



# Foreign direct investment spillover effects in China: Are they different across industries with different technological levels? ☆



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## ARTICLE INFO

### Article history:

Received 13 June 2012  
Received in revised form 23 May 2013  
Accepted 26 May 2013  
Available online 4 June 2013

### JEL classification:

F21  
O33

### Keywords:

FDI spillover effects  
Technological level  
Panel data analysis  
Asia  
China

## ABSTRACT

Despite the impressive magnitude of inward FDI in China, empirical studies on its spillover effects are relatively scarce and have failed to find conclusive evidence. By exploring a vast firm-level panel dataset, this study aims to test empirically whether the horizontal and vertical FDI spillover effects are different among industries classified by their technological levels. Key findings are as follows: First, foreign investments in the same industry are more likely to engender negative influences on the local Chinese firms. Second, these negative horizontal effects are particularly prominent in low technology sectors. Third, the effects of foreign investments in other industries appear to be positive and significant relatively evenly across industries with different technological levels. Considered in the context of Chinese policies on FDI, these findings suggest that government policies could be a crucial factor in taking advantage of FDI spillovers.

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## 1. Introduction

As global competition continues to intensify, foreign direct investment (FDI) is increasingly becoming a crucial strategic option for multinational enterprises (MNEs) to prevail against competitors. On the other hand, policy makers, particularly in developing countries, have a propensity to regard inward FDI as a useful springboard which helps to achieve economic takeoff and leap into advanced economies (Park & Ghauri, 2011). The expected positive effects of FDI on economic development include the following: the inflow of new technological and managerial knowledge that has not been available in host markets commonly promotes organizational renewal and strengthens sustainable competitive advantage (Inkpen, 1998); FDI is often referred to as the most stable and largest component of capital inputs (Adams, 2009); employment creation has also been given as a reason for the importance of FDI inflows (Kobrin, 2005). Due to the combination of mutual interests between both MNEs and host countries, the volume of FDI has increased dramatically in the past two decades.

In particular, China has attracted huge scholarly attention from international business commentators, as it has been the largest FDI recipient in the developing world. As a result of active government measures to promote FDI inflows, FDI in China has grown rapidly since the early 1990s (for overviews on FDI policy and trends in China, see Fung, Iizaka, and Tong (2004), Lemoine (2000),

☆ This research was supported by Kyungsoong University research grant in 2013.

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Long (2005), Mantzopoulos and Shen (2011)). For instance, annual averages of US\$ 2 billion per year during 1979–1984 have steadily and rapidly grown to more than US\$ 193.7 billion in 2006. Accordingly, the total amount of FDI actually utilized in China has also grown from about an average of US\$ 0.8 billion during 1979–1984 to more than US\$ 92.4 billion per year in 2009. In addition, China has emerged as the second largest FDI recipient (the United States being in first place) in 2009 (UNCTAD, 2010). As a consequence, foreign investment in China has become an important source for investment in fixed assets.

FDI may not only affect the national business environment, but also influence the operations of local firms: two effects have been distinguished and attracted special attention of researchers. The first is the intra-industry spillovers that would arise by the presence of FDI in the same sector, better known as “horizontal effects” (Konings, 2001). Discussions that try to identify channels for horizontal effects postulate that FDI may improve the productivity of local firms in the same sector through knowledge acquisition from MNEs and the competition intensified by the entry of foreign investment may result in the enhancement of organizational efficiency of local firms (Aitken & Harrison, 1999). The second is the inter-industry spillovers, better known as “vertical or linkage effects”, which could occur when foreign firms in other sectors create linkages with local firms through the creation of supply and demand chains (Blalock & Gertler, 2008). A partial list of the channels through which the vertical spillovers take place includes: foreign buyers' direct assistance to local suppliers to procure qualified supplies, higher requirements for product quality providing an incentive for local suppliers to upgrade their management and technology, strengthened competition among potential local contractors to contract with foreign firms, increased demand for intermediate goods that could create other positive effects such as economies of scale, and so on (Javorcik & Spatareanu, 2005).

Unlike the theoretical definitiveness of FDI spillovers, a number of empirical studies examining productivity spillovers fail to find conclusive evidence. That is, the majority of studies for developing and transitional economies either fail to find significant positive effects or even uncover evidence of negative intra-industry effects (i.e., horizontal effects).<sup>3</sup> A partial list of those studies includes Aitken and Harrison (1999) on Venezuela, Haddad and Harrison (1993) on Morocco, Djankov and Hoekman (2000) on the Czech Republic, Javorcik and Spatareanu (2008) on Romania, and Konings (2001) on Bulgaria, Romania and Poland. These studies suggest that FDI often causes a negative effect on local firms by increasing competitive pressure and taking market share away from firms in the host economy. Fortunately, evidence of positive vertical effects in developing economies seems to be stronger in empirical studies and previous literature generally finds that local suppliers to foreign buyers are the major beneficiaries of FDI inflows (see Javorcik (2004) on Lithuania, Javorcik and Spatareanu (2008) on Romania, Giroud (2007) on Malaysia, and Blalock and Gertler (2008) on Indonesia). Bwalya (2006) and Kugler (2006) also find little evidence in support of positive horizontal effects but find significant vertical effects of FDI in Zambia and Colombia, respectively. To sum up, the wisdom derived from the previous studies tells us that asymmetric FDI spillovers have positive vertical but negative horizontal effects.

With respect to China, the empirical evidence for the question about FDI effects on local firms is much more complicated. In other words, some researchers perceive that inward FDI into China has positively contributed to economic development in the country directly by adding capital formation. Indeed, the advocates of this view maintain that FDI inflows in China have played a pivotal role in promoting exports, investment and employment, leading to faster economic growth in China (Banerjee, 2006; Chen, 1999; Ghauri & Firth, 2011; Lardy, 2000; Lemoine, 2000; Tseng & Zebregs, 2002; Zebregs, 2003; Zhang & Song, 2000). Furthermore, some of them also argue that it has contributed to GDP growth in China indirectly by creating positive spillover effects from foreign invested firms (FIFs) to local firms (Cheung & Lin, 2003; Hu & Jefferson, 2002; Liu, 2002; Tseng & Zebregs, 2002; Zebregs, 2003). In contrast, many other studies challenge this positive effect of FDI in China, for example by arguing that the transference of technology from FIFs to local firms, if any, has yielded only marginal positive influences (Chen, Chang, & Zhang, 1995; Wei, 2002; Young & Lan, 1997). The third school takes a middle path. For instance, after investigating China's electronics industry, Buckley et al. (2006) suggest that the productivity gains from inward FDI in China have been confined only to certain, but not all, groups of firms.

In addition, a more problematic inconsistency resides in the examinations exploring the horizontal effects of FDI in the Chinese market. Regarding vertical effects of FDI, all studies available for the Chinese economy confirm that FIFs have had significant positive vertical effects on local firms (Du, Harrison, & Jefferson, 2011; Lin, Liu, & Zhang, 2009; Liu, 2008). Contrary to this strong agreement among researchers on the vertical effects in China, evidence suggested on the horizontal effects of FDI in the country is mixed and inconclusive. Du et al. (2011) find positive horizontal effects, even if weak and less robust. However, some other studies show that the positiveness of horizontal effects of FDI in China is conditional on the origin of FDI and industry, or both: Abraham, Konings, and Slootmaekers (2010) uncover evidence of positive horizontal FDI spillovers on average in the Chinese manufacturing industry, but the impacts of FDI originating from Taiwan, Macao and Hong Kong (TMH) on exporting firms are negative. In a similar vein, Lin et al. (2009) demonstrate negative horizontal spillover effects of FDI from TMH and positive horizontal spillover effects of FDI from non-TMH (mostly from OECD countries).<sup>4</sup> In a different context, Girma, Gong, and Görg (2006) also document that inward FDI in the same sector has a negative effect, whereas it has a positive effect on innovative activities of state-owned enterprises (SOEs) that export, invest in human capital or R&D, or have prior innovation experience. The conditional nature of positive horizontal effects in China has even been found over time: Liu (2008) detects that an increase in FDI at the four-digit industry level lowers the short-term productivity level but raises the long-term rate of productivity growth of local firms.

<sup>3</sup> The overall horizontal effects will turn out to be negative when this negative competition effect dominates the positive ones. As shown, a big body of literature empirically demonstrates and reports overall negative horizontal effects probably caused by this competition effect.

<sup>4</sup> In a similar vein, Javorcik and Spatareanu (2011) formulates a hypothesis that the origin of FDI may matter for spillovers to domestic producers supplying intermediate inputs and empirically demonstrates the validity of this hypothesis for Romania. This study also provides two rationales for this pattern in terms of the distance between the host and the source economy and preferential trade agreements, both of which can affect investors' incentive to be sourced locally.

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