Estimating regional trade agreement effects on FDI in an interdependent world

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ABSTRACT

Recent research on trade and multinationals highlights that multinational firms' integration strategies are complex and the degree of vertical integration varies in a multilateral world with many possible locations of activity. In particular, multinationals control a large fraction of trade within the block of developed countries. The most important regional trade agreements (RTAs) are signed between members of the very same block of economies. This gives rise to the question asked in the present paper: what is the impact of RTAs on FDI in an interdependent world? Recent spatial HAC estimation techniques are applied to both estimation and testing.

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Executive summary

The limited availability of resources – such as factor endowments – naturally establishes interdependence in the allocation decisions about these resources. The paper provides empirical evidence that this is true for a parent country's outbound foreign direct investment (FDI) across a set of host countries. Hence, economic policy aimed at attracting FDI in a particular subset of host countries will cause effects not only there but also in other host countries. This can happen even in the absence of any change in the economic environment in the other host countries.

This paper focuses on the consequences of preferential trade liberalization, i.e., the partial or full elimination of tariffs among a subset of the world economies. We argue that preferential trade liberalization causes not only effects on the involved countries but also on other host countries. And it not only affects trade but it extends to FDI as well. One reason for the latter is the importance of export platforms in multinational networks. If tariffs are reduced or fully eliminated in a subset of economies, it becomes cheaper for multinationals to deliver goods to consumers inside the liberalizing area from export platforms within this area. Hence, we would expect preferential trade liberalization to lead to a redirection of FDI into the liberalizing area. On the one hand, this increases bilateral FDI of parent countries into the free trade area. But on the other hand, it reduces FDI in countries outside this area. An assessment of the consequences of preferential trade liberalization on FDI ought to take into account both effects. At least, such an analysis might help in understanding the reasons and strengths of repercussions against such liberalizations from outside a free trade area. Moreover, this delivers estimates of the net effects on a parent country's total outbound FDI, which consists of both preferential trade liberalization-induced FDI creation and diversion effects.

The ratification of the Europe Agreements entails a preferential trade liberalization scenario along the lines described above. We identified direct positive effects on bilateral FDI between the Western and the involved Central and Eastern European countries. The estimated direct effects of Europe Agreement ratification in the preferred models are similar to those obtained from models that ignore any indirect effects. They amount to about 120%–135% of FDI of the Western European parent countries in the involved Central and Eastern European economies. This depends upon the participant and the year considered. In comparison, the negative indirect effects on third host countries are small but ubiquitous in Europe. They amount to about −2% to −9% for the whole block of Western European host countries, and they are similar in size for the non-participating Central and Eastern European countries. Although the positive direct effects on Western Europe's FDI in Central and Eastern Europe are large percentage-wise, they are rather small in absolute terms. By way of contrast, within

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Western Europe the negative indirect effects on FDI are small percentage-wise but large in absolute terms. Hence, preferential trade liberalization between Western and Central and Eastern Europe has caused a reasonably strong reallocation of FDI from Western Europe into Central and Eastern Europe.

For economic policy our results seem relevant from various standpoints. First, they suggest that welfare analysis of trade liberalization should not attribute effects to goods trade alone but should also consider the associated consequences for factor movements. Second, our findings indicate that a sizable stimulus of investment in one country or region eventually causes a reduction of investment in other countries or regions. Third, enlargements of existing free trade areas typically involve strong percentage-wise direct effects on FDI in the new participant economies but smaller indirect ones in the incumbent countries. As a consequence, welfare gains tend to be strongly concentrated in new member countries. Fourth, our results suggest that there was a moderate percentage-wise reduction in inbound FDI within Western Europe in response to the ratification of the Europe Agreements in the 1990s. This reduction was fairly unevenly distributed across host countries, depending on their geographical location and economic integration with the other European economies. Hence, redistributive measures aimed at a more equal allocation of gains and losses from economic integration should pay attention to a country's geographical and economic environment. Econometric methods taking interdependence across macro-economic units into account can help to identify which units are (favorably or unfavorably) exposed to the consequences of preferential trade liberalization.

1. Introduction

The second half of the last century was characterized by a surge of "bilateralism" in trade policy. The foundation of the European Union (EU, formerly referred to as European Community), the European Free Trade Area (EFTA), and the North American Free Trade Area (NAFTA) are some of the most sizeable regional trade agreements (RTAs) that were signed and implemented within this period. As observed by authorities in empirical research on trade issues, this process resulted in a significant increase in bilateral trade volumes among the member countries (see Baier and Bergstrand (2007), or Glick and Rose (2002)). At the same time, foreign direct investment (FDI) increased much faster than trade, even within the OECD and among the members of the mentioned RTAs. While numerous studies on the impact of RTAs on bilateral trade are now available, the question of how the bilateralism of trade policy affects FDI seems under-researched.

The theory of horizontal multinational firms (Markusen, 1984) assumes that the avoidance of trade impediments (including tariffs and other trade costs) is a major reason for setting up foreign plants that produce the same good in the parent and the host country. By way of contrast, vertical multinational firms (Helpman, 1984) split up the production process across borders to exploit gains from comparative advantage within the firm. For instance, the gains from "outsourcing" production stages to low-wage countries and the associated trade of intermediate goods within firms are important issues with vertical multinational firms. Since these firms engage in trade, we expect vertical FDI to increase through the implementation of RTAs. Hence, the sign and magnitude of the coefficient of the RTA variable (typically a dummy variable) in empirical FDI specifications is of interest for policy analysis. It also implicitly indicates the relative importance of horizontal versus vertical FDI.

However, more recent theory points to the complex integration strategies of multinational firms (Yeaple, 2003; Helpman et al., 2004; Raff, 2004; Grossman et al., 2006). In particular, this literature avoids the restrictive features of models with simple horizontal or vertical multinationals. While it may be optimal to set up foreign subsidiaries in some host countries to serve only the local consumers (the horizontal motive), it may be optimal for the same firm to set up export platforms in other host countries that serve consumers there and elsewhere. Hence, this theory comes closer to the empirical stylized facts of mixed horizontal–vertical and complex integration strategies within multinationals. Two issues with complex multinational firms are of particular interest in the present paper. First, it is an empirical reality that foreign subsidiaries are set up in a multi-country world, and it is potentially insufficient to model bilateral FDI as a function of bilateral determinants only. Firms set up their foreign plants in accordance with the characteristics not only of a particular target market but also with the characteristics of other potential host countries. Second, the design of a multinational production and sales network likely entails strategic aspects of plant location in space.[1] Third, the role of RTAs will be non-trivial with complex FDI. Low trade barriers are an incentive to export not only for national but also for complex multinational firms (similar to vertical multinationals). However, high trade barriers foster the location of locally selling foreign subsidiaries (similar to horizontal multinationals). Overall, the net effect of a reduction in trade barriers is less clear-cut in complex than in simple forms of the multinational firm organization.

How does empirical work on the impact of RTAs relate to the theory of multinational firms? As mentioned above, only a few articles address this issue. Blomström and Kokko (1997) report on three case studies. They point out that the implementation of the US–Canada Free Trade Agreement led to a reduction in intra-regional FDI to both the US and Canada (i.e., a negative impact on bilateral FDI), while it increased extra-regional FDI into Canada (i.e., a positive third-country impact). Similarly, the establishment of NAFTA has fostered extra-regional FDI into Mexico, as has Mercosur stimulated extra-regional FDI into the member countries. Levy Yeyati et al. (2002a,b) analyze the impact of RTAs on bilateral FDI stocks in a large sample of countries. They point out that pooling the effect of integration agreements on FDI may be harmful, since this depends on the prevailing mode of FDI (horizontal, local market seeking versus vertical, low-cost seeking). By way of contrast, they mention that FDI into RTA member countries is ceteris paribus more attractive than FDI to non-member countries. Their findings indicate a significantly positive average impact of regional integration agreements on bilateral FDI. However, Levy Yeyati et al. (2002a,b) do not consider interdependencies across host markets, which are at the heart of this paper's analysis.

Recent empirical research on the determinants of FDI support a significant impact of interdependencies across markets. Coughlin and Segev (2000), Blonigen et al. (2007, 2008), and Baltagi et al. (2007), using different data, and spatial cross-sectional as well as spatial panel data models, find that FDI between two countries is not independent of FDI in other economies. This is expected from a general equilibrium perspective (see Blonigen (2005) for a survey). In a similar vein, Drukker and Millimet (2007) provide evidence on spatial dependence in inward FDI across US states.

This paper focuses on bilateral outward FDI stocks into Europe. The sample covers 28 host countries over the period 1989–2001. We allow for two types of spatial interaction. (i) Spatially

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[1] Subsidiaries that produce intermediate goods for other downstream plants within the firm will be located such that the overall delivery costs (covering not only production costs but also trade costs) are minimized. Also, the location of foreign subsidiaries will not be independent of the location decisions of competing multinationals.