International Business Review xxx (2014) xxx–xxx

Contents lists available at ScienceDirect

International Business Review

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

The determinants of FDI and the impact of the economic crisis on the implementation of RTAs: A static and dynamic gravity model

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ARTICLE INFO

Article history:
Received 20 November 2013
Received in revised form 8 July 2014
Accepted 17 October 2014
Available online xxx

JEL classification:
F 15
F 23
C 23
C 26

Keywords:
FDI
GMM estimators
Gravity model
RTAs

ABSTRACT

Foreign Direct Investment has become one of the major challenges for the countries who participated in international economy. It affects the host country by increasing its national income, labor productivity and employment. It also has some spillover effects, including technology transfer, new management and modern production techniques. This work develops a static and dynamic gravity model to test the determinants of FDI between 14 investment partners and 39 host countries during the period 1990–2011 and evaluate the impact of the recent economic crisis on FDI. Our empirical estimates take into account the endogenous nature of the effects of integration and the existence of the dynamic effect.

1. Introduction

Since the 1980s, the expansion of international market in the form of FDI has been one of the most salient features of globalization. The interest in the proliferation of RTAs and the trade liberalization of countries is generally justified by many expectations: their impact on growth, resource inputs, increased productivity, improved local management capacity, technology transfer and the consolidation of infrastructure (harbor, airport, communication, etc.). In the same context, the trade liberalization of countries has important implications for firms. This process leads to the reduction of transaction costs, which cut across different types of trade costs (regional, international, for goods and factors, tariffs, etc.). FDI is an important source of capital, technology and skill transfer. It helps the source economy to benefit from the expanding market, lower costs factors and other tariff measures. A country with good quality resources, high potential markets, and adequate infrastructure can have a good opportunity to attract more FDI. However, FDI factors working well for one country may not be appropriate for other countries (Ietto-Gillies, 2005). The gravity model is generally regarded as a relevant approach to explain bilateral trade flows (Evenett & Keller, 2002; De Mello-Sampayo, 2009; Chen & Novy, 2011; Kahouli & Maktouf, 2013). The model has recently been used to explain the bilateral FDI flows (Desbordes & Vicard, 2009; Busse, Königer, & Nunnenkamp, 2010).

The gravity model supports both the assumptions of increasing returns to scale and production of homogeneous goods. This may explain why this approach has been widely used in the empirical studies about FDI (Benassy-Quere, Coupet, & Mayer, 2007; Stein & Daude, 2007). This paper develops a gravity model to test the determinants of FDI among the regional groups (EU.15, NAFTA, ASEAN, Mercosur, AMU and EUROMED) and evaluate the impact of the recent economic crisis on inward FDI stock. Trade flows between two countries depend positively on the size of the market and negatively on the distance; however, the reference to the FDI is implied. On the one hand, if countries are very distant from each other, it is preferable for them to produce directly in a foreign country rather than serve through exports. The long distance

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http://dx.doi.org/10.1016/j.ibusrev.2014.10.009
0969-5931/

implies higher transportation costs, making exports less convenient. On the other hand, when countries are far away from each other, then the cost of information on investment are high; therefore companies are unwilling to invest in a foreign market. The approach of gravity seems to be consistent with the part of the OLI paradigm that emphasizes the importance of market characteristics as determinants of FDI (Brenton & Di Mauro, 1999). The use of the gravity model in this study, to explain FDI stocks, may be based on the following two observations: First, countries with relatively high bilateral trade shares tend to have relatively high bilateral shares of FDI. Goldstein and Razin (2006) suggest that there are fixed costs established for direct investment, such as information acquisition costs. Bilateral commercial ties can reduce costs for direct investment. Second, there is a common observation that knowledge incites investors to focus on neighboring countries with similar characteristics and legal systems as countries farther and institutionally different.

Thus, the gravity model has become an appreciated approach to analyze the importance of the appealing factors for FDI (Buch, Kokta, & Piazolo, 2003). It created an empirical framework to explain FDI and identify its common determinants between countries (Bevan & Estrin, 2004). This model is based on interactions between the different potential sources across the border. The model has an inverse relationship between the origins and destinations countries. It is also designed to reflect the behavior of large groups of people, goods, trade and appropriate to study the determinants of FDI between members. The distance plays an important role in determining the host country receiving the most FDI. However, international investors may choose FDI instead of other forms of investment, because it gives them control. In this case, investment in more distant regions may be preferable. By being closer to the market, control by investor is maximized and information asymmetries are minimized. In the study of bilateral FDI flows, the distance is a proxy for information costs rather than for transport costs. FDI also generates the transfer of human capital which, in turn, may be adversely affected by distance.

There are three sets of issues with the trade and FDI gravity model: omitted variable bias (endogeneity), sample selection bias and issues related to the model specification such as the "frictions" (e.g. barriers to investment) that offset gravity effects. Potential sources of endogeneity bias of right-hand-side variables' coefficient estimates generally fall under three categories: omitted variables, simultaneity, and measurement error (Wooldridge, 2002). While we believe all three factors may contribute potentially to endogeneity bias caused by RTA, we will argue that the most important source is omitted variables bias. As noted in Anderson and Van Wincoop (2003), an important potential source of omitted variables bias in gravity equations is the role of "multilateral resistance" terms. In the context of a panel, this suggests including also country-specific dummies for each time period. Given the problems associated with accounting for endogeneity of RTAs using instrumental variables and cross-section data, the authors argued that a better approach to eliminate endogeneity bias of RTAs is to use panel techniques (Baier, Bergstrand, & Feng, 2014).

This work is organized as follows: Section 2 presents a literature review on FDI. Section 3 discusses the empirical models and methodology. Section 4 describes the data and presents the estimation results. Section 5 presents the issues that came out of the political and economic implications.

2. Review of theoretical literature

Several studies have conducted on FDI, including the fundamental theories of FDI, the different macro-economic variables affecting the FDI, the impact of economic integration on the movement of FDI and the advantages and disadvantages of FDI in the host country (Cheng & Kwan, 2000; Zhang, 2001). Dunning (1980) introduced the FDI theory via the eclectic paradigm. This theory considers that FDI is determined by the benefits of ownership, location and internalization that multinational corporations (MNCs) have on the foreign producer. When these benefits exceed the costs, FDI occurs. The eclectic paradigm (OLI) of MNCs is based on the theory of internalization including factors specific to locality in several countries to assist in determining FDI. This paradigm allows researchers and firms to understand why FDI takes place, how it is used strategically by MNCs to improve their global competitiveness, how (and why) governments (as host country than origin) are facing it, and how it is used by industry in response to the changing competitive conditions. Several studies used the OLI paradigm to identify the overall strategic approaches of firms in other regions. In addition, Hill, Hwang, and Kim (1990) studied the factors that influence the firms in their choice of an entry mode into a foreign market. Each entry mode corresponds to the different level of control, the commitment of resources and the risk of spread. The authors discussed the strategic, environmental factors beside transaction costs (specific value of knowledge, the tacit nature of know-how) in respect of the decision of the entry mode. They found that firms pursued a global strategy with an entry preferably in the high control-mode. However, when country risk is high, licensing and joint ventures are preferred to wholly owned subsidiaries. If the reduction of the transaction costs exceeds the costs of creation and transfer of know-how, the wholly-owned subsidiaries appear more reasonable.

In the same order, Agarwal and Ramaswami (1992) examined the effect of the interaction between the benefits of firms in the choice of input modes (export, licensing, joint venture and trying only on foreign markets). Their results showed the existence of interaction effects, which implies that firms would establish a market in foreign countries through FDI. However, the ability of firms is limited by their size and multinational experience. In addition, firms used methods of investment only in high-potential markets. Eicher and Kang (2005) examined how optimal entry of MNCs in foreign markets is based on the market size, FDI fixed costs and tariffs. They showed that low trade barriers encourage the entry relative to trade among other MNCs options. However, the authors found that when trade barriers increase, trade reduce the price levels and makes it less probable which could allow the multinationals to overcome trade barriers. FDI has also existed in the markets due to the advantage of multinationals in the cost of production in the local society. The High investment costs increase the market size for FDI which cannot be compensated when trade barriers are very low to help the penetration of MNCs. With trade barriers, MNCs prefer the trade acquisitions as FDI fixed costs are not too higher. In addition, large markets lead to acquisition and independent trade barriers, because the monopoly power from the acquisition is very attractive. In the case of high competition, FDI became the main input mode, allowing MNCs to enjoy their property benefit.

The new theory of FDI introduced the MNCs in general equilibrium models, where they arise endogenously. Helpman and Krugman (1985) derive the activity of MNCs when they try to explain intra-firm as an additional element of international trade. In addition, they assumed that transportation costs are zero and the MNCs will share their production process between a siege of activity seat and a factory abroad. This is recognizable as vertical FDI separated from their production process to take advantage of differences in the price factor between countries. This also implies that the type of FDI that can be derived from the theory is limited to vertical FDI. However, in the case of the developed countries, the structure of foreign investment is mainly horizontal, because the same types of production activities held by the MNCs are held in

Please cite this article in press as: Kahouli, B., & Maktouf, S. The determinants of FDI and the impact of the economic crisis on the implementation of RTAs: A static and dynamic gravity model. *International Business Review* (2014), http://dx.doi.org/10.1016/j.ibusrev.2014.10.009