Chinese and Indian MNEs' shopping sprees in advanced countries. How good is it for their innovation output?

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Abstract

Acquisition of firms in advanced countries by emerging market multinational enterprises (EMNEs) is booming. Extant research shows that strategic asset seeking is a major motivation EMNE investments, and technological knowledge is much sought-after. EMNEs aim at accessing knowledge either directly from the acquired firms or by tapping into the local knowledge available in the regions where the target firms are located. In this paper, we investigate the post-acquisition innovative output of Chinese and Indian medium to high tech cross-border acquisitions in Europe, Japan, and the U.S. over the period 2003–2011. We find that unless EMNEs have strong knowledge bases prior to the acquisition, EMNEs benefit neither from acquiring very innovative target firms nor from investing in the most innovative regions.

INTRODUCTION

Due to a sharp trend toward outward investment (UNCTAD, 2015), emerging-market multinational enterprises (EMNEs) are attracting increasing attention from scholars of international business and management (see e.g. the special issue edited by Cuervo-Cazurra, 2012a). Roughly a third of the investment flows from emerging economies goes towards advanced countries such as the U.S., Europe, and Japan (UNCTAD, 2015; The Economist, 2011)[1]. This phenomenon has caught the attention of policy makers in those target countries, who fear that the growing power of EMNEs may come at the expense of their domestic firms' competitiveness and control over strategic assets such as patents and technological skills (Berger *et al*., 2011; Luo and Tung, 2007; Zeng, 2016).

These concerns often are based on anecdotal evidence related to some leading firms being taken over by EMNEs – see the cases of Jaguar and Land Rover acquired by the Indian Tata Motors in 2008, the acquisition of Volvo by Geely Automobile of China in 2010, and the recent acquisitions of the Italian tire producer Pirelli in 2015 and the Swiss pesticides and seeds producer, Syngenta, in 2016 by the state-owned group ChemChina (China National Chemical Corp). Beyond this evidence, international business research on the consequences of such acquisitions on the acquiring EMNEs' innovative outcomes is relatively scant. Most research focuses mainly on the financial impacts of such acquisitions (see e.g. Aybar and Ficici, 2009; Buckley, Elia, and Kafouros, 2014; Chen, 2011; Cozza, Rabellotti, and Sanfilippo, 2015; Gubbi *et al.*, 2010; Lebedev *et al.*, 2015; Nicholson and Salaber, 2013), with a few case studies investigating innovative impact. Those works explore EMNEs' post-acquisition[2] learning and innovation processes, pointing to the problems encountered by EMNEs in exploiting the pool of innovation knowledge in the acquired firm (e.g. Awate, Larsen, and Mudambi, 2012, 2014; Bonaglia, Goldstein, and Mathews, 2007; Duysters *et al*., 2009; Hansen, Fold, and Hansen, 2016; Kedron and Bagchi-Sen, 2012; Nam and Li, 2012). What is missing is large-scale analysis of EMNEs' innovative output in the wake of an acquisition. For example, little is known about how much EMNEs benefit from cross-border acquisitions (CBAs) from exploiting the

[1] In 2012, for instance, The U.S., Europe, and Japan accounted for a third of the stock of outward foreign direct investments (FDI) from Brazil, Russia, India, and China. See also UNCTADSTAT, http://unctadstat.unctad.org/EN/Index.html, last accessed 20 February 2016.

[2] In this paper we use both 'post-acquisition' and 'post-deal' to refer to the period following a cross-border acquisition.

acquired firm's knowledge resources and those on the regional ecosystem in which the acquired firm is located. EMNEs can tap into advanced country knowledge and technological assets by accessing knowledge directly from the acquired firm and by sourcing knowledge from organizations (e.g. universities, suppliers, public-private service providers) located in acquired firm's region (Beugelsdijk and Mudambi, 2013; Cantwell and Iammarino, 2001; Dau, 2013; Iammarino and McCann, 2013; Meyer, Mudambi, and Narula, 2011; Mudambi and Swift, 2011). A focus on both the target firm and its location (region) is justified by the fact that acquiring and acquired firm and resources available in the region are likely to differ in their innovativeness, and therefore in their capacity to contribute to the EMNEs' innovative output after the deal.

The question of whether "more is better", that is whether, other things being equal, the acquiring EMNEs benefits more from investing in the most resource-rich contexts (Barnard, 2010) has been relatively overlooked. The common contention is that the more innovative the target firm, the more it is likely to contribute valuable knowledge to the innovation activities of the acquirer, because this latter is able to draw on a richer pool of knowledge and skills. Similarly, the greater the stock of accumulated knowledge in the region, the more the region can be expected to generate knowledge spillovers which increase the EMNE subsidiary's learning and innovation processes after the deal (Breschi and Malerba, 2001; Porter, 2000; Tallman *et al*., 2004).

In this paper we challenge this common perspective, and challenge the idea that investing in a highly innovative firm and its home region makes the acquiring EMNE more innovative. The novelty of our paper is that it combines organizational learning perspectives (Nelson and Winter, 1982; Cohen and Levinthal, 1990; Bell and Pavitt, 1993; Lane and Lubatkin, 1998) with social status theory (Podolny, 1993; Podolny and Phillips, 1996; Gould, 2002), and applies them to the context of EMNEs. Exant research considers that such firms suffer from the liability of emergingness (LOE), defined as the extra-burden EMNEs face when they invest in advanced countries due to their emerging economy origins (Madhok and Kayhani, 2012; Ramachandran and Pant, 2010). We propose that the LOE engenders status imbalances between EMNEs and key constituencies in target firms and target regions in advanced countries, and that the more innovative the target firm and region, the more severe will be those status imbalances. We contend that this will inhibit the

transfer of knowledge from the target firm and/or region to the EMNE, reducing its post-deal innovative output. Finally, we explore whether the strength of the EMNEs' knowledge base acts as a moderating factor in the relationship between the innovativeness of the target firm or region, and the EMNE's post-deal innovative output. We suggest that the EMNEs' knowledge base prior to acquisition will both ease the absorption of locally available knowledge in the target firm and/or region (Cohen and Levinthal, 1989), and reduce status imbalances by signaling to key constituencies in the target firm and its region, the EMNEs' technological capabilities.

The context of our research is the universe of majority stake CBAs accomplished by Chinese and Indian medium to high-tech firms in Europe (EU28), Japan, and the U.S. during 2003–2011. Our focus on medium to high-tech firms is justified by the need to select deals that most likely reflect the EMNE's interest in acquiring and building on the target firm's and region's technological assets, in line with earlier research by Piscitello, Rabellotti, and Scalera, 2015. Our sample includes 466 deals, 20 percent involving China, and 80 percent involving India. We find support for most of our hypotheses, and show that the more innovative the acquired firm, the lower is the EMNE's innovation output after the deal. We find also that the level of the EMNEs' knowledge base prior to the deal positively moderates this relationship, and that their post-deal innovative output benefits from investment in more innovative regions but only if the EMNE has a pre-existing strong knowledge bases. We believe that our study contributes to two strands of scholarly research. First, it contributes to research on the internationalization of EMNEs (e.g. Cuervo-Cazurra, 2012a; Ramamurti, 2012), by analyzing the impacts of CBAs and by connecting social status theory with LOE. Second, it adds to the recent research on international business related to understanding how sub-national discontinuities affect multinational enterprises' (MNEs) strategic choices and outcomes (Beugelsdijk and Mudambi, 2013; Iammarino and McCann, 2013). We discuss some implications for managers and policy makers in the conclusion.

BACKGROUND LITERATURE

The innovative impacts of CBAs

In international business and strategic management studies, mergers and acquisitions (M&As) in general, and CBAs in particular, have been investigated widely in the context of advanced economies as a strategy to access and appropriate the

technological assets of target firms (Birkinshaw, Bresman, and Håkanson, 2000; Graebner, Eisenhardt, and Roundy, 2010). Scholars have adopted different theoretical lenses to investigate M&As and their impact on the innovation capacity of the firms involved. Drawing on the resource- and knowledge-based views of the firm, and organizational learning theories (Cohen and Levinthal, 1990; Grant, 1996; Lane and Lubatkin, 1998, Kapoor and Lim, 2007; Nelson and Winter, 1982), scholars have argued that M&As grant firms access to valuable knowledge, which fosters long-term competitive advantage. Among the possible means for appropriating external knowledge and technologies, CBAs are described as a potentially effective channel to transfer tacit knowledge from the acquired (i.e. target) firm to the acquirer firm, and *vice versa* (de Man and Duyster, 2005). Using these theoretical lenses, the innovative outcomes are deemed to be particularly valuable if the acquirer and target firms are successful at integrating their knowledge bases and redeploying their respective technological assets (e.g. Ahuja and Katila, 2001; Cassiman *et al.*, 2005; Cloodt, Hagedoorn, and Van Kranenburg, 2006; Makri, Hitt, and Lane, 2010; Valentini and Di Guardo, 2012; Colombo and Rabbiosi, 2014). Some studies show also that the acquirer's abilities to identify targets with the desired resources, and get the timing of the merger right, are important conditions for success (see Desyllas and Hughes, 2010; Graebner *et al.*, 2010). Other insights from M&A and CBA research suggest that acquisitions are beneficial because they bring additional capital from the investing firm, boost R&D projects, and provide opportunities for achieving economies of scale and scope in innovation activities (Karim and Mitchell, 2000; Valentini, 2012).

Despite these compelling arguments, the empirical evidence on the impact of acquisitions on the innovative output of the acquiring firm is inconclusive, and generally points to either a neutral or a negative impact (de Man and Duyster, 2005). Hall (1990) and Hitt *et al.* (1991, 1996) were among the first scholars to find a negative impact of acquisition on different innovation-related measures. Agency theory and incentive-based perspectives are often used to explain why R&D managers, scientists, and engineers may be less productive after an acquisition. One reason might be that the re-organization of activities can lead to a reduction in R&D personnel, and a restructuring of the acquired R&D operations involving replacement of R&D top managers. In the absence of key scientists and engineers, "the remaining R&D personnel become demoralized" (Colombo and Rabbiosi, 2014: 1041), and their

innovative performance can deteriorate.

At the same time, agency theory suggests that because the integration between the acquirer and the target may increase the number of organizational units and actors whose actions may influence performance (due to duplication of functions and divisions), individual contributions to innovation are less likely to be identified and rewarded—at least in the short term. This can induce free riding behaviors, especially among talented employees whose skills and efforts are tacit and hard to track (Puranam, Singh, and Zollo, 2006). Other interpretations refer to the disruptive effect of and conflicts arising from routines inherited from an acquisition, on different levels of the organization which may negate the potential benefits of the acquisition. Furthermore, the integration of acquirer and target may be complex and costly, diverting resources from strategic activities such as R&D and innovation. During the post-acquisition phase, scholars have noted that managers can become stressed about the urgency to show that the acquisition is successful, and to privilege investments more likely to bring short term rewards, over risky and uncertain long term investments in more strategic areas such as innovation (Valentini, 2012).

Finally, research in international business focuses on acquirer-target cultural differences— i.e. differences in beliefs, values and practices among the combined units (Björkman, Stahl, and Vaara, 2007). Some suggest that the greater the cultural distance between acquirer and target, the lower the likelihood of being about integrate the assets (e.g. Morosini, Shane, and Singh, 1998)—a condition that eventually influences the success of the acquisition. In particular, cultural distance can hamper the development of a shared identity and positive attitudes between the two firms (Birkinshaw *et al.*, 2000). Other perspectives draw on the resource-based view of the firm to stress that distance can facilitate the sharing of potentially valuable and complementary capabilities embedded in different cultural or institutional environments (Björkman *et al*., 2007; Stahl and Voigt, 2008), and envisage a positive relationship between cultural distance and the capacity of firms to transfer capabilities and resources[3].

Overall, by focusing mostly on CBAs from an advanced country perspective, previous research highlights a set of conditions that could facilitate or hamper the

[3] Conceptuallly, these studies suggest that while cultural distance conventionally is thought of as reflecting national differences between the firms original home and host countries (see Hofstede, 1980), it is possible that organizational cultural distance between firms can hamper post-acquisition integration (Sarala and Vaara, 2010).

acquiring firm's post-acquisition innovative performance; however, the results are not conclusive. In addition, research investigating the outcomes of CBAs undertaken by EMNEs—the focus of our paper—is limited. We discuss these outcomes in the next section.

The acquisition challenges faced by EMNEs

Extant international business research shows that EMNEs often invest in countries with more advanced technology, skills, and management capabilities than in the home country (Cui *et al*., 2014; Deng, 2009, 2010; Luo and Tung, 2007). Following the seminal contribution of Dunning (1993), we define these investments as "strategic asset seeking" since they are intended to acquire intangible overseas assets to enable catch up and eventually overtaking of global incumbents (Meyer, 2015)[4]. Research on EMNEs' asset-seeking motivations is abundant (see among others Amighini, Rabellotti, and Sanfilippo, 2013; Buckley *et al.,* 2007; Hitt *et al.,* 2000; Makino, Lau and Yeh, 2002; Piscitello, Rabellotti, and Scalera, 2015; Rabbiosi, Elia, and Bertoni, 2012), with most focusing on the naturerather than the outcome of these investments.

When internationalizing in advanced economies, EMNEs, like other MNEs, suffer from the liability of foreignness (LOF) due to the geographical, cultural, and institutional distance between the home and host countries (Kostova and Zaheer, 1999; Zaheer, 1995; Hymer, 1976). However, EMNEs face also an additional burden and specific challenges related to emerging country origin, which reduces their legitimacy among advanced economy constituencies (Madhok and Kayhani, 2012; Ramachandran and Pant, 2010).

Previous research suggests that the LOE can hamper the successful integration of operations in both the target firm and the acquiring EMNE, since it can undermine the formation of trusting relationships between respective managers. For example, in a study of the takeover of two world-leading Danish biomass power firms by a Chinese MNE, Hansen *et al.* (2016) provide examples for lack of trust between and diffidence in managers in target firms with respect to their Chinese acquirer. The authors highlight several barriers to knowledge exchange and the acquisition of innovative capabilities including issues related to trust, property rights protection, and

[4] Strategic asset seeking motivations are not exclusive to EMNEs; MNEs generally increasingly use their international networks to reinforce competitive advantage and/or create new advantages (Cantwell, 1995; Piscitello, 2011).

unfavorable communication patterns. They provide evidence of deliberate 'knowledge protectionism' exhibited by managers in the Danish subsidiaries:

> Danish engineers obstructed knowledge sharing ... Giving away key insights and accumulated experiences was therefore simply not in their immediate interest. All of this meant that few relationships of trust were established across the departments through which knowledge sharing could be facilitated.(Hansen *et al.*, 2016: 17)

Anecdotal evidence from other cases confirms the presence of reluctance among managers of acquired firms to transfer knowledge to the acquiring EMNE, often citing restrictiveness of host country intellectual property rights law as a justification (see e.g. Awate, Larsen, and Mudambi, 2014). These cases highlight the problems involved in negotiations between the EMNE and an acquired firm's managers for access to knowledge assets, and the how this hinders the transfer of valuable knowledge resources.

The LOE is exacerbated further by EMNEs' notorious technological backwardness. Although many EMNEs are able to manage cutting-edge technologies, many are unable to generate radical innovations (Bell and Pavitt, 1993; Awate *et al.*, 2012, 2014; Luo and Tung, 2007; Tan and Mathews, 2014). This suggests a lack of the absorptive capacity (Cohen and Levinthal, 1990) required to exploit the acquired firm's knowledge.

The LOE and weak absorptive capacity can hamper EMNEs' capacity also to take advantage of the knowledge available in the target region whose actors (firms, universities, etc.) may represent critical sources of technological assets and skills for the EMNE (Beugelsdijk and Mudambi, 2013; Dau, 2013; Iammarino and McCann, 2013; Meyer *et al*,, 2011; Mudambi and Swift, 2011). Since the absorption of locally embedded knowledge is not automatic—the knowledge is not 'in the air' (Giuliani, 2007)—MNEs may not be best place to exploit local knowledge successfully. This requires local actors who are willing to share their knowledge with the EMNE or its local affiliates—a condition that cannot be taken for granted.

These considerations indicate that EMNEs may face special challenges when undertaking CBAs targeting advanced country firms and regions. We elaborate our theoretical framework and hypotheses in the next section.

HYPOTHESES

Target firm innovativeness

In this section, we expand on our argument that the more innovative the target firm, the less innovative will be the acquiring EMNEs following acquisition. We combine the notion of LOE with social status theory and social status imbalances (Podolny, 1993; Podolny and Phillips, 1996; Gould, 2002). In line with existing research, we define status as perception of the relative qualities of a firm in a given market or organizational field[5]. Accordingly, high-status firms are generally associated with higher esteem and respect than lower status firms. This notion relies on the idea that a firm's inherent qualities are not fully observable since complete information on a firm's resources and activities is either not readily available or is costly to gather (Gould, 2002). Status considerations often orient firms' choices about with whom to establish connections and market transactions, which in turn, condition their capacity to gain from these relationships (Podolny, 1993). However, while status is socially constructed, it is not built in a vacuum, and depends partly on past demonstrations of firm quality and the signals the firm sends on its quality (Podolny and Phillips, 1996).

Innovation is an important signal based on its high visibility and impact on the perceptions of interested constituencies. Google, Apple, and BMW are perceived as the world's most reputable[6] firms (Global RepTrack 100, 2015), due mostly to their visibility as innovative firms producing innovative products and services. For instance, according to Bill McAndrews, Head of BMW's Group Corporate Communications, BMW's reputation is based on the group being "an innovation driver [for] that's the basis for everything we do" (Global RepTrack 100, 2015: 24).

Drawing on these notions, we maintain that EMNEs investing in advanced countries for strategic asset-seeking purposes will perceive innovative target firms as high status firms. Similarly, managers in innovative target firms in advanced countries will position their firms in the highest levels in the hierarchy of their organizational field. Moreover, they will perceive EMNEs as lower status firms because of their

[5] The notion of status relies on a conceptualization of the market as a structure that is socially constructed and defined in terms of the perceptions of market participants (White, 1981; Podolny, 1993). An organizational field is defined as 'those organizations, which, in the aggregate, constitute a recognized area of institutional life: key suppliers, resources and product consumers, regulatory agencies, and other organizations that produce similar services or products. (DiMaggio and Powell, 1983: 148). Podolny (1993: 830) defines the status of a producer as 'the perceived quality of that producer's products in relation to the perceived quality of that producer's competitors' products.' For a recent review on the concept see Piazza and Castellucci (2013).

[6] Note that we use this example for illustrative purposes and are aware that reputation and status are somewhat different constructs (see Stern, Dukerich, and Zajac, 2014).

emerging economy origins, and as suffering from LOE issues. These conditions result in a hierarchical ordering and related status imbalance between an EMNE and an advanced country target firm, with the former being perceived as lower status than the latter, and with the status imbalance increasing with the innovativeness of the target firm.

We contend that this hierarchical status ordering influences the successful integration between target and acquiring firm in a CBA (Sharkey, 2014). Status imbalances can be detrimental, spark conflicts among managers, and undermine the willingness of managers and other employees (scientists etc.) in the target firm, to share knowledge with the acquiring EMNEs' managers. It might be that the managers in high status firms may fear loss of their high social status when they become associated with low status firms, and therefore they may be demotivated or unwilling to transfer their knowledge to the EMNEs' managers and other employees, at least in the short term. Alternatively, to avoid loss of status, the most talented and skilled human resources might leave the acquired firm soon after acquisition by an EMNE, thereby hollowing out the target's skills and knowledge resources.

On these grounds, we would argue that the more innovative the target firm, the lower will be the commitment of its managers, scientists, and employees to share knowledge, and therefore, to contribute positively to the post-deal innovativeness of the acquiring EMNE. Conversely, managers working in less innovative target firms where status imbalances with the acquiring EMNE are less pronounced may be keener to share their knowledge and to collaborate with the acquiring EMNE's managers. In this context, they will be less afraid of their status being negatively affected or downgraded by the acquisition. Therefore, we predict that:

> *Hypothesis 1: All else remaining constant, the more innovative the acquired firm, the less innovative is the acquiring EMNE after the deal.*

Target region innovativeness

EMNEs investing in host advanced country regions have the opportunity to tap into specialized knowledge assets, and benefit from spatially bounded knowledge flows by collaborating with suppliers, universities, and other organizations in the target region, that is the region where their target firm is located (Cantwell and Piscitello, 1999; Iammarino and McCann, 2013; McCann and Mudambi, 2005). We argue that the

more innovative the target region, the less innovative is the acquiring EMNEs after the deal. We build our argument on the notion of status imbalance discussed earlier, which we consider applies to the target region, although with some differences.

First, EMNEs do not benefit by passively locating their operations in a regional ecosystem because valuable knowledge is mostly not in the air (Giuliani, 2007) and requires significant commitment and willingness among the actors and potential sources of knowledge to transfer or share the knowledge with the EMNE and its managers. This means also that these regional actors need to be willing to share their knowledge with the acquired firm after acquisition. Thus, unless the regional actors are keen to collaborate with the EMNE and the acquired firm's managers, the EMNE acquirer will not benefit from its links to the region however resource rich it might be.

We suggest also that some regions are more innovative than others and that their innovativeness influences their regional identity, defined as "a shared understanding, by both residents and external observers, about the salient features of life and work within a region" (Romanelli and Khessina, 2005: 347). For instance, Silicon Valley is characterized as a high technology hot spot (Saxenian, 1994), and Cambridge in the UK has the reputation of being a leading telecommunications, microprocessor design, and biosciences hub in Europe. Being identified as belonging to a highly innovative region is likely to influence the behavior of the relevant constituencies—that is, managers, scientists, and employees working in the region's various organizations. In particular, we argue that these actors will perceive themselves as working in a high status region, and therefore, perceive there to be a status imbalance with the EMNE which may condition their willingness to contribute to the latter's learning and innovation processes.

For instance, the actors in the most innovative regions may fear dissipation of their proprietary knowledge through the formation of a new relationship with an EMNE and its affiliates, or may not be interested in partnering with an EMNE since they perceive the possibility of reciprocal knowledge to be very small. Status imbalances may lead to the discontinuation of pre-existing ties between the acquired firm and other organizations in the region. Managers and other skilled personnel in high status regions may be skeptical about the EMNE's intentions, and fear a predatory strategy (Giuliani *et al.,* 2014) aimed at eating into the regional knowledge assets and transferring them to the firm's home region (Hansen *et al.,* 2016).

Similarly, regional actors may be concerned about the possibility that the acquisition will contribute to downgrading the status of the region, 'contaminating' its high status regional identity, and endangering its strategic advantage.

All of these factors might result in very little knowledge being shared or transferred from the regional actors to the EMNE—either directly or via the local affiliate. This could mean that EMNEs investing in more innovative regions are unable to fully exploit the rich knowledge endowments in the region and to innovate accordingly. Based on these theoretical considerations, we hypothesize that:

> *Hypothesis 2: All else remaining constant, the more innovative the target region, the less innovative is the acquiring EMNE after the deal.*

The moderating role of the EMNE's knowledge base prior to the acquisition

So far, our theoretical argument has focused on the innovativeness of the target firm and the target region. We now discuss the moderating role of the EMNE's knowledge base (Cohen and Levinthal, 1990) prior to acquisition, in the relationship between the innovativeness of the target firm and region and the EMNE's post-deal innovation output.

We begin by noting that the LOF literature (Kostova and Zaheer, 1999; Zaheer, 1995; Hymer, 1976) stresses that MNEs can overcome the LOF by exploiting their firm-specific advantages (e.g. scale economies, advanced technological capabilities), which may be lacking in domestic firms (Hymer, 1976; Nachum, 2003). Intangible advantages such as patents, trademarks, and management skills, are particularly important to guarantee the higher efficiency and technological sophistication of MNEs keen to enter a particular host country (Caves, 1996, among many others). We suggest that the EMNE's knowledge base may not only contribute to reducing the LOF but also will mitigate LOE issues, thereby facilitating absorption of knowledge from the target firm and region.

Our prediction is based on two bodies of work. First, the literatures on absorptive capacity (Cohen and Levinthal, 1989, 1990) and technological capability accumulation (Bell and Pavit, 1993; Lall, 1992) underline the need for MNEs (as well as other firms) to accumulate a significant base of knowledge in order successfully to absorb new knowledge from the host location, and establish knowledge linkages with local actors in the target region (Marin and Bell, 2006; Cantwell and Mudambi,

2011). Hence, EMNEs characterized by a strong knowledge base are likely to possess the internal skills and technological capabilities needed to guarantee continuous learning, facilitating successful integration of their innovation and learning routines with those of the acquired firm. For instance, EMNEs' engineers may have accumulated experience in R&D projects, which allows them to integrate their learning processes with those of the acquired firm, reducing the chances of conflict and poor communication. Similarly, EMNEs with a strong knowledge base are likely to be more active at and capable of searching, at the local level, for relevant valuable R&D partners among regional actors. Similarly, the EMNEs' skilled personnel may be able to understand and exploit the knowledge available in local universities, firms, and other organizations (Awate *et al*, 2012, 2014)

Second, the strength of the EMNE's knowledge base can act as a signal to the managers in the acquired firm and other relevant actors in the region, and change their perceptions of EMNEs as lower status firms. It is well known that patents which are the typical outcomes of learning processes for medium-to-high tech firms, reduce information asymmetries between the patenting actor and its observers (Long, 2002). A rich patent portfolio is a more efficient signal of the firm's characteristics than other information sources. This has been documented by previous studies which show that patents help investors (e.g. venture capitalists) and other stakeholders form expectations about a firm's qualities which otherwise are unobservable (e.g. Hottenrott and Rexhäuser, 2015; Czarnitzki, Hall, and Oriani, 2006). As Stuart, Hoang, and Hybels (1999: 317) put it 'a proven ability to patent new technologies is important not only because patents are property rights to potentially revenue-generating inventions, but also because this track record signals the depth of the firm's underlying technological capabilities.

An EMNE with a strong knowledge base can use its patent portfolio to signal its inherent qualities to acquired firms and other actors in the target region, thus mitigating its LOE. A signal of quality will contribute to reducing the social status imbalances existing between the EMNE and a more innovative target firm and region, making the target firm's managers and other relevant actors more willing to share their knowledge and contribute to the EMNE's innovative processes and outputs after the deal. Accordingly, we predict that:

Hypothesis 3: All else remaining constant, the relationship between the innovativeness of the target firm and the post-deal innovation output of the acquiring EMNE is positively moderated by the acquiring EMNE's knowledge base.

Hypothesis 4: All else remaining constant, the relationship between the innovativeness of the target region and the post-deal innovation output of the acquiring EMNE is positively moderated by the acquiring EMNE's knowledge base.

METHOD

Data

The empirical analysis includes all completed majority-stake CBAs made by Indian and Chinese firms in Europe (EU28), the U.S., and Japan reported in by Zephyr (Bureau van Dijk) and SDC Platinum (Thompson)[7], between 2003 and 2011. We censored our analysis to year 2011 to allow observation of the post-acquisition innovative output of the acquiring EMNE[8]. Following some previous studies on the effects of acquisitions on patenting (Ahuja and Katila, 2001, Cloodt *et al.*, 2006, Valentini and Di Guardo, 2012), we focus on medium and high-tech manufacturing and service industries, classified according to NACE codes[9]. Over the observed period, our data includes 466 deals. Table 1 shows that the distribution of deals is 20.4 percent from China and 79.6 percent from India. Both countries' deals are mostly in the manufacturing sector. Figures 1 and 2 present the geographical distribution of acquisitions and patents per capita in the OECD-TL2 regions[10].

Overall, we notice that in the U.S., the preferred recipient country with 206 deals (30 from China and 176 from India) there is a strong concentration in Silicon Valley, followed by New York, New Jersey, and Texas. In Europe, the preferred destination is the U.K. (87 deals), which is a target country for many Indian MNEs

[7] The overlap between the two databases is partial: 28% of the acquisitions appear only in Zephyr, and 31% appear only in SDC Platinum.

[8] The start year is 2003 because according to UNCTAD (2015), most outward foreign investments from emerging to advanced countries occurred after that date.

[9] The 2-digit NACE codes are 20, 21, 26, 27, 28, 29, and 30 (for manufacturing) and 59, 60, 61, 62, 63,64, 65 66, 69, 70, 71, 72, 73, 74, 78, and 80 (for services). The SDC Classification was used for the deals taken from the SDC-Platinum database.

[10] The TL2 regions are the so-called 'Large Regions', corresponding to NUTS2 regions for the EU28, to States for the U.S., and to groups of prefectures for Japan (Maraut *et al.*, 2008).

(78 deals), and within the U.K. London area, followed by the West Midlands, and South East England. The second most preferred destination in Europe is Germany, where acquisitions are concentrated in Bayern and Baden-Württemberg. Finally, Japan accounts for just 10 acquisitions, concentrated in the regions of Tokyo and Kyoto.

[Table 1 about here]

[Figures 1–2 about here]

Variables

Appendix table A-1 provides further details of the variables included in the econometric analysis which are described below. Table 2 reports the summary statistics and Appendix table A-2 is the correlation table.

Dependent Variable

Our dependent variable is *EMNE post-deal innovative output.* We follow well-established strand of empirical research (see e.g. Ahuja and Katila, 2001), which uses patents to measure the acquiring firm's innovative output. Our dependent variable is calculated as the cumulated number of 'patent families' (INPADOC—International Patent Documentation)[11] containing patent applications filed by the acquirer at any patent office in the three years after the deal[12]. A patent family is a set of patent applications (and publications) to multiple countries to protect a single invention, sharing the same priority date (Martinez, 2010). The advantage of using patent family rather than patent applications to an individual patent office such as the European Patent Office (EPO) or the United States Patent and Trademark Office (USPTO) is the possibility to include all possible patents filed by a firm without double counting for the same invention.

We retrieved patent data for each acquirer from ORBIS and checked them manually against EPO-PATSTAT (version April 2014). The INPADOC families of these patents and their patent information (i.e. backward citations, filing dates, technological classes) were retrieved from EPO-PATSTAT.

[11] Note that we also used a different specification for patent family based on DOCDB family, as suggested by Martinez (2010). The results are consistent.

[12] A 3-year window is standard in the literature. To check the robustness of our results we also considered a 5-year window. The empirical findings did not change substantially.

Independent Variables

Hypothesis 1 refers to the effect of the innovativeness of the target firm (*Target firm innovation*) on the EMNE's innovative output after the deal. This variable is measured as the sum of distinct INPADOC families and patents filed by the target firm five years before the deal. Since our target firms are in Europe, Japan, and the U.S., the use of INPADOC families avoids a potential 'home bias' (Bacchiocchi and Montobbio, 2010) due to the fact that firms tend to patent more at their local domestic patent office (e.g. American firms file more patents in the USPTO than in Europe).

Hypothesis 2 refers to the effect of the level of innovation of the target (*Target region innovation*) on the EMNE's innovative output after the deal. We measure this variable as the logarithm of the cumulative number of Patent Cooperation Treaty (PCT) applications per capita in the five years before the deal in the OECD-TL2 region where the target firm is located.

Hypotheses 3 and 4 refer to the moderating role of *EMNE's knowledge base* at the moment of the acquisition. Similar to Ahuja and Katila (2001), we calculate EMNEs' knowledge base as the sum of distinct INPADOC families with patents filed by the acquirer and their cited INPADOC families in the five years prior to the deal.

Control Variables

We include a set of control variables to account for other factors that might explain EMNE's post-deal innovative output.

We control for the size (*Size*) of the acquirer since it is possible that larger firms may have more operations and be able to exploit economies of scale and scope, and exercise higher bargaining power vis-à-vis acquired firms (Mansfield, 1962). We use a dummy variable which takes the value 1 if the acquirer is not in the size categories 'Large' and 'Very Large' as defined by ORBIS. It controls for the following conditions.

Experience accumulated in previous investments may allow for the development of managerial and coordination capabilities helpful for the strategic integration of the target firm (Buckley and Ghauri, 2004; Buckley *et al.*, 2014). Therefore, we control for previous FDI experience (*FDI experience*) based on cumulative number of investments (majority acquisitions and greenfield) undertaken worldwide by the acquirer before the deal.

We control also for horizontal acquisitions (*Horizontal CBA*) that is whether CBAs are in the same (=1) or a different (=0) industry. According to the literature (Buckley and Ghauri, 2004; Rabbiosi *et al.*, 2012; Buckley *et al.*, 2014; Ornaghi, 2009), horizontal acquisitions involve lower integration costs, more potential for synergies, and a better strategic fit. This variable is constructed comparing the SIC 2-digit codes of target and acquirer firms.

Since prior research suggests that different forms of distance might affect the successful integration of operations among collaborating partners, we control for institutional distance (*Institutional distance*) between the target and acquirer countries. This variable is calculated following Berry, Guillen, and Zhou (2010)[13].

Finally, we control for home and host country specificities (introducing country dummies) since each country has a different history and specific internal institutional arrangements, which might result in different approaches to innovation and capability building (the reference group for the home country is India, and for the host country is Europe). Year dummies are also included.

[Table 2 about here]

Estimation method

Since our dependent variable is a count type, we implement the Poisson Quasi Maximum Likelihood (PQML) estimator (Hu and Jefferson, 2009), adding industry fixed effects at NACE Main Section level[14], since there might be inter-sectoral differences conditioning acquisition success (Cloodt *et al*., 2006). With respect to other models such as the Negative Binomial which also allow for overdispersion (i.e. the conditional variance may differ from the conditional mean), the PQML estimation is consistent under the weaker assumption of correct conditional mean specification (Gourieroux, Monfort, and Trognon, 1984; Wooldridge, 2002; Cameron and Trivedi, 2005). We performed a set of robustness checks using USPTO data and other estimators which are discussed in the succeeding sections.

[13] As a further control we use the measure of cultural distance developed by Hofstede (1980); our the magnitude and significance of our results remained mostly unchanged.

[14] We employ industry-specific rather than firm-specific effects (as proposed in Hausman, Hall, and Griliches, 1984) because of very limited heterogeneity in the output across the same investors (and even less heterogeneity if we control for the year of the deal). In fact, only 28% of the acquirers in our sample had been involved in more than one acquisition, and only 13% had been involved in more than two. Also, we adopt an aggregate industry classification (NACE Main Section) in order to obtain as large a sample as possible. We checked the robustness of our findings with NACE 2-digit fixed effects and found comparable results for our main variables of interest, with a decrease in significance but still within the 10% level.

RESULTS

Table 3 reports descriptive statistics for the patenting activities of the acquirer and acquired firms, five years before and three years after the deal. In total, the number of patents filed by acquiring EMNEs is 4,883 before the deal and 5,293 after the deal. If we look at home country differences, we observe that on average, Chinese EMNEs patent more than Indian firms: the average number of patent applications for Chinese MNEs is 33 before and 36 after the deal, while Indian MNEs have on average respectively 11 patents and 9 patents.

Target firms have an average of 38 patents before the deal, with major differences between firms acquired by Chinese MNEs—182 patents on average, and firms taken over by Indian MNEs—an average of only 2 patents filed before the deal. Therefore, on average, Indian MNEs are less interested than Chinese MNEs in acquiring companies with prior patenting experience. Note that, although in this paper we use patents as a measure of the firm's knowledge base, having no or very few patents does not mean that the target firm has no knowledge upon which the acquiring EMNE can build. Non-patenting firms have knowhow and intra-organizational learning processes in in-house design, development, and other knowledge intensive activities (Bell and Pavitt, 1993) which may not translate directly into patent applications but which the EMNE can exploit in order to patent after the deal (Hansen *et al*., 2016).

[Table 3 about here]

Table 4 presents the econometric analysis. Model 1 includes only the control variables on which we comment at the end of this section. Model 2 shows that the coefficient of *target firm innovation* is negative and significant, providing support for Hypothesis 1, which suggests that the more innovative the target firm, the less innovative the EMNE after the deal. In Model 3, the coefficient of the variable measuring *target region innovation* is negative but not significant. Hence, Hypothesis 2 - the higher the innovativeness of target region, the less innovative the EMNE after the deal - is not supported by our analysis. Model 4 includes both the variables for target firm and region innovativeness, and their significance does not change when both are considered. Model 5 adds the moderating variable *EMNEs knowledge base*,

which is positive and significant, suggesting that the stronger the acquiring EMNE's knowledge base, the higher is its innovative output after the deal.

To test the moderating effect of the acquiring EMNE's knowledge base, we interact our variables for target firm innovation performance and target region innovation performance with our measure of EMNE's knowledge base (Models 6 and 7). Both coefficients are positive and significant. Figures 3 and 4 depict the interaction effects supporting Hypotheses 3 and 4 about a positive moderating effect of the acquiring EMNE knowledge base.

[Table 4 about here]

The results of the control variables are worth discussing. The country of origin dummy for China is positive and significant across all model specifications, suggesting that on average, Chinese MNEs have higher post-deal innovation output than Indian MNEs—a result that is coherent with our descriptive statistics (table 3). The host country dummy for Japan is always negative, pointing to the fact that EMNEs investing in Japan display lower post-deal innovative output compared to those investing in Europe, possibly reflecting the declining innovative capacity of Japan over recent years (OECD, 2015). However, this result is not robust since its significance depends on the model specification. We note also that there is no difference between the host country dummy for the U.S. and the reference group (Europe), suggesting that investing in either area makes no difference.

The control variable accounting for EMNE experience of overseas acquisitions and greenfield investments (*FDI experience*), is positive and significant in all the model specifications. This suggests that EMNEs with more expertise in cross-border foreign investments have a higher chance of innovating after the acquisition vis-à-vis less experienced companies.

The variable for institutional distance (*Institutional distance*) takes the expected negative and significant sign in the full model (model 5) and in the models with the interactions (models 6–7), which is in line with some earlier evidence pointing to the importance of cultural distance for the success of CBAs (e.g. Vaara *et al*., 2014; Reus and Lamont, 2009).

We found also that acquisitions in the same sector as the target (*Horizontal CBA*) have a positive impact on the acquirer's innovative output after the deal, possibly due to the higher degree of integration among the R&D operations of firms belonging to the same industry sector (Colombo and Rabbiosi, 2014). Finally, the negative and

significant coefficient of *Size* as expected, shows that larger EMNEs patent more after the deal compared to smaller ones.

[Figures 3 and 4 about here]

Robustness Checks

In order to test the robustness of our results we run three further econometric analyses. First, we test the robustness of our main models (models 5–7, table 4) using USPTO data. This implies restricting the analysis to a subset of patents which conventionally are considered high quality, and controlling for the possibility of INPADOC families also containing home country domestic patents (Eberhardt, Helmers, and Zhihong, 2011). Therefore, in this analysis we re-calculate all our main firm-level variables (*EMNEs' post-deal innovative output; target firm innovation and EMNE knowledge base*) using USPTO data instead of INPADOC families. The results are consistent with the estimations reported in table 5.

[Table 5 about here]

Second, given the skewed nature of our dependent variables and the high number of zeros, we check the robustness of our results using a zero-inflated Poisson (ZIP) regression (Hu and Jefferson, 2009; Czarnitzki, Hussinger, and Schneider, 2011). In this model, the excess zeros are generated by a separate process from the count values different from zero, so that they can be modeled independently (Cameron and Trivedi, 2005). This econometric approach consists of adding an auxiliary equation to predict the excess zeros. This equation is estimated by a logit model which employs the following EMNE-level regressors: size, sector (NACE Main Section Level), country of origin, and knowledge base of the acquirer. The independent variables and the controls in the main equation, which predicts the acquirers' number of post-deal patents, are mostly the same as in the previously estimated PQML model. The exception is the inclusion of a dummy variable for deals after 2008 (equal to 1 for deals concluded after 2008 and 0 otherwise), which controls for the effects of the economic crisis, replacing year dummies to account for convergence issues [15]. The results for the full model and the models with the interactions are reported in table 6 and are consistent in sign with models 5–7 in table 4.

[15] Note that the ZIP model solves a 2-equation system, which computationally is more demanding than the estimation using PQML.

[Table 6 about here]

Finally, we control for endogeneity in the sample selection to address the possibility that the two processes affecting respectively, the distribution of patent counts, and the selection of firms as acquirers, might not be independent (Valentini and Di Guardo, 2012). Accordingly, we implement a two-stage count model with sample selection (Bratti and Miranda, 2010). This econometric approach consists of adding an auxiliary equation which allows us to control for the probability of an international acquisition. In particular, drawing on the selection equation employed in Valentini and Di Guardo (2012), we associate the likelihood of undertaking a CBA with the following EMNE-level characteristics: size, measured by (the log of) its operating revenues; industry, using a dummy for manufacturing and services as the reference group; country of origin; solvency capability (i.e. ratio of shareholders' assets in total assets), and knowledge base[16.] In the main equation, we employ mostly the same independent variables and controls as in the PQML model with the exception of the time control which is a dummy variable for deals undertaken after 2008 (equal to 1 for deals concluded after 2008 and 0 otherwise) and the size control measure using the logarithm of the operating revenues[17]. In order to estimate the probability of undertaking a CBA, we compare our main sample against a control sample consisting of 1,972 firms never involved in a cross-border acquisition *and* belonging to the same medium to high-tech sectors as the acquiring firms in our main sample. The control sample was randomly selected from ORBIS and respects the proportions across both countries and industries (NACE Main Section) of the firms in the main sample. Table 7 reports the results of the main equation, which are in line with the earlier findings.

[Table 7 about here]

DISCUSSION AND CONCLUSION

This study addresses the crucial question of whether EMNEs benefit in terms of their innovative output from acquisitions in advanced economies. By combining

[16] Unlike Valentini and Di Guardo (2012), our model specification does not include the variables R&D intensity and Tobin's q because of the presence of too many missing values in our sample for these two variables. To account for this, we include as controls the EMNEs' knowledge base and the operating revenues.

[17] In the model controlling for sample selection, we measure the firm size by its operating revenues rather than the *Size* dummy. This is because the latter implies a strong reduction in the variability of the output when it is included in both the selection and the main equations, and therefore, leads to convergence issues. Thus, in the other models we chose to use the *SIZE* dummy because it contains less missing values than operating revenues.

organizational learning theories and social status theory, we argued that target firm and region innovativeness negatively influences the post-deal innovative output of the acquiring EMNE. We predicted that this relationship would be positively moderated by the EMNEs' knowledge base, a dimension that contributes to increasing absorptive capacity and reducing the EMNE's LOE and social status imbalance between the EMNEs and advanced country firms and other constituencies, thus impacting positively on the EMNE's post-deal innovation output.

Our analysis is based on the universe of medium to high-tech CBAs from China and India, to the EU28, Japan, and the U.S. during the period 2003–2011, and provides support for most of our hypotheses. In particular, we find that the more EMNEs acquire innovative target firms, the lower is their innovation output after the deal. This result is coherent with our theoretical framework (Hypothesis 1), suggesting that very innovative target firms, despite potentially being able to offer substantial and valuable knowledge assets to the acquiring EMNEs, may be resistant to knowledge transfer. We conjecture that this might be due to managers' unwillingness to share valuable proprietary knowledge with what they consider to be a lower-status firm based on its country of origin, lack of legitimacy, and LOE. These managers' behavior may engender conflicts which hamper the process of integration between the target firm and the acquiring EMNE, and have a negative impact on the latter's innovation process. Additionally, it is possible that the most talented managers and scientists in the target firm may leave soon after the acquisition, to avoid their knowledge and reputation being downgraded by the perceived lower status of the acquiring EMNE. This leaves the EMNE with a lower quality pool of knowledge to draw on after the deal.

We acknowledge that alternative interpretations are also possible. One possibility is that EMNEs investing in highly innovative firms or regions follow a predatory strategy (Giuliani *et al.,* 2014) since they are interested solely in exploiting their accumulated property rights in the home market. Along these lines, Anderson, Sutherland, and Severe (2015) suggest this strategy is frequent among Chinese MNEs investing in Europe, Japan, and the U.S., and promotes a reverse knowledge transfer process to the home country increasing the number of Chinese patents filed after an acquisition. However, our results hold also if we consider USPTO patents, suggesting that the observed positive impacts on patent applications cannot be fully explained by home country applications. Another interpretation is that our results are due to

innovation, whose underlying R&D is carried out at the level of the target firm, although its ownership is retained by the acquiring EMNE. To assess whether this is a tenable conjecture, we controlled for how many patents filed after an acquisition, involved inventors located in the target country. Although limited to the availability in PATSTAT of data on country of residence of the inventors involved in the INPADOC families, we found that only 2 percent of INPADOC families filed after a deal involve inventors located in the target country. This suggests that the patents filed involve mostly inventors residing in China and India. Another way to interpret our results would be to consider that innovative target firm is so technologically sophisticated that the acquiring EMNE is unable to build upon its knowledge. This is a plausible interpretation although it is less clear how it is compatible with a negative impact on innovation output[18].

All things considered, we believe that our theoretical framework is an important complement rather than a stark alternative to other interpretations. In particular, it explains why the target firm's managers might be unwilling to share or transfer knowledge to the acquiring EMNE, negatively conditioning their innovation output soon after the deal. Note that our analysis focuses only on short-term impacts, and therefore we do not theorize about the longer-term attitudes of managers who likely become more familiar with the EMNE over time and perceive lower status imbalance differently.

Our result about the moderating effect of the EMNE's knowledge base on the relationship between the target firm's innovativeness and the EMNE's post-deal innovation output is in line with our theoretical expectations (Hypothesis 3). The strength of the EMNE's knowledge base may allow more effective building on the knowledge available in the target firm, and generate innovation output after the deal—in line with the notion of absorptive capacity and related constructs (Cohen and Levinthal, 1990; Bell and Pavitt, 1993). Additionally, it may be an important signal of quality, improving status perception and mitigating LOE problems, and encouraging

[18] To try to assess whether the technological distance between the target and the acquiring EMNE might be influencing our analysis, we calculated the 4 measures of technological relatedness suggested by Ornaghi (2009) and found that the cosine correlation gives results different from zero in only approximately 2% (28 out of 466) of deals. However, in our view, the cosine correlation does not allow us to distinguish between cases where target firm and acquirer have patents in different technological classes (i.e. unrelated CBAs), and cases where neither target nor acquirer has any patents. Since in our research context the presence of zero patents is not negligible, technological distance cannot be fully measured.

the target firm's managers to share knowledge and collaborate with the acquiring EMNE's R&D department.

Instead, our Hypothesis 2 on the negative relationship between the innovativeness of the target region and the EMNE's post-deal innovative output is not fully supported. Our evidence suggests that EMNEs increase their post-deal innovative output the more they invest in innovative regions but always provided that they have a strong knowledge base (Hypothesis 4). EMNEs with weak knowledge bases are unable to benefit from location in very innovative regions, and therefore, investing in innovative regions *per se* does not generate any linear effect on their innovation capacity. Our evidence contrasts with the idea that the 'more is better' (Barnard, 2010), and with the conventional view that knowledge spillovers generating benefits for co-localized firms and MNEs regardless of knowledge base heterogeneity. However, it is in line with earlier research in international business suggesting that only when MNE subsidiaries and their headquarters have strong absorptive capacity, are they able to benefit from and contribute to a specific local context (Crescenzi, Pietrobelli and Rabellotti, 2016; Marin and Bell, 2006, Cantwell and Mudambi, 2011).

It is interesting to compare our findings on the innovativeness of target firms with those for target regions. Our evidence shows that the EMNE's post-acquisition innovation output may be undermined by the existence of frictions between the target firm and the acquiring EMNE. In contrast, in the case of innovative regions, the evidence is coherent with the idea that local actors may simply be unwilling to contribute to the EMNE's learning and innovation processes. These local actors are external to both the EMNE and the target firm and may not be able to disrupt internal learning and innovation processes. Our evidence would seem to be consistent with the idea that an innovative region may not generate sufficient learning opportunities but also may not be able to disrupt the EMNE's innovation activities enough to significantly affect its innovation output after the deal.

We believe our paper contributes to scholarship in the following ways. First, we contribute to international business research on the internationalization of EMNEs. A wide discussion, very well summarized and neatly denominated the '*Goldilocks* debate' by Cuervo-Cazurra (2012b), has been ongoing for some years, over whether EMNEs require a new theory, or whether their behavior can be interpreted by extending existing theories. The analysis in this paper offers suggestions about

extending existing approaches to understand the impact of CBA on the acquiring firm, and highlighting that the specific context of the EMNE is interesting to discuss how status imbalances due to EMNEs' LOE might condition post-deal outcomes. Hence, our research is original in linking LOE and social status theory, and in suggesting that the EMNE's knowledge base can act as a factor mitigating LOE and social status imbalances. Earlier research relies solely on the notion of absorptive capacity to explain post-deal innovation. We extend this view (e.g. Deng, 2010; Zheng *et al*., 2016) by stressing how advanced country perceptions about EMNEs can affect their capacity to exploit the knowledge they are able to access. These insights should potentially be of interest to scholars investigating CBAs in general since the liability of origin and status imbalances may also be present in an advanced country context.

Second, we believe this article adds to work on international business related to understanding how the regional characteristics of location destinations affect MNEs' strategic choices and their outcomes (Beugelsdijk and Mudambi, 2013). Interest in the MNEs' location choices is not new to international business scholars (Dunning, 1998; Cantwell, 2009), and is being promoted further by the spikiness of the current globalized world (Florida, 2005), and the recognition that there is wide variation across sub-national regions in terms of their pool of accumulated resources and skills (Breschi and Malerba, 2001). The geography of innovation within host countries is crucial for understanding MNEs' innovative processes because innovation relies on the recombination of prior accumulated knowledge, which is partly tacit, and therefore, highly contextual—that it, its sharing might require geographical proximity (Buckley and Ghauri, 2004; Iammarino and McCann, 2013; Narula and Santangelo, 2012). Hence, different regions are likely to offer different learning opportunities to the MNEs locating in them. So far, research that tries to combine international business and economic geography has looked mainly at how regional (or other sub-national agglomeration such as clusters and cities) characteristics shape the motivations for investing or divesting in a particular location (e.g. Goerzen, Asmussen, and Nielsen, 2013; Cantwell and Piscitello, 2005) and how they influence the mode of entry of MNEs (e.g. Gaur and Malhotra, 2014), or the nature of the offshored activities (e.g. Jensen and Pedersen, 2011). Scholars have looked also at how geographical proximity affects MNEs' supplier choices (Schmitt and Van Biesebroek, 2013), and delved into the complexities faced by MNEs embedded in multiple locations (Meyer *et al*., 2011; Figueiredo, 2011).

However, there has been very little research into the developmental impact of the region on the investing MNE (Narula and Driffield, 2012; Giuliani and Macchi, 2014). Our paper helps to fill this gap in the literature by investigating how regional discontinuities that is differences in their innovativeness, might be contributing to EMNEs' innovation output in the aftermath of an acquisition. Our findings follow earlier research integrating location and firm-specific (i.e. the subsidiary or headquarters level) characteristics into models aimed at understanding the global-local nexus in MNEs innovative behaviours (Mudambi and Swift, 2011; Cantwell and Mudambi, 2005). However, it offers a new theoretical interpretation of why MNEs may find it hard to learn from resource-rich regions.

Our study also has some important implications for managers and policy makers. Although our analysis was not aimed at observing managers directly *per se*, our results suggest that EMNEs' home country managers should not see their investments in innovative firms and regions as a panacea, largely because their chances of benefiting from the valuable assets of the acquired firm and tapping local knowledge sources might not be high. It is well known that CBAs are complex, and are disruptive to corporate routines (de Man and Duyster, 2005; Cantwell and Mudambi, 2011); however, EMNE managers may need to be particularly cautious in the context of very innovative firms and regions in advanced countries. EMNE investment in highly innovative firms and regions requires the accumulation of a strong knowledge base; hence CBAs need to be simultaneously knowledge augmenting (i.e. adding novel technological skills and building new innovative capabilities) and knowledge exploiting (i.e. exploiting and building on existing knowledge). In essence, EMNE managers should see CBAs not as a quick fix for the lack of technological capabilities at home but as part of a complex strategy of innovation capabilities building. Radical innovation is likely to be the result of an inexorable, risky, cumulative, and long-term process of knowledge accumulation (Bell and Pavitt, 1993).

This paper addresses some concerns of policy makers in both emerging and advanced countries. Our researches suggests that emerging country policy-makers should develop and strengthen policies oriented towards technological capability building in their home country (Lema, Quadros, and Schmitz, 2015). This can be achieved in various ways including attracting MNEs from advanced countries, since learning from such firms 'may be a viable first step for laggard EMNEs to enhance

their technological capabilities.' (Li, Li, and Shapiro, 2012; 291). Other policies include increasing investment in higher education and the national system of innovation generally (Nelson, 1991; Lundvall *et al*., 2009), and creating incentives for promoting the return migration of engineers, scientists, and managers (World Bank, 2010). In advanced countries, the potential risk of valuable strategic assets being eroded is real. Although we have not empirically addressed the existence of a reverse technology transfer, or the knowledge erosion effect, we observe that if the acquiring EMNE has a strong knowledge base and invests in an innovative firm and/or region, the chances patent applications following the deal are higher. Policy makers in advanced countries need to find ways to ensure that CBAs are equally beneficial and asset augmenting for the acquired firms, especially if their technological assets are of strategic value in the home country. Policy makers should try to minimize the probability of predatory behaviors, and attract investors interested in becoming embedded in the local context of the acquired company (Giuliani *et al*., 2014). Indeed, acquisitions and the entry of new entrepreneurial forces from emerging countries may open up opportunities for managers and entrepreneurs in advanced host countries, to learn from these investors, to bridge the cultural and market distance with emerging economies[19].

Our study has some limitations. First, we focus only on Chinese and Indian MNEs, which might limit the generalizability of our results. However, these two countries account for approximately a quarter of total outflows from developing and emerging countries (UNCTAD, 2015)[20]. Second, our estimates do not control for the financial and economic performance of the acquirer and target firms because reliable and comparable financial indicators for emerging country firms are available only for publicly listed firms and our sample includes some non-listed firms. Third, we do not control for the motivation of the acquisition because there is no systematic information on motivations in Zephyr and SDC Platinum. Hence, we assume that, given the sectorial specialization in medium high tech industries, the acquiring EMNE is motivated by access to strategic and knowledge-intensive assets (see Cozza *et al*., 2015). Fourth, our only indicator of the innovativeness of the target and the region is

[19] See the recent *Economist* article: 'Better than barbarians', about how the attitude of rich world firms is changing positively with respect to Chinese acquisitions (January, 16th 2016).
[20] See UNCTADSTAT, http://unctadstat.unctad.org/EN/Index.html, last accessed February 20th, 2016.

patents[21], which are used also to measure the acquirer firm's knowledge base and its innovation output following an acquisition. Further research could introduce other 'soft' indicators of innovation, which would capture knowledge-intensive activities such as design, adaptation, and process, and incremental innovation, much better. Fifth, we do not account for patent quality, usually measured by forward citations. A natural extension of this work would be to assess the quality of post-deal innovation output using as the dependent variable the number of forward citations received by the patents filed following the deal. We were unable to include this in our analysis because some of the acquisitions in our sample are very recent (the latest was in 2011) and PATSTAT covers applications up to 2014, leaving insufficient time (only 3 years) to observe a significant number of forward citations (see Squicciarini, Dernis, and Criscuolo, 2013 which suggests a citation lag of at least 5 to 7 years).

[21] Limited to acquisitions in the EU regions, we tested an alternative model and introduced an indicator for 'soft' innovation factors and the socio-economic innovation proneness of the region, measured by the Social Filter used in several previous empirical analyses (Crescenzi *et al.*, 2007, 2012, 2016). The sign and significance of the results do not change. They are not reported here but are available from the authors.

REFERENCES

Ahuja G, Katila R. 2001. Technological acquisitions and the innovation performance of acquiring firms: a longitudinal study. Strategic Management Journal **22**(3):197–220.

Amighini A, Rabellotti R, Sanfilippo M. 2013. China's outward FDI: an industry-level analysis of host-country determinants. Fontiers for Economics in China **8**(3): 27.

Anderson J, Sutherland D, Severe S. 2015. An event study of home and host country patent generation in Chinese MNEs undertaking strategic asset acquisitions in developed markets. International Business Review **25**(5): 758–771.

Awate S, Larsen MM, Mudambi R. 2012. EMNE catch-up strategies in the wind turbine industry: is there a trade-off between output and innovation capabilities? Global Strategy Journal **2**:205–223..

Awate S, Larsen MM, Mudambi R. 2014. Accessing vs sourcing knowledge: a comparative study of R&D internationalization between emerging and advanced economy firms. Journal of International Business Studies **46(**1): 63–86.

Aybar B, Ficici A. 2009. Cross-border acquisitions and firm value: an analysis of emerging-market multinationals. Journal of International Business Studies **40**(8): 1317–1338.

Bacchiocchi E, Montobbio F. 2010. International knowledge diffusion and home-bias eEffect: do USPTO and EPO patent citations tell the same story? Scandinavian Journal of Economics **112**(3): 441–470.

Barnard H. 2010. Overcoming the liability of foreignness without strong firm capabilities—the value of market-based resources. Journal of International Management, **16**(2): 165–176.

Bell M, Pavitt K. 1993. Technological accumulation and industrial growth: contrasts between developed and developing countries. Industrial and Corporate Change, **2**(2): 157–210.

Berger A, Busse M, Nunnenkamp P, Roy M. 2011. More stringent BITs, less ambiguous effects on FDI? Not a bit! Economics Letters **112**(3): 270–272.

Berry H, Guillén MF, Zhou N. 2010. An institutional approach to cross-national distance. Journal of International Business Studies **41**: 1460–1480.

Beugelsdijk S, Mudambi R. 2013 MNEs as border-crossing multi-location enterprises: The role of discontinuities in geographic space. Journal of International Business Studies **44**: 413–426.

Birkinshaw J, Bresman H, Håkanson L. 2000. Managing the post-acquisition integration process: how the human integration and task integration processes interact to foster value creation. Journal of Management Studies **37**(3): 395–425.

Björkman I, Stahl G, Vaara E. 2007. Cultural differences and capability transfer in cross-border acquisitions: the mediating roles of capability complementarity, absorptive capacity, and social integration. Journal of International Business Studies **38**(4): 658-672.

Bonaglia F, Goldstein A, Mathews JA. 2007. Accelerated internationalization by emerging markets' multinationals: the case of the white goods sector. Journal of World Business **42** (4): 369–383.

Bratti M, Miranda A. 2010. Non-pecuniary returns to higher education: the effect on smoking intensity in the UK. Health Economics **19**(8): 906–920.

Breschi S, Malerba F. 2001. The geography of innovation and economic clustering: some introductory notes. Industrial and Corporate Change **10**(4): 817–833.

Buckley PJ, Clegg LJ, Cross A, Liu X, Voss H, Zheng P. 2007. The Determinants of Chinese outward foreign direct investment. Journal of International Business Studies **38**(4): 499–518.

Buckley PJ, Elia S, Kafouros M. 2014. Acquisitions by emerging market multinationals: implications for firm performance. Journal of World Business **49**(4): 611–632.

Buckley PJ, Ghauri PN. 2004. Globalisation, economic geography and the strategy of multinational enterprises. Journal of International Business Studies **35**(2): 81–98.

Cameron CA, Trivedi PK. 2005. Microeconometrics: Methods and Applications. Cambridge University Press: Cambridge, UK.

Cantwell J. 1995. The globalisation of technology: what remains of the product cycle model? Cambridge Journal of Economics **19**: 155–155.

Cantwell, J. 2009. Location and the multinational enterprise. Journal of International Business Studies **40**(1): 35–41.

Cantwell J, Iammarino S. 2001. EU regions and multinational corporations: change, stability and strengthening of technological comparative advantages. Industrial and Corporate Change **10**(4): 1007–1037.

Cantwell J, Mudambi R. 2005. MNE competence-creating subsidiary mandates. Strategic Management Journal **26**(12): 1109–1128.

Cantwell J, Mudambi R. 2011. Physical attraction and the geography of knowledge sourcing in multinational enterprises. Global Strategy Journal **1**(3-4): 206–232.

Cantwell J, Piscitello L. (1999). The emergence of corporate international networks for the accumulation of dispersed technological competences. Management International Review, 123–147.

Cantwell J, Piscitello, L. 2005. Recent location of foreign-owned R&D activities by large multinational corporations in the European regions: the role of spillovers and externalities. Regional Studies **39**(1): 1–16.

Cassiman B, Colombo MG, Garrone P, Veugelers R. 2005. The impact of M&A on the R&D process: an empirical analysis of the role of technological- and market-relatedness. Research Policy **34**(2): 195–220.

Caves R. 1996. Multinational Enterprise and Economic Analysis. Cambridge University Press: Cambridge, UK.

Chen W. 2011. The effect of investor origin on firm performance: domestic and foreign direct investment in the United States. Journal of International Economics **83** (2): 219–228.

Cloodt M, Hagedoorn J, Van Kranenburg H. 2006. Mergers and acquisitions: their effect on the innovative performance of companies in high-tech industries. Research Policy **35**(5): 642–654.

Cohen WM, Levinthal DA. 1989. Innovation and learning: the two faces of R&D. The Economic Journal **99**: 569–596.

Cohen WM, Levinthal DA. 1990. Absorptive capacity: a new perspective on learning and onnovation. Administrative Science Quarterly **35**(1): 128–152.

Colombo MG, Rabbiosi L. 2014. Technological similarity, post-acquisition R&D reorganization, and innovation performance in horizontal acquisitions. Research Policy **43**(6): 1039–1054.

Cozza C, Rabellotti R, Sanfilippo M. 2015. The impact of outward FDI on the performance of Chinese firms. China Economic Review **36**: 42–57.

Crescenzi R, Pietrobelli C, Rabellotti R. 2016. Regional strategic assets and the location strategies of emerging countries' multinationals in Europe. European Planning Studies **24**(4): 645–667.

Crescenzi R, Rodríguez-Pose A, Storper M. 2007. The territorial dynamics of innovation: a Europe–United States comparative analysis. Journal of Economic Geography **7**(6): 673–709.

Crescenzi R, Rodríguez-Pose A, Storper M. 2012. The territorial dynamics of innovation in China and India. Journal of Economic Geography **12**: 1055–1085.

Cuervo-Cazurra A. 2012a. Developing country multinational companies. Special Issue. Global Strategy Journal **2**(3).

Cuervo-Cazurra A. 2012b. Extending theory by analyzing developing country multinational companies: Solving the Goldilocks debate. Global Strategy Journal **2**(3): 153–167.

Cui L, Meyer KE, Hu HW. 2014 What drives firms' intent to seek strategic assets by foreign direct investment? A study of emerging economy firms. Journal of World Business **49**(4): 488–501.

Czarnitzki D, Hall BH Oriani R. 2006. The market valuation of jnowledge assets in US and European firms. In The Management of Intellectual Property, D. Bosworth and E. Webster (eds). Edward Elgar: Cheltenham, UK: 111–131.

Czarnitzki D, Hussinger K, Schneider C. 2011. Commercializing academic research: the quality of faculty patenting. Industrial and Corporate Change **20**(5): 1403–1437.

Dau LA. 2013. Learning across geographic space: pro-market reforms, multinationalization strategy, and profitability. Journal of International Business Studies **44**(3): 235–262.

de Man A , Duyster G. 2005. Collaboration and innovation: a review of the effects of mergers, acquisitions and alliances on innovation. Technovation **25**(12): 1377–1387.

Deng P. 2009. Why do Chinese firms tend to acquire strategic assets in international expansion? Journal of World Business **44**: 434–444.

Deng P. 2010. What determines performance of cross-border M&As by Chinese companies? An absorptive capacity perspective. Thunderbird International Business Review **52**(6): 509–524.

Desyllas P, Hughes A. 2010. Do high technology acquirers become more innovative? Research Policy **39**(8): 1105–1121.

Di Maggio PJ, Powell WW. 1983. The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. American Sociological Association **48**(2): 147–160.

Duysters G, Jacob J, Lemmens C, Jintian Y. 2009. Internationalization and technological catching up of emerging multinationals: a comparative case study of China's Haier group. Industrial and Corporate Change **18**(2): 325–349.

Dunning JH. 1993. Multinational Enterprises and the Global Economy. Addison Wesley: Wokingham, UK.

Dunning JH. 1998. Location and the multinational enterprise: a neglected factor?. Journal of International Business Studies **29**(1): 45–66.

Economist (The) 2011. South-north FDI: role reversal. Emerging-market firms are increasingly buying up rich-world ones, Special Report: The World Economy, September 24th. Available at: http://www.economist.com/node/21528982, (accessed March 10, 2016).

Eberhardt M, Helmers C, Zhihong Y. 2011. Is the dragon learning to fly? An analysis of the Chinese patent explosion, The University of Nottingham Research Paper No. 2011/16.

Figueiredo PN. 2011. The role of dual embeddedness in the innovative performance of MNE subsidiaries: evidence from Brazil. Journal of Management Studies **48**(2): 417–440.

Florida R. (2005) The world is spiky. The Atlantic Monthly **296**(3): 48–51.

Gaur A, Malhotra S. 2014. Spatial geography and control in foreign acquisitions. Journal of International Business Studies **45**(2): 191–210.

Giuliani E. 2007. The selective nature of knowledge networks in clusters: evidence from the wine industry. Journal of Economic Geography **7**(2): 139–168.

Giuliani E, Gorgoni S, Günther C, Rabellotti R. 2014. Emerging versus advanced country MNEs investing in Europe: a typology of subsidiary global–local connections. International Business Review **23**(4): 680–691.

Giuliani E, Macchi C. 2014. Multinational corporations' economic and human rights impacts on developing countries: a review and research agenda. Cambridge Journal of Economics **38**(2): 479–517.

Global RepTrack 100 (2015) The world's most reputable companies. Reputation Institute, https://www.reputationinstitute.com (accessed March 2, 2016.

Goerzen A, Asmussen CG, Nielsen BB. 2013. Global cities and multinational enterprise location strategy. Journal of International Business Studies **44**: 427–450.

Gould RV. 2002. The origins of status hierarchies: a formal theory and empirical test. The American Journal of Sociology **107**(5): 1143–1178.

Gourieroux C, Monfort A, Trognon A. 1984. Pseudo Maximum Likelihood Methods: applications to Poisson models. Econometrica **52**(3): 701–720.

Graebner ME, Eisenhardt HM, Roundy PT. 2010. Success and failure in technology acquisitions: lessons for nuyers and sellers. The Academy of Management Perspectives **24**(3): 73–92.

Grant RM. 1996. Toward a knowledge-based theory of the firm. Strategic Management Journal **17**(S2): 109–122.

Gubbi SR, Aulakh P, Ray S, Sarkar MB, Chittoor R. 2010. Do international acquisitions by emerging-economy firms create shareholder value[quest] The case of Indian firms. Journal of International Business Studies **41**(3): 397–418.

Hall BH. 1990. The impact of corporate restructuring on industrial research and development. Brookings Papers on Economic Activity 3: 40.

Hansen U, Fold N, Hansen T. 2016. Upgrading to lead firm position via international acquisition: learning from the global biomass power plant industry. Journal of Economic Geography **16**(1): 131–153.

Hitt MA, Dacin MT, Levitas E, Arregle J, Borza A. 2000. Partner selection in emerging and developed market contexts: resource-based and organizational learning perspectives. Academy of Management Journal **43**(3): 449–467.

Hitt MA, Hoskisson RE, Ireland RD, Harrison JS. 1991. Effects of acquisitions on R&D inputs and outputs. Academy of Management Journal **34**(3): 693–706.

Hitt MA, Hoskisson RE, Johnson RA, Moesel DD. 1996. The market for corporate control and firm innovation. Academy of Management Journal **39**(5): 1084–1119.

Hymer S. 1976. The international operations of national firms: a study of direct foreign investment. MIT Press: Cambridge, MA, USA.

Hofstede G. 1980. Culture's consequences: international differences in Work-Related Values, Sage Publications: Beverly Hills CA, USA.

Hottenrott H, Rexhäuser S. 2015. Policy-induced environmental technology and inventive efforts: is there a crowding out?. Industry and Innovation **22**(5): 375–401.

Hu AG, Jefferson GH. 2009. A great wall of patents: What is behind China's recent patent explosion? Journal of Development Economics **90**(1): 57–68.

Iammarino S, McCann P. 2013. Multinationals and Economic Geography: Location, Technology and Innovation. Edward Elgar Publishing: Cheltenham, UK.

Jensen ØPD, Pedersen T. 2011. The economic geography of offshoring: the fit between activities and local context. Journal of Management Studies **48**(2): 352–372.

Kapoor R, Lim K. 2007. The impact of acquisitions on the productivity of inventors at semiconductor firms: a synthesis of knowledge-based and incentive-based perspectives. Academy of Management Journal **50**(5): 1133–1155.

Karim S, Mitchell W. 2000. Path-dependent and path-breaking change: reconfiguring business resources following acquisitions in the U.S. medical sector, 1978-1995. Strategic Management Journal **21**: 1061–1081.

Kedron P, Bagchi-Sen S. 2012. Foreign direct investment in Europe by multinational pharmaceutical companies from India. Journal of Economic Geography. doi: 10.1093/jeg/lbr044.

Kostova T, Zaheer S. 1999. Organizational legitimacy under conditions of complexity: the case of the multinational enterprise. Academy of Management Review **24**(1): 64–81.

Lall S. 1992. Technological capabilities and industrialization. World Development **20**(2): 165–186.

Lane PJ, Lubatkin M. 1998. Relative absorptive capacity and interorganizational learning. Strategic Management Journal **19**(5): 461–477.

Lebedev S, Peng MW, Xie E, Stevens CE. 2015. Mergers and acquisitions in and out of emerging economies. Journal of World Business **50**(4): 651–662.

Lema R, Quadros, R, Schmitz, H. 2015, Reorganising global value chains and building innovation capabilities in Brazil and India. Research Policy **44**(7): 1376–1386.

Li J, Li Y, Shapiro D. 2012. Knowledge seeking and outward FDI of emerging market firms: the moderating effect of inward FDI. Global Strategy Journal **2**(4): 277–295.

Long C. 2002. Patent signals. The University of Chicago Law Review **69**(2): 625–679.

Luo Y, Tung RL. 2007. International expansion of emerging market enterprises: a springboard perspective. Journal of International Business Studies **38**(4), 481–498.

Lundvall BA, Joseph KJ, Chaminade C, Vang J. (eds). 2009. Handbook of Innovation Systems and Developing Countries, Edward Elgar: Chelthenam, UK.

Makino S, Lau C, Yeh R. 2002. Asset-exploitation versus asset-seeking: implications for location choice of foreign direct investment from newly industrialized economies. Journal of International Business Studies **33**(3): 403–421.

Madhok A, Keyhani M. 2012. Acquisitions as entrepreneurship: asymmetries, opportunities, and the internationalization of multinationals from emerging economies. Global Strategy Journal **2**(1): 26–40.

Makri M, Hitt MA, Lane PJ. 2010. Complementary technologies, knowledge relatedness, and invention outcomes in high technology mergers and acquisitions. Strategic Management Journal **31**(6): 602–628.

Mansfield E. 1962. Entry, Gibrat's Law, innovation, and the growth of firms. American Economic Review **52**(5): 1023–1051.

Marin A, Bell M. 2006. Technology spillovers from foreign direct investment (FDI): the active role of MNC subsidiaries in Argentina in the 1990s. Journal of Development Studies **42**(6): 678–697.

Martínez C. 2010. Patent families: when do different definitions really matter?. Scientometrics **86**(1): 39–63

Maraut, S, Dernis, H Webb, C, Spiezia V, Guellec D. 2008. The OECD REGPAT Database: a presentation', STI Working Paper 2008/2, Statistical Analysis of Science, Technology and Industry, OECD, Paris.

McCann P, Mudambi R. 2005. Analytical differences in the economics of geography: the case of the multinational firm. Environment and Planning A **37**(10): 1857–1876.

Meyer KE , Mudambi R, Narula R. 2011. Multinational enterprises and local contexts: the opportunities and challenges of multiple embeddedness. Journal of Management Studies **48**(2): 235–252.

Meyer KE. 2015. Context in management research in emerging economies. Management and Organization Review **11**(3): 369–377.

Morosini G, Shane S, Singh H. 1998. National cultural distance and cross-border acquisition performance. Journal of International Business Studies **29**(1): 137–158.

Mudambi R, Swift T. 2011. Leveraging knowledge and competencies across space: the next frontier in international business. Journal of International Management **17**(3): 186–189.

Nachum L. 2003. Liability of foreignness in global competition? Financial service affiliates in the city of London. Strategic Management Journal **24**(12): 1187–1208.

Nam K, Li X. 2012. Out of passivity: potential role of OFDIin IFDI-based learning trajectory. Industrial and Corporate Change **22**(3): 711–743

Narula R, Driffield N. 2012. Does FDI cause development? The ambiguity of the evidence and why it matters. European Journal of Developmental Research **24**(1): 1–7.

Narula R, Santangelo GD. 2012. Location and collocation advantages in international innovation. Multinational Business Review **20**(1): 6–25.

Nelson R. 1991. Why do firms differ, and how does it matter? Strategic Management Journal **12**(S2): 61–74.

Nelson R, Winter S. 1982. An Evolutionary Theory of Economic Change. Harvard University Press: Cambridge MA, USA.

Nicholson-Rao R, Salaber J. 2013. The motives and performance of cross-border acquirers from emerging economies: Comparison between Chinese and Indian firms. International Business Review **22**(6): 963–980.

Organisation for Economic Cooperation and Development (OECD). 2015. OECD Economic Survey JAPAN, OECD, Paris. Available at http://www.oecd.org/eco/surveys/Japan-2015-overview.pdf (accessed March 10, 2016).

Ornaghi C. 2009. Mergers and innovation in big pharma. International Journal of Industrial Organization **27**(1): 70–79.

Piazza A, Castellucci F. 2013. Status in organization and management theory. Journal of Management **40**(1): 287–315.

Piscitello L. 2011. Strategy, location, and the conceptual metamorphosis of the MNE. Global Strategy Journal **1**(1-2): 127–131.

Piscitello L, Rabellotti R, Scalera V 2015. Chinese and Indian acquisitions in Europe: the relationship between motivation and entry mode choice. In The Routledge Companion to Merger and Acquisition, Risberg A., King D., Meglio O. (eds), Routledge: London, UK; 114–129.

Podolny JM. 1993. A status-based model of market competition. American Journal of Sociology **98**(4): 829–872.

Podolny JM, Phillips DJ. 1996. The dynamics of organizational status. Industrial and Corporate Change **5**(2): 453–471.

Porter ME. 2000. Location, competition, and economic development: local clusters in a global economy. Economic Development Quarterly **14**(1): 15–34.

Puranam P, Singh H, Zollo M. 2006. Organizing for innovation: managing the coordination-autonomy dilemma in technology acquisitions. Academy of Management Journal **49**(2): 263–280.

Rabbiosi L, Elia S, Bertoni F. 2012. Acquisitions by EMNCs in developed markets an organisational learning perspective. Management International Review **52**: 193–212.

Ramachandran J, Pant A. 2010. The liabilities of origin: an emerging economy perspective on the costs of doing business abroad. In Advances in International Management: The Past, Present and Future of International Business and Management, Devenney TM., Pedersen TL., and Tihanyi (eds). Emerald: New York, USA: 231-265.

Ramamurti R. 2012. What is really different about emerging market multinationals? Global Strategy Journal **2**(1): 41–47.

Reus TH, Lamont BT. 2009. The double-edged sword of cultural distance in international acquisitions. Journal of International Business Studies **40**(8): 1298–1316.

Romanelli E, Khessina OM. 2005. Regional industrial identity: cluster configurations and economic development. Organization Science **16(**4): 344–358

Sarala RM, Vaara E. 2010. Cultural differences, convergence, and crossvergence as explanations of knowledge transfer in international acquisitions. Journal of International Business Studies **41**(8): 1365–1390.

Saxenian A. 1994. Regional Advantage Culture and Competition in Silicon Valley and Route 128. Harvard University Press, Cambridge, MA.

Schmitt A, Van Biesebroeck J. 2013. Proximity strategies in outsourcing relations: the role of geographical, cultural and relational proximity in the European automotive industry. Journal of International Business Studies **44**(5): 475–503.

Sharkey AJ. 2014. Categories and organizational status: the role of industry status in the response to organizational deviance. American Journal of Sociology **119**(5): 1380–1433.

Squicciarini M, Dernis H, Criscuolo C. 2013. Measuring patent quality: indicators of technological and economic calue. OECD Science, Technology and Industry Working Papers, 2013/03. Paris, OECD Publishing.

Stahl GK, Voigt A. 2008. Do cultural differences matter in mergers and acquisitions? A tentative model and examination. Organization Science **19**(1): 160–176.

Stern I, Dukerich JM, Zajac E. 2014. Unmixed signals: how reputation and status affect alliance formation. Strategic Management Journal **35**: 512–531.

Stuart TE, Hoang H, Hybels RC. 1999. Interorganizational Endorsements and the Performance of Entrepreneurial Ventures. Administrative Science Quarterly **44**: 315–349.

Tallman S, Jenkins M, Henry N, Pinch S. 2004. Knowledge, clusters, and competitive advantage. Academy of Management Review **29**(2): 258–271.

Tan H, Mathews JA. 2014. China's continuing renewable energy revolution: global implications. The Asia-Pacific Journal **12**(12): 1-10.

UNCTAD. 2015. World Investment Report. Geneva: UNCTAD.

Vaara E, Junni P, Sarala RM, Ehrnrooth M, Koveshnikov A. 2014. Attributional tendencies in cultural explanations of M&A performance. Strategic Management Journal **35**(9): 1302–1317.

Valentini G. 2012. Measuring the effect of M&A on patenting quantity and quality. Strategic Management Journal **33**(3): 336–346.

Valentini G, Di Guardo MC. 2012. M&A and the profile of inventive activity. Strategic Organization **10**(4): 384–405.

White H. 1981. Where do markets come from? American Journal of Sociology **87**(3): 517–547.

Wooldridge JM. 2002. Econometric Analysis of Cross Section and Panel Data. MIT Press: Cambridge, MA, USA.

World Bank. (2010). Innovation Policy: A Guide for Developing Countries, The International Bank for Reconstruction and Development, The World Bank, Washington DC, USA.

Zaheer S. 1995. Overcoming the liability of foreignness. Academy of Management Journal **38**: 341–363

Zeng K. 2016. Understanding the institutional variation in China's Bilateral Investment Treaties (BITs): the complex interplay of domestic and international influences. Journal of Contemporary China **25**(97): 112–129.

Zheng N, Wei Y, Zhang Y, Yang J. (2016). In search of strategic assets through cross-border mergers and acquisitions: Evidence from Chinese multinational enterprises in developed economies. International Business Review **25**(1): 177–186.

APPENDIX

Table A–1 List of variables and sources

NAME	DESCRIPTION	SOURCE
Dependent variables		
EMNE post-deal innovative output	# INPADOC families of the acquirer applied in the 3 years after the deal	PATSTAT ORBIS
Independent variables		
Target firm innovation	# INPADOC families of the target firm applied in the 5 years before the deal	PATSTAT ORBIS
Target region innovation	Logarithm of the cumulated # of PCT patents per capita in the region (TL2) where the target firm is located in the 5 years before the deal	OECD REG PAT
EMNE knowledge base	# INPADOC families of the acquirer applied in the 5 years before the deal plus # INPADOC families of the cited patents	PATSTAT ORBIS
Control variables		
Horizontal CBA	Dummy equal 1 if the target and the acquirer are in the same SIC (2 digit) code	ORBIS
Institutional distance	Institutional distance between the acquirer and target's country	Berry *et al.* 2010
Size	Dummy equal to 1 if the acquirer is not in the size categories 'Large' and 'Very Large' as defined in ORBIS	ORBIS
FDI experience	Number of CBAs and greenfields with a majority acquisition prior to the main-deal year	ZEPHYR SDC PLATINUM
China dummy	Dummy equal to 1 if the acquirer is Chinese	ZEPHYR SDC PLATINUM
Japan dummy	Dummy equal to 1 if the target firm/region is located in Japan	ZEPHYR SDC PLATINUM
U.S. dummy	Dummy equal to 1 if the target firm/region is located in the U.S.	ZEPHYR SDC PLATINUM

Table A–2 Correlation table

	Variables	1	2	3	4	5	6	7	8	9	10	11
1	EMNE post-deal innovative output	1										
2	Target firm innovation	-0.0108	1									
3	Target region innovation	-0.0095	0.0357	1								
4	EMNE knowledge base	0.5276	-0.0135	-0.0297	1							
5	China dummy	0.1833	0.0949	0.1073	-0.0388	1						
6	Japan dummy	0.0018	0.3137	0.0505	-0.0103	0.2246	1					
7	U.S. dummy	-0.082	-0.0438	0.2343	-0.0749	-0.1474	-0.134	1				
8	FDI experience	0.1604	-0.0452	0.0533	0.3575	-0.1615	-0.0636	0.074	1			
9	Institutional distance	-0.1594	-0.0594	0.1773	-0.0924	-0.4358	-0.1996	0.7671	0.093	1		
10	Horizontal CBA	0.0515	0.0175	0.1052	0.0209	-0.0651	0.0061	-0.0483	0.1091	0.0032	1	
11	Size	-0.1046	0.0965	-0.0549	-0.1276	0.1572	0.116	-0.1118	-0.2203	-0.0928	-0.1249	1

TABLES

Table 1 - Distribution of acquisitions by country of origin, industry and target countries

	Total #	Manufacturing*	Services*	Host countries #
China	95 (20.4)	59 (28.2)	36 (14)	30 USA 20 Germany 9 France 9 Japan
India	371 (79.6)	150 (71.8)	221 (86)	176 USA 78 UK 32 Germany
Total	466 (100)	209 (100)	257 (100)	

Legend: % in brackets. *Manufacturing and Services are defined using the 2-digits NACE codes. Manufacturing includes: 20, 21, 26, 27, 28, 29, and 30. Services includes: 59, 60, 61, 62, 63,64, 65 66, 69, 70, 71, 72, 73, 74, 78, and 80.

Table 2 - Descriptive statistics

Continuous variables

VARIABLES	N	Mean	Std. Dev.	Min	Max
EMNE post-deal innovative output	466	14.223	63.459	0	691
Target firm innovation	466	211.7	4206.825	0	90811
Target region innovation	452	7.708	1.346	0	9.53
EMNE knowledge base	466	59.341	217.683	0	2053
FDI experience	466	2.352	2.492	0	18
Institutional distance	466	19.803	7.489	1.3	38.182

Categorical/dummy variables

VARIABLES	N	Frequency (%)
China dummy	466	20.39
Japan dummy	466	2.36
U.S. dummy	466	44.21
Horizontal CBA	466	19.53
Size	466	43.78

Table 3 - Descriptive statistics on acquirer, target and region patents

		Acquirer		**Target**	**Region**
		# INPADOC families			***PCT Applications (per capita per mlns)***
		Before (5 years)	After (3 years)	Before (5 years)	Before (5 years)
Total	*#*	4883	5293	17879	
	mean	15.33047	14.223	38.4206	3278.582
	sd	72.95005	63.459	785.9202	2344.228
	min	0	0	0	0
	max	1214	691	16966	13766.54
China	*#*	3118	3369	17303	
	mean	33.07368	36.168	182.2526	4182.964
	sd	135.3276	123.934	1740.346	2921.993
	min	0	0	0	0
	max	1214	691	16966	13766.54
India	*#*	1765	1924	577	
	mean	10.78706	8.604	1.590296	3050.608
	sd	43.97647	31.678	10.46948	2119.232
	min	0	0	0	0
	max	447	347	170	13174.14

Table 4 - Regression results (dependent variable: *EMNE post-deal innovative output*)

	Controls	***Full Models***				***Full Model with Interactions***	
Models	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
China dummy	1.8289***	1.8338***	1.8947***	1.9020***	2.2340***	2.2692***	2.3066***
	(0.1373)	(0.1439)	(0.1593)	(0.1652)	(0.6007)	(0.5849)	(0.6726)
Japan dummy	-1.1888**	-0.9756*	-1.1076**	-0.8944*	-0.4668	-0.4301	-0.4558
	(0.4124)	(0.4525)	(0.4248)	(0.4484)	(0.3598)	(0.4077)	(0.3917)
U.S. dummy	-0.0760	-0.0810	0.0088	0.0095	0.1737	0.1179	0.1236
	(0.5765)	(0.5866)	(0.5961)	(0.6055)	(0.2143)	(0.2501)	(0.2272)
FDI experience	0.2571***	0.2520***	0.2567***	0.2513***	0.0528*	0.0732***	0.0734*
	(0.0301)	(0.0299)	(0.0363)	(0.0359)	(0.0249)	(0.0174)	(0.0298)
Institutional distance	-0.0466	-0.0468	-0.0457	-0.0463	-0.0245***	-0.0273***	-0.0196***
	(0.0297)	(0.0303)	(0.0358)	(0.0364)	(0.0021)	(0.0022)	(0.0024)
Horizontal CBA	0.9832	1.0080	0.6660	0.6884	0.8056*	0.8129*	0.8765**
	(0.5683)	(0.5778)	(0.5622)	(0.5697)	(0.3417)	(0.3506)	(0.3273)
Size	-3.0603***	-3.0647***	-3.0894***	-3.0966***	-3.1112***	-3.0998***	-3.0932***
	(0.8490)	(0.8546)	(0.8352)	(0.8412)	(0.8134)	(0.8218)	(0.8411)
Target firm innovation		-0.0336***		-0.0351***	-0.0200***	-0.0405***	-0.0167***
		(0.0063)		(0.0087)	(0.0037)	(0.0058)	(0.0025)
Target region innovation			-0.0421	-0.0342	-0.0160	-0.0175	-0.0822**
			(0.0322)	(0.0334)	(0.0367)	(0.0404)	(0.0305)
EMNE knowledge base					0.0030***	0.0030***	-0.0047
					(0.0003)	(0.0003)	(0.0027)
EMNE knowledge base *x* Target firm innovation						0.0002***	
						(0.0001)	
EMNE knowledge base *x* Target region innovation							0.0010**
							(0.0004)
Year dummy	yes	yes	yes	yes	yes	yes	yes
Observations	442	442	428	428	428	428	428
Log Likelihood	-9.0e+03	-9.0e+03	-8.8e+03	-8.8e+03	-5.8e+03	-5.7e+03	-5.4e+03

LEGEND: *<0.05, **<0.01, ***<0.001. Models are estimated using Poisson Quasi-Maximum Likelihood. Robust Standard errors are reported below coefficients.

Table 5—Regression results with USPTO data (dependent variable: EMNE innovative performance after the deal)

	Full Model	***Full Model with Interactions***	
	(1)	(2)	(3)
China dummy	-1.4479**	-1.4710***	-1.4651***
	(0.4431)	(0.4422)	(0.3111)
Japan dummy	1.6802***	1.7570***	1.8162***
	(0.3894)	(0.4128)	(0.5094)
U.S. dummy	0.2829	0.2572	0.2033
	(0.4412)	(0.4101)	(0.3735)
FDI experience	0.1114***	0.1130***	0.1458***
	(0.0246)	(0.026)	(0.0078)
Institutional distance	0.0019	0.0027	0.0137
	(0.028)	(0.0267)	(0.0165)
Horizontal CBA	0.026	0.0286	0.0255
	(0.3823)	(0.3849)	(0.3029)
Size	-1.4446	-1.4636	-1.4672
	(0.955)	(0.9713)	(0.9589)
Target firm innovation[$]	-0.0837***	-0.1651***	-0.0809***
	(0.0248)	(0.0168)	(0.0101)
Target region innovation	0.0149	0.0175	-0.2279*
	(0.1478)	(0.1474)	(0.0956)
EMNE knowledge base[$]	0.0049***	0.0048***	-0.0123**
	(0.0014)	(0.0014)	(0.0046)
EMNE knowledge base[$] *x* Target firm innovation[$]		0.0002**	
		(0.0001)	
EMNE knowledge base[$] *x* Target region innovation			0.0022***
			(0.0006)
Year dummy	yes	yes	yes
Observations	423	423	423
Log likelihood	-1.30E+03	-1.20E+03	-1.20E+03

LEGEND: *<0.05, **<0.01, ***<0.001. Models are estimated using Poisson Quasi-Maximum Likelihood. Robust Standard errors are reported below coefficients. [$] All these variables are calculated using USPTO patents data.

Table 6—Zero-inflated models (dependent variable: EMNE innovative performance after the deal)

	Full Model	***Full Model with Interactions***	
	(1)	(2)	(3)
China dummy	1.7256***	1.6687***	1.7257***
	(0.0373)	(0.0376)	(0.0373)
Japan dummy	0.3372***	0.3666***	0.3378***
	(0.0895)	(0.0896)	(0.0901)
U.S. dummy	0.0281	-0.0248	0.0278
	(0.0514)	(0.0512)	(0.0516)
FDI experience	-0.0477***	-0.0448***	-0.0477***
	(0.0060)	(0.0060)	(0.0060)
Institutional distance	0.0202***	0.0288***	0.0202***
	(0.0033)	(0.0034)	(0.0033)
Horizontal CBA	0.1278	0.1772**	0.1278
	(0.0668)	(0.0669)	(0.0668)
Manufacturing	0.1337***	0.2946***	0.1336***
	(0.0315)	(0.0354)	(0.0315)
Size	-1.4936***	-1.3956***	-1.4937***
	(0.1431)	(0.1433)	(0.1431)
Deal done before 2008	-0.3556***	-0.3409***	-0.3558***
	(0.0331)	(0.0332)	(0.0332)
Target firm innovation	-0.0442***	-0.0426***	-0.0443***
	(0.0039)	(0.0038)	(0.0046)
Target region innovation	-0.0866***	-0.1350***	-0.0866***
	(0.0096)	(0.0101)	(0.0096)
EMNE knowledge base	0.0018***	0.0001	0.0018***
	(0.0001)	(0.0002)	(0.0001)
EMNE knowledge base *x* Target firm innovation		0.0002***	
		(0.0001)	
EMNE knowledge base *x* Target region innovation			0.0001
			(0.0001)
Constant	3.1800***	3.2607***	3.1801***
	(0.1159)	(0.1138)	(0.1159)
Observations	452	452	452
Log Likelihood	-4.2e+03	-4.1e+03	-4.2e+03

Legend: *<0.05, **<0.01, ***<0.001. Models are estimated using Zero-inflated Poisson regression. The inflate equation includes origin country dummy, sector dummies, acquirer knowledge base and acquirer size. Standard errors are reported below coefficients.

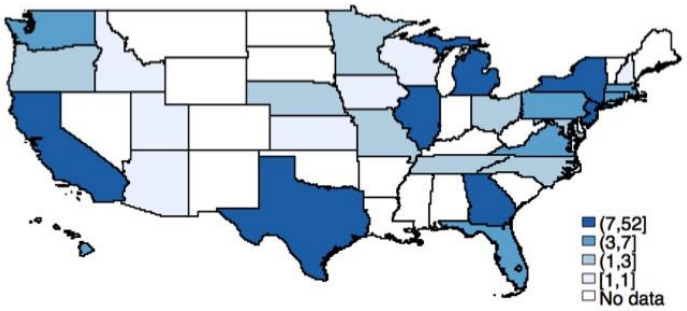
Table 7 –Two-stage estimation (dependent variable: EMNE innovative performance after the deal)

	Full Model	***Full Model with Interactions***	
	(1)	(2)	(3)
China dummy	1.3748***	1.7596***	1.7632***
	(0.0501)	(0.0529)	(0.0526)
Japan dummy	-1.2048***	-0.2178*	-0.1365
	(0.0867)	(0.0906)	(0.0883)
U.S. dummy	1.0313***	0.7661***	0.3641***
	(0.0827)	(0.0753)	(0.0789)
FDI experience	-0.1105***	-0.0696***	-0.0298***
	(0.0068)	(0.0068)	(0.0067)
Institutional distance	-0.1165***	-0.0800***	-0.0865***
	(0.0047)	(0.0047)	(0.0048)
Horizontal CBA	0.5180***	0.2335**	0.1606
	(0.0816)	(0.0803)	(0.0895)
Manufacturing	-0.6198***	-0.0720	-0.4600***
	(0.0532)	(0.0519)	(0.0522)
Logarithm of operating revenues	0.7003***	0.5877***	0.6199***
	(0.0120)	(0.0112)	(0.0118)
Deal done before 2008	0.2274***	0.4677***	0.3118***
	(0.0389)	(0.0388)	(0.0400)
Target firm innovation	-0.0101**	-0.0345***	-0.0690***
	(0.0033)	(0.0030)	(0.0038)
Target region innovation	-0.2671***	-0.2095***	-0.3726***
	(0.0146)	(0.0149)	(0.0152)
EMNE knowledge base	0.0040***	-0.0032***	0.0034***
	(0.0001)	(0.0002)	(0.0001)
EMNE knowledge base *x* Target firm innovation		0.0009***	
		(0.0001)	
EMNE knowledge base *x* Target region innovation			0.0004***
			(0.0001)
Constant	-5.1737***	-4.1472***	-3.4584***
	(0.1959)	(0.1901)	(0.2135)
Observations	2438	2438	2438
Log Likelihood	-1.3e+03	-1.3e+03	-1.3e+03

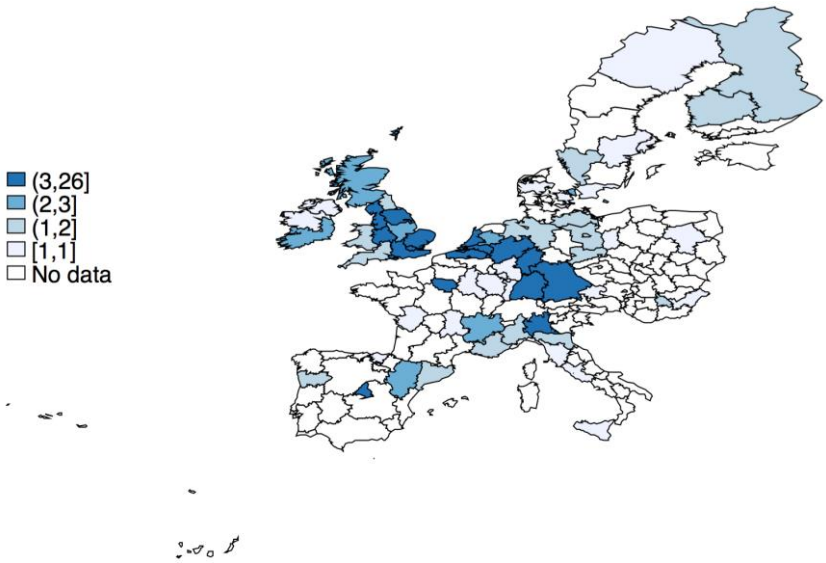
Legend: *<0.05, **<0.01, ***<0.001. Models are estimated using the STATA command `smm` presented in Miranda and Rabe-Hesketh (2006). The selection equation includes revenues, solvency capability, acquirer knowledge base, manufacturing sector dummy and origin country dummy. Standard errors are reported below coefficients.

Figure 1—Geographical distribution of CBAs to U.S., Europe and Japan

United States



Europe



Japan

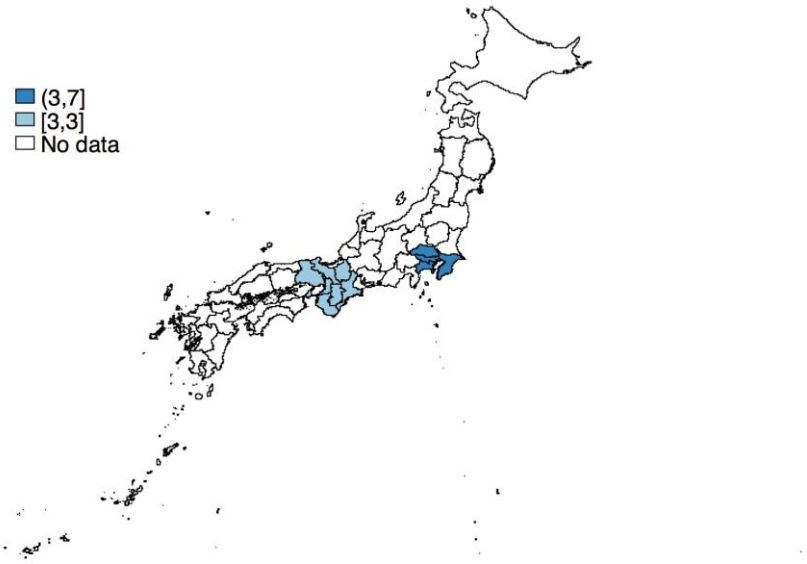
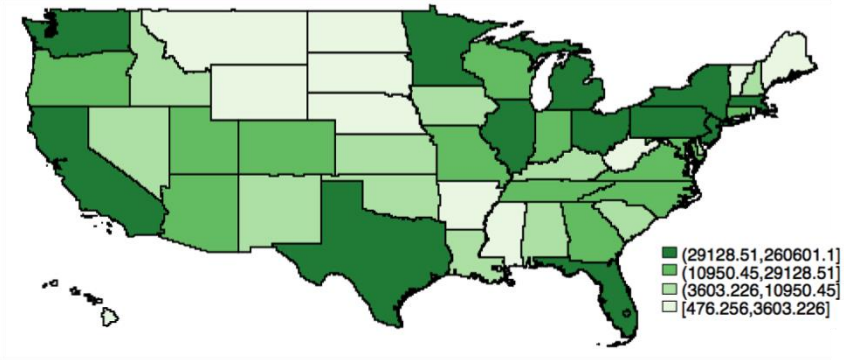
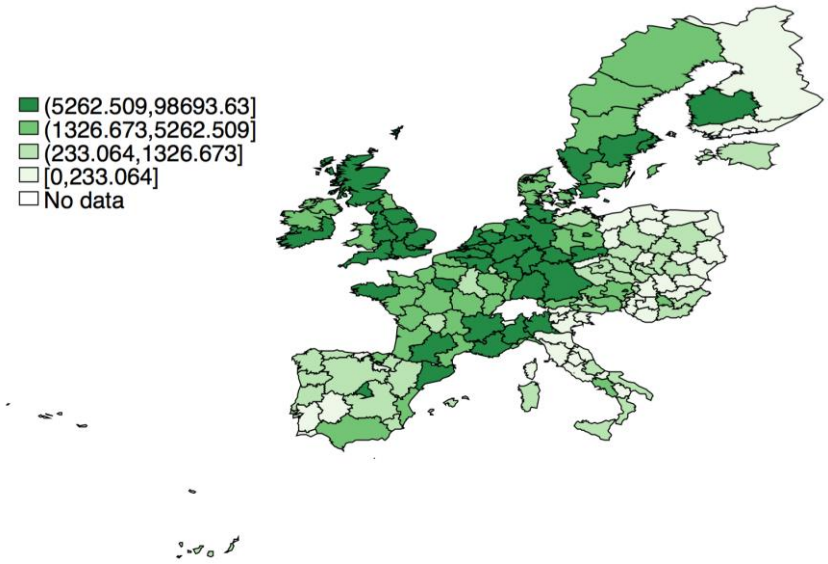


Figure 2—Geographical distribution of PCT patent applications in U.S., European and Japanese regions

United States



Europe



Japan

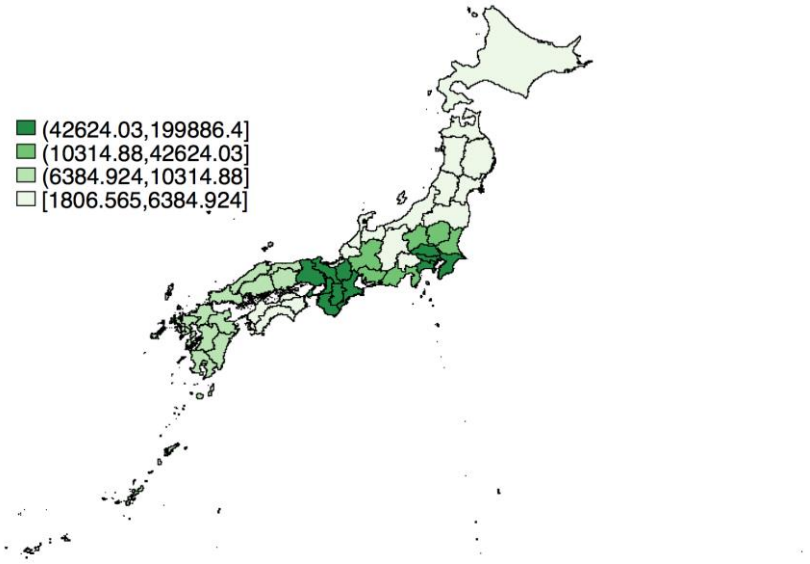


Figure 3—Number of patents at different level of target firm innovation and EMNE knowledge base. The graph was drawn based on the results in Model 6 in Table 4

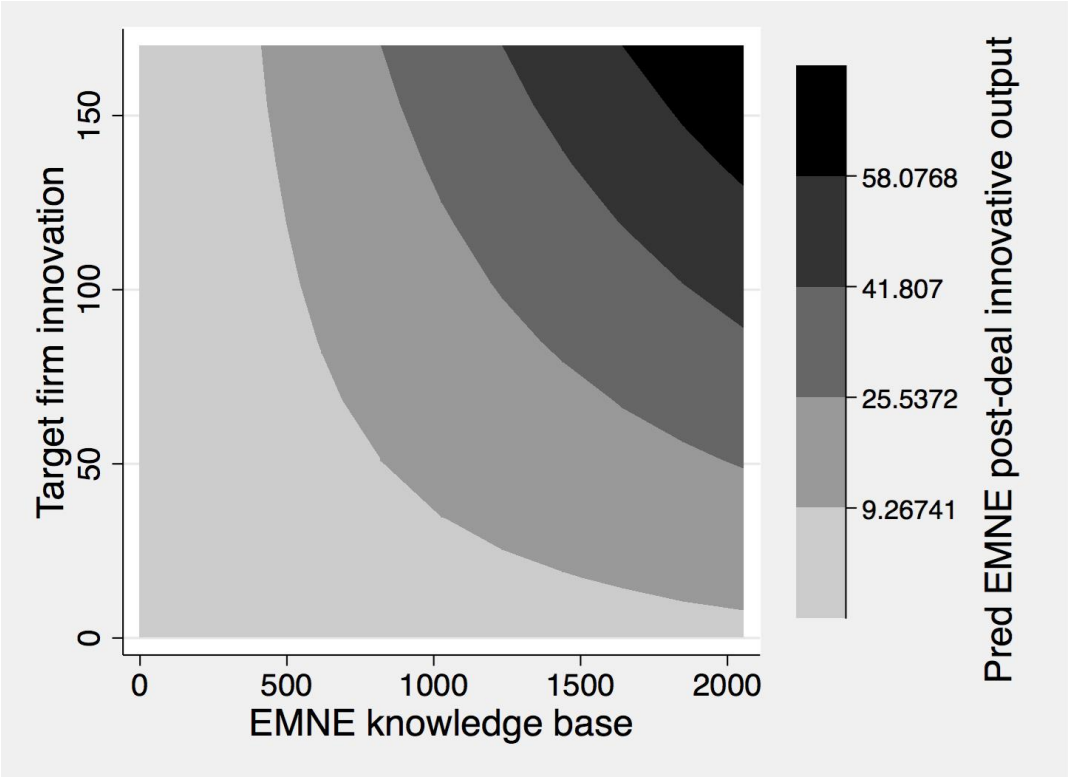


Figure 4—Number of patents at different level of target region innovation and EMNE knowledge base. The graph was drawn based on the results in Model 7 in Table 4