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International reverse spillover effects on parent firms: Evidences from emerging-market MNEs in developed markets [☆]

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Summary This study examines whether and to what extent emerging-market multinational enterprises (EM MNEs) use outward foreign direct investment (FDI) in a developed market to capture knowledge spillovers so as to improve their technological capabilities at home. We refer to this as a “reverse spillover” effect on parent firms, and develop the idea based on the knowledge-seeking motive for FDI by EM MNEs. Extending previous studies that have identified the knowledge-seeking motive and have also provided some evidence for its validity, our study focuses on the effects of such FDI on technological capabilities of EM MNEs at home. Using a panel dataset of 493 EM MNEs over the period 2000–2008, and controlling for possible endogeneity, we find evidence supporting the reverse spillover effect: EM MNEs that have subsidiaries in host developed markets richer in technological resources (measured by R&D investments and R&D employment) exhibit stronger technological capabilities at home. We discuss the implications of our study for research and practice related to the internationalization of EM MNEs.

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Introduction

The penetration of emerging market multinational enterprises (EM MNEs) into developed markets (DMs) through outward foreign direct investments (OFDI) is a significant but relatively understudied phenomenon (e.g., Bertoni, Elia, & Rabbiosi, 2008; Buckley, Elia, & Kafourous, 2010; Yamakawa,

Peng, & Deeds, 2008). An important motivation for such OFDI is to access advanced knowledge and capabilities available in DMs and to utilize them to improve the technological and innovative capabilities of the parent companies in emerging markets (Deng, 2009; Luo & Tung, 2007; Makino, Lau, & Yeh, 2002; Mathews & Zander, 2007; Rui & Yip, 2008). This “knowledge seeking” motivation of EM MNEs has been supported by recent studies that have investigated EM MNEs’ entry decisions (e.g., location choice) as a function of technological endowments in host markets (Bertoni et al., 2008; Buckley et al., 2007). While it is important to investigate the impact of knowledge seeking on EM MNEs’ entry decisions, it is equally important to understand whether investments in DMs have actually generated positive spillover effects that

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augment technological capabilities of EM MNEs at home. To our knowledge, however, no studies have investigated the latter topic. Our study aims to fill this literature gap.

Specifically, we hypothesize that OFDI in knowledge intensive DMs will positively affect technological capabilities of EM MNE parent firms, which we refer to as reverse spillover effects. Positive reverse spillover effects are realized through knowledge spillovers to EM subsidiaries in a developed market and by the subsequent knowledge transfer from these subsidiaries to their parents in EMs. Based on the knowledge transfer literature, we highlight that EM parent firms tend to increase their R&D spending level in order to absorb knowledge transferred from the subsidiaries, as well as to combine it with their existing knowledge to innovate, and that increased R&D spending for these two purposes presumably enhances parent firm' technological capabilities (Cohen, & Levinthal, 1990; Szulanski, 1996; Tsai, 2001; see Michailova & Mustaffa, *in press*, for a literature review). The reverse spillover effect proposed in our study contrasts with the more conventional approach to spillover benefits for firms in emerging markets which focuses on spillovers from DM MNEs investing in emerging markets to host market firms (for reviews, see Globerman & Chen, 2010; Meyer & Sinani, 2009).

Empirically, we utilize a panel dataset consisting of 493 MNEs from 20 different EMs between 2000 and 2008. We use R&D expenditures of the parent firm in the home market to measure its technological capabilities. We employ three measures (R&D investment, R&D employment, and number of patents) to capture the level of technological resources in a host market, all adjusted for industry. Our primary focus is on the relationship between parent-firm R&D expenditures and the level of technological resources in the host market. Because it is possible that technology flows from the parent firm at home to the host market, we are careful to control for possible endogeneity in our empirical work. We use instrumental variable methods and Hausman tests to ensure that host-market technological measures are exogenous. Using panel Tobit regressions (Tobin, 1958), we find evidence supporting our main prediction that technological resources related to R&D investments and R&D employment in a host market-industry have a significant, positive effect on the R&D expenditures of the EM parent companies that have invested in the host market-industry.

Our study contributes to the FDI literature in at least two important aspects. First, our study contributes to the literature that investigates FDI spillover effects on the technological capabilities of EM firms. The majority of this literature has focused on spillover effects of inward FDI in EMs on technological improvement of firms in the host markets (e.g., Aitken & Harrison, 1999; Girma, Gong, & Gorg, 2009; Globerman, 1979; Haddad & Harrison, 1993; Li, Chen, & Shapiro, 2010; Zhang, Li, Li, & Zhou, 2010; for a review, see Meyer & Sinani, 2009). This literature has suggested that inward FDI tends to generate knowledge spillovers that benefit local firms in EMs as host markets by enhancing their technological capabilities (Cantwell, 1989; Caves, 1996). Although there have been studies of reverse spillover effects on foreign subsidiaries (Driffield & Love, 2003), the FDI literature has yet to examine the potential reverse capability benefits of OFDI on the EM MNE parent (Globerman & Chen, 2010; Meyer & Sinani, 2009).

Second, our study contributes to the literature on OFDI of EM MNEs. Previous studies have largely concentrated on the influence of technological resources in a host market on entry-related decisions (Bertoni et al., 2008; Buckley et al., 2007). For instance, Bertoni et al. (2008) suggested that firms from Brazil, Russia, India, and China use horizontal acquisitions in developed markets to access technological resources. Buckley et al. (2007) argued that Chinese MNEs are more likely to locate in a foreign market that has rich technological endowments. Our study is among the first attempts to examine the post-entry consequences of EM MNEs' investments in DMs.

We adopt three alternative measures for host-market technological resources, and find that EM MNEs that have subsidiaries in host markets that are rich in R&D-based resources tend to benefit significantly from knowledge spillovers and knowledge transfer to the parent. However, EM MNEs that have subsidiaries in patent-rich host markets do not benefit in the same way. These results suggest more nuanced conclusions regarding reverse spillovers. Specifically we argue that R&D input-related knowledge embedded in researchers, local universities and business networks is relatively tacit and location bound and can therefore be accessed only through locational choices. Patents, on the other hand, are not only codified and tradable but can also be accessed via market transactions (e.g., licenses) by EM MNEs even when they have no presence in the host markets where the patents are created.

The rest of the paper proceeds as follows. We review the literature and develop our main hypothesis in section two, discuss empirical methods in section three, and present the results in section four. We conclude the study by discussing its implications and potential future extensions.

Theory and hypothesis development

Knowledge seeking of emerging market firms in developed markets

Knowledge seeking FDI is geared less to exploiting an existing ownership advantage of an MNE, and more to augmenting firm specific advantages by the acquisition of new knowledge (Cantwell, 1989; Dunning, 1981; Dunning, 2001; Wesson, 1999). Consistent with the knowledge seeking motivation, research studies have found that firms from technologically lagging countries tend to invest in countries with stronger technological positions (Florida, 1997; Kogut & Chang, 1991; Kuemmerle, 1999; Serapio & Dalton, 1999). For instance, Kogut and Chang (1991) observed that Japanese firms entered industries in the United States that have stronger R&D capabilities than in Japan. Similarly, Kuemmerle (1999) found that MNEs are inclined to establish R&D laboratories in a host market when the country commits more to R&D activities and offers more qualified human resources than the MNE's home market.

The knowledge seeking motivation for OFDI is particularly emphasized by the literature on the internationalization of firms from emerging and developing markets. This literature suggests that firms use international expansion as a "springboard" to access knowledge overseas, to compensate for their competitive weaknesses, and to overcome

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