistically significant in all the specifications estimated. The signs were the expected ones. In

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\(^{24}\) We also used statutory corporate income tax, to measure the tax effect on FDI (the results are reported in the Appendix). The tax treatment of FDI is a complex issue, however, and using a statutory corporate tax rate may therefore be misleading. De Moolj-Ederveen\(^{11}\).

\(^{25}\) Capital account taxes were excluded for Japan and the United States.

\(^{26}\) Following Layard, Nickell and Jackman\(^{30}\) (page 209), the total wage wedge "is the gap between the real labour costs of the firm, on the one hand, and the real, post-tax consumption wage of the workers, on the other. The wage wedge arises because labour income is first taxed through social security contributions; then workers must pay income taxes on the remaining income, which is then, once direct taxes have been deducted, subject to indirect taxes when consumed. In other words, the tax wedge on labour is the difference between the gross wage deflated by the producer's price (real producer wage) and the gross wage net of social security contributions and personal income taxes on labour income deflated by the consumer's price See Martinez-Mongay\(^{32}\).

\(^{27}\) The OECD uses aggregated data on FDI for Belgium and Luxembourg because of its survey methodology.

\(^{28}\) The year 1990 was chosen as the starting period for the estimates, because it was the beginning of the first stage of EMU: in 1990 most of the restrictions on capital movements were abolished. It would therefore seem that this year is particularly significant for the strong signal of advancement in the European integration process given to international investors. Conversely, 1998 was the most recent year for which homogeneous and thorough data on bilateral FDI inflows to the Member States were available.

\(^{29}\) Similar results have been obtained by Béassy Qudé et al.\(^{5}\) and by Gropp and Kostial\(^{25}\).

\(^{30}\) The bilateral constants included the distance effect (a variable which is generally included in gravitational equations) as well as all other country-specific characteristics influencing FDI flows; all these variables were always statistically non-significant in the specifications adopted.

\(^{31}\) The Hausman test is based on Wald's criterion. Under the null hypothesis, both the generalised least squares estimator of the random-effect model and the ordinary least squares estimator with inclusion of specific constants for the market-country couples are consistent, but the latter is an inefficient estimator. In the case of rejection of the null hypothesis, the generalised least squares estimators of the random-effect model yield inconsistent estimates, and the fixed-effect model must be adopted.
particular, the fiscal indicators were negatively correlated with FDI inflows towards the selected countries, which confirms the findings of the recent empirical literature on this topic (see section 4).

The main exception was the per capita GDP differential between investor and destination country taken in absolute value, which had mixed signs in the various specifications adopted and were always statistically non-significant at conventional level.

This result is not surprising: the difference in the development levels of a pair of countries was captured by the group of explanatory variables and by all the bilateral characteristics embodied in constant terms; this proxy loss it’s significance.

Furthermore, the flows of bilateral FDI were positively correlated with the degree of bilateral openness between countries. This result seems to confirm that elements of complementarity between FDI flows and trade flows among countries prevail, thereby indicating that, within the European Union, the aims of multi-national investors are also to strengthen distribution activities abroad and to serve the local market.

The results of the econometric exercise also confirm the importance of policy-related variables, highlighting the particular importance of transport infrastructures in the internationalisation process among industrialised countries as shown by the theory and the empirical evidence.

With regard to the influence of taxation, all the regressors used in the estimates were of the expected sign and always stood in a negative and significant relation with the FDI flows. These variables are more significant if they expressed in terms of the differential between the receiving and investor country: a tax rate increase in the destination country rather than the investor country reduces FDI inflows.

The robustness of the overall estimate was verified against changes in the fiscal variable specification in the estimate period and equation specification. The case of Ireland seems to explain the negative correlation between corporate tax rate and FDI flows. In fact, if this country is excluded from the panel, the specification which includes the corporate tax rate as a fiscal variable is less significant (the alternative specifications, fiscal burden and tax wedge, are equally significant. The exclusion of Belgium and Netherlands – Member States where investors have particular fiscal benefits not included in the model – seems to improve the significance of the estimates.

The inclusion in the estimated equations of a trend which proves statistically significant in the most of specifications does not undermine the significance of parameters by showing, on the one hand, that the dynamic seems to play a role in determining bilateral FDI inflows and, on the other, that the estimates are robust. The results of the econometric exercise show that, for all the

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<td>(2.41) (2.10) (2.29) (1.89) (2.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport infrastructures partner country (infra)</td>
<td>0.030</td>
<td>0.026</td>
<td>0.025</td>
<td>0.033</td>
<td>0.035</td>
</tr>
<tr>
<td>(2.04) (1.69) (1.73) (2.24) (2.33)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fiscal wedge on labour work (wedge)</td>
<td>-0.035</td>
<td>-0.003</td>
<td>-0.002</td>
<td>-0.002</td>
<td>-0.002</td>
</tr>
<tr>
<td>(2.67) (3.08) (3.12) (2.59) (2.63)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fiscal wedge on labour differential partner vs. reporting country (wedge.in)</td>
<td>-0.002</td>
<td>-0.002</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td>(1.91) (2.59) (2.63) (2.59) (2.63)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate legal tax rate differential partner vs. reporting country</td>
<td>R2</td>
<td>0.43</td>
<td>0.44</td>
<td>0.44</td>
<td>0.44</td>
</tr>
<tr>
<td>R2*2</td>
<td>0.36</td>
<td>0.36</td>
<td>0.36</td>
<td>0.37</td>
<td>0.38</td>
</tr>
<tr>
<td>D-W</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Hausman test (2)</td>
<td>x² 5.37 (0.07)</td>
<td>x² 4.96 (0.08)</td>
<td>x² 4.97 (0.08)</td>
<td>x² 5.10 (0.07)</td>
<td>x² 5.16 (0.075)</td>
</tr>
</tbody>
</table>

(1) Student’s t is given in brackets.
(2) P value in brackets.
countries considered, the determinants selected significantly influenced FDI inflows into the European Union countries.

Table 2: FDI inflows estimated elasticity to main explanatory variables

<table>
<thead>
<tr>
<th>Per capita GDP differential between investing and partner country in absolute value</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>0.03</td>
<td>0.23</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Bilateral degree of openness</td>
<td>0.94</td>
<td>0.99</td>
<td>1.00</td>
<td>0.97</td>
</tr>
<tr>
<td>Transport infrastructures in the partner country</td>
<td>1.01</td>
<td>1.03</td>
<td>1.14</td>
<td>1.19</td>
</tr>
<tr>
<td>Innovativeness coefficient in the partner country</td>
<td>0.23</td>
<td>0.24</td>
<td>0.21</td>
<td>0.25</td>
</tr>
<tr>
<td>Total fiscal burden</td>
<td>-0.44</td>
<td>-0.02</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>Fiscal wedge on labor differential, partner vs. reporting country</td>
<td>-0.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate tax rate differential, partner vs. reporting country</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total fiscal wedge on labor</td>
<td>-0.66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of the elasticities of FDI inflows to the explanatory variables yielded more detailed information which apparently confirmed the importance of taxation as an influence on decisions concerning business localisation (Table 2).

The empirical analysis has shown that the total fiscal wedge on labour influences FDI inflows in the European Union countries more than does the corporate tax rate and total fiscal burden: a 1% reduction in the tax wedge on labour increases FDI inflows in percentages of GDP into the host country by an average of 0.66.

Table 3: Ranking of fiscal wedge on labour and corresponding elasticities to FDI flows from US

<table>
<thead>
<tr>
<th></th>
<th>Ranking</th>
<th>Total fiscal wedge on labour (1990-98 average)</th>
<th>Ranking</th>
<th>Elasticities with respect to FDI flows from USA</th>
<th>Below above average fiscal wedge</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>37.9%</td>
<td>Ireland</td>
<td>0.04</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>39.3%</td>
<td>United Kingdom</td>
<td>0.08</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>40.7%</td>
<td>Portugal</td>
<td>0.08</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>41.6%</td>
<td>Netherlands</td>
<td>0.08</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>49.3%</td>
<td>Spain</td>
<td>0.12</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>49.6%</td>
<td>Belgium and Lux.</td>
<td>0.15</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>51.4%</td>
<td>Denmark</td>
<td>0.21</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>52.9%</td>
<td>France</td>
<td>0.72</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Belgium and Lux.</td>
<td>54.7%</td>
<td>Austria</td>
<td>0.91</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>54.7</td>
<td>Sweden</td>
<td>0.93</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>58.4</td>
<td>Germany</td>
<td>1.04</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>59.3</td>
<td>Finland</td>
<td>1.23</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>62.0</td>
<td>Italy</td>
<td>1.26</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>EU average</td>
<td>50.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Gender is not included due to the lack of homogeneous data
** Simple average (not weighted).

A further exercise was then performed to obtain more detailed information about the importance of fiscal determinants in individual Member States. The elasticities of each EU country to the total fiscal wedge on labour were calculated with reference to FDI flows from the United States.

Two considerations emerged from this exercise. Firstly, the above-listed general results advocating the importance of fiscal variables were confirmed for all countries. Secondly, FDI elasticity to taxation (is the exercises, total fiscal wedge on labour) seemed to be greater, the larger the fiscal wedge in the receiving country. Table 3 reports the ranking of the average values of the fiscal wedge on labour for EU countries, and the ranking of the corresponding elasticities with respect to FDI flows from the USA. One notes that, with the sole exception of Italy, countries with fiscal wedges below the EU average (B) have lower elasticities than countries with fiscal wedges above the EU average (A).

It would thus seem that, at least in the case of FDI inflows from the USA, FDI elasticity to taxation follows a decreasing trend as taxation dimin-

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38 Elasticity is the percentage variation of FDI inflows as a ratio of GDP caused by a unitary percentage variation of the explanatory variables included in the estimates. The elasticity is given by the estimated coefficient times the average regressor value for the period examined divided by the average value of the dependent variable.

39 Elasticity is the percentage variation of FDI inflows as a ratio of GDP caused by a unitary percentage variation of its explanatory variables included in the estimates. The elasticity is given by the estimated coefficient times the average regressor value for the period examined divided by the average value of the dependent variable.

**40 This result is partially confirmed if the exercise is carried out for FDI flows from Germany.**
nishes⁴¹. This implies that – all other conditions remaining equal – a fiscal burden reduction by a high-taxation country (Austria, Sweden, Germany, Finland and Italy) would bring greater advantage in terms of FDI inflows than fiscal burden reduction in a country with medium or low taxation.

6. Concluding remarks

The results of the empirical analysis confirm the importance of not only macroeconomic variables but "policy related" and fiscal ones as well in explaining inward FDI flows in European Union countries.

The bilateral degree of trade openness performs an important role in attracting FDI; a result which seems to confirm, at aggregate level, the complementarity relationship between FDI and trade found by other recent empirical studies.

The proxy for infrastructure also exerts major impact among FDI determinants; policies to improve infrastructural endowments would enhance the competitiveness of countries.

As regards fiscal variables, the empirical analysis has shown that the total fiscal wedge on labour influences FDI inflows in the European Union countries more than the corporate tax rate. This suggests that when business firms make their localisation choices, they focus more on the overall tax and contribution burden than on individual corporate tax rates, which provide only partial (albeit immediate) information⁴².

This result, together with awareness of wide differences among tax systems in the European Union, suggests the following two conclusions. Firstly, all other conditions remaining unchanged, a reduction in the overall fiscal burden would raise FDI inflows; secondly, each country – due to the composite nature of the indicator examined – might obtain that reduction through recomposition within a tax structure perfectly in keeping with its tradition.

The estimated elasticities suggest that a high-taxation country may derive considerable benefits in terms of FDI from a relatively modest tax rate reduction. Consequently, it is not necessarily the case that a Member State must switch to very low tax rates (like those of Ireland, for example) in order to obtain an optimal combination between costs (associated with the tax rate reductions) and benefits (linked to the tax base enlargement, i.e. larger FDI flows).

Moreover, examination of the elasticities has shown that a State with relatively less attractive environmental conditions might be able to offset its relative disadvantage vis-à-vis other potential destination countries for FDI by easing the fiscal burden. Conversely, a country may prefer higher tax rates in order to finance more and better infrastructures, training, and technological innovation so as to attract foreign investors.

In conclusion, it should be stressed that, if on the one hand growing capital mobility within the European Union tends to increase FDI elasticity to taxation, on the other, tax policies are constrained by the Maastricht parameters and by the Stability and Growth Pact, whose stringent budget constraints leave little room for tax rate reductions unless they are accompanied by corresponding public expenditure cuts. According to some estimates, such cuts would foster – together with a more advantageous tax system – greater FDI inflows into a country, provided they did not negatively influence environmental variables infrastructure endowment in particular.

REFERENCES


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EUROPEAN COMMISSION (2000), “EU Transport in Figure”, DG Energy and Transport.


OECD (2000), *Main Science and Technology Indicators*.


WORLD BANK, Databank, available on http.sims-ext.worldbank.org

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### Table A1: Main Determinants of FDI inflows

<table>
<thead>
<tr>
<th>Country</th>
<th>Pre-tax interest rate</th>
<th>Real exchange rate</th>
<th>Investment opportunity index</th>
<th>Pre-tax profit margin</th>
<th>Managerial quality</th>
<th>Government financial flows</th>
<th>Total effective tax rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>0.47</td>
<td>0.46</td>
<td>0.46</td>
<td>0.58</td>
<td>0.46</td>
<td>0.58</td>
<td>0.58</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.56</td>
<td>0.50</td>
<td>0.48</td>
<td>0.63</td>
<td>0.56</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.40</td>
<td>0.37</td>
<td>0.47</td>
<td>0.62</td>
<td>0.37</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>France</td>
<td>0.48</td>
<td>0.44</td>
<td>0.47</td>
<td>0.64</td>
<td>0.44</td>
<td>0.44</td>
<td>0.44</td>
</tr>
<tr>
<td>Germany</td>
<td>0.47</td>
<td>0.42</td>
<td>0.47</td>
<td>0.61</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td>Greece</td>
<td>0.46</td>
<td>0.39</td>
<td>0.47</td>
<td>0.63</td>
<td>0.39</td>
<td>0.39</td>
<td>0.39</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.44</td>
<td>0.37</td>
<td>0.47</td>
<td>0.62</td>
<td>0.37</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.50</td>
<td>0.44</td>
<td>0.47</td>
<td>0.61</td>
<td>0.44</td>
<td>0.44</td>
<td>0.44</td>
</tr>
<tr>
<td>Italy</td>
<td>0.50</td>
<td>0.44</td>
<td>0.47</td>
<td>0.61</td>
<td>0.44</td>
<td>0.44</td>
<td>0.44</td>
</tr>
<tr>
<td>Japan</td>
<td>0.50</td>
<td>0.44</td>
<td>0.47</td>
<td>0.61</td>
<td>0.44</td>
<td>0.44</td>
<td>0.44</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.50</td>
<td>0.44</td>
<td>0.47</td>
<td>0.61</td>
<td>0.44</td>
<td>0.44</td>
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</tr>
<tr>
<td>Norway</td>
<td>0.46</td>
<td>0.42</td>
<td>0.47</td>
<td>0.63</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.48</td>
<td>0.42</td>
<td>0.47</td>
<td>0.63</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td>Spain</td>
<td>0.46</td>
<td>0.42</td>
<td>0.47</td>
<td>0.63</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.46</td>
<td>0.42</td>
<td>0.47</td>
<td>0.63</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td>UK</td>
<td>0.46</td>
<td>0.42</td>
<td>0.47</td>
<td>0.63</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
</tr>
</tbody>
</table>

*Note: Pre-tax interest rate, real exchange rate, investment opportunity index, and pre-tax profit margin are all in percentage terms.*

---

Table A2

<table>
<thead>
<tr>
<th>Variables</th>
<th>Source</th>
<th>Available years</th>
</tr>
</thead>
<tbody>
<tr>
<td>million US $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US $ in PPP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>current US $ and PPP</td>
<td>Main Science and Technology Indicators.</td>
<td></td>
</tr>
<tr>
<td>Bilateral trade in current</td>
<td>Datastream e World Bank Databank</td>
<td>1980-99</td>
</tr>
<tr>
<td>US $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ratio between the road-railway length and the receiving country’s total area)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventiv. coefficient</td>
<td>OECD (2000), Main Science and Technology Indicators.</td>
<td>1980-97</td>
</tr>
<tr>
<td>(number of patents issued in the receiving country’s resident population per 10,000 inhabitants)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiscal burden</td>
<td>Banca d’Italia (2000), Supplemento al Bollettino Statistico n.48, dicembre</td>
<td>1980-98</td>
</tr>
</tbody>
</table>

LA FIERA COMME STRUMENTO DI MARKETING TERRITORIALE. LA FIERA DEL LEVANTE DI BARI

di Luca Petruzelli*

JEL Classification: L100; M310
Parole chiave: Industrial economics; Marketing territoriale

1. Introduzione

I notevoli cambiamenti occorsi nell’economia mondiale, tra cui l’internazionalizzazione dell’organizzazione produttiva, l’integrazione economica e politica tra gli stati nazionali e la globalizzazione, insieme alla crescita dell’offerta di territorio stanno spingendo verso l’intensificarsi della competizione tra ambiti geografici locali.

La globalizzazione ha comportato il progressivo allargamento delle distanze e il conseguente avvicinamento delle aree geografiche di tutto il mondo, intensificando la competizione tra i territori per ottenere le migliori risorse disponibili. Anche la concorrenza tra imprese si è spostata sul contesto ambientale nel quale l’impresa svolge la sua attività, andando incontro ad una nuova organizzazione spaziale dei luoghi di “produzione” inseriti ormai in reti sovranazionali secondo logiche d’impresa (efficacia e impatto sociale).

L’arena competitiva che si va delineando, ricca di grandi opportunità ma anche di elevati rischi di crisi, si sviluppa intorno all’offerta di nuovi fattori localizzativi, predisposti sulla base di un progetto strategico che collochi il territorio all’interno del sistema competitivo in cui andrà ad operare. Tale competizione, considerato il nuovo scenario economico, risulta essere più intricata ed internazionale.

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Si ringrazia la INGEP S.p.A. che ha messo a disposizione il software GIS di geomarketing e la prof.ssa Chiuri per il prezioso aiuto per l’indagine econometrica.

1 Il fenomeno della globalizzazione ha coinvolto i mercati dei beni e dei servizi, dei fattori produttivi, dell’informazione e delle competenze. È possibile riscontrare tre categorie di processi: 1) l’internazionalizzazione, ossia la forma più tradizionale di integrazione internazionale, che attiene al commercio mondiale di beni e servizi, un processo che obbedisce ad una logica di scambio; 2) la multinasionalizzazione, che attiene ai flussi di investimenti diretti transborder, un processo che obbedisce ad una logica di produzione e di localizzazione; 3) la globalizzazione propriamente detta, che attiene agli scambi di informazioni e di competenze e che obbedisce ad una logica di innovazione. R. Carnagni (1999a, pp. 1-2).

2 Il concetto di produzione che qui si intende non è quello esclusivamente industriale ma è un’accezione più ampia che comprende anche la fornitura di servizi e di relazioni con gli utenti.