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Two-dimensional analysis of the impact of outward FDI on performance at home: Evidence from Japanese manufacturing firms

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ABSTRACT

This paper empirically investigates two dimensions of changes in firm behavior and performance before and after foreign direct investment (FDI). The first dimension is the difference between vertical and horizontal FDI. The second dimension is the effect of outward FDI on firms' production and non-production activities in the home country. In our careful empirical analysis we use the propensity score matching method to show that the impact of outward FDI differs by dimension, that is, by FDI type and firms' production and non-production activities. In particular, while horizontal FDI increases demand for non-production workers, vertical FDI increases demand for skilled production workers.

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1. Introduction

The share of non-production activities in the manufacturing industry has risen in developed countries. In the U.S., this share increased during the 1980s and 1990s compared with that in the 1960s and 1970s (Feenstra and Hanson, 2001). It has been suggested that various elements account for such an increase, including active trade and outsourcing. An important element in this phenomenon is the extent to which firms in developed countries relocate all or part of their production activities to developing countries through foreign direct investment (FDI). This has stimulated the closure of domestic plants in developed countries, which in turn has induced anxiety about the hollowing out of domestic industries. For instance, around the turn of the century, such fear peaked in Japan due to the acceleration of Japanese FDI in China. Multinational enterprises (MNE) in developed countries are gradually shifting their major domestic activities to non-production activities such as marketing, and research and development (R&D).

From an academic perspective, the above-mentioned perceptions are supported by the theories of vertical FDI (VFDI). FDI is classified into two types based on their purpose: horizontal FDI (HFDI) and VFDI. HFDI avoids broadly defined trade costs by setting up production facilities in overseas markets, rather than exporting goods from the home country. By contrast, VFDI is a corporate strategy that exploits low-cost production factors abundant in the host country. Theoretically, VFDI firms are expected to relocate activities in which the host country has a comparative advantage and domestically specialize in activities in which the home country has a comparative advantage. Since developed countries are often assumed to be knowledge abundant in comparison to developing countries, VFDI firms tend to specialize in non-production activities, or at least, knowledge-intensive production activities in the home country.

Changes in firm behavior and performance in the home country before and after investing abroad have been explored in the empirical literature. Recent studies include Navaretti and Castellani (2004), Castellani et al. (2008), and Imbriani et al. (2011) for Italian MNEs; Hijzen et al. (2011) for French MNEs; Navaretti et al. (2010) for French and Italian MNEs; Kleinert and Toubal (2007) for German MNEs; Ito (2007), Hijzen et al. (2007), Edamura et al. (2011) for Japanese MNEs; Debaere et al. (2010) for Korean MNEs; and Masso et al. (2008) for Estonian MNEs. Among these, some studies have focused on the impacts of FDI, particularly on

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employment in the home country, and found no significant positive effect; others have investigated the so-called "learning effect" of FDI—the positive effect of FDI on productivity in the home country—and found mixed results. In addition, some studies have explored changes in skill intensity (i.e., the ratio of skilled to unskilled workers) in the home country and found no significant change (Castellani et al., 2008; Hijzen et al., 2011). The effects of FDI on wages in the home country were also investigated.

Some of these studies differ from the others in two aspects: Some analyze performance changes according to FDI type (Debaere et al., 2010; Edamura et al., 2011; Hijzen et al., 2011; Navaretti et al., 2010). Debaere et al. (2010), Edamura et al. (2011), and Navaretti et al. (2010) classify FDI in developing and developed countries as VFDI and HFDI, respectively. Hijzen et al. (2011) define VFDI as firms investing in industries of developing countries that have a comparative disadvantage, while they define HFDI as investments in industries of developed countries with a comparative advantage. These studies found different effects on firms' performance in the home country according to FDI type. For example, Edamura et al. (2011), Hijzen et al. (2011), and Navaretti et al. (2010) found a positive significant effect in the home country's productivity through HFDI, but not VFDI. Debaere et al. (2010) revealed no positive impact on employment of either FDI type.

Other studies examine changes in performance in manufacturing and service MNEs separately (Edamura et al., 2011; Hijzen et al., 2011; Ito, 2007; Imbriani et al., 2011; Masso et al., 2008). Masso et al. (2008) and Ito (2007) focus on the changes in the home country's employment and productivity, respectively, while other studies investigate changes in both employment and productivity; this comparative analysis reveals mixed results. Studies of Japanese MNEs (Edamura et al., 2011; Ito, 2007) consistently detect a significant positive effect of FDI in services on productivity while showing an insignificant effect of FDI in manufacturing. These findings are in contrast to the studies on Italian and French MNEs that find a positive effect of FDI on both productivity and employment in the home country for manufacturing, but not for services (Imbriani et al., 2011; Hijzen et al., 2011). Masso et al. (2008) studies Estonian MNEs and finds positive effects of FDI for both manufacturing and service industries.

Against this backdrop, this paper empirically investigates performance changes in Japanese MNEs. We examine the impacts of FDI on several performance indicators, including productivity, employment, and wages. Similar to the studies cited above, by examining the impacts of FDI on developing and developed countries separately, we explore performance changes according to FDI type. However, this paper does not investigate performance changes in manufacturing and services FDI separately; rather, the impact of manufacturing FDI on production and non-production activities is separately examined. As mentioned above, it is largely believed that, in the manufacturing industry, increased FDI to developing countries forces the home country to specialize in non-production activities such as marketing and R&D. This can be analyzed by investigating the impact of manufacturing FDI on production and non-production activities rather than on manufacturing and non-manufacturing industries. Compared with previous studies, this paper comprehensively differentiates the impacts of manufacturing FDI between production and non-production activities in the home country. Such a two-dimensional analysis of FDI type and production and non-production activities will strengthen our comprehensive understanding of the effects of manufacturing FDI on home country performance.

The paper is organized as follows: Section 2 provides a conceptual framework for the empirical analysis. Section 3 begins by specifying the basic empirical methodology employed and introduces our two-dimensional approach by exploiting two types of firm-level data. The empirical results are presented in Section 4, and Section 5 concludes.

2. Conceptual framework

This section discusses the current overall understanding of the impact of investment abroad on firm behavior and performance in the home country. We examine the impact of two types of FDI—HFDI and VFDI—on employment, wages, and cost efficiency for production and non-production activities. To clarify our investigation, we also discuss their impact on outputs. Conceptually, non-production activities include marketing, R&D, planning, information technology, administration, accounting, personnel, and international affairs activities. These classifications are consistent with those found in the U.S. Annual Survey of Manufacturing and Japan's Labor Force Survey.[1] The skills required for labor differ by non-production activity.

In the case of HFDI, firms decide on whether to market their products to the destination country either by exporting them or by setting up production facilities within the host country and selling them locally. They choose the option with the higher total profit, which is the sum of gross profits from both the home and host country markets. A firm can avoid the set-up costs associated with production facilities by exporting its products; it can save on shipping costs by investing in local production and selling in the foreign market. Firms would choose HFDI if fixed costs such as set-up costs are lower than shipping costs.

On the other hand, in the case of VFDI, the investing firm partially or completely relocates production activities abroad. The firm's decision on whether to relocate is based on the comparison of joint profits from production activities in the home country and abroad with the initial profits from integrated production in the home country. Integrated production in the home country enables a firm to save on the costs associated with supervision, coordination, and control over different activities in different locations. If a portion of production is relocated abroad through VFDI, the investing firm incurs the costs of shipping semi-finished products across borders and the various costs of connecting these remotely located activities. As a result, a firm chooses VFDI if the costs to manage cross-border production sharing are sufficiently low and if the difference in factor prices such as worker wages between the home and host countries is sufficiently large.

FDIs also affect the volume of output in the home country. In the case of HFDIs, because the firm ceases the production of goods designed for the destination country after investing there, the domestic output decreases immediately; thus, the short-run impact of HFDI on domestic output is negative. However, according to Navaretti et al. (2010), the investing firms can gradually enjoy the spillover of knowledge and technology from their overseas plants. Therefore, in the long run, investors' technology might improve, which is particularly possible when investing in knowledge-abundant countries (i.e., developed countries). If such benefits are significant enough, domestic output could expand in the long run. On the other hand, in the case of VFDI, the product or product bundle manufactured in the home country changes through relocating parts of the production processes from the home country to abroad. Since such changes seem to occur at almost the same time as the investment, the impacts of VFDI on outputs will be seen immediately. However, due to such qualitative changes in the production function, it is difficult to compare the volume of domestic output before and after VFDI. As

[1] On the basis of this classification, Feenstra and Hanson (2001) and Head and Ries (2002) investigated production and non-production activities in U.S. and Japanese multinational companies, respectively.

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