

Technology spillover from foreign-owned firms in Japanese manufacturing industry[☆]

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Abstract

This paper shows that in the short run an increase in foreign firms' industry share lowers the total factor productivity (TFP) growth of Japanese firms as a result of the decrease in market power. However, in the long run, the entry of foreign-owned firms has a positive effect on the productivity of local firms as a result of technology spillovers. In addition, the results suggest that foreign firms exert competitive pressure that forces Japanese firms with a high level of technological capabilities raise their productivity growth.

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1. Introduction

During the 1990s, Japan's economy registered minimal growth. Studies suggest that this “lost decade” was partly caused by a stagnation in total factor productivity (TFP) growth. Two factors in particular appear to have contributed to this stagnation. The first is that the entry of productive firms and the expansion of production by high-TFP firms have been limited (see, e.g., [Fukao & Kwon, 2004](#); [Nishimura, Nakajima, & Kiyota, 2003](#)). This situation stands in stark contrast with that in the U.S. where, as productivity analyses show, the entry of productive establishments and the expansion of existing high-productivity firms have substantially contributed to overall TFP growth ([Baily, Hulten, & Campbell, 1992](#); [Foster, Haltiwanger, & Krizan, 1998](#)). Against this background, foreign direct investment (FDI) can potentially play an important role in lifting the TFP growth rate in Japan.

According to the standard theory of FDI (see, e.g., [Caves, 1996](#); [Dunning, 1992](#)), foreign investment can be understood in terms of the so-called OLI paradigm, where the “O” refers to

[☆] This paper is a revised paper based on [Murakami and Fukao \(2006\)](#).

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ownership advantages, the “L” to location advantages, and the “I” to internalization advantages. Ownership advantages relate to the intangible assets that firms own and that help to compensate for the disadvantages firms face when operating in a foreign environment where they may lack consumer recognition and established networks of suppliers and are unfamiliar with the legal system and local customs. In this context, FDI is considered as a form of long-term international capital movement which is accompanied by investors’ intangible assets. Furthermore, it is expected that the transfer of foreign-owned firms’ business resources (such as technological knowledge, business know-how, etc.) helps to raise the productivity of domestic firms in the recipient country.

Whether this is indeed the case has been the subject of numerous studies which either use cross-country or firm-level data to examine the benefits of inward FDI for the host country. [Blomstrom and Sjöholm \(1998\)](#), for example, in an empirical study using micro data for Indonesia, found that the labor productivity of foreign-owned firms was higher than that of domestically owned firms (“domestically owned firms” will be referred to as “domestic firms” hereafter for brevity). Their findings, moreover, suggest that while the share of foreign-owned firms in a particular industry does not have any influence on the labor productivity of export-oriented domestic firms, it does have a positive influence on other, i.e. non-exporting, domestic firms. [Okamoto \(1999\)](#), using a plant-level data set on the U.S. automobile parts industry, compared various business performance indicators of Japanese plants in the U.S. and domestically owned U.S. plants and investigated whether there have been technological knowledge spillovers from Japanese to U.S. plants. She found that the labor productivity and outsourcing ratio of Japanese plants were higher than those of U.S. plants, but TFP was lower. Moreover, she found that there were statistically significant spillovers of technological knowledge from Japanese plants to U.S. plants.

In an earlier study on foreign direct investment in Japan ([Fukao & Murakami, 2005](#)), we found that the TFP level and the TFP growth rate of foreign-owned firms in Japan were higher than those of domestic firms when controlling for firm fixed effects and other factors influencing firms’ productivity. In addition, we found that out-in M&A target firms tended to score better in terms of R&D intensity, current profits per worker and wage levels to begin with when compared with other firms. Finally, our results suggested that target firms of out-in M&As saw an improvement in their business efficiency after the M&A, while target firms of in-in M&As did not. Taken together, the results suggested that the Japanese economy benefits from inward FDI. Since foreign-owned firms have a higher productivity than domestic firms and out-in M&As raise the productivity level of Japanese industry overall through the “share effect,” FDI raises the productivity of the Japanese economy as a whole.

On the other hand, however, the industrial organization literature suggests that the market structure in a particular industry has an important impact on firms’ performance. We would therefore expect that if foreign-owned firms undermine the market share and market power of domestic firms, this would lower the profitability and productivity of the latter.¹ For example, if domestic firms enjoy economies of scale that help to lower average costs and raise productivity, then the entry of foreign-owned firms potentially erodes such cost advantages. Such negative effects are described by the market power hypothesis, which suggests that the greater a firm’s

¹ Another avenue through which foreign competition may undermine the market share and market power of domestic firms is imports. [Keller and Yeaple \(2003\)](#) argued that imports bring about competitive pressure. This paper does not consider imports.

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