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Productivity and technology diffusion in India: The spillover effects from foreign direct investment

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Abstract

In this paper, we examine the spillover effects from foreign direct investment (FDI) in the Indian manufacturing industries under the capital liberalisation period using macro aggregated panel data (1995–2004). In the first step, we estimate the total factor productivity (TFP) of each industry using a Cobb–Douglas-type production function. In the second step, we examine the relationship between the level of TFP and the level of FDI in each industry, where we distinguish FDI spillover effects two types: short run and long run. In addition, we test FDI spillover both as an intra-industry effect and an inter-industry effect, also called backward linkage. Our main findings are that the FDI stock increases the TFP, especially through backward linkage, although the TFP level fell in the short run.

JEL classification: C82; F21; O53

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1. Introduction

This paper focuses on FDI policy in India, especially focusing on FDI spillover effects under the capital account liberalisation regime. The FDI spillover effect – emanating from

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knowledge spillovers – is generally defined a positive externality from FDI to industries in the host country, such as the improvement of productivity through know-how and technology transfer.

Following independence the Indian government took an import substitution industrialisation policy and strictly regulated FDI inflows. However, as a result of the currency crisis in 1991, the Narasimha Rao government repositioned India's economic policy as being increasingly market oriented and globalised and in accordance with their economic liberalisation policy, the Indian government gradually deregulated the restriction of FDI, for example by raising the upper limit of the foreign ownership ratio was raised from 40% to 51% for the 35 industries in the high priority industry group. Economic liberalisation oriented policies were further developed by the Atal Behari Vajpayee government (1998–2004) and the Manmohan Singh government (2004–2014), who in 2000 switched the permission system for FDI from a positive list approach to a negative list approach, thereby creating a system by which all FDI was automatically approved except for industries on a negative list.

However, there are also some negative opinions about this rapid capital account liberalisation. For example, through empirical analysis, Goldar and Kumari (2003) and Goldar (2004) concluded that technological progress and the TFP growth rate of the Indian manufacturing sector had decelerated after the capital account liberalisation.

The aim of this paper is to exam the hypothesis that increased FDI inflow has improved industrial productivity at the industry level in India. This hypothesis is based on following facts regarding India's capital account liberalisation during the 1990s. First, as a results of capital account liberalisation, Indian domestic firms have been accepting FDI since the 1990s. Second, accelerated capital account liberalisation and the concomitant increase in FDI has increase the access of Indian manufacturing firms' access to new know-how and technology, which also provides, through empirical study, evidence that FDI spillover has had an effect in India. For example, Kathuria (2001, 2002) showed an FDI spilover effect using firm-level data, albeit using only a few observations. Here, we examine the relationship between technological progress and accumulations of FDI using macro data aggregated by industry level. In addition, this paper thoroughly analyses how spillovers from FDI could affect productivity growth in manufacturing.

This paper is structured as follows: Section 2 describes the concept of the FDI spillover effect with a review of theoretical and empirical literature. Section 3 illustrates the mechanism of the FDI spillover effect in theoretical term. Next, Section 4 explained the model of empirical analysis and presents the results obtained. Finally, Section 5 draws conclusion and also suggests policy implications.

2. Concept of the FDI spillover

There are several discussions on how foreign direct investment (FDI) affects economic growth in developing countries. A large number of studies have examined the impact that FDI has had on economic growth in developing countries, and in most cases, a positive relationship between the amount of FDI and economic growth has been identified. Here, through a review of the literature, we explain the concept of spillovers from FDI through a literature review.

There are two FDI spillover channels: a horizontal effect with newly acquired knowledge spilling out from FDI companies as skilled local workers change companies, and a vertical effect whereby new technology is introduced from the FDI source country to supply chain intermediaries.