Available online at www.sciencedirect.com
ScienceDirect
European Economic Review 51 (2007) 1303–1325
EUROPEAN ECONOMIC REVIEW
www.elsevier.com/locate/eer

FDI in space: Spatial autoregressive relationships in foreign direct investment

Bruce A. Blonigen[1], Ronald B. Davies*, Glen R. Waddell, Helen T. Naughton

Department of Economics, University of Oregon, 435 PLC Building, Eugene, OR 97403-1285, USA

Received 4 October 2005; accepted 15 August 2006
Available online 20 October 2006

Abstract

There are a number of theoretical reasons why foreign direct investment (FDI) into a host country may depend on the FDI in proximate countries. Such spatial interdependence has been largely ignored by the empirical FDI literature, with only a couple recent papers accounting for such issues in their estimation. This paper conducts a general examination of spatial interactions in empirical FDI models using data on US outbound FDI activity. We find that estimated relationships of traditional determinants of FDI are surprisingly robust to inclusion of terms to capture spatial interdependence, even though such interdependence is estimated to be significant. However, we find that both the traditional determinants of FDI and the estimated spatial interdependence are quite sensitive to the sample of countries one examines.

JEL classification: F21; F23.

Keywords: Foreign direct investment; Multinational enterprises; Spatial econometrics

1. Introduction

Since 1980, worldwide foreign direct investment (FDI) has grown at a remarkable rate. According to Markusen (2002), in the latter half of the 1990s FDI flows grew annually by

*Corresponding author. Tel.: +1 541 346 4671; fax: +1 541 346 1243.
E-mail address: rdavies@uoregon.edu (R.B. Davies).

[1]Blonigen is also a Research Associate with the National Bureau of Economic Research.

0014-2921/$ - see front matter
doi:10.1016/j.euroecorev.2006.08.006

nearly 32%. When compared to the 1.5% annual growth in exports and the 0.6% annual increase in world gross domestic product (GDP), it comes as no surprise that this same period has seen the development of formal economic models of multinational enterprises (MNEs) and increased empirical investigation of factors driving FDI patterns.

Development of formal MNE theory stems from Markusen (1984) and Helpman (1984). Markusen (1984) provides a general-equilibrium model where MNEs arise due to a market-access motive to substitute for export flows, or what is termed "horizontal" FDI. In contrast, Helpman (1984) develops a general-equilibrium model where MNEs arise due to the desire to access cheaper factor inputs abroad, or what is termed "vertical" FDI. Both are developed in a two-country framework and have spawned significant theoretical work on MNEs. Empirical work on the determinants of FDI over recent decades has mainly relied on a gravity-type framework, where market size and distance provide explanatory power, and have primarily used data on bilateral country-level FDI activity.[2]

A potential weakness of the standard theoretical and empirical work on MNEs and FDI is this reliance on the two-country (or bilateral) framework. Recent theoretical work has begun to relax the two-country assumption, leading to the development of alternative motivations for FDI. For example, recent work by Ekholm et al. (2003), Yeaple (2003), and Bergstrand and Egger (2004) develop models of export-platform FDI, where a parent country invests in a particular host country with the intention of serving "third" markets with exports of final goods from the affiliate in the host country.[3,4] Alternatively, an MNE may set up its vertical chain of production across multiple countries to exploit the comparative advantages of various locales. This motivation has been developed in a model by Baltagi et al. (forthcoming) and termed "complex vertical." While both of these forms of FDI would involve exports to third markets, the difference is that complex-vertical MNE activity would be associated with exports of intermediate inputs from affiliates to third market for further (or final) processing, before being shipped to its final destination. However, both export-platform and complex-vertical motivations imply that FDI decisions are multilateral in nature and, therefore, cannot be captured by a two-country framework. Other factors may also create interdependent FDI decisions across host destinations, including agglomeration externalities and imperfect capital markets that limit the funds an MNE has to invest abroad.[5]

The existence of multilateral decision-making has significant implications for empirical work on FDI, as multilateral decision-making means that FDI decisions across various host countries are not independent. Yet, estimating models of FDI where each observation

[2]Recent work by Carr et al. (2001) introduces a modified gravity framework, where endowments are also part of the regressor matrix. This regression specification is based on a "knowledge-capital" MNE model that displays both horizontal and vertical motivations for FDI (see Markusen, 2002, for a treatment). However, for our purposes, this innovation is still similar to previous work in that the modeling is within a two-country framework and the empirical work is based on bilateral country-level data.

[3]Consistent with this, anecdotal evidence suggests that as much as 94% of US affiliate production in Ireland is intended for export, 76% of which is bound for the European Union (CSO, 2004).

[4]Ekholm et al. (2003) also distinguish between export-platform firms, differentiating between "horizontal export platforms" in which all subsidiary output is sold in the third country and "vertical export platforms" in which subsidiary output is sold both in the third country and in the parent country. Since we control separately for the size of third countries and the parent country, we do not distinguish between these in our discussion.

[5]Blomström and Kokko (1998) provide a more detailed discussion of how agglomeration economies may arise in the context of FDI, and we discuss this more below.