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## Is foreign direct investment productive? A case study of the regions of Vietnam



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#### ABSTRACT

By making use of a recently released dataset that covers a large number of manufacturing firms over the period 2000–2005, this paper examines the impact of foreign direct investment (FDI) and FDI generated spillovers on total factor productivity (TFP) in eight regions of Vietnam. Unlike most existing studies, this paper focuses on the impact of spillovers that take place through both horizontal and vertical linkages. The results presented in this paper suggest that the impact of FDI spillovers on TFP varies considerably across regions. FDI spillovers generate a strong positive impact on TFP through backward linkages only in Red River Delta, South Central Coast, South East and Mekong River Delta while in other regions the impact is negative and mostly insignificant. The paper also examines the impact of the absorptive capacity on TFP growth in each of the eight geographical regions.

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#### 1. Introduction

Economic reforms create international business opportunities. Due to the rising cost of doing business in China, Vietnam has become a popular destination for foreign investment. A number of existing studies have examined the impact of foreign direct investment (FDI) and FDI-related spillover effects on firm productivity and export behavior in developed as well as developing countries. This paper focuses on Vietnam, a country that due to the rising cost of doing business in China is now attracting significant FDI. However, due to lack of appropriate data, so far, relatively few studies have considered the case of Vietnam.

In recent years, the government of Vietnam has started releasing firm level data, including data on FDI inflows that could be used to examine the impact of FDI-related spillover effects on firm performance. Most existing studies, for example Anwar and Nguyen (2010a) and Athukorala and Tien (2012), focus only on the direct effect of FDI on firm performance in Vietnam. In addition, the existing studies (such as Anwar and Nguyen, 2010b) are highly aggregated and hence do not present a clear picture of the impact of FDI on different regions of Vietnam. An important role of the government is to take steps to reduce regional economic disparity. A region by region analysis of the impact of FDI-related spillover effects (i.e., the indirect effect) on firm productivity can provide useful information to domestic policy makers.

By making use of a firm level panel dataset, this paper empirically examines the impact of FDI generated horizontal and vertical spillovers on total factor productivity (TFP) of manufacturing firms located in all eight regions of Vietnam.

The rest of this paper is structured as follows. Section 2 contains a review of related studies. Section 3 includes a brief description of the methodology. The empirical results are presented and discussed in Section 4. Section 5 contains some concluding remarks.

#### 2. Review of related studies

While a number of studies have examined the impact of FDI on firm productivity and GDP growth, relatively few studies have explicitly considered the impact of FDI-related spillover effects on productivity. Liu (2002) and Liu and Wang (2003) consider the effect of FDI on technology transfer in China but they do not consider the impact of spillover effects. Pan (2003) outlines source and host country factors that can affect foreign direct investment in China. Bwalya (2006) examines the nature of spillover from foreign to domestic firms by using firm level data on Zambian manufacturing firms for the period 1993–1995. Bwalya finds little evidence in support of technology spillovers from foreign firms to local firms through horizontal channels, suggesting that the productivity of local firms is negatively affected by the scale of operation of foreign firms.

Stancik (2007) considers the effect of FDI on the growth rate of sales of domestic firms in the Czech Republic by using firm level panel data from 1995 to 2003. Stancik focuses on the impact of FDI spillovers. The empirical results suggest that the presence of foreign firms has

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adversely affected most domestic firms in the Czech Republic, especially in upstream sectors.

Bitzer, Geishecker, and Görg (2008) use industry level data for 17 Organisation for Economic Cooperation and Development (OECD) countries to investigate the importance of horizontal and vertical spillovers. Their empirical work shows that spillovers through vertical backward linkages between multinationals and domestic firms exist in all 17 countries. They also found evidence to support the existence of positive spillover effects from horizontal FDI. Using annual data on 44 host countries over the period 1983-2003, Beugelsdijk, Smeets, and Zwinkels (2008) argue that FDI generated horizontal and vertical effects have a significant positive impact on host developed countries but those benefits to host developing countries are insignificant. Liu (2008) examines the effect of technology transfer arising from FDI in the Chinese manufacturing sector, finding that spillovers through backward and forward linkages have a positive effect on productivity of domestic firms and backward linkages are the most important channel through which technology spills over from foreign to domestic firms. Using an event history technique, Lin (2010), focuses on the determinants of Taiwanese investment in China's IT industry, Du, Harrison, and Jefferson (2012) examine the impact of FDI-related horizontal and vertical spillovers on the productivity of Chinese manufacturing firms. They find that horizontal spillovers have a weak effect on productivity but the impact of vertical spillovers is statistically significant.

In summary, the empirical evidence regarding the impact of FDI generated spillovers on host economies is mixed (see Table 1, which includes only some of the recent studies). A review of earlier studies can be found in Meyer and Sinani (2009), Table 1. Some existing studies suggest that the impact of FDI generated spillover effects also depends on the absorptive capacity of host countries. This means that the impact of FDI spillovers on host countries can vary from country to country and from industry to industry.

#### 2.1. FDI in Vietnam

Due to lack of data, only a few studies attempt to investigate the impact of FDI on Vietnam. These studies consider a number of issues. For example, Jenkins (2006) considers the direct effect of FDI on employment growth in Vietnam (especially in early years), finding only a limited positive effect. Athukorala and Tien (2012) suggest that, in recent years, FDI inflows have played an important role, not only in providing investment capital but also in stimulating export growth. Le (2005) examines the effect of FDI on labor productivity of 29 Vietnamese manufacturing industries over the period 1995–2002. Le found FDI's effect on productivity to be positive. Nguyen and Nguyen (2007) used firm-level data to investigate the effect of FDI spillovers. They conclude that FDI has resulted in improved labor productivity. Nguyen et al. (2008) used firm level

**Table 2**FDI in regions of Vietnam (1988 to 2005).
Source: GSO (2013)

Regions of Vietnam	Number of FDI projects	FDI in million US dollars at constant prices	FDI projects in percentage of the total
Red River Delta	1239	14884.3	20.10
North East	291	1945.5	4.72
North West	23	100.6	0.37
North Central Coast	90	1368.8	1.46
South Central Coast	280	3476.3	4.54
Central Highlands	94	1001.1	1.52
South East	3831	32380.5	62.15
Mekong River Delta	268	1812.9	4.34

data to investigate the effect of FDI-related horizontal, backward and forward spillover effects in Vietnam's manufacturing and services sectors. However, they do not consider the effect of FDI-related spillovers on TFP growth. The same applies to the work of Athukorala and Tien (2012). Anwar and Nguyen (2010a) found that a two-way mutually reinforcing relationship between output growth and FDI growth exists in Vietnam. However, TFP is a better measure of productivity (Lipsey & Carlaw, 2004). Other studies on Vietnam include Binh and Haughton (2002), Giroud (2007), Anwar and Nguyen (2010b, 2011a, 2011b), and Nguyen and Sun (2012). These studies have focused on the impact of FDI on trade and export performance. Unlike the existing studies, this paper focuses on the impact of indirect effect of FDI on all eight regions of Vietnam and TFP is used as a measure of productivity.

FDI in Vietnam concentrates mostly in the key economic regions, namely Red River Delta, North East, South East, and Mekong River Delta, while remote regions receive only a small fraction of FDI (see Table 2).

Table 2 shows that differences between regional economic growth rates and per-capita income across regions are significant. In 2005, the per-capita income in South East was more than twice the national average. The per-capita income in Red River Delta was the same as the national average, but income in North West was approximately 40% of the national average (see Table 2). These differences can influence the magnitude of FDI-related horizontal and vertical spillovers. Accordingly, a region-wise analysis can present a better picture of the benefits from FDI (Table 3).

The broad hypotheses tested in the following section include (1) the impact of FDI and FDI-related spillovers on productivity of domestic firms varies across the regions of Vietnam and (2) absorptive capacity (as measured by human capital, technology gap with foreign firms and the level of financial development) enhances the FDI spillover effects across the regions of Vietnam.

**Table 1** FDI and economic performance — A summary of some recent studies.

Bwalya (2006)	1993-1995	Zambia	Panel data	FDI spillovers through horizontal channels have a positive impact on firm output.
Abu-Bader and Abu-Qarn (2008)	1960-2001	Egypt	Time series	There is a bi-directional relationship between financial development and economic growth.
Alvarez and Lopez (2008)	1990-1999	Chile	Panel data	Exporting leads to positive spillover effects.
Beugelsdijk et al. (2008)	1994-2003	44 countries	Panel data	Vertical FDI has a stronger positive impact on productivity.
Bitzer et al. (2008)	1989-2003	17 OECD Countries	Panel data	FDI linked backward spillovers have a positive impact on productivity.
Liu (2008)	China	1995–1999	Panel data	FDI can have a negative impact on productivity in the short term but its impact on long term productivity is positive.
Barbosa and Eiriz (2009)	Portugal	1994-1999	Panel data	FDI spillovers do not have a significant impact on firm productivity.
Suyanto et al. (2009)	Indonesia	1988-2000	Panel data	FDI and FDI-related spillovers have a positive impact on productivity.
Anwar and Nguyen (2010)	1990-2007	Vietnam	Panel data	There is a bi-directional relationship between FDI and economic growth.
Wang (2010)	1973-1991	Canada	Panel data	FDI generates strong positive impact on productivity.
Anwar and Nguyen (2011a)	2004	Vietnam	Cross section data	FDI has contributed to increase in net exports in the post Asian crisis period.
Anwar and Nguyen (2011b)	2000-2007	Vietnam	Panel data	FDI spillovers can have positive impact on export performance of domestic firms.
Nguyen and Sun (2012)	2003-2004	Vietnam	Panel data	FDI spillovers improve firm export performance.
Athukorala and Tien (2012)	2000-2005	Vietnam	Time series data	FDI has a positive impact on real output.
Du et al. (2012)	1998-2007	China	Panel data	FDI benefits local firms through both vertical and horizontal linkages.
Fernandes and Paunov (2012)	1992-2004	Chile	Panel data	FDI has a positive impact on productivity of firms in both manufacturing and services sectors.

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