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Eleni E.N. Piteli

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Eleni E. N. Piteli
University of Cambridge
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Abstract

We analyse the determinants of foreign direct investment (FDI) by multinational corporations (MNCs) in developed economies. We compare between EU and non-EU countries, in the context of an estimated equation derived from economic theory, which compares the main demand and supply-side determinants of FDI. We contribute to the literature in three ways. First, by employing different proxies for demand and supply-side factors. Second, by comparing between European and non-European developed countries. Third, by testing for the relative importance of total factor productivity (TFP) as a determinant of FDI. Our results are in line with theoretical predictions, but point to the importance of TFP as the determinant par excellence of FDI in developed countries. They also highlight differences even within developed European and non-European counties.

I) Introduction

During the 1990's, foreign direct investment (FDI) by multinational corporations (MNCs) grew at a faster rate than incomes and trade (Hill, 2009). This growth and the anticipated potential beneficial effects on growth and development, especially of developing and emerging economies have led to attempts by governments to devise policies that attract FDI. It has also renewed discussion and research on the determinants of FDI. An important question in this context is whether such determinants differ between countries.

Our aim in this paper is to test the above hypothesis by focusing on developed OECD countries and by comparing between European and non-European countries. In particular we use as a basis a model by Head and Mayer (2003), which accounts for both demand and supply-side factors, but test it for the two different sets of countries and by employing different proxies for the generic cost and demand-side variables the authors derive. Our results are in line with the theory, but also point to important differences between the two sets of countries, as well as between different proxies for the similar cost or demand-side variables.

II) Theoretical Foundations of FDI and the MNC

Multinational corporations (MNCs) can be defined as incorporated or unincorporated enterprises that comprise parent enterprises and their foreign affiliates (UNCTAD 2007). A parent company is defined as an enterprise that controls assets of other entities in countries other than its home country, usually by owning an equity stake. An equity stake of 10 per cent or more of the shares or voting power for an incorporated enterprise is normally considered as a threshold for the control of assets, or its equivalent for an unincorporated one. The definition of what constitutes FDI, as opposed to other capital flows, follows from the above convention. For example, UNCTAD (2007) considers FDI to involve equity capital, the reinvestment of earnings and the provision of long-term and the short-term intra-company loans between parent and affiliate enterprises.

MNCs pursue profits by implementing a strategy of internationally seeking enhanced differentiation and reduced costs (Caves, 1997). To achieve this, they place different stages of production, or the production of part of the same product, in various countries according to the costs and the availability of inputs, which are most critical for the respective stage of production or the kind of the product. For example, the production of a relatively labour-intensive good will be undertaken in a country with relatively cheap labour, whereas the production of a relatively capital- or technology-intensive good will be undertaken in a country with relatively high-specialized labour, developed infrastructure and agglomeration economies (unit cost economies resulting from the concentration of economic activities).

Stephen Hymer (1960) was the first economist who considered FDI as the defining feature of the MNC and tried to explain it in terms of its relative advantages vis-à-vis other forms of foreign operations. The first reason to explain why firms favour FDI to alternative modalities such as licensing or cooperation, Hymer suggested, was the reduction of rivalry in international markets. A second reason was that FDI allowed firms to better exploit their monopolistic advantages. A third was the diversification of risk. MNCs can be horizontally integrated, vertically integrated and/or diversified (Caves, 1997). Horizontally integrated are enterprises producing the same group of outputs irrespectively of the geographic market. Vertically integrated are enterprises, which use some of their partner firms, or as Caves refers to “plants”, to produce commodities that serve as inputs for other activities. Hymer also claimed

that “the strength of a multinational enterprise stems from the fact that it can trade knowledge internally more quickly than two firms which have to negotiate conditions each time” (Hymer 1968, pp. 23). Overall, Hymer concluded that “multinational firms are better institutions than international markets for stimulating business, transmitting information and fixing prices” (Hymer 1968, pp. 17).

Post-Hymer theories such as Buckley and Casson (1976) and Williamson (1986) focused on the internalisation of advantages and claimed that internalisation reduces transaction costs when assets are intangible or specific to the investments made. Resource-based and evolutionary theories such as Teece (1981) and Kogut and Zander (1993) claimed that MNCs may be superior to markets in transferring tacit (non-codifiable) knowledge (Dunning and Pitelis, 2008).

The most widely known general framework that aims to the existence and growth of MNCs or FDI is the OLI paradigm, (also known as eclectic), developed by John Dunning (1995). Dunning argued that the existence and growth of MNCs is the result of the simultaneous combination of three sets of advantages relative to other firms, the advantages of Ownership, Location and Internalisation, (also referred to as the OLI tripod, Eden, 1991). Ownership advantages are mainly intangible knowledge-based assets and advantages of oligopoly. Knowledge advantages can be patents, brand names, marketing and managerial skills, product innovations and process enhancements. Oligopoly advantages include economies of scale and scope, private access to resources and first mover advantages. Internalisation advantages arise from the avoidance of exogenous imperfections of markets faced by MNCs. Exogenous imperfections can be divided into two categories; those that are intrinsic to some markets and to those that are generated by state actions. The former arise from the existence of transaction costs, uncertainty and the public good aspect of knowledge in foreign markets. State-induced imperfections include tariffs, foreign exchange controls and subsidies. The internalisation of markets is a vehicle that the corporation can employ to substitute an external or missing market with an internal one and thus to overcome market failures. Locational advantages determine the countries in which the MNC chooses to produce. They can be divided into economic, social and political. Economic advantages refer to a country’s factor endowments for example its capital, labour, managerial skills, technology and natural resources, as well as its transportation and communications, infrastructure and its market size. Social or non-economic advantages (or disadvantages) include the language, ethnicity, business

customs and culture of different countries. Finally, political advantages include the government's attitude towards MNCs and certain policies, such as trade barriers and investment regulations that may affect FDI (Eden, 1991).

In Dunning's OLI paradigm ownership and internalisation advantages do not determine the location in which the firm will invest. Location, like structure, is part of a strategy, meaning that the region chosen by the MNC depends on the strategic role that the plant will play within the enterprise. The reasons that MNCs go abroad are numerous but can be classified into three main categories; securing natural resources, reducing costs and gaining access to foreign markets (Eden, 1991). The locational decisions of an MNC as to where it should set up its plant depends on the nature of the investment, in other words if it is resource-seeking, cost reduction or market access. Consequently, the MNCs' locational structures depend on the strategy followed and can be of three forms. In the case of resource-seeking, strategic investments plants can be either extractors, (in which case they collect and secure raw materials), or processors, which turn raw materials into fabricated ones. In case of cost reducing strategic investments, plants can be either offshores or source factories. The former make use of cheap local inputs, such as relatively low unit labour costs, to produce intermediate goods that are exported back to the MNC for further assembly. Source factories enable access to low-cost inputs and produce subcomponents that are sold to the parent firm for their usage in the production of the final goods. Although they are both used for sub-assembly, source factories have higher level of technological activity than offshores (ibid, 1991).

Affiliates that correspond to market access strategic investments can be importers, local servers, focused factories, or miniature replicas or lead factories or outposts, depending on their level of technological activity, with the last mentioned having the higher. Early Japanese investments in Europe were mainly importer factories. Local servers sell output to local markets and are used for the production of subcomponents for domestic sale. Focused factories specialise in mass production of one to maximum two lines of products to be sold in the domestic and open market. Miniature replicas are set up by the MNC for the production and sales of a full range of products, being very similar to the parent firm. They constitute a strategy by MNCs to overcome host country trade barriers. The development of new technologies and products for global markets is a responsibility of lead factories, which are similar to the parent firm. Finally, outposts are R&D intensive investments designed from the

MNC to act as a window to technology in technology innovations and accumulate knowledge across nations (Eden, 1991).

Location-Specific determinants of FDI can be divided into two categories, the Hierarchical-Related Advantages and the Alliance or Network-Related Advantages. These may favour home or host countries (Dunning, 1995). The Hierarchical-Related Advantages include the spatial distribution of natural and created resource endowments and markets, input prices, quality and productivity, such as labour, energy, materials, components and semi-finished goods, international transport and communication costs, investment incentives and disincentives (including performance requirements, etc.) and artificial barriers, for example import controls to trade. Moreover, societal and infrastructure provisions (commercial, legal, educational, transport and communication), cross-country ideological, language, cultural, business, political, etc. differences, economies of centralization of Research and Development (R&D) production and marketing and lastly, the economic system and policies of government, particularly the institutional framework for production and resource allocation.

Advantages of agglomeration arise essentially from the presence of a portfolio of immobile local complementary assets, which, when organized within a framework of alliances and networks, produce a stimulating and productive industrial atmosphere. The extent and type of industrial districts, science parks and the external economies they offer to participating firms are examples of these advantages, which over time may allow foreign affiliates and cross-border alliances and network relationships to better tap into, and exploit, the comparative technological and organizational advantages of host countries. Networks may also help reduce any information asymmetries and the likelihood of opportunism in imperfect markets. They may also create local institutional thickness, "intelligent regions" and social embeddedness (Amin and Thrift 1994, Dunning 1995, pp. 476).

It is also possible to classify the location-specific determinants of FDI into supply-side and demand-side ones (or factor-oriented and market-oriented variables respectively). The main supply-side variables are the labour costs, capital costs and tax rates whilst the demand-side variables include mainly the market size and its rate of growth (Head and Mayer, 2003).

FDI has the potential to affect economic growth through multiple channels, such as capital formation, increases in employment and productivity, technology

transfer and spillovers, human capital (skills and knowledge) enhancement, and increase exports and the long-term economic performance of countries (Ozturk 2007, UNCTAD 2007). More than ever, countries at all levels of development seek to leverage FDI for development. Foreign affiliates of around 64,000 multinational corporations generate 53 million jobs. Moreover, FDI is the largest source of external finance for developing countries. In 2005 developing countries´ inward stock of FDI accounted for about one third of their GDP, compared to just 10 per cent in 1980. Notably, one-third of global trade is intra-firm trade (UNCTAD, 2007).

The potential impact of FDI on the host countries is very important for policy makers, who wish to know whether to try to attract FDI or not, and if so, what type of FDI, as well as the relationship between FDI and trade, for example exports in this context. Gast and Herrmann (2008) focused on the identification of the factors that led to the worldwide increase of FDI during the 1990s and also, they addressed the question whether these determinants influenced exports in a different way. They used data from 22 OECD countries. They estimated gravity models for bilateral FDI stocks/flows and exports, firstly in a cross-section setting for 1999 and then as a panel data set for the period 1991-2001. Analysing the panel results they found that a change in total market size is an important characteristic that leads both FDI and exports in the same direction. Relative market size affects only exports significantly. In addition, stock market booms boost FDI but not exports. The political indicators and exchange rate changes suggested that exports are demand-driven whereas FDI is supply-driven. They concluded that "FDI and exports tended to flow relatively less abundantly to distant countries than to nearby countries over the period under consideration. This supports the idea of a complementary relationship between investment and trade" (Gast and Herrmann 2008, pp. 1).

Markusen and Venables (1998) examined two ways through which FDI might affect host countries, through its effects on local firms in the same industry; product market competition and linkage effects. The former constitutes the channel through which MNCs can substitute for domestic firms and the latter is the channel through which MNCs can be complementary. They showed that it is possible for FDI to act as a catalyst, leading to the development of local industry, which may in turn become strong enough, so as to reduce both the relative and absolute position of MNCs in the industry. They supported their claims with case study literature from South East Asian economies. Furthermore, they argued that competition in the product and factor

markets will lead to reduced profits of local firms, which however can be substituted through the linkage effects to supplier industries that may decrease input costs and this way raise profits. They established circumstances in which FDI is complementary to local industries and they illustrated how FDI might lead to the establishment of local industrial sectors. They pointed that such sectors may develop to the extent that local production overtakes and forces out FDI plants. Concluding, they claimed that their results were consistent with experience.

Li and Liu (2005) conducted a panel investigation of 84 countries, both developed and less developed ones, during the period 1970-1999 to examine the effects of FDI on economic growth. They found that there is a strong correlation between FDI and economic growth from the mid 1980's onwards. They argued that FDI not only promotes economic growth directly, but also does so indirectly, through its interaction with human capital. However, they also highlighted a significant negative correlation between the interaction of FDI with the 'technology gap' and economic growth. From their empirical analysis they concluded that inward FDI is attracted to recipient countries with a large market size. Additionally, they highlighted the importance of human capital and 'technology-absorptive' capabilities in promoting economic growth in less developed countries. On this basis, they derived policy implications that involve the promotion of human capital and technological capabilities, which will lead to increased FDI inflows and in turn to further economic growth and enhanced competitiveness (Li and Liu, 2005).

Busse and Groizard (2006) explored the linkage between income growth rates and FDI inflows. They argued that countries need a sound business environment in the form of good state regulations to be able to benefit from FDI. Using a comprehensive data set for regulations, they tested this hypothesis and found indications that excessive regulations can constrain the economic growth that FDI can generate only in the most regulated economies. They concluded "Any attempts by government to attract capital in the form of foreign direct investment by offering special tax breaks are not likely to yield the expected beneficial effects if the regulatory quality is rather low. In addition to increasing educational attainment levels and boosting the regulatory quality and liquidity of financial markets, host countries have to reform their fundamental framework for regulations" (Busse and Groizard, 2006).

Ozturk (2007) conducted an extensive review of the literature of the effects of FDI on growth. He characterized the overall evidence as mixed as regards the

importance of labour costs, openness, investment climate, developed vs. developing countries and fiscal incentives. However, he concluded that "free trade zones, trade regime, the human capital base in the host country, financial market regulations, banking system, infrastructure quality, tax incentives, market size, regional integration arrangements and economic/political stability" are very important determinants for FDI that create a positive impact on overall economic growth (Ozturk 2007, pp. 79).

Even within developed economies it is possible that the degree of economic development and/or other factors, such as the their geography/location, influence the determinants of FDI. Mold (2003) conducted an econometric analysis with a sample of developed European countries, which grouped into 'core' ones (Belgium, Denmark, France, Germany, Italy, Luxemburg, the Netherlands and the United Kingdom) and 'peripheral' ones, (Greece, Ireland, Portugal and Spain) examining the FDI outflows of United States manufacturing affiliates into the aforementioned countries. He observed that only market growth potential and exchange rate variability were significant, followed by the relative unit labour costs. He concluded that factor-related characteristics, such as the local cost of capital, did not seem to influence the locational choices of US MNCs but rather the market-related variables play the primary role. Moreover, his study showed that the growth rate of real FDI inflows was much higher in the peripheral countries than in the European centre (63 versus 31 per cent). He claimed that this could be a result of European Union's investments in infrastructure and market liberalisation in the transport sector, thus a reduction in transaction costs within its borders. Moreover, in per capita terms, smallest European countries, such as Luxemburg, attracted higher levels of US FDI in the manufacturing sector.

Wheeler and Mody (1992) examined three variables, previous investment, infrastructure and the level of industrialization, and found them all to be significant and positive. Woodward (1992) supported these results with an econometric analysis showing that Japan's outward FDI was drawn to regions with high present manufacturing activity.

Further studies suggest that tax rates may be significant for attracting FDI by MNCs. Although the relationship between FDI and interest rates is not clear, in principle if the host country has relatively higher interest rates this will deter firms from investing in expansions of local capital markets and this may subsequently lead

to an increase in FDI. On the other hand, if the host country has much higher interest rates than the international market, (an implication of an unstable economy) this will reduce FDI (Mold, 2003). Culem (1988) estimated a model concerning US FDI in the EEC, in which the nominal interest rate differential between the host country and the international market was positively signed and found that higher interest rates in the host country may attract FDI inflows. Bénassy-Quéré et al. (2001) who examined separately nominal and effective tax rates found a consistently significant and negative relationship between taxation and FDI inflows, irrespectively of the tax form.

Pye (1998) conducted a survey with a sample of 334 firms from the main European and North American countries in terms of investment into the Czech Republic, Romania, Slovakia, Poland and Hungary between 1989 and 1996. He found that the leading drive in 34 per cent of the sample was market size and its growth potential. Further research suggests that 116 West European firms planning to operate in one of sixteen CEECs share as their primary motive the size of the market, with the exception of Hungary and Czech Republic, where political and economic stability were the dominant factors to attract investment flows (Lankes and Venables, 1997). Moreover, Poland's size and homogeneity of its market, and its relatively higher personal incomes seemed to be the major factors attracting FDI. The latter applies for the Czech Republic and Hungary, which along with Poland have the highest personal incomes in the district. Additionally, Altzinger (1999) found that among 150 Austrian firms investing in CEECs, those specializing in finance and insurance, food and beverages and construction considered market potential to be the most significant factor. Meyer (1996) examined 267 British and German companies that invest primarily in Hungary, which mainly emphasized on the purchasing power of the consumers. Also, the market size in terms of population size that could be a way to proxy expected market growth seemed to be a most important factor for attracting FDI. Market size and growth were the primary motive for market-oriented MNCs.

Factor costs seem to be important as well, as MNCs do seek lower wage costs. Pye (1998) found that financial efficiency factors account for 10 percent of the secondary determinants for enterprises. In the Czech Republic and Slovakia labour cost advantages were the primary motives for investors although elsewhere market potential seemed to be the leading factor. Lankes and Venables (1997) indicated that production costs and cheap qualified labour are of high significance for export-

oriented enterprises. In addition they showed that transport costs are significant for heavy industry. Factor costs were proved to be important in Poland too, especially in earlier years. Furthermore, according to Altzinger (1999) Austrian firms view lower unit labour costs as an advantage, especially in the engineering sector where it seems to be the most significant one, but of almost inexistent one in the financial and insurance industrial sectors. Meyer (1996) observed that a skilled labour force is the leading factor for attracting FDI in Hungary, particularly for assemblers and domestic supply oriented exporters. This does not seem to be the case for non-exporters. The recent evidence on the determinants of locational choices by MNCs are summarised by Boudier-Bensebaa (2005).

Despite extensive research on the determinants of FDI, there is no research that tests for the impact of the same determinants between different types of developed counties, such as European and non-European countries of the OECD. There are various reasons why there could be important differences, not least because of the existence of regional blocks, such as the EU, the role of location and geography, the proximity of the EU countries to the newly emergent of the countries of Central and Eastern Europe. In this context, it appears worth separating European from non-European developed OECD countries. In addition, theoretical models usually come-up with genres of FDI determinants, which could be proxied by different variables. Here we employ different proxies for supply-side and demand-side variables to explore whether and how do they impact on FDI.

III) Model, Data, Estimated Equation and Econometric Results

Head and Mayer (2003) developed a mathematical model to examine the profitability of a location to a prospective investment company. Their model is is attractive in that it accounts for both demand and supply-side factors, hence our selection of it as a basis. Note, however, that other models come up with similar predictions, so our results are more representative, see Faeth (2009) for a recent summary of the empirical evidence, which also points to this conclusion. Head and Mayer's approach consists of deriving first the demand equation for consumers, firms and individuals, as follows,

$q_{ij} = (p_{ij}^{-\sigma} / \Sigma_{r=1}^{R} n_r p^{1-\sigma}_{rj})*E_j$, where $E_{r,}$ represents the expenditures in a specific industry in region r. Consumers allocate their expenditures in variations of the product in the specified industry. The authors assume that both firms and individuals to have constant elasticity of substitution sub-utility functions for each industry and maximise it subject to expenditure E_r and the delivered prices from all R possible product origins. Consumers face the delivered price P_{ij} in region j, the host destination, for products from region i, the home country. On this basis, they derive the profit function in each destination region j for a firm producing in region i as

$\pi_{ij} = (p_i - c_i) \tau_{ij} q_{ij} = \{(c_i \tau_i)^{1-\sigma} / \sigma G_j\}*E_j$. After mathematical manipulations, including the subtraction of the fixed costs and the inclusion of M_r, the 'Krugman market potential' (M_r) (Krugman, 1992), they obtain

$U_r = \{\ln\sigma + \ln (\Pi_r + F)\} / \sigma\text{-}1 = - \ln c_r + (\sigma - 1)^{-1} \ln M_r$. This "expresses the profitability for a firm of locating in region r as a very simple function that is decreasing in production costs and increasing in the Krugman market potential term" (Head and Mayer 2003, p.6). Finally, by using labour at cost w_r, 'other inputs' like land and intermediates at cost v_r, a as labour's share and A_r, which represents total factor productivity they conclude in

$U_r = -a \ln w_r + (\sigma\text{-}1)^{-1} \ln M_r - (1 - a) \ln v_r + \ln A_r$. (1)

In their econometric analysis the authors derive the estimated equation

$U_r = V_s + W_r + \xi_r$, where V_s denotes the nation-state variables, independent across nations, W_r the region-state variables and ξ_r that the remaining non-observable random variation. Hence, V_s includes national policies, such as corporate tax rates, W_r includes wages and market potential and ξ_r is a random term that acts as a shock to $\ln A_r$ that is specific to firm-region pairs.

In what follows we use this model as a basis, but test it for two sets of OECD countries, EU and non-EU. We include different proxies for demand and supply-side-related factors, in order to test for any differences on their impact on FDI. We also test the model with or without total factor productivity as an independent variable for reasons explained below.

We use panel data, 'cross-sectional time-series'. Our dataset covers seventeen developed OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Spain, Sweden, United Kingdom, and United States) for the period 1972 to 2000. The choice of countries and period was determined by data availability. There are thirteen European countries and four non-EU member countries. The total number of observations is 493 and the panel variable is strongly balanced. We use six variables, foreign direct investment inflows (FDIIN) (dependent variable), GDP per capita (GDPPC), real unit labour cost (RULC), firms' gross operating surplus (profits) (GOS), total factor productivity (TFP), the gap between actual and trend GDP (Y-Ytrend)/Ytrend (GAP) and corporate tax rate (TAX). These are described in Appendix 3. From these variables GDPPC and GAP are proxies for the demand-side variables, while GOS and TFP for the supply-side (see below). TFP stands as a proxy for the overall strength of the domestic economy, including its innovation system and agglomeration effects (Krugman 1994, Porter 1990). TAX aims to capture specific tax policies by countries that aim to attract FDI.

The estimated equation in its general form is as follows:

$FDI_{it} = a_0 + a_1\ GDPPC_{it} + a_2\ RULC_{it} + a_3\ TFP_{it} + a_4\ GAP_{it} + a_5\ GOS_{it} + a_6\ TAX_{it} + u_{it}$

where *i* refers to the 17 host countries of the OECD to the period 1972-2000 and u is the error term, which is assumed to satisfy the usual conditions. GDP per capita is the gross domestic product divided by the population and captures the effect of market size and consumer power on the investment decision. In addition, it represents the economy's demand. GOS is the gross output minus total costs, more specifically, the gross operating surplus adjusted for imputed compensation of self-employed. It depicts the economy's profits and is a proxy for the country's general business environment. Total factor productivity can be seen as a proxy for the overall efficiency of the economy. It can also be seen as a proxy to agglomerations, which may result in external economies that reduce unit costs and increase productivity. The second variable, RULC, captures the differences in factor costs, in particular the

relative unit labour costs, in the different countries examined. The variable GAP represents the gap between actual and trend GDP as a percentage of trend GDP. It is used to capture 'Krugman's market potential'. Finally, TAX depicts the highest corporate tax rate in each country.

In our regression analysis we use random and fixed effects models. The reason for this is that the variables are not independent of the error term and by using the ordinary least squares (OLS) model we would have biased estimates. By fitting the fixed-effect or random-effect model, the fixed or random individual differences can be controlled. Fixed effects regression is the model to use in order to control for omitted variables that differ between cases but are constant over time. It gives the option to use the changes in the variables over time to estimate the effects of the independent variables on the dependent variable, and is the primary technique used for analysis of panel data. This way dummy variables are generated for each of the cases (in this analysis the countries) and by including them in a standard linear regression we can control these fixed 'case effects' see Data and Statistical Services (DSS), (2007). It is appropriate for this analysis as there are relatively fewer cases and more time periods, 17 countries compared to 29 years period of time, (as each dummy variable removes one degree of freedom from our model). In case some omitted variables are constant over time but vary between cases, and others are fixed between cases but vary over time, then we can include both types by using random effects. Stata's random-effects estimator is a weighted average of fixed and between effects. The way to choose between fixed and random effects is running a Hausman test. Statistically, fixed effects always give consistent results but random effects give better P-values, as they are a more efficient estimator. The Hausman test checks a more efficient model against a less efficient but consistent model to ensure that the more efficient model will also give consistent results (DSS, 2007). Therefore, it is used to decide whether we should use the random or fixed-effects model.

Overall, we ran three regressions for all OECD countries, three for European countries and three for the non-European countries. We used the logarithmic values of the variables as the aforementioned model suggests. The results obtained for all OECD countries using the random effects model as the Hausman test suggested ($p=0.1663$), show that only the lnTFP was significant at the 1 percent level. The least significant variable was GAP. In the case of Europe the Hausman test was significant with p value equal to 0.0335, at 5 percent, and thus, we used the fixed effects model.

Both lnGDPPC and lnTFP were found significant at 5 percent level of significance. Lastly, in the case of non-European countries, where we also used the fixed effects model (p=0.0383), lnTFP was found significant at 1 percent and lnGOS at the 5 percent one. Both in European and non-European countries GAP was the least significant factor.

In terms of method, we used the 'general to specific' modelling (Wojciech W. Charemza and Derek F. Deadman, 1997). This requires that "starting from a general dynamic statistical model, which captures the essential characteristics of the underlying data set, standard testing procedures are used to reduce its complexity by eliminating statistically insignificant variables and to check the validity of the reductions in order to ensure the congruency of the model. As the reduction process is inherently iterative, many reduction paths can be considered, which may lead to different terminal specifications. Encompassing is then used to test between these, usually non-nested, specifications, and only models, which survive the encompassing step, are kept for further consideration. If more than one model survives the "testimation" process, it becomes the new general model, and the specification process is re-applied to it" (Hans-Martin Krolzig and David Hendry 1999, p.1). In this case we first eliminated the lnGAP variable, which was the least significant. Using the same model for each group respectively, in the general regression, lnTFP remained the most significant determinant at 1 percent level of significance. In the case of Europe, lnGDPPC and lnTFP remained significant with minor changes in their p values and lnTFP and lnGOS for non-European countries.

In the last category of regressions we excluded total factor productivity, as this is strongly correlated with unit labour costs (TFP reduces unit labour costs), but also because of its potentially unique importance as an overall measure of the health of an economy. The results obtained using the same model led to lnGDPPC being significant at 1 percent, lnTAX negative and significant at 1 percent, lnRULC negative and significant at 5 percent and lnGOS negative and significant at 10 percent for all OECD countries. For European countries, lnRULC was significant at 5 percent and all other variables were significant at 1 percent with p values equal to 0.000 and for non-European countries, lnRULC and lnGOS were significant at 5 percent and lnGDPPC and lnTAX at 1 percent.

Our results are of interest. They first show that once supply-side factors such as TFP are considered, demand-side considerations become unimportant for

developed countries as a whole. This seems to be consistent with the idea that in developed countries it is the overall efficiency of the economy, as captured by TFP that matters. This overall result however, seems to hide differences between the two types of countries. While in European countries both TFP (supply-side) and GDPPC (demand-side) were significant, in non-European countries only supply-side factors were significant (TFP and GOS). Another interesting observation concerns the critical role of TFP, which seems to dominate all other factors that acquire importance only in its absence (with the exception of GDPPC in Europe). This is in line with and supports arguments by Krugman (1991, 1994) and others on the critical role of TFP, especially in developed economies.

IV) Conclusion and policy implications

In conclusion, we analysed the determinants of FDI in developed OECD, European and non-European countries. Following a discussion of the theoretical foundations, we examined a model developed by Head and Mayer (2003), which highlights some rather generic determinants of FDI, and used different measures as proxies for supply and demand-side factors. Our results highlighted the critical role of TFP as a determinant of FDI in developed countries. We also identified some differences between European and non-European developed countries, as well as factors other than TFP that influence FDI in these groups of countries. In terms of policy implications that follow from our results, countries interested in attracting FDI should focus on policies that improve the overall business climate, firm profitability and importantly the overall productivity of the economy. Tax policies and demand issues seem to be of lesser importance in developed economies.

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Appendices

Appendix 1

Table 1. Variables contained in the dataset

Variables	Description	Source
FDIIN	Foreign direct investment inflows (US dollars)	UNCTAD (undated)
GDPPC	GDP per capita (constant 1995 US dollars)	AMECO (2005)
RULC	Real unit labour cost index: total economy (1995=100)	AMECO (2005)
GOS	Gross operating surplus adjusted for imputed compensation of self-employed: total economy (millions of 1995 US dollars)	AMECO (2005)
TFP	Total factor productivity	AMECO (2005)
GAP	Gap between actual and trend GDP at 1995 market price as percentage of trend GDP. (Y-Ytrend)/Ytrend	AMECO (2005)
TAX	Highest Corporate tax rate	World Tax Database University of Michigan

Appendix 2

Table 2. Coefficients and p values for all OECD countries

lnfdiin	Coef.	P>|z|
lngap1	.0452294	0.729
lngdppc	-.9617021	0.351
lnrulc1	-1.627661	0.708
lntfp	12.97459	0.000
lngos1	.2224283	0.388
lntax	-.8566307	0.327
_cons	-32.22295	0.325

lnfdiin	Coef.	P>|z|
lngdppc	-1.006227	0.294
lnrulc1	-1.507609	0.724
lntfp	12.97932	0.000
lngos1	.2444934	0.305
lntax	-.8298365	0.332
_cons	-32.56863	0.310

lnfdiin	Coef.	P>|t|
lngdppc	8.342187	0.000
lnrulc1	-8.9352	0.032
lngos1	-2.648698	0.060
lntax	-2.329601	0.004
_cons	-11.03671	0.712

Table 3: Coefficients and p values for Europe

lnfdiin	Coef.	P>|t|
lngap1	-.2007114	0.572
lngdppc	34.96531	0.013
lnrulc1	16.40516	0.368
lntfp	-58.74093	0.034
lngos1	3.150075	0.634
lntax	-.1730125	0.969
_cons	-172.9521	0.211

lnfdiin	Coef. .	P>|t|
lngdppc	31.52518	0.017
lnrulc1	21.91331	0.195
lntfp	-57.70971	0.029
lngos1	5.201979	0.397
lntax	-.9241214	0.830
_cons	-178.6053	0.180

lnfdiin	Coef.	P>|z
lngdppc	-12.2488	0.000
lnrulc1	-23.93084	0.016
lngos1	1.800828	0.000
lntax	-12.29617	0.000
_cons	276.3697	0.000

Table 4: Coefficients and p values for non-European OECD countries

lnfdiin	Coef.	P>|t|
lngap1	.0840974	0.558
lngdppc	1.918122	0.571
lnrulc1	-4.595563	0.347
lntfp	15.82113	0.010
lngos1	-3.293685	0.028
lntax	-.9995903	0.282
_cons	-41.04894	0.235

lnfdiin	Coef.	P>|t|
lngdppc	2.374869	0.466
lnrulc1	-4.53192	0.344
lntfp	15.66903	0.010
lngos1	-3.394708	0.018
lntax	-.9849291	0.279
_cons	-44.65345	0.183

lnfdiin	Coef.	P>|t|
lngdppc	8.749839	0.000
lnrulc1	-10.44642	0.015
lngos1	-2.835531	0.048
lntax	-2.161201	0.007
_cons	-8.182241	0.790