International Business Review 24 (2015) 209–223

Contents lists available at ScienceDirect

International Business Review

journal homepage: www.elsevier.com/locate/ibusrev

The determinants of inward foreign direct investment: Evidence from the European regions[☆]

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ARTICLE INFO

Article history:
Received 11 October 2013
Received in revised form 14 July 2014
Accepted 16 July 2014
Available online 7 August 2014

Keywords:
European regions
Factor analysis
Foreign direct investment

ABSTRACT

The aim of this paper is to study the determinants of FDI in the 260 EU NUTS2 regions between 2000 and 2006. After reviewing the relevant literature and the major traits of the FDI regional distribution in the EU, we analyse its drivers. First, we specify the model and perform a factor analysis to reduce the vast number of potential determinants to a manageable size. Afterwards, we estimate a reduced version of the model with the extracted factors as independent variables. We find that *economic potential, labour market characteristics, technological progress* and *competitiveness* exert a significant impact on FDI location patterns; in contrast, *market size* and *labour regulation* do not seem to play any noteworthy role. Finally, we perform some robustness tests to make sure the results are not sensitive to outliers, spatial dependence, size of regions, endogeneity and the consideration of just the top 50 FDI recipient regions.

1. Introduction

In recent decades, and particularly since mid-1990s, one of the most striking developments in the global economy has been the remarkable growth of foreign direct investment (FDI).[1] As a result, FDI has become a key component of the economic strategies put forward by most developed and developing countries. Although there may be various reasons behind such behaviour, this is most likely related to the fact that FDI is generally considered to be a major factor in enhancing economic growth (e.g., Lim, 2001; Caves, 2007; Dunning & Lundan, 2008; Franco, 2013).

Europe, and more specifically the European Union (EU), has traditionally been one of the main recipients of FDI, particularly since the launching of the single market program, the introduction of the euro, and the last two enlargements. Therefore, the study of FDI in the EU is, especially from a policy-oriented point of view, of paramount interest. Numerous papers have analysed this issue (for a review, see, among others, Barba & Venables, 2004), but most have been performed either at a national level or for sets of regions of just a single EU country. This national focus (or, at best, narrow regional focus) is mostly due to a lack of homogeneous statistical information on FDI for all the EU regions.

Because of these data problems, several authors and institutions have attempted to circumvent them by producing their own statistics, among which the well-known FDIRegio and Elios databases. Although very interesting, these two databases – both of which offer directly observed regional data – suffer from a critical drawback: they provide regional information just about the number of foreign firms with affiliates in EU countries, but they fail to offer any information on the actual amounts of money invested by these companies.[2] For this reason, this paper makes use of a

[☆] We would like to thank the Swedish Institute for European Policy Studies (SIEPS) for financial support, W. Polasek and R. Sellner for providing us with the FDI regional database, and two anonymous referees for their helpful comments and suggestions. We also benefited from the comments of participants in a seminar held at SIEPS (Stockholm, January 2013) and in the XV World Economic Meeting (Santander, June 2013).

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[1] According to OECD data, FDI inflows in the world increased more than eight-fold between 1990 and 2011, from $203,772 to $1660,558 million.

[2] The FDIRegio database is obtained from the Amadeus database compiled by the Bureau Van Dijk. For each company, this database provides information about the year of incorporation, country/region of origin and destination, ownership structure, and sector of activity, among other data. The Elios (European Linkages and Ownership Structure) database, built at the University of Urbino (Italy), collects information from Dun and Brasdstreet's *Who owns whom* for the five largest European countries. For each firm, the database supplies the name/country of the ultimate owner, sector of activity, location, and year of establishment.

http://dx.doi.org/10.1016/j.ibusrev.2014.07.008
0969-5931/

different, novel FDI regional database built, from national data, with the spatial Chow-Lin data interpolation method (Polasek & Sellner, 2010; Polasek, Llano, & Sellner, 2010).[3] Although this database has also some limitations – e.g., it does not include any sectoral breakdown or the country of FDI origin – in our opinion it is superior to the FDIRegio and Elios databases because it does offer information about the total amount of FDI in the EU regions.

Bearing all these considerations in mind, this paper attempts to contribute to the literature on inward FDI determinants in four different and simultaneous aspects. First, it uses data on all EU regions, as in this way the results obtained are more general than those coming from samples made up of just a specific group of regions; our sample comprises 260 NUTS2 regions and, for reasons of data availability, goes from 2000 to 2006.[4] Second, it uses data on the real amount of FDI received by each region rather than on the number of affiliates of foreign firms; this is one of the main drawbacks of previous papers on this topic. Third, an additional contribution of the paper rests on the way of selecting potential FDI determinants; in contrast to the more usual, ad hoc selection of variables, it employs exploratory factor analysis because this is an advisable statistical tool to simplify econometric analysis when the number of potentially explanatory variables in a model is, as in this case, very large; the results obtained are supported by appropriate theories well established in the literature. Fourth, we provide an extensive robustness checking, including results obtained after controlling for spatial dependence, the presence of outliers, endogeneity, and so on; this is an additional point of the paper because, apart from reinforcing its main results, allows us to gain additional insights.

The rest of the paper is organised as follows. In Section 2 we briefly review the theoretical literature on the main inward FDI determinants, and present a survey of empirical studies for the EU regions. Then, to offer some insights about the specifics of our case study, Section 3 outlines the pattern of the regional distribution of inward FDI in the EU. In Section 4, which constitutes the central part of the paper, we pursue four tasks: we specify the model to be estimated; we perform a factor analysis to reduce the huge number of potential FDI determinants reported by the literature to a manageable size; we estimate the model and discuss its results; and we carry out a set of robustness checks addressing five main issues: (a) potential outliers; (b) spatial dependence; (c) different size of regions, (d) endogeneity, and (e) the consideration of only the top 50 FDI receiving regions. Section 5 presents the main conclusions.

2. FDI determinants: A review

2.1. A brief theoretical survey on FDI determinants

Because this is eminently an empirical paper, a complete summary of the FDI theory is clearly beyond its scope. In any case, it is convenient to note that, although the potential determinants of FDI have been studied extensively, no general theory has been accepted yet. As a short reference it is worthy of mention the existence of very good surveys on the issue, among which those of Blonigen (2005) and Faeth (2009) are some of the most relevant.

Drawing on Faeth's (2009) paper, the first attempts to explain FDI were proposed in the context of neoclassical trade models by MacDougall (1960) and Kemp (1964). In a nutshell, the explanation offered by these authors lies in the differences in return to capital in favour of FDI. According to Kindleberger (1969), however, FDI cannot exist in a world of perfect competition. Following on this reasoning, Hymer (1976) developed a theory of market imperfection that explains FDI by ownership advantages in the form, for instance, of product differentiation, internal or external economies of scale, and government incentives. Caves (1971) and Knickerbocker (1973) employed a similar approach, with the former focusing on product differentiation and the latter on oligopoly rivalry. Considering the issue of firm rivalry, Vernon (1966) developed his theory of the product life cycle, according to which there is a cost-based rationale for firms changing from exporting to foreign-based production (FDI) because the products they manufacture move from one to another of the three (new, mature, standardised) stages of their life cycle. Internalisation theory (Buckley & Casson, 1976) explains FDI as an application to multinational enterprises (MNEs) of the idea of internalising transactions in response to market failures.

The aforementioned approaches were, to a certain extent, summarised and made consistent in the so-called OLI eclectic paradigm developed by Dunning (1977, 1979). According to Dunning, FDI can be explained "by identifying three types of special advantages that MNEs possess: ownership (O), location (L) and internalization (I) advantages" (Faeth, 2009 p. 171). Because we are interested in explaining the geographical distribution of inward FDI in the EU regions, here the advantages of location are of paramount importance.[5] These location advantages are usually divided into three types: economic, political, and sociocultural advantages. Table 1, taken from UNCTAD (1999), includes what we consider to be the best synthesis of the location advantages (host country determinants of FDI). Focusing our comments on the economic determinants, it can be observed that they can be broken down into three groups: market-seeking, resource/asset-seeking, and efficiency-seeking determinants.

In addition to these approaches, the new theory of international trade and the so-called institutional approach also provide explanations for FDI. Building on the OLI paradigm, in the new theory of international trade FDI is linked to variables such as market size, barriers to entry, transport costs, and factor endowments. In the institutional approach "FDI can be seen as a game with two players, MNE and host government, or a contest between two or more host countries competing for FDI" (Faeth, 2009, p. 183). Variables such as financial incentives, fiscal incentives, and other economic incentives play a crucial role in explaining FDI in this approach.

2.2. A brief empirical survey on FDI determinants in the EU regions

Although the theoretical literature on FDI determinants is very rich, the empirical one about the EU regions is relatively scarce. Even so, it is possible to distinguish among three types of studies: those of regions in a single EU country, of regions within a group of EU countries, and of regions in all EU countries.

The first group is the most densely populated but, nevertheless, not very abundant.[6] Generally speaking, these studies (in particular the papers by Fallon and Cook, 2010, on UK regions,

[3] As indicated by Polasek and Sellner (2011), p. 25 "the spatial Chow–Lin procedure uses the relationship between a dependent variable that is only measured at a more aggregate regional level (...) and independent variables that are measured at a more disaggregate regional level (...) to predict the dependent variable at the disaggregate regional level".

[4] NUTS stands for Nomenclature of Units for Territorial Statistics. In this paper, we use the NUTS2 definition from 2003, such that Denmark is considered as one region. Although we are well aware that this administrative delimitation of regions could mask some key aspects of the EU economic reality, we have adopted it because it is officially used by the EU and, in addition, it is the only one for which homogeneous data on potential FDI determinants exist. For further reference on this issue, see Maza and Villaverde (2011).

[5] The other two advantages (ownership and internalisation) are firm-specific and considered as exogenous variables from the perspective of the host country.

[6] Main references are Crozet, Mayer, and Mucchielli (2004), Fazekas (2005), Pelegrín and Bolancé (2008), Chidlow, Salciuviene, and Young (2009), Majocchi and Presutti (2009), Papalia and Bertarelli (2009), Pazienza and Vecchione (2009), Cook (2010), Fallon and Cook (2010), Castiglione, Gorbunova, Infante, and Smirnova (2012), Villaverde and Maza (2012) and Wren and Jones (2012).