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Are there regional spillovers from FDI in the Swiss manufacturing industry?

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ABSTRACT

This paper examines whether there are signs of regional spillovers from FDI, although evidence is still very scarce. It hypothesizes that (a) the assessment of regional spillovers relies on a detailed analysis of these effects, according to the channels by which they occur (namely, increasing competition, worker mobility, and demonstration effects); (b) the size and the extent of these effects depend on the interaction between their channels and the levels of existing technological capacity of local firms; and (c) spillover benefits tend to occur in regions where local firms largely invest in absorbing the best foreign knowledge. Using detailed firm-level manufacturing data from Switzerland, we have found that local firms gain from the presence of foreign firms in their region, but lose out if the firms are located elsewhere. Competition-related spillovers appear to be fully absorbed by local firms, with high technological capacities; worker-mobility-related spillovers are fully absorbed by low technology firms; while demonstration-related spillovers are absorbed by all groups of firms with mid technology firms experiencing the larger benefit. In addition, our results demonstrate that only local firms which have invested largely in the absorptive capacity benefit from spillovers, stemming mainly from technology transfer. This benefit seems to occur at both regional level and outside.

1. Introduction

MNCs are widely considered as the main source for spillover benefit which is reflected in productivity improvements of the local host country's firms. This benefit is the main reason for many governments in host countries, both developed and developing, by liberalizing their FDI regulations and encouraging the inflow of FDI (Buckley, Clegg, & Wang, 2003; Dunning, 1992). In fact, MNCs are generally assumed to possess advanced technology (production technology, marketing and management techniques, etc.) which is exploited in many host countries. Consequently, local firms which are expected to learn from this technology get the necessary strength to face foreign competition.

MNC literature distinguishes two groups concerning spillover effects: the competitive disciplinary effects and knowledge spillovers. The former operate through either a more efficient use of existing technology and resources or an assimilation of

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foreign technologies. While the latter may result from the introduction of new know-how to local firms among other things, demonstrating new technologies and training employees who later work for local firms. Spillovers may occur either in the foreign affiliates' own industry or in other industries such as; among the affiliates' suppliers or customers.[1]

The number of empirical studies analyzing the incidence of intra-industry spillovers is rapidly growing (among others Barbosa & Eiriz, 2009; Buckley, Clegg, & Wang, 2007; Buckley, Clegg, Wang, & Wang, 2009; Castellani & Zanfei, 2007; Dimelis, 2005; Haddad & Harrison, 1993; Haskel, Pereira, & Slaughter, 2007; Kokko, 1994; Kokko, Tansini, & Zejan, 1996; Konings, 1999; Liu & Wei, 2006; Ruane & Ugur, 2005; Stančík, 2009; Yeaple & Keller, 2003; Zhang, Lin, & Zhuomin, 2009).[2] However, results thus far have been mixed for country analyses and evidence on spillovers has not yet been conclusive. Consequently, despite the policy relevance, the spillover effects of FDI on host economies are not well understood.

The heterogeneity on spillover findings could be a result of misspecification of these effects. Firstly, spillovers might not be observed at the aggregate level (for all firms/industries/regions), but only in the sub-set of firms which share some common technological characteristics and are not located far from foreign affiliates. Consequently, spillover benefits tend to be captured firstly by neighboring local firms, and gradually spread to other, more distant ones (Aitken & Harrison, 1999). Learning tends to be highly localized (Yildizoglu & Jonard, 1999) and that spillovers are geographically bound – very little attention has been paid by scholars to this argument and the results of these existing studies have been mixed for country analyses. This paper seeks to contribute to this emerging body of knowledge by testing the presence and the extent of regional spillovers[3] for manufacturing in Switzerland. Secondly, only firms with high levels of absorptive capacity are likely to benefit from FDI spillovers, whereas, insufficient absorptive capacity may hinder the critical learning processes at the firm which in turn were not able to exploit the technological opportunities from a foreign presence (Cohen & Levinthal, 1989). The firm's level of absorptive capacity depends on its existing level of technological competence as well as its learning and investment made to be able to use foreign knowledge productively. Scholars have broadly employed domestic absorptive capacity in determining spillover effects. However, most of them disregard the importance of learning and investment efforts in determining the absorptive capacity of local firm. In most cases, they retain the firm's existing level of technological capacity or its technological gap vis-à-vis the foreign firm as proxies. Our paper uses a thorough measure of domestic absorptive capacity in assessing regional spillovers. Thirdly, spillovers are assumed to happen through a variety of channels, thus the assessment of spillovers requires a detailed analysis of these effects according to the channels by which they occur (viz. increased competition, worker mobility, and demonstration effects) – arguments disregarded by most existing studies. With detailed analysis, we believe that the process of spillovers will be correctly described in a more satisfactory model and therefore the impact of this process will be clearly identified. Fourthly, we argue that the size and the extent of spillovers depend largely on the interaction between the channels by which they occur and the existing technological levels of domestic firms. Thereby, relatively high technological firms are highly probable to benefit from spillovers through demonstration and/or competition effects. While low technology firms which are not in a position to compete with foreign firms, gain a great deal from other forms of spillovers such as worker mobility, since this channel provides some personnel assistance which can help domestic firms understand better and implement foreign technology (Mody, 1989).

This paper uses the regional distribution of FDI to test for regional and interregional spillovers and therefore proposes some components for a more detailed research agenda on regional spillover effects. Unlike existing empirical studies, it offers detailed analysis of regional spillovers according to the ways they occur. It supports the hypothesis that local absorptive capacity also affects the size and the extent of spillovers. It uses comprehensive measurement of local absorptive capacity, in which the learning and investment efforts of local firms come with their existing technological capacities. Moreover it suggests that the size and the extent of regional spillovers largely depend on the interaction between the mechanisms by which they occur and the existing technological capacities of local firms.

The structure of the paper is as follows: following this introduction, Section 2 analyzes the theoretical framework underlying our hypotheses, together with a review of the relevant empirical studies. Section 3 presents the econometric model, Section 4 discusses Swiss data, Section 5 presents the estimation results, and Section 6 concludes the paper.

2. Inward foreign investment and spillovers: the potential for regional dimension

This paper recognizes that the assessment of FDI spillovers on host economies calls upon a detailed analysis of the circumstances under which they occur. The regional dimension is important when determining spillover benefits and the binomial spillover channels/technological conditions of local firms has a significant role in assessing these effects.

In the following sections, the theoretical and empirical frameworks underlying these arguments are discussed. Section 2.1 highlights the role of the regional dimension in assessing the benefit of spillovers. Section 2.2 analyzes the different channels of spillovers and calls for a detailed analysis of regional spillovers according to the channels by which they occur. Section 2.3 highlights the role of the absorptive capacity of local firms, appropriately measured, in determining

[1] The focus in this paper consists of studying the intra-industry spillovers, although the effects via vertical linkage are also of great importance and worth exploring.

[2] Meta-analyses of spillover studies are presented in Görg and Strobl (2001) and Meyer and Sinani (2005).

[3] Regional spillovers denote the effect from foreign affiliates to local firm located nearby in the same geographic area.