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# Linking corporate productivity to foreign direct investment: An empirical assessment<sup>☆</sup>

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## ABSTRACT

This paper examines whether foreign firms generate productivity spillovers. Despite the relevance of this question to public policy, previous studies have failed to find consistent and conclusive evidence to support the existence of positive spillovers. Using previously unexploited firm-level data over the 1994–1999 period, we attempt to contribute to the literature on productivity spillovers from FDI by analysing the Portuguese manufacturing industry. The results indicate that foreign firms in the same industry of the observed firms (horizontal spillovers) and linkages between foreign firms and their local suppliers or customers (vertical spillovers) do not impact significantly on firms' productivity. Moreover, we detected no differences on productivity spillovers associated to firm-specific characteristics.

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## 1. Introduction

Attracting foreign direct investment (FDI) has become a key factor of the national development strategies of many countries. Policymakers tend to claim that FDI generates economic externalities. The policy agenda in many countries emphasises the need to attract FDI as a means to access capital, new technologies, know-how, and other resources (e.g., access to distribution channels) on the grounds that these resources may improve domestic productivity. The rationale for that relies on there being some form of market failure, namely in the form of an externality.

Theory identifies a range of possible channels by which foreign firms can affect either the level or growth rate of domestic productivity. Foreign firms may boost technology transfer because domestic firms may try to imitate the technology used by foreign firms more easily once the foreign firm is located in the domestic market. The relevance of this effect is nonetheless limited by domestic firms' absorptive capacity in terms of capturing knowledge spillovers and by the time required to develop them (see Blomström & Kokko, 1998; Görg & Greenaway, 2004, for a survey). This argument suggests that firms belonging to industries that have a significant foreign presence should display higher levels of productivity.

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On the other hand, foreign firms may increase competitive pressure in the domestic product market, depressing the margins of firms operating in industries with an important foreign presence. In the short-run, foreign firms may lead to a decrease in domestically produced output, pushing domestic firms up their average cost curves and therefore decreasing productivity. However, in the long-run, the presence of foreign firms may well increase domestic productivity, since they are able to put into effect a selection mechanism that will choose the most efficient firms. Furthermore, the pro-competitive effect of foreign firms may enhance incentives to adopt technologies. If so, an increased foreign presence within an industry may increase the speed of technology transfer.

Despite the above claims, the consequences and potential benefits of FDI are not well established. Empirical work examining the impact of foreign firms on the productivity of domestic firms has cast doubts on the importance of knowledge spillovers, yielding mixed results with estimated parameters varying from positive to insignificant or even negative. Therefore, the benefits of multinationals' resource mobility for host economies deserve more attention. This paper looks at productivity spillovers from FDI, either through direct or indirect knowledge transfer from foreign to domestic firms, by which foreign firms may improve other firms' productivity. It exploits firm-level panel data for manufacturing firms operating in Portugal.

Portugal offers a particularly interesting case for building on empirical evidence regarding productivity spillovers from inward FDI. It is a small, open and developed economy, but within the context of the European Union (EU) it is a peripheral economy that attracts multinational companies (MNCs) which are mostly seeking locations with relatively low production costs (Barbosa, Guimarães, & Woodward, 2004). The motives for FDI in Portugal may differ from those in other European countries,<sup>1</sup> which therefore may affect productivity spillovers (Driffield & Love, 2006, 2007). Moreover, to the best of our knowledge, there is no similar study for Portugal that attempts to measure firm-level efficiency benefits stemming from inward FDI by explicitly considering both intra- and inter-industry spillovers in the same empirical framework. Therefore, this paper adds to our understanding of the value and interest of FDI in Portugal.

Following recent work on this topic (e.g., Kolasa, 2008; Smarzynska, 2004), this study searches for productivity spillovers that may occur due to the presence of foreign firms in the same industry of the observed firms (horizontal spillovers) and productivity spillovers that may arise due to linkages between foreign firms and their local suppliers (vertical spillovers). This distinction allows us to assess whether there are horizontal and vertical productivity spillovers from inward FDI in the Portuguese manufacturing industry and to evaluate how firm-specific characteristics affect these two types of FDI spillovers. Therefore, the paper is a step forward in evaluating the relevance of productivity spillovers associated with the activity of MNCs. It adds to the existing literature by (i) testing whether MNCs shape domestic firms' efficiency parameter (based on the Barba Navaretti & Venables, 2004 analytical framework) using two measures of MNCs presence (one measure of MNCs presence in the same industry of the observed firms – intra-industry level; and other measure in backward and forward industries of the industry of the observed firms – inter-industry level), (ii) providing evidence on the role of firms-specific characteristics in shaping firms' ability to benefit from inward FDI and, hence, engendering heterogeneous relationships between MNCs presence and domestic firms' efficiency, and (iii) focusing on a host economy that mainly attracts MNCs seeking locations with relatively low production costs, which is relevant to other economies – especially those in Eastern Europe – attracting MNCs with similar motivations.

This paper is organized as follows. The next section reviews the literature on productivity spillovers. The econometric model and the main estimation issues are discussed in Section 3. Section 4 describes the data and variables. Section 5 presents estimates on productivity spillover effects and examines the empirical evidence. The paper ends with a synthesis of the main results and conclusion.

## 2. FDI and productivity of domestic firms: a synthesis

Research on the consequences of FDI on host countries may be studied at different levels using very different research methods, techniques and measures of foreign presence. Depending on the research approach adopted, results may differ significantly. In particular, different FDI measures or different estimation procedures might lead to varying results (see, e.g., Castellani & Zanfei, 2006; Narula & Zanfei, 2005; Proença, Fontoura, & Crespo, 2006) with contrasting consequences on policy implications.

Most studies on the consequences of FDI are at industry- or firm-level, looking at the performance of domestic and multinational firms and at the relationship between their performances. Görg and Greenaway (2004) identified 35 papers on productivity spillovers from multinationals to domestic firms for developing countries (15 papers on Mexico, Morocco, Uruguay, Indonesia, Taiwan, Venezuela, India, and Colombia), developed countries (14 papers on Australia, Canada, the UK, Ireland, Spain, and Greece), and transition countries (6 papers on several Eastern European countries). Most of these studies did not find evidence to support positive spillovers from multinational firms to domestic firms. That is, they fail to show that domestic firms' efficiency is an increasing function of MNCs presence in the host economy. In fact, some of them find either negative or statistically insignificant effects (see, e.g., Aitken & Harrison, 1999 for Venezuelan industry, Kathuria, 2000 for

<sup>1</sup> See, for instance, Barba Navaretti and Venables (2004:187–216) for a discussion of the Irish experience, which is also a small, open and peripheral European economy but attracting MNCs with different strategic motivations from those entering in Portugal.

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