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

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1. Introduction

Roughly 40% of emerging economies' investments are in advanced countries (UNCTAD, 2017) that are rich in strategic assets such as patents and technological skills, much sought after by emerging-market multinational enterprises (EMNEs) (Luo and Tung, 2007; Cuervo-Cazurra, 2012). Several landmark cross-border acquisitions (CBAs) such as the acquisition of Jaguar and Land Rover by the Indian Tata Motors in 2008, and the state owned Chinese chemical company ChemChina's takeovers of the Italian tire producer Pirelli in 2015 and the Swiss pesticide and seed producer, Syngenta in 2016 are good examples of EMNEs' asset seeking strategies. These kinds of CBAs are expected to boost the acquiring EMNEs' innovative capabilities and promote processes of reverse knowledge transfer to their home countries (Hansen et al., 2014). However, we know little about whether these expectations are fulfilled, or the frictions and impediments involved in these processes.

EMNEs access advanced country knowledge and technological assets directly from the acquired firm, and by connecting to other actors (e.g. universities, suppliers, competitors, service providers) present in the region in which the acquired firm is located (hereafter we refer to target firm and target region) (Cantwell and Iammarino, 2001; Meyer et al., 2011; Mudambi and Swift, 2011; Beugelsdijk and Mudambi, 2013; Dau, 2013). However, since the pool of available knowledge in the target firm and/or region are likely to differ widely, their capacity to contribute to the post-acquisition EMNEs' innovation output can be expected also to differ[1]. For instance, an EMNE purchasing an innovative company located in Silicon Valley will likely have access to rich and valuable knowledge spillovers, and more opportunities to tap into a larger pool of specialized knowledge (Barnard, 2010; Cantwell and Mudambi, 2011) compared to an EMNE involved in purchasing a less innovative firm in a region with lower innovation capacity.

There are some parallel international business and economic geography investigations

[1] In this article, we use the terms post-acquisition and post-deal interchangeably.

into the process of tapping into international knowledge. These studies document the potential frictions and impediments related to attempts to source knowledge which can reduce the capacity to fully exploit the potential from investments in highly innovative target firms and regions. Research in international business generally takes predominantly firm-level perspective on this topic (e.g. Birkinshaw et al., 2000; Cassiman et al., 2005; Cloodt et al., 2006; Awate et al., 2014; Colombo and Rabbiosi, 2014), while economic geographers tend to focus more on the spatial dimensions of the process and how multinationals integrate with the local context of the investment (Iammarino and McCann, 2013; Crescenzi et al., 2014; Hansen et al., 2016). Although several some progress has been made toward integrating these two strands of scholarly research (see e.g. Cantwell and Mudambi, 2011; Mudambi and Swift, 2011; Beugelsdijk and Mudambi, 2013), bridging studies are scarce. Also, very few studies examine the impacts of CBAs on EMNEs, taking account of both firm- and territorial-level perspectives.

To try to fill these gaps, we consider the universe of Chinese and Indian medium to high-tech firms' majority-stake CBAs in Europe (EU28) and the U.S. during 2003–2011, and investigate whether these investments have led higher levels of innovation in the acquiring firms. Our baseline expectation is that the higher the innovative capacity of the target firm (i.e. size of its innovative output), or the target region (i.e. wealth of technological knowledge available in the regional ecosystem), the more the acquiring firm will innovate post-deal[2]. To qualify these relationships, we investigate the moderating roles played by EMNEs' absorptive capacity and status. Our focus on these two dimensions is justified because the former which, following Cohen and Levinthal (1990), we conceptualize as the firm's knowledge base, generally is considered an important condition for the ability to tap into external knowledge and

[2] Note that we consider not the proximity of the firm or region to the technological frontier (i.e. technological advancedness) but rather the wealth (i.e. scale) of technological knowledge in the firm or region to reflect the innovative capacity of those contexts. Hence, in our study, higher innovative capacity does not necessarily translate into more advanced, radical or complex innovation. We acknowledge the possibility of a link between the scale of the knowledge-generating or innovative efforts of the firms (and regions) and their technological advancedness but we do not focus on the latter dimension.

skills that are outside the EMNEs' "*comfort zone*" (see also Bathelt and Cohendet, 2014)[3]. We expect significant variation in the EMNEs' knowledge bases, and suggest that this heterogeneity could influence their capacity to take advantage of their CBAs to improve their innovation output. To investigate EMNE status, we consider that high-status EMNEs which we define as those receiving more positive appraisals in the international press than might be expected given their characteristics (e.g. size, country of origin, degree of innovativeness), will find it easier to access local knowledge residing in the target firm or region. Therefore, we expect status to moderate our baseline relationships positively. In sum, we address the following questions: Are EMNEs' post-deal innovative outputs higher, the higher the innovative capacity of the target firm and/or region? Do EMNEs' absorptive capacity and status positively moderate the relationship between their post-deal innovative output and the innovative capacity of the target firm and/or region?

Our analysis supports most of our predictions but also reveals some important differences between the capacity of firms and regions to influence the EMNEs' innovative output after the acquisition. As expected, our findings suggest that the innovative capacity of the target region is positively and significantly related to the post-deal innovative output of the EMNE, measuring the regional innovative capacity by the "social filter" (Rodriguez-Pose and Crescenzi, 2008)[4]. This result is reinforced if we combine the social filter with the moderators EMNEs' knowledge base and EMNE's status. However, in contrast to our expectations, all other things being equal we find that the more innovative the target firm, the lower the EMNE's innovative output post-deal. This result suggests the presence of major difficulties related to EMNEs accessing highly innovative organizational contexts. This finding becomes positive

[3] Because firm knowledge base is functional to the firm's capacity to absorb external knowledge and then to innovate (Cohen and Levinthal, 1990), in what follows we use the terms 'knowledge base' and 'absorptive capacity' interchangeably.

[4] The social filter is a composite indicator used widely in the economic geography literature to approximate the regional socio-economic preconditions in a well-developed ecosystem characterized by intense knowledge circulation (Crescenzi et al., 2014).

only if the potential obstacles faced by the acquiring firm are mitigated by a strong EMNE knowledge base and high status.

The paper is organized as follows: section 2 reviews the literature on which our we formulate our hypotheses (section 3). Section 4 describes the data, the variables and the method, and sections 5 and 6 respectively present and discuss the empirical findings.

2. Background literature

The relevance of mergers & acquisitions (M&A), and CBAs in particular, for accessing and appropriating target firms' technological assets, has been a major focus of scholarly research for some time, although confined mostly to M&As involving advanced country firms (Birkinshaw et al., 2000; Graebner et al., 2010). A variety of theoretical lenses have been used but evidence on the impact of acquisitions on the innovative outputs of acquiring and target firms generally has been inconclusive essentially because there are several conditions that dictate acquisition success or not (de Man and Duyster, 2005). Hall (1990) and Hitt et al. (1991, 1996) were among the first studies to test this relationship. Using different firm-level innovation-related measures they find a negative impact of acquisitions which generally is ascribed to poor integration dynamics after acquisition, and to conflicts that demotivate the most talented of the target firm's human resources (Puranam et al., 2006; Valentini, 2012; Colombo and Rabbiosi, 2014). However, other works find evidence of more positive M&A and CBA outcomes, and suggest that post-deal innovation is more likely if target and acquirer are able to combine complementary capabilities, thus, if their knowledge bases are neither too similar nor too distant (Makri et al., 2010; Colombo and Rabbiosi, 2014). Hence, acquisition success in terms of innovative outcomes is explained by acquirers' abilities to identify targets with the desired knowledge resources (Desyllas and Hughes, 2010; Graebner et al., 2010), and to integrate this knowledge with their own (Ahuja and Katila, 2001; Cassiman et al., 2005; Cloodt

et al., 2006; Makri et al., 2010). Furthermore, acquisitions are considered beneficial if they bring additional capital and provide opportunities for achieving scale and scope economies in innovation activities (Karim and Mitchell, 2000).

Acquisitions are a way also, for multinationals to try establish themselves as insiders in a new location (Porter, 2000). According to the economic geography literature, firms can derive several benefits from co-location: both the possibility to exploit scale economies and traded interdependencies, and access to 'localized capabilities' and untraded independencies which have been stressed as crucial for the processes of learning and innovation (Bathelt et al., 2004). Therefore, acquisitions allow multinationals to exploit the local availability of agglomerated resources not available to firms situated elsewhere (Beugelsdijk and Mudambi, 2013). Entry to the regional ecosystem provides opportunities for face-to-face contact with local suppliers, universities and other organizations (Cantwell and Piscitello, 1999; Zeller, 2004; McCann and Mudambi, 2005; Mariotti et al., 2010). Although the process of accessing local information and pools of knowledge is far from straightforward, it can facilitate learning and generate knowledge and new ideas (Cantwell and Mudambi, 2011; Bathelt and Cohendet, 2014; Glückler, 2014).

As mentioned above, theories about and evidence on the innovative impacts of M&As and CBAs have focused so far on advanced country companies since they were the targets of most previous technology-seeking investments. However, the in current scenario there is evidence that many CBAs involve emerging country firms' acquisitions of advanced country firms to appropriate strategic technological assets lacking in the acquiring firms' countries (Poon et al., 2006; Luo and Tung, 2007; Cuervo-Cazurra, 2012; Cui et al., 2014; Meyer, 2015). This raises questions about the innovative outcomes of these acquiring emerging country firms; these may be different from the outcomes experienced by the advanced country companies for two reasons. First, the technological capabilities (Bell and Pavitt, 1993) of the acquiring emerging country firm may be weaker due to the home country's technological gap (Luo and

Tung, 2007; Awate et al., 2012, 2014). This implies that emerging country companies may not have the absorptive capacity required (Bell, 1984; Cohen and Levinthal, 1990) to assimilate and combine newly acquired assets with their existing resources, and to transform and apply the knowledge embedded in the target firm or region (Deng, 2010; Meyer et al., 2011; Mudambi and Swift, 2011; Beugelsdijk and Mudambi, 2013). Therefore, we investigate how EMNEs with heterogeneous knowledge bases are differently able take advantage of their investment in an innovative target firm and region.

Second, from an international stakeholder perspective, emerging country firms can suffer from credibility and legitimacy deficits (Ramachandran and Pant, 2010) due to weak home country institutions, and ambiguous political, social and environmental practices (Madhok and Keyhani, 2012; Gao et al., 2017). This can result in negative or imperfect information on their strategies and ownership (Rindova et al., 2007). A perception of poor credibility can hamper the successful integration of operations in both the target and acquiring firms and can undermine the formation of trustful relationships between these firms' respective managers which will impede knowledge transfer (Shen et al., 2014; Hansen et al., 2016). In turn, this can reduce the incentives for collaboration (Kapoor and Lim, 2007). However, levels of skepticism regarding emerging country firms vary, with some EMNEs considered by international host country audiences to be more credible or reliable based on positive information on their operations in the international press and other channels. Other emerging country firms may be relatively unknown or associated with negative news. For instance, scandals over contaminated pet food ingredients, poisonous toys, defective tires and tainted toothpaste have worsened perceptions of the credibility and of Chinese contractors, and threatened their quest for legitimacy (Fiaschi et al., 2017). Sociologists consider these differences in perceptions to contribute to a social hierarchy which results in the stigmatization of some firms by relevant audiences as low status, while others are identified as high status (Podolny, 1993). These considerations lead to

questions about whether and how status considerations influence the capacity of EMNEs to take advantage of investments in innovative target firms and regions.

In Section 3, we describe our theoretical framework and formulate the hypotheses.

3. Hypotheses

To improve our understanding of the impact of CBAs on the acquiring EMNE's innovative output, we start by formulating two baseline hypotheses. The first tests the relationship between the innovative capacity of the target firm and the innovative output of the acquiring EMNE after the deal; the second examines the link between the innovative capacity of the target region and the EMNE's post-deal innovative output. Both hypotheses are modified by the EMNE's knowledge base and status prior to the acquisition - characteristics likely to influence the process of knowledge transfer from target firm and region to the EMNE, and to allow knowledge absorption by the acquiring firm. Thus, they are considered crucial for the generation of innovation after the deal (see section 2). Our baseline relationships make no assumptions about the EMNE's characteristics; we follow an abstract line of reasoning based on the notion of "more is better", i.e. the more knowledge-rich the knowledge source, the greater will be the knowledge recipient's learning opportunities. Therefore, investing in an innovation-intensive firm such as Volvo[5] which was acquired by the Chinese automotive multinational Geely, in principle will generate more knowledge spillovers to the acquiring firm than investment in a firm that engages in few innovation and knowledge-generating activities. The idea is to focus on the knowledge pool available to the EMNE which reflects the wealth of unique skills and technological capabilities that the target firm has accumulated over time (Dosi,

[5] Volvo is ranked among the 20 largest R&D spenders in the world automotive industry according to the 2016 EU Industrial R&D Scoreboard (World 2500) (accessed May 21, 2018).

1988), and which will result in a higher innovative output by the EMNE after the deal[6]. We expect acquiring EMNEs to learn more from target firms that have more to offer.

Therefore, our ur first baseline hypothesis is:

Baseline *[Target firm] All else remaining constant, the higher the innovative capacity of the target firm, the higher the EMNE's level of innovative output after the deal.*

Second, we argue similarly that regions with more locally-embedded knowledge have more to offer to a foreign investor; local actors and institutions with larger knowledge stocks are more likely to generate valuable knowledge spillovers which will benefit the EMNE's innovation activity. For instance, California which hosts Silicon Valley, and other innovative regions in Europe that host innovation hubs, are vibrant ecosystems that offer inspiration, information and learning opportunities to investors who are able to become locally embedded after the acquisition. Note that we refer not necessarily to the extent to which the target region is at the scientific or technological frontier but rather to the magnitude of the learning opportunities engendered by its pool of specialized labor and innovative firms, or other localized capabilities that generate an environment favorable to knowledge enhancing spillovers (Bathelt et al., 2004). This is grounded on the idea proposed in previous economic geography and regional economics research (see Feldman, 1999 for a review), that 'local buzz' (Storper and Venables, 2004), or intensive information and knowledge exchange, increases the stock of knowledge available in principle to all organizations within a bounded geographical area (i.e. a region or cluster), and in turn contributes to the learning and innovative capacity of the local actors. In this perspective, EMNEs making acquisitions in regions with strong innovative

[6] This baseline idea might seem not to align to the notion of the absorption process as facilitated by some kind of cognitive or knowledge similarity between knowledge source and recipient (Lane and Lubatkin, 1998); however, we are not interested in the technological superiority of the target firm vis à vis the acquirer (i.e. the proximity to the technological frontier of the target firm compared to the EMNE) but rather in the knowledge-rich resources the target can offer to the acquirer.

capacity have opportunities to tap into specialized knowledge assets via expatriate managers setting up in the region of their investment, and via the acquired firm's links to other actors in the regional ecosystem (Mariotti et al., 2010). Thus, we posit that all else remaining constant, EMNEs will learn more from investing in knowledge-rich and innovative regions compared to less innovative regions (Breschi and Malerba, 2001; Tallman et al., 2004). Accordingly,

> ***Baseline*** *[Target region] All else remaining constant, the higher the innovative capacity of the target region, the higher the innovative output of the EMNE after the deal.*

3.1. The moderating role of EMNE absorptive capacity

Our baseline relationships hold if we assume that acquiring EMNEs have homogeneous strong absorptive capacity, allowing easy absorption and extension of the target firm's and region's knowledge. However, this assumption may not apply to all firms, and especially emerging country firms with perhaps weak absorptive capacity. Following earlier research, we conceptualize EMNEs' absorptive capacity as their knowledge base, in other words a "*set of information inputs, knowledge and capabilities that inventors draw on when looking for innovative solutions*" (Dosi, 1988: 1126; see also Cohen and Levinthal, 1990). Our prediction is based on the literature on technological capability accumulation in developing country firms (Bell and Pavitt, 1993) which underlines the need for MNEs (and other firms) to accumulate significant absorptive capacity for the successful acquisition of new knowledge from the host location, and to establish learning links to local actors (Marin and Bell, 2006; Cantwell and Mudambi, 2011).

Martin Bell (1984: 198) in a seminal contribution said that: *"such knowledge and information very seldom just 'arrives'. Almost always it has to be searched out and acquired by the firm itself. In other words, the flow depends on the active effort by the firm, and that in turn*

requires prior accumulation and deployment of resources to make that search effort". Bell is referring here to developing country firms' learning in the home country, possibly through connections to subsidiaries of advanced country firms operating in the home country. However, we consider this to be relevant to the context of EMNEs tapping into international knowledge. We would stress that some emerging country firms may have weak knowledge bases which will limit their capacity to assimilate, integrate and apply external knowledge. On the other hand, others may be characterized by a strong knowledge base prior to the deal, and therefore, may possess more advanced internal skills and technological capabilities required to learn and accommodate their innovation and learning routines to those of the acquired firm which will reduce risk of conflict and poor communication. We want to capture this heterogeneity and study how it affects EMNEs' capacity to exploit their take-overs by increasing their post-deal innovation output. Following earlier research, we suggest that EMNEs with a strong knowledge base are likely to be more capable of identifying relevant knowledge partners from among regional actors and understanding and absorbing the locally available knowledge (Awate et al., 2012, 2014), than EMNEs with a weak knowledge base. Therefore, we predict that the stronger the EMNE's knowledge base, the more it will benefit from investing in an innovative target firm and region. Accordingly, we hypothesize that:

> ***Hypothesis 1****: All else remaining constant, the relationship between the target firm's innovative capacity and the post-deal innovation output of the acquiring EMNE is positively moderated by the latter's knowledge base.*
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> ***Hypothesis 2****: All else remaining constant, the relationship between the target region's innovative capacity and the post-deal innovation output of the acquiring EMNE is positively moderated by the latter's knowledge base.*

3.2. The moderating role of EMNE status

Yet, although the EMNE's knowledge base may influence the process of knowledge absorption, considerations about EMNE status may affect the willingness of local managers and other relevant actors to share knowledge with the acquiring EMNE. Drawing on social status theory (Podolny, 1993; Podolny and Phillips, 1996; Gould, 2002) we explore how status can moderate both baseline relationships. In line with existing research, we define status as perception of the relative qualities of a firm in a given market or organizational field[7]. Accordingly, high status firms generally are 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 the firm's choice of where to establish connections and market transactions which in turn, will condition its capacity to gain from these relationships (Podolny, 1993). Since status is socially constructed, it is not built in a vacuum and depends partly on past demonstration of firm quality, and the signals the firm and influential actors send about its quality (Podolny and Phillips, 1996). Because our analytical context is internationalizing firms, we understand status as reflected by the international press which we assume to be an important source of signals influencing status considerations by host country audiences in the target firm or region. We contend that these status considerations influence successful integration between the target and acquiring firms in a CBA (Sharkey, 2014). Our approach adds to the conventional idea that when investing in advanced countries, EMNEs suffer from liabilities stemming from their country of origin (Ramachandran and Pant, 2010; Fiaschi et al., 2017). We suggest that there

[7] The notion of status relies on a conceptualization of the market as a structure that is socially constructed and defined according to 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 of the concept see Piazza and Castellucci (2013).

might be important inter-firm differences related to status such that higher status EMNEs will suffer less from country-of-origin liabilities when accessing valuable assets in host countries. In contrast, EMNEs perceived as low status may be stigmatized which can spark conflict and undermine the willingness of the target firm's managers and other employees (e.g. researchers) to share their knowledge with the acquiring EMNE's managers.

Along the same lines, the most talented and highly skilled human resources might leave the acquired firm after acquisition by a low status EMNE, thereby reducing the target's skills and knowledge resources. Accordingly, we predict that as the innovative capacity of the target firm increases, consideration of the acquirer's status will become more relevant because the acquired firm's managers will have more knowledge to retain or share and will be more sensitive to the perceived quality of the take-over firm. Thus:

> ***Hypothesis 3****: All else remaining constant, the relationship between the target firm's innovative capacity and the post-deal innovation output of the acquiring EMNE is positively moderated by the latter's status.*

Similar considerations are likely to apply to the target region. Since firms may not necessarily be able to benefit from passive location of their operations in the regional ecosystem *per se* (Giuliani, 2007), significant commitment and willingness from local actors such as other firms, universities and R&D labs may be required for the transfer and sharing of knowledge with EMNE managers. Thus, unless regional actors are willing to collaborate, the EMNE – despite having a rich knowledge base - may not benefit fully from its links to the region.

We suggest that local actors in innovative regions may fear loss of their proprietary knowledge from the forging of relationships with an EMNE perceived as low status or may be uninterested in partnering with it because of the limited possibility of reciprocal knowledge transfer (von Hippel, 1987). Perceptions of low status of emerging country investors can lead also to the discontinuation of pre-existing ties between the acquired firm and other organizations

in the region. Managers and other skilled personnel in advanced country regions may be skeptical about the EMNE's intentions, and fear a predatory strategy (Giuliani et al., 2014) aimed at transferring local knowledge assets back to the firm's home region (Hansen et al., 2016). Additionally, regional actors may be concerned about the possibility that the acquisition will downgrade the region's status, "contaminating" its regional identity (Romanelli and Khessina, 2005) and threatening its strategic advantage.

In contrast, the perception of EMNEs as high status can result in fewer conflictual feelings and can generate incentives for the sharing and transfer of knowledge from regional actors to the EMNE—directly or via local affiliates. We posit that as the innovative capacity of the target region increases, high status EMNEs (vis à vis low status EMNEs) will be better placed to access the pool of knowledge available in the target region due to less skepticism from local actors which will be more willing to collaborate and share their knowledge. Accordingly:

> ***Hypothesis 4:*** *All else remaining constant, the relationship between the target region's innovative capacity and the post-deal innovation output of the acquiring EMNE is positively moderated by the latter's status.*

4. Method

4.1. Data

The empirical analysis includes all majority-stake CBAs by Indian and Chinese firms in Europe (EU28) and the U.S. reported by Zephyr (Bureau van Dijk) and SDC Platinum (Thompson)[8],

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

completed between 2003 and 2011[9]. Following previous work on the effects of acquisition on patenting (Ahuja and Katila, 2001; Cloodt et al., 2006; King et al., 2008; Valentini and Di Guardo, 2012), we focus on medium and high-tech manufacturing and service industries to identify deals most likely to reflect an EMNE's aim to acquire and build on the target firm's and region's technological assets[10].

The period observed includes 455 deals, mostly in the manufacturing sector: 18.9% involving China, and 81.1% involving India (table 1). Figures 1 and 2 respectively depict geographical distributions of acquisitions and patents per capita in the OECD-TL2 regions[11]. Overall, the U.S. is the preferred target area accounting for 206 deals (30 involving China and 176 involving India), focused mainly on California, followed by New York, New Jersey and Texas. In Europe, the preferred target is the U.K. accounting for 87 deals (78 involving India), mostly in the London area, followed by the West Midlands and South-East England. The second most preferred destination is Germany where acquisitions are concentrated in Bayern and Baden-Württemberg.

(Table 1 about here)

(Figures 1–2 about here)

Note that while our main empirical strategy is a quantitative study (see below for details), we also conducted in-depth interviews with the managers from three firms (2 Chinese and 1 Indian) in our sample[12] to identify some interpretative cues for our results.

[9] We censored our analysis to year 2011 to allow observation of the post-acquisition innovation output of the acquiring EMNE. The start year is 2003 because according to UNCTAD (2015), most outward foreign investments from emerging to advanced countries occurred after that date.

[10] In the specific context of Chinese and Indian acquisitions in Europe the prevalence of a strategic asset seeking motivation in these industry types is confirmed in Piscitello et al. (2015). For the classification, we consider the following 2-digit NACE codes: 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 is used for deals taken from the SDC-Platinum database.

[11] TL2 regions are so-called 'Large Regions', corresponding to NUTS2 regions in the case of the EU28 and to States in the case of the U.S.

[12] For reasons of confidentiality, the interviewed companies remain anonomous. Interviews were conducted by phone and lasted around 60 minutes.

4.2. Variables

Table 2 reports the summary statistics of the variables included in the econometric analysis presented in Appendix table A.1. Appendix table A.2 presents the correlations. The dependent variable is *EMNE_POST_INNOV*. Following a, established strand of empirical research (see e.g. Ahuja and Katila, 2001) which uses patents to measure an acquiring firm's innovation output, we calculate this as the cumulated number of "patent families" (INPADOC—International Patent Documentation)[13] containing the patent applications filed by an acquirer at any patent office in the three years after the deal[14]. Patent families are sets of patent applications (and publications) with the same priority date in multiple countries protecting a single invention (Martinez, 2010). The advantage of using patent families 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 that it includes all possible patents filed by a firm without double counting for the same invention[15].

Independent Variables

In our baseline hypotheses we test, first, the effect of the target firm's innovative capacity (*TARGET_INNOV*) on the EMNE's innovation output after the deal. This variable is measured as the sum of distinct INPADOC patent families filed by the target firm five years before the deal. Since our target firms are in Europe and the U.S., the use of INPADOC families avoids 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

[13] We also used another specification for patent family based on DOCDB family, suggested by Martinez (2010). The results are consistent.
[14] 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.
[15] The INPADOC families of these patents and their patent information (i.e. backward citations, filing dates, technological classes) were retrieved from EPO-PATSTAT (version April 2014).

USPTO than in Europe).

Second, we test the effect of the level of the target region's innovative capacity on the EMNE's innovation output after the deal using two variables. *SOCIAL_FILTER* measures the degree to which the target region constitutes an ecosystem favorable to innovation. We follow earlier research in economic geography (Crescenzi and Rodrìguez-Pose, 2013) and use the composite indicator social filter which considers a set of structural conditions - region's education achievement; productive employment of human resources; and demographic structure – that may make some regions more or less prone to innovate as a consequence of a more or less favorable environment for innovation and knowledge circulation (Rodriguez-Pose and Crescenzi, 2008). This indicator is particularly informative in the context of our study given that among many other applications, it has been used to explore territorial dynamics in the EU and USA (e.g. Crescenzi et al., 2007)[16]. The second variable (*REGION_INNOV*) measures regional innovative output more directly 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 in which the target firm is located.

Hypotheses 1 and 2 refer to the moderating role on the baseline relationships, of the EMNEs' knowledge base (*EMNE_KB)* at the moment of the acquisition. Similar to Ahuja and Katila (2001), we calculate *EMNE_KB* as the sum of distinct INPADOC families including patents filed by the acquirer, and their cited INPADOC families in the five years prior to the deal[17].

Hypotheses 3 and 4 refer to the moderating effects of EMNE status (*EMNE_STATUS*),

[16] Details on the construction of this variable are reported in Appendix A.1.

[17] To control for the fact that when calculating *EMNE_KB* we do not include patents previously developed by the target firm and re-assigned to the acquirer after the CBA, we manually checked the names of the applicant on priority applications, for families with priorities not filed either in China or in India. The literature suggests that firms tend to apply first to their domestic patent office and exploit the 12 months allowed by the PCT procedure to extend their applications to other legislations (OECD, 2009; de Rassenfosse et al., 2013). In our sample, we identified 583 'uncertain' families which were screened manually.

operationalized following Shen et al.'s (2014) proposed approach to socially constructed status based on "positive" news concerning the EMNE in the international press. We consulted the Lexis Nexis All News database. Full details of how this variable was constructed are provided in Appendix A.2. However, note that country of origin effects (i.e. China vs. India) are factored out of the measurement of firm-level status, so *EMNE_STATUS* is country-of-origin neutral[18].

Control Variables

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

We control for acquirer's size (*SIZE*) since larger firms vis-à-vis the acquired firm may have more operations, be able to exploit economies of scale and scope and have higher bargaining power (Mansfield, 1962). We use a dummy variable which takes the value 1 if the acquirer is not in the ORBIS size categories "Large" or "Very Large"[19].

Experience accumulated from previous investments may allow the development of managerial and coordination capabilities that facilitate the strategic integration of the target firm (Buckley and Ghauri, 2004; Buckley et al., 2014). Therefore, we control for previous foreign direct investment (FDI) experience *(FDI_EXP)*, based on the cumulative number of investments (majority and greenfield acquisitions) worldwide undertaken previously by the acquirer.

We control also for horizontal acquisitions (*HOR_CBA*) i.e. whether CBAs are in the same (=1) or a different (=0) industry. According to the literature (Buckley and Ghauri, 2004; Ornaghi, 2009; Buckley et al., 2014), horizontal acquisitions involve lower integration costs,

[18] We thank an anonymous reviewer for suggesting this clarification.

[19] Note that due to the high number of missing values in the sample considered for this analysis, ORBIS provides information on size categories but does not provide reliable continuous information to measure size. It is only for the robustness check which is limited to listed companies in the sample (see section 5.4) that we have continuous information on size, measured as revenue.

and offer more potential for synergies and a better strategic fit. This variable is constructed by comparing the SIC 2-digit codes of the target and acquirer firms.

Since prior research suggests that different types of distance might affect the successful integration of operations among collaborating partners, we control for institutional distance (*INST_DIST*) between the target and acquirer countries, calculated following Berry et al. (2010)[20].

Finally, we control for home and host country specificities (introducing country dummies) since each country has a different history and different internal institutional arrangements which could suggest different approaches to innovation and capability building (the home country reference group is India, and the host country reference group is Europe). Year dummies are also included[21].

(Table 2 about here)

4.3. Estimation method

Since our dependent variable is a count type with evidence of over-dispersion, we implement the Poisson quasi maximum likelihood (PQML) estimator (Hu and Jefferson, 2009). This approach is generally preferred to a negative binomial model because it imposes no restrictions on the conditional variance (i.e. it allows for overdispersion), and is consistent under the weaker assumption of correct conditional mean specification (Gourieroux et al., 1984; Wooldridge, 2002; Cameron and Trivedi, 2005). In PQML estimation specification we add industry fixed effects at the NACE Main Section level[22] to account for possible inter-sectoral differences conditioning acquisition success (Cloodt et al., 2006). The set of robustness checks we

[20] As a further control, we used the cultural distance measure developed by Hofstede (1980). The magnitude and significance of our results (available on request) remain unchanged.
[21] In the robustness checks we employ some additional variables which are described in section 5.4.
[22] We employ industry-specific rather than firm-specific effects (as in Hausman et al., 1984) because of the limited heterogeneity in output across the same investors. If we control for year of the deal this heterogeneity reduces even further. Only 28% of the acquirers in our sample have involvement in more than one acquisition, and only 13% involvement in more than two. We adopt an aggregate industry classification (NACE Main Section) to obtain as large a sample as possible. We checked the robustness of our findings using NACE 2-digit fixed effects and found comparable results for our main variables of interest; significance decreased but remained within the 10% level.

performed are discussed in section 5.4.

We test the hypotheses by adding some interaction terms to the baseline specification. Since we are estimating a nonlinear model (i.e. a PQML), interpretation of the econometric results cannot be based only on the signs and significance of the coefficients (Ai and Norton, 2003; Karaca-Mandic et al., 2012); therefore, we plot the average predicted output at different target firm and region innovative capacity values (see figures 3-6, and sections 5.2 and 5.3).

5. Empirical results

5.1. Baseline relationships

First, we examine the results concerning the baseline relationships. With reference to our first baseline hypothesis, we find a negative and significant relationship between the target firm's innovative capacity and the EMNE's post-deal innovation output (table 3, columns 6 and 7) which is contrary to our expectations but in line with some earlier research pointing to the difficulties experienced by acquiring firms related to benefiting from a CBA (see among many others Kapoor and Lim, 2007; for a review see de Man and Duyster, 2005). When we use the variable social filter (*SOCIAL_FILTER*) in the context of region (table 3, columns 3 and 6) the results support our second baseline hypothesis although the results are not significant if we measure regional innovative capacity using a narrower indicator such as patents per capita (*REGION_ INNOV)* (table 3, columns 4 and 7).

(Table 3 about here)

5.2. The moderating effect of EMNE knowledge base

In the context of our main hypotheses, the results of the estimations (table 4, columns 1 and 2) and the graphical representations of the linear predictions of the estimates (figure 3) support Hypothesis 1, showing that the negative baseline relationship between the target firm's

innovative capacity and EMNE post-deal innovative output is mitigated, and therefore is *less* negative, the stronger the EMNE's knowledge base prior to the deal. Figure 3(a), derived from the estimation in table 4 column 1[23], shows a higher predicted innovative output for higher values of *TARGET_INNOV* and *EMNE_KB* (corresponding to the darker area), while figure 3(b) depicts the significance of this relationship distinguishing between EMNEs with weak and strong knowledge bases[24]. These results are in line with the standard innovation literature on the key role of by firm's knowledge base to exploit the skills and expertise residing in other organizations (Dosi, 1988; Cohen and Levinthal, 1990).

We find support also for Hypothesis 2 (table 4, columns 3 and 4) when the social filter (*SOCIAL_FILTER)* is included. Figure 4 (a) shows that the higher the social filter and the EMNE knowledge base (the darker shared area top right of the figure) the higher is the predicted innovative output. For EMNEs with a strong knowledge base, figure 4(b) shows that the baseline relationship is positive, and that knowledge base is a positive and significant moderator for *SOCIAL_FILTER* values larger than -0.2; at each level of *SOCIAL_FILTER*, predicted outputs for low knowledge base EMNEs are lower than the outputs predicted for EMNEs with high *EMNE_KB.*

In figure 4(c) if we consider patents per capita (*REGION_INNOV)* as a measure of regional innovative capacity (darker area top right) this corresponds to a higher predicted value of our dependent variable *EMNE_POST_INNOV* when both target region innovative capacity and EMNE knowledge base are high. However, figure 4(d) shows that in contrast to regional innovative capacity measured by the social filter, the overall moderation is not generally significant.

[23] For reasons of space we do not include the graph derived from the estimation in table 4 column 2; it is similar to the graph in figure 3(a).
[24] We measure low knowledge base EMNEs as those with no patents prior to the deal (variable equal to 0) and high knowledge base EMNEs as those in the 95th percentile of the distribution. The plot of the marginal effects of the linear prediction (available upon request) supports our findings.

5.3. The moderating effect of EMNE status

We next explore the moderating role of EMNE status on the two baseline relationships. We find support for Hypothesis 3 that the negative relationship between the innovative capacity of the target firm and EMNE post-deal innovative output reduces with increased EMNE status (table 4, columns 5 and 6). Figure 5(a) which is derived from the estimation in table 4 column 5[25], shows in particular that the highest *TARGET_INNOV* levels are associated to the highest (top-right of the figure) and the lowest (bottom-right) predicted innovative outputs, according to respectively high or low *EMNE_STATUS*. Figure 5(b) depicts the statistical significance of the positive (negative) moderating role of high (low) EMNE status.

For Hypothesis 4 about the positive moderating role of EMNE status on the relationship between the target region's innovative capacity and EMNE's post-deal innovation output, the results are more ambivalent. In line with our theoretical expectations, we find a positive moderating effect if regional innovative capacity is measured using the social filter (table 4, column 7). Figure 6(a) shows that predicted innovative output is highest for high values of both *EMNE_STATUS* and *SOCIAL_FILTER* (top-right of figure 6(a); figure 6(b) shows that high EMNE status significantly and positively moderates the baseline relationship at high levels for the social filter.

If we consider regional patents per capita, we find that high status EMNEs benefit less from investing in more innovative regions (table 4, column 8, figure 6(c)). Figure 6(d) shows the statistical significance of the negative moderating role of EMNE status in this case. We comment on the results of our estimates in section 6.

[25] For space reasons, we do not include the graph derived from the estimation in table 4 column 6 which is similar to figure 5(a).

(Table 4 about here)

(Figures 3-6 about here)

5.4. Robustness Checks

To test the robustness of our results we run further econometric analyses.

We check the robustness of our models in table 3 (columns 6 and 7) and table 4 by controlling for endogeneity in the sample selection, to address the possibility that the two processes affecting the distribution of patent counts and selection of firms as acquirers might not be independent (Valentini and Di Guardo, 2012). We implement a two-stage count model with sample selection (Bratti and Miranda, 2010) which consists of the addition of an auxiliary equation to control for the probability of an international acquisition. Drawing on the selection equation employed by Valentini and Di Guardo (2012), we associate the likelihood of undertaking a CBA to the following EMNE-level characteristics: size (measured by the log of operating revenues); industry (dummy for manufacturing as the reference group, *MANUFACTURING*); country of origin (dummy for China, *CHINA*); solvency capability (ratio of shareholders' assets to total assets), knowledge base (*EMNE_KB*) and ownership (dummy for listed companies)[26]. In the main equation, we employ almost the same independent variables and controls as in the PQML model with the exception of the time control, a dummy variable for deals undertaken after 2008 (equal to 1 for deals concluded after 2008 and 0 otherwise, *PRE_2008*) and the size control, dropped for convergence reasons[27]. To estimate the probability of undertaking a CBA, we compare the main sample with a control sample of 1,972 firms randomly selected from ORBIS, with no previous involvement in a cross-border acquisition, belonging to the same medium to high-tech sectors and respecting the same proportions across countries and industries (NACE Main Section) as the acquiring firms in our main sample. Table

[26] Unlike Valentini and Di Guardo (2012), because of the number of missing values our model specification does not include the variables R&D intensity and Tobin's q. Instead, we include EMNE knowledge base and operating revenue as further controls.
[27] We control for size in the selection equation.

5 reports the results of the main models which are largely consistent with the previous findings.

(Table 5 about here)

We control for the robustness of those models by calculating the output variable (*EMNE_POST_INNOV*) using EPO patents[28]. This implies restricting the analysis to a subset of patents considered conventionally to be high quality and controlling for the possibility of output measured by INPADOC families, including home country domestic patents. The results confirm the positive moderating effects of EMNE knowledge base and EMNE status although less strong in the case of the latter.

We replicate the estimates of the main equations (tables 3 and 4) controlling for innovation concentration ratio (Cantwell and Mudambi, 2011) measured by the share of innovative activity of the top five innovators within each region, following Breschi et al. (2000). The larger this indicator, the larger the contribution of just a few companies to regional innovative activity. These shares are computed using the OECD REGPAT database (February 2016) which provides the NUTS2 patent assignee regions, and the OECD HAN database (September 2016) which provides clean and harmonized assignee names. The resulting estimates are consistent with earlier results. We control also for the spatial dispersion of patents across sub-regional territorial units using the Shannon entropy index (Frenken et al., 2007; Balland, 2009). Finally, we run the full models on the subset of the listed companies in our sample (66% of CBAs) which allows us to include EMNE return on assets (ROA) as a control which takes account of EMNEs' heterogeneous performance. The results are mostly consistent

[28] We use EPO rather than USPTO patents as controls, given that more than half of the deals (55%) in our dataset target EU destinations.

with those presented in tables 3 and 4[29].

6. Discussion and conclusions

In 2008, when *The Economist* published an article on the *new breed* of multinational companies from emerging and developing countries, many people in the advanced countries had never heard of ChemChina, Haier, Geely or Tata. In the years prior to 2008, there had been a wave of cross-border deals that had gone unnoticed by most people, and it was unclear at that time what kinds of opportunities or threats the companies involved in these deals might pose to the advanced country acquired firms. However, it was clear that there were "*not just Tatas or Cherys, emerging from giant, booming domestic markets; but new creatures, bursting out of nowhere to take the world by storm*"[30]. Concern grew among analysts and policy makers over whether these investments would in some way depredate advanced countries' most valuable strategic assets, and particularly - but not exclusively- innovation-related assets such as patents and other technological resources (Giuliani et al., 2014).

Some years later, scholars, managers and policy makers are showing interest in the repercussions of these investments for innovation in the acquiring EMNEs. Are they innovating more intensively following their advanced country acquisitions? If so, what has facilitated this increased innovative capacity? In this paper, our interest was specifically whether EMNEs' post-deal innovative output increases with the innovative capacity of the target firm and/or target region, and whether and how EMNEs' knowledge base and status moderate these relationships. We chose these dimensions because the former influences the EMNE's capacity to absorb and innovate thanks to the knowledge available in the target location (firm and/or

[29] We thank anonymous reviewers for suggesting some of these robustness checks whose results were shared with them and the editors during the revision process. They are not included here for reasons of space but are available on request.

[30] The challengers, *The Economist*, January 10th 2008, http://www.economist.com/node/10496684.

region), while we believe the latter will influence the willingness of knowledge holders in the target locations to work for or transfer knowledge to the acquiring EMNE. To address these issues, we investigated the universe of medium to high-tech Chinese and Indian CBAs in the U.S. and EU28 during the period 2003–11. Our results are interesting and are discussed below.

In line with some earlier research (Hansen et al., 2016; Fu et al., 2018), we found evidence consistent with the idea that learning from innovative target firms is not straightforward. Hence, target firms, despite potentially being a source of rich and valuable knowledge assets for the acquiring EMNE, may be resistant to knowledge transfer, or may present barriers to the absorption and appropriation of relevant knowledge. Our findings here are consistent with a different but connected literature investigating the value destruction potential of acquisitions from emerging country firms (see e.g. Aybar and Ficici, 2009), showing that lack of information on asset compatibility is one of the causes of value destruction, commonly manifested after an EMNE acquisition in a high-tech industry.

Our main findings show that the problems related to exploiting a CBA are mitigated if the EMNE has a strong knowledge base and high status. Qualitative insights from an interview with a middle manager in an acquired firm in our sample suggest that acquisition is not a smooth process, and our interviewee displayed some discomfort in explaining that the acquiring EMNE had an insufficient knowledge base:

> *… they know nothing about our product, its production, …and they did not send anyone from China to learn from us, they don't even know the company, …so – as of now – we did not observe a strong mutual benefit from the acquisition in terms of learning opportunities. Maybe these things take time….*

Some prior knowledge about "the product" (as one of our interviewees described it) is helpful because it facilitates use of and improvements to the knowledge available in the target firm for undertaking further innovation. This view is consistent with standard theories about the

processes of knowledge absorption and technological catching up by developing countries (Bell, 1984; Cohen and Levinthal, 1990; Bell and Pavitt, 1993), and is confirmed by successful cases such as Volvo's acquisition by Geely which improved the latter's innovation capacity immensely (McKelvey and Jin, 2018).

More interesting is the finding that status influences the extent to which EMNEs are able to gain from CBAs. Our result about the positive moderating effect of status on our baseline hypothesis about the impact of the target firm's innovative capacity on the EMNE's post-deal innovative output is consistent with the idea that high status firms send out positive signals which are reassuring to target firms' managers, and may contribute positively to the success of the CBA. In contrast, firms that are perceived as low status may trigger negative feelings among management, and these can hamper post-CBA integration. Some interviewees suggested that they had struggled to find reliable information about the acquiring company, and this exacerbated the general feeling of skepticism towards some of these firms. One respondent suggested that:

> *Prior to the acquisition we did not know the firm: the acquisition was a bolt from the blue, so we [middle managers] immediately went to see the press…to see whether it talked about the firm, but we did not find much …of course we knew it was not a bad monster, we had been in China before so we were not scared by Chinese companies, but still there was a great uncertainty there because we had no idea about the company and its reputation.*

These comments suggest that uncertainty over the quality of the acquiring firm make managers wary, not because they are intimidated by the country of origin but rather because information about "*who they are, what they do and how*" may be limited. These insights suggest that skepticism seems to be firm-specific rather than country-specific. As the above extract suggests, information provided by media potentially is useful to reduce this uncertainty, and to

create a more positive climate for cooperation by reassuring managers about the quality of the acquiring company and mitigating fears of being outcompeted as the result of reverse knowledge transfer (Anderson et al., 2015). Other means of communication e.g. personal exchanges within restricted circles such as communities of practice in the host location may also be effective for boosting the EMNE's social status and counterbalancing its liability of origin. Given our research design, we were unable to dig deeper into intra-firm processes and individual-level motivations but this finding could be interpreted as showing that perceived low status can engender more friction among employees in the acquired innovative firm. Managers of acquired firms may be less cooperative and more resistant to sharing their knowledge and skills with the acquiring EMNEs and may choose to quit the firm. This will have a negative impact on post-deal innovation. It is plausible also that acquisitions by low status EMNEs prevent managers in the acquired innovative firm from exploiting opportunities for growth and reduce their motivation to work productively with people perceived as distant or diverse.

If we shift the focus from target firm to target region we find some support for our hypotheses, especially if we consider regional innovative capacity measured by the social filter (Crescenzi et al., 2014). In particular, the stronger the region's social filter, the more innovative the EMNE after the deal. This result suggests that EMNEs are able to benefit from regions characterized by socio-economic pre-conditions facilitating the development of an ecosystem favoring innovation and knowledge circulation. Crescenzi et al. (2014) find that the social filter plays a significant role in attracting foreign R&D investments in European regions. Our empirical analysis provides additional evidence of the relation between this indicator and multinationals' investment strategies, and this is consistent with the idea that regions with strong human capital endowments (proxied by share of population with tertiary education) and productive use of resources (proxied by the percentages of the labor force employed in agriculture, and long-term unemployment) offer more learning opportunities even to new

Chinese and Indian investor entries to the local ecosystem. It is significant that if we combine the social filter with the two moderators of EMNE knowledge base and status, the effects on EMNE post-deal innovative output are reinforced. The positive moderating effect of knowledge base is straightforward and was explained above; however, our evidence suggests that tapping into regional knowledge is not a trivial issue for low status EMNEs. An Indian investor in Europe, mentioned that local actors in the region display some skepticism towards Indian investors. He told us that country of origin skepticism "*is diminishing over time, but it is still common*," and added "*it is difficult, you still have to face some challenges and skepticism, but people like me would have an advantage, because my company has a reputation for being fair, honest and serious* [which allows us to] *get access to better quality information before the rest of the market.*" In the interview, he suggested that the way EMNEs are perceived in the local ecosystem varies across firms – i.e. not all Indian firms are perceived with the same degree of skepticism or suffer the same level of liability of origin. In fact, he mentioned that signals to the local ecosystem are crucial to ensure that "*you get access to real promising ideas*" and "*innovations that matter*" before anybody else. He reemphasized the importance of good signals that reinforce perceptions of status in the target region. He referred to investors being subject to local scrutiny, and their quality being judged on a firm vs. firm level:

> *people are watching you, they are talking about you and behind you, saying this firm is a good firm, this is not a good firm. So, in spite of the general skepticism behind an emerging country company they eventually prioritize one company over the other on the basis of the available information and the signals they get about that specific company.*

We are unable to investigate in greater depth the way EMNEs manage to give signals that contribute to higher status but the above extract suggests that EMNEs that are perceived to be low status by local audiences may experience more difficulties in accessing high quality knowledge, and we conjecture that this could limit their innovation output. Also, it is possible

that when a company is acquired by a low status EMNE, the subsidiary may experience disruption to its innovative routines at the regional level. For instance, some collaborative projects may be discontinued, and talented human resources may be discouraged from applying for jobs following an acquisition if the information on the acquiring EMNE signals poor status. Examples from other research contexts are useful to illustrate the plausibility of this interpretation. For instance, a 2013 *China Business Review* article suggests that Asian multinationals focus on improving their brand reputation in order to attract and retain foreign talent outside their home markets and to fuel innovation and growth[31]. Focusing on brand reputation is outside of our study context but shows the importance of signaling quality for Asian companies going global and facing cultural barriers. Brand reputation can hedge against uncertainty and skepticism from international audiences against firms competing for talent internationally. This hints at the importance of status: just as Asian multinationals stigmatized as low status can find it difficult to recruit the best human resources, under the same conditions, other EMNEs may find it difficult to benefit from regional assets and actors no matter how innovation-active the region.

Finally, if we measure regional innovation using patents per capita rather than the social filter, we find that, ceteris paribus, for high status EMNEs the higher the number of the target region's per capita patents, the lower the innovative output after the deal. This result rejects our prediction and might have various motivations. It is possible that in regions with the highest numbers of patents per capita (e.g. California in the U.S. and Baden-Wurttemberg in Germany) which are in the tail of the most innovative regions in the global landscape, firms and other regional organizations compete more on strategic assets, and therefore, are less willing to share their knowledge, especially with firms perceived as competitors. High status firms are more

[31] How Asian firms are meeting global hiring challenges, September 23rd 2013, *China Business Review*, https://www.chinabusinessreview.com/the-global-search-for-talent/

visible and more discussed than low status firms which may instill a "protectionist" attitude that prevents valuable knowledge or skills from being shared, thus, hampering the innovative process.

However, when interpreting this finding, it should be borne in mind that data limitations do not allow us to rule out other more strategic or empirical motivations. For instance, when EMNEs undertake investments in high innovative capacity regions this may be with a view to pursuing frontier technology projects which are riskier, and whose returns need longer to materialize. Our analysis covers the three to five years after an acquisition but some "blue sky" innovative endeavors may take longer (so we would not observe their outcomes), and may divert resources from less ambitious projects, leading to a short-term reduction in the EMNE's innovative output. Also, due to data limitations, our dependent variable accounts for number not quality of patents so we cannot rule out that investments in highly innovative regions might result in high-status companies' CBAs producing higher quality innovative outputs in the medium-long term but a smaller number of lower quality innovations in the short term. These conjectures need more careful empirical examination which is something we leave to future research.

To conclude, we believe our paper contributes to work that tries to combine international business and economic geography research to understand how sub-national differences in MNE location affect these firm's strategic choices and outcomes (e.g. Beugelsdijk and Mudambi, 2013; Iammarino and McCann, 2013). So far, the literature has looked mainly at how the region's (or other sub-national agglomerations such as cluster and city) characteristics shape the motivations for investing or divesting in a particular location (e.g. Cantwell and Piscitello, 2005; Goerzen et al., 2013; Crescenzi et al., 2014, 2016), and how they influence the mode of MNE entry (e.g. Gaur and Malhotra, 2014), or the nature of the offshored activities (e.g. Jensen and Pedersen, 2011). Scholars have also investigated how geographical proximity affects MNEs'

supplier choices (Schmitt and Van Biesebroek, 2013), and delved into the complexities faced by MNEs embedded in multiple locations (Figueiredo, 2011; Meyer et al., 2011). We extend this literature by investigating how regional discontinuities in terms of different degrees of innovative capacity, might be contributing to EMNEs' innovation outputs after an acquisition. Our findings are in line with earlier research integrating location and firm-specific characteristics into models aimed at understanding the global-local nexus in MNEs' innovative behaviors (Cantwell and Mudambi, 2011; Mudambi and Swift, 2011). Compared to earlier research (e.g. Awate et al., 2012, 2014; Hansen et al., 2016), by combining absorptive capacity with social status theory we offer a richer theoretical interpretation of why EMNEs may learn from resource-rich regions. Our findings contribute also to the literature on the 'geographies of knowledge transfers over distance' (Bathelt and Henn, 2014), and the conditions underlying the learning processes in EMNEs investing in advanced countries which is becoming an increasingly common phenomenon. More importantly, this paper goes beyond the general idea that EMNEs as a homogeneous group of firms, suffer from country-of-origin skepticism and liability, by proposing that there are status differences across EMNEs from the same home country, and that they influence the learning processes in the host economies.

Our study adds to our understanding of technological catching up processes. For long, innovation scholars have been disappointed by the inability of developing and emerging country firms to catch up technologically despite increased internationalization of their home economies, increased exports of capital goods and consequent better access to machine-embodied technologies for their domestic companies (see e.g. Bell and Pavitt, 1997). This body of work makes it clear that access to technologies is not the problem but that their assimilation can be difficult for a developing country firm. Such firms need to increase their productive capacity (i.e. capital goods and static resources that allow to use given technologies at a certain level of efficiency) but they need also to build technological capabilities which constitute "*the*

skills, knowledge and institutions that make up a country's capacity to generate and manage change in the industrial technology it uses" (Bell and Pavitt, 1993: 159). It seems clear that simply implementing trade or investment policies does not allow emerging countries to catch up, and that what is needed is investment in the accumulation of knowledge and technological capabilities at home – e.g. by implementing public R&D program or providing support for private-public relationships that foster the formation of a solid domestic knowledge base. Our study is in line with that view but suggests consideration of firm status which is neglected in previous research on technological catching up.

Our results have some implications for managers and policy makers. Although the analysis was not aimed at observing managers *per se*, the results suggest that EMNE managers should not see investment in an innovative firm as a quick fix for lack of technological capabilities at home but rather as part of a complex strategy of innovation capability building. Hence, if the objective is short term innovative gains, a CBA may not be the appropriate strategy for an emerging country firm. Our study emphasizes that CBAs are complex and disruptive to corporate routines (de Man and Duyster, 2005; Cantwell and Mudambi, 2011). This applies even more to the very innovative firms in advanced countries, in which context EMNE managers must be prepared for an inexorable risky, cumulative and long-term process of knowledge accumulation (Bell and Pavitt, 1993). In terms of policy recommendations for emerging country policy-makers, our research suggests the importance of developing and strengthening policies oriented to technological capability building in the home country for enabling the EMNE to benefit from distant knowledge (Lema et al., 2015). Our study also highlights the importance of signals, and more specifically, of positive portrayal in the international press and/or other communication channels, in order to overcome skepticism and resistance to knowledge transfer. Positive signals are likely to translate into positive status

which is a unique intangible asset that creates a favorable learning environment for firms operating in advanced countries.

The study has some limitations. First, we focus only on Chinese and Indian acquisitions which might limit the generalizability of our results. However, these two countries account for almost half of total outflows from developing and emerging countries[32]. Second, we do not control for the motivation for the acquisition because there is no systematic information available in Zephyr and SDC Platinum. Hence, similar to prior research (Ahuja and Katila, 2001; Cloodt et al., 2005; King et al., 2008; Valentini and Di Guardo, 2012), we focus on medium to high tech industries, assuming that these are sectors where EMNEs will be more motivated by access to strategic and knowledge-intensive assets (see Cozza et al., 2015), although we cannot rule out the possibility that Chinese and Indian foreign investments may be motivated by market ambitions both domestic and abroad (Horner, 2014; Yeung, 2004). This means that we may be underestimating the innovative effects of CBAs; our results might be stronger for EMNEs with an unambiguous technology seeking intent. We leave this to future research.

Third, 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 number of forward citations received by the patents filed following the deal as the dependent variable. We are 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 et al., 2013 who suggests a citation lag of at least 5 to 7 years).

[32] See UNCTADSTAT, http://unctadstat.unctad.org/EN/Index.html, last accessed October 23rd, 2017.

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APPENDIX

Table A.1 Variables in the main equations

NAME	DESCRIPTION	SOURCE
Dependent variables		
EMNE_POST_INNOV	# INPADOC families of the acquirer applied in the 3 years after the deal	PATSTAT ORBIS
Independent variables		
Measure of target firm innovative capacity:		
TARGET_INNOV	# INPADOC families of the target firm in the 5 years before the deal	PATSTAT ORBIS
Measures of target region innovative capacity:		
SOCIAL_FILTER	Index built through principal component analysis applied to four OECD-TL2 level variables: share of labor force with tertiary education, rate of unemployment, agricultural employment as share of total employment, share of people aged 15-24 in total population (Appendix A.1)	OECD Regional Database
REGION_INNOV	Logarithm of the cumulated # of PCT patents per capita in theOECD-TL2 region where the target firm is located in the 5 years before the deal	OECD REG PAT
Moderating variables:		
EMNE_KB	# INPADOC families of the acquirer in the 5 years before the deal plus # INPADOC families of the cited patents	PATSTAT ORBIS
EMNE_STATUS	Standardized residual of a regression with the number of positive news about the acquirer as dependent variable and a set of firm-level variables as regressors (Appendix A.2).	Lexis Nexis, ORBIS
Control variables		
HOR_CBA	Dummy equal 1 if the target and the acquirer are in the same SIC (2 digit) code	ORBIS
INST_DIST	Institutional distance between the acquirer and the 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_EXP	# CBAs and greenfield investments with a majority acquisition prior to the main-deal year	ZEPHYR SDC PLATINUM
CHINA	Dummy equal to 1 if the acquirer is Chinese	ZEPHYR SDC PLATINUM
U.S.	Dummy equal to 1 if the target firm/region is located in the U.S.	ZEPHYR SDC PLATINUM

Table A.2. Correlation table

	EMNE_POST_INNOV	*SIZE*	*FDI_EXP*	*HOR_CBA*	*INST_DIST*	*CHINA*	*U.S.*	*TARGET_ INNOV*	*REGION_ INNOV*	*SOCIAL_FILTER*	*EMNE_KB*	*EMNE_STATUS*
EMNE_POST_INNOV	1											
SIZE	-0.102	1										
FDI_EXP	0.156	-0.210	1									
HOR_CBA	0.048	-0.116	0.113	1.000								
INST_DIST	-0.168	-0.086	0.085	-0.018	1.000							
CHINA	0.193	0.140	-0.146	-0.095	-0.434	1.000						
U.S.	-0.086	-0.104	0.068	-0.065	0.764	-0.132	1.000					
TARGET_INNOV	-0.022	0.058	-0.020	0.047	-0.101	0.065	-0.128	1.000				
REGION_INNOV	-0.019	-0.059	0.056	0.001	0.153	0.088	0.232	0.029	1.000			
SOCIAL_FILTER	-0.022	-0.049	0.063	0.044	0.588	-0.158	0.528	-0.134	0.359	1.000		
EMNE_KB	0.528	-0.123	0.356	0.014	-0.100	-0.030	-0.078	-0.015	-0.035	-0.024	1.000	
EMNE_STATUS	-0.008	0.015	0.154	-0.127	0.092	-0.018	0.077	-0.014	-0.013	0.056	0.141	1

A.1. SOCIAL FILTER

The indicator 'social filter' is built using principal component analysis as in Crescenzi et al. (2007) and Crescenzi and Rodrìguez-Pose (2013). Social filter measures the innovative capacity of regions by assessing three major dimensions simultaneously: educational achievement, productive employment of human resources and demographic structure. As in Crescenzi and Rodrìguez-Pose (2013), these are respectively share of labor force with tertiary education[33] (*Tertiary education*); unemployment rate (*Unemployment* rate) and agricultural employment as a share of total employment (*Agricultural employment*); and share of people aged 15-24 in the total population (*Young population*).

The OECD Regional Database is the source for all the variables of interest at the OECD-TL2 level. The year chosen is 2007 because (*i*) there are missing values for some sample variables in earlier years, (*ii*) year 2007 is the central year in our sample and splits the total number of deals into two almost identical parts. Furthermore, for those regions where it was possible to build the index for all the years observed, we checked that the mean values of social filter at the beginning and at the end of our cohort (i.e. 2003 and 2011) were not significantly different. Table A.3 reports the output of the principal component analysis. Analysis of the eigenvalues of the correlation matrix (table A.3.1) shows that the first principal component accounts for around 40% of the total variance. The principal component scores are calculated from the standardized value of the original variables using the coefficients of the first principal component (table A.3.2)[34].These coefficients assign a higher weight to the

[33] Crescenzi and Rodrìguez-Pose (2013) consider the share of population with tertiary education which is not available in the OECD Regional Database.

[34] As in Crescenzi and Rodrìguez-Pose (2013), we multiply the scores by -1 so that the value of the index increases with the level of regional innovativeness.

educational achievement indicator and to the percentage of the agricultural labor force and the unemployment rate (with a negative sign) as major components of the region's socio-economic fabric.

Component 1 constitutes what we call the social filter, introduced into the regression analysis as an aggregate proxy for the potential innovative capacity of each region.

Table A.3. 'Social Filter' Index – Results of the principal components analysis (PCA)

	Eigenvalue	**Difference**	**Proportion**	**Cumulate**
A.3.1 – PCA: Eigen analysis of the correlation matrix				
Comp1	1.612	0.433	0.403	0.403
Comp2	1.179	0.394	0.295	0.698
Comp3	0.785	0.362	0.196	0.894
Comp4	0.423	.	0.106	1.000

A.3.2 – PCA: principale components' coefficients

	Comp1	**Comp2**	**Comp3**	**Comp4**
Agricultural employment	-0.618	-0.152	0.539	-0.552
Tertiary education	0.616	-0.403	-0.094	-0.671
Unemployment rate	-0.488	-0.270	-0.812	-0.172
Young population	-0.026	-0.862	0.203	0.465

A.2 EMNE_STATUS

A.2 The variable EMNE_STATUS

Shen et al. (2014) propose a measure of firm-level status based on news coverage. The intuition behind this approach is that any contribution to media coverage of the firm not "explained" by specific observable characteristics (e.g. size, innovativeness, profitability, country) is related to firm status. Accordingly, our variable $Status_{i,t}$ (for a company involved in deal *i* at time *t*) is calculated as the standardized residual of the following cross-section regression:

$$lnStatusNews_{i,t-1} = \alpha + \beta lnAssets_{i,t-1} + \gamma Profit_{i,t-1} + \delta NSubsidiaries_{i,t-1} + \vartheta PatentStock_{i,t-1} + \mu CHINA_i + \pi Listed_{i,t-1} + \sum \rho_j Sector_{i,j} + \sum \varphi_t DealYear_{i,t} + \epsilon,$$

where *lnStatusNews* is the natural log of the number of "positive news items" collected from Lexis Nexis concerning the acquirer in deal *i* in the year before the deal (i.e. at time t-1). Following Shen et al. (2014), positive news is identified using 10 keywords included in the Merriam-Webster Dictionary (i.e. *status, prestigious, respectable, famous, prominent, eminent, high ranking, elite, admirable, celebrity*). Although the content of news articles is constructed according to the interests and agendas of particular journalists (Tuchman 1978), in aggregate, news can be considered a reliable source to identify generalized public opinion on a given entity, including a firm (Humphreys, 2010).

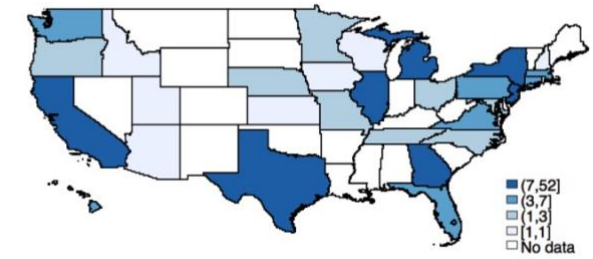
The firm-level observable characteristics included in the model are: the natural log of the assets of the acquirer involved in deal *i*(*lnAssets),* the profit margin of the acquirer involved in deal *i*(*Profit*), the number of the EMNE's subsidiaries involved in deal *i*(*NSubsidiaries*), the stock of EMNE patents involved in deal *i* (*PatentStock),* the home country dummy (*CHINA*) and a dummy (*Listed*) that takes the value 1 if the acquirer involved in deal *i* is publicly listed and 0 otherwise. Finally, we control also for sector at the NACE main sector level (*Sector*) and deal year (*DealYear*). With the exception of the variable *PatentStock*, all the other firm-level variables are drawn from the ORBIS BvD database.

Note that the approach used here is based on the assumption that the international press portrays companies based also on some observable characteristics such as size, profitability, foreign investments, or country of origin. Thus, scepticism about China, for example, might lead to lack of enthusiasm in international press reporting of Chinese companies' activities. However, taking account of the residual of the above regression model, by construction, these factors do not affect our measurement of status. As a further robustness check, for country of origin, we conducted a Fligner-Policello test of the distribution of the status variable; this does not reject the hypothesis that Chinese and Indian acquirers are sampled from the same population.

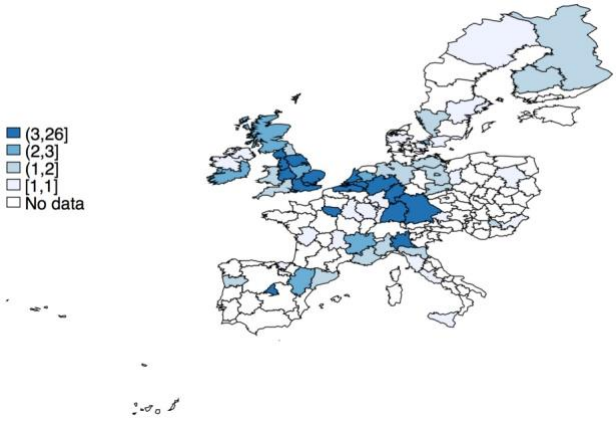
FIGURES

Figure 1. Geographical distribution of CBAs in the U.S. and Europe

United States

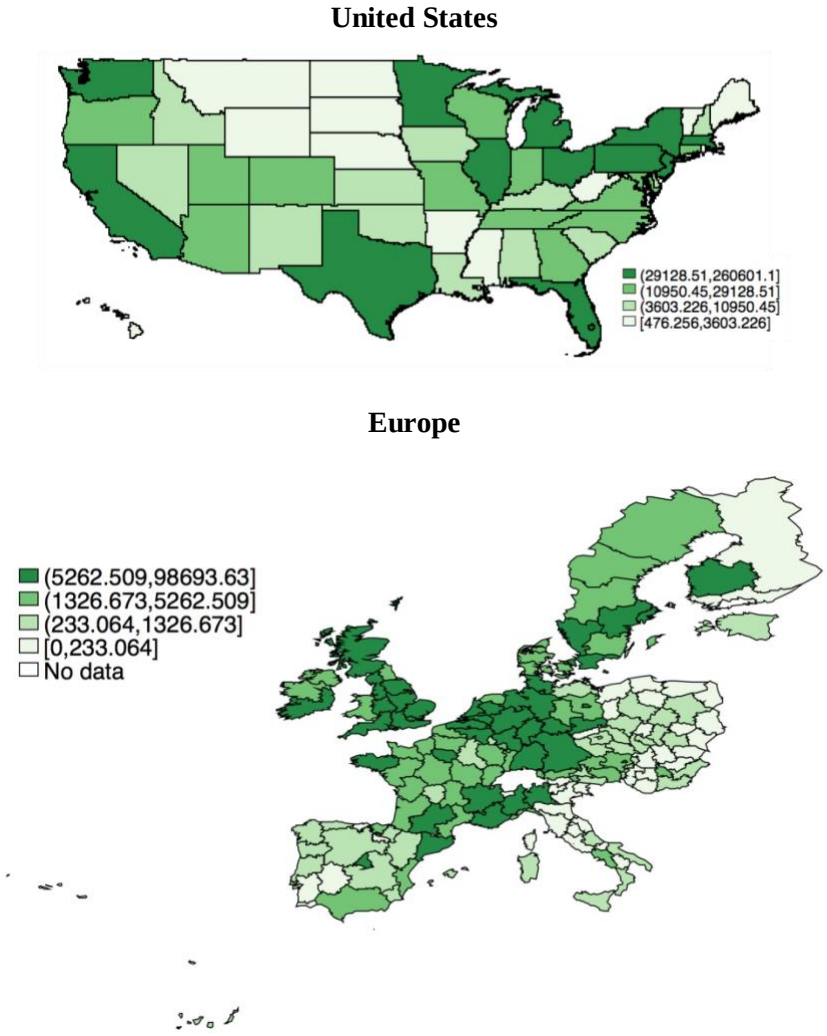


Europe



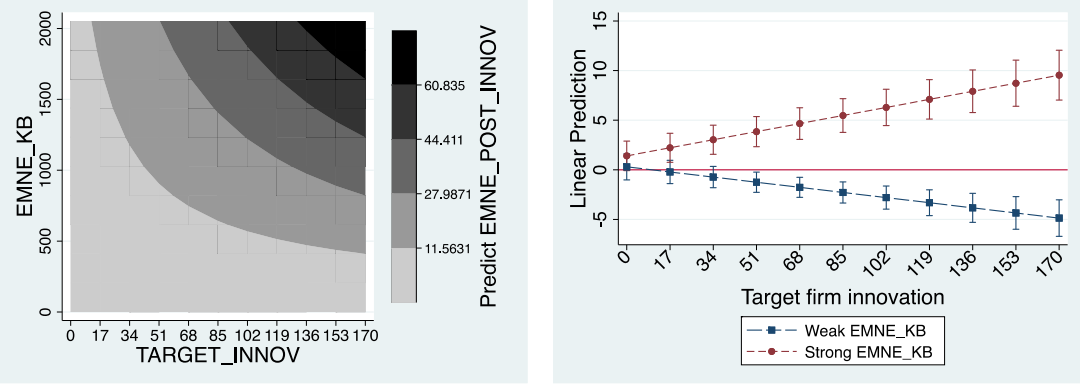
Source: Authors' elaboration on OECD data.

Figure 2. Geographical distribution of PCT patent applications in the U.S. and Europe



Source: Authors' elaboration on OECD data.

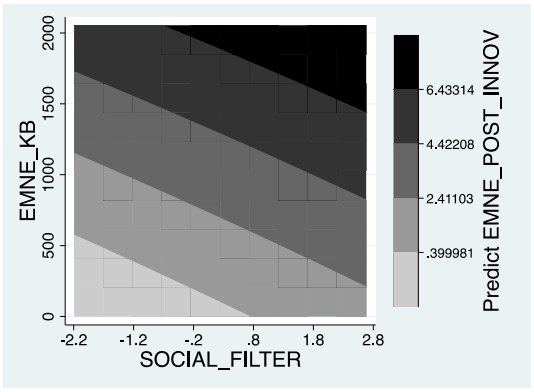
Figure 3 – The moderating role of EMNEs' knowledge base in the relationship between target firm innovative capacity and acquirers' post-CBA innovative output



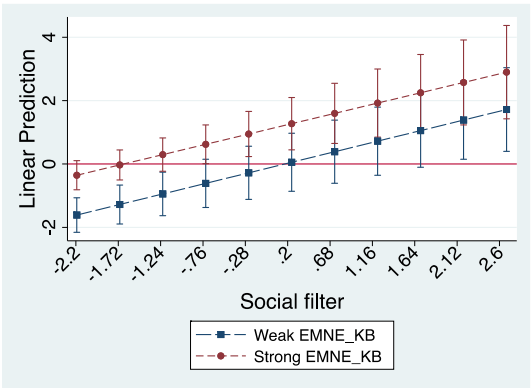
(a) *(b)*

Note: Graphs are derived from the estimation presented in Table 4 column 1. Weak EMNE knowledge base corresponds to the variable *EMNE_KB* equal to 0. Strong EMNE knowledge base corresponds to the 95th percentile of the variable's distribution.
Source: Authors' calculations.

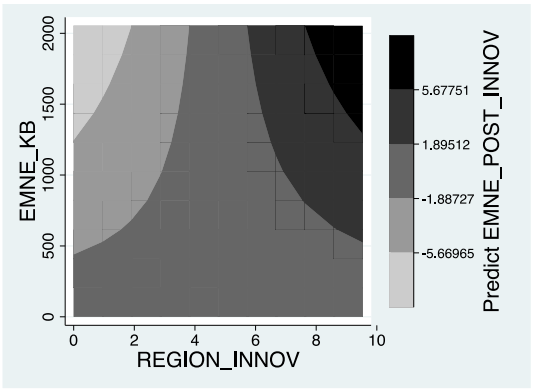
Figure 4. The moderating role of EMNEs' knowledge base in the relationship between target region innovative capacity and acquirers' post-CBA innovative output



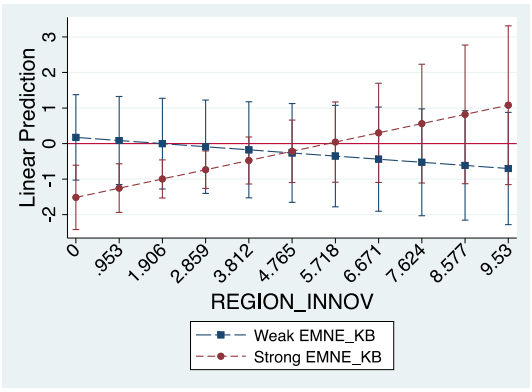
(a)



(b)



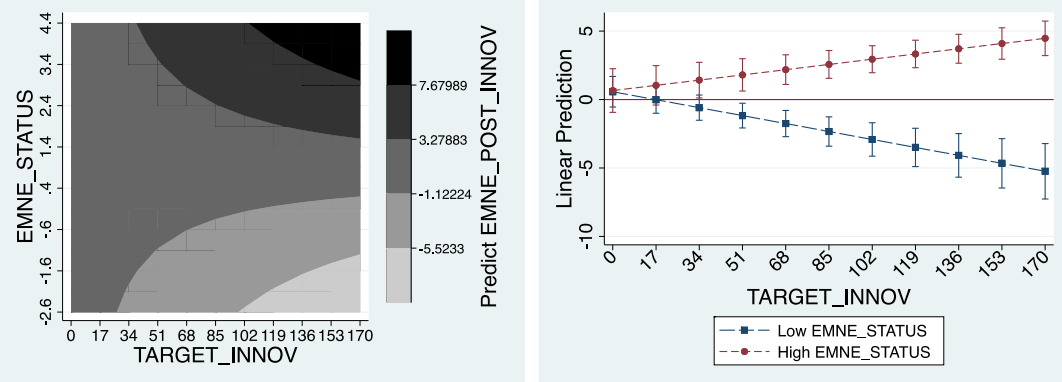
(c)



(d)

Note: Graphs (a) and (b) are derived from the estimation presented in Table 4 column 3; and graphs (c) and (d) from the estimation presented in Table 4 column 4. Weak EMNE knowledge base corresponds to the variable *EMNE_KB* equal to 0. Strong EMNE knowledge base corresponds to the 95th percentile of the variable's distribution.
Source: Authors' calculations

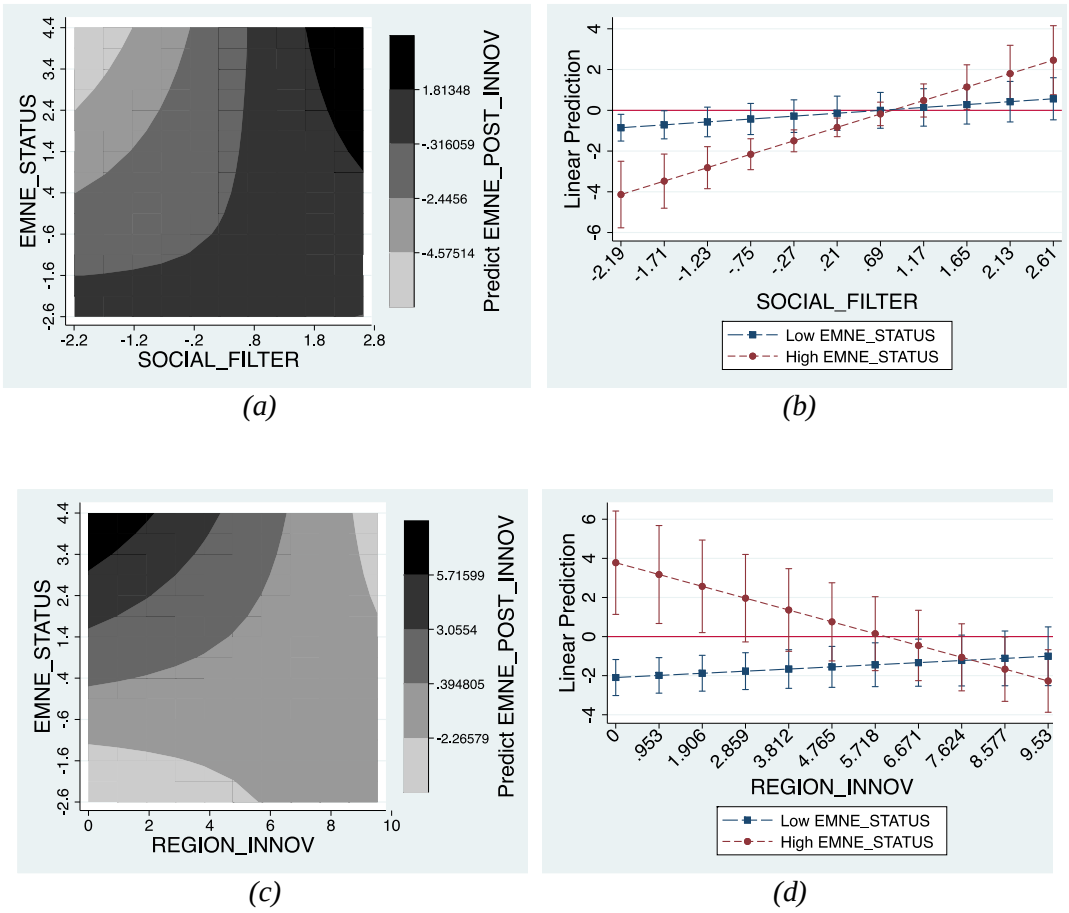
Figure 5 - The moderating role of EMNEs' status in the relationship between target firm innovative capacity and acquirers' post-CBA innovative output



(a) *(b)*

Note: The graph is derived from the estimation presented in Table 4 column 5. Low status corresponds to the 5th percentile of the variable *EMNE_STATUS* distribution, while high status corresponds to the 95th percentile.
Source: Authors' calculations

Figure 6 - The moderating role of EMNEs' status in the relationship between target region innovative capacity and acquirers' post-CBA innovative output



(a) *(b)*

(c) *(d)*

Note: Graphs (a) and (b) are derived from the estimation presented in Table 4 column 7 and graphs (c) and (d) from the estimation presented in Table 4 column 8. Low status corresponds to the 5th percentile of the variable distribution, while high status corresponds to the 95th percentile.
Source: Authors' calculations

TABLES

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

	Total #	Manufacturing*	Services*	# in host countries
China	86 (18.9)	54 (26.7)	32 (12.6)	30 USA 20 Germany 9 France
India	369 (81.1)	148 (73.3)	221 (87.4)	176 USA 78 UK 32 Germany
Total	455	202	253	

% in brackets

* 2-digits NACE codes: a) manufacturing includes: 20, 21, 26, 27, 28, 29, and 30.;b) services include: 59, 60, 61, 62, 63,64, 65 66, 69, 70, 71, 72, 73, 74, 78, and 80.

Table 2. Descriptive statistics

Continuous variables					
	#	**Mean**	**Std. Dev.**	**Min**	**Max**
EMNE_POST_INNOV	455	14.237	64.076	0	691
TARGET_INNOV	455	1.941	11.165	0	170
REGION_INNOV	442	7.697	1.358	0	10
SOCIAL_FILTER	434	1.048	0.705	-2.190	3
EMNE_KB	455	59.833	219.695	0	2053
FDI_EXP	455	2.380	2.503	0	18
INST_DIST	455	20.051	7.361	1.30	38.18
EMNE_STATUS	455	-0.003	0.997	-2.686	4.455

Categorical/dummy variables		
	#	**Frequency (%)**
CHINA	455	18.9
U.S.	455	45.3
HOR_CBA	455	87.03
SIZE	455	18.68

Table 3. Regression results (baseline hypotheses)

	Controls		**Full models**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SIZE	-3.024***	-3.020***	-3.156***	-3.064***	-3.034***	-3.158***	-3.045***
	(0.842)	(0.845)	(0.825)	(0.828)	(0.809)	(0.811)	(0.799)
FDI_EXP	0.255***	0.253***	0.256***	0.255***	0.059***	0.048***	0.053***
	(0.029)	(0.03)	(0.033)	(0.036)	(0.029)	(0.019)	(0.015)
HOR_CBA	0.978°	0.999°	0.831	0.65	0.855***	0.978**	0.805°
	(0.581)	(0.587)	(0.531)	(0.585)	(0.35)	(0.328)	(0.426)
INST_DIST	-0.047	-0.046	-0.057	-0.046	-0.031***	-0.038***	-0.025***
	(0.03)	(0.031)	(0.04)	(0.037)	(0.002)	(0.01)	(0.004)
CHINA	1.874***	1.880***	2.025***	1.946***	2.218***	2.290***	2.262***
	(0.128)	(0.13)	(0.157)	(0.155)	(0.616)	(0.47)	(0.528)
U.S.	-0.071	-0.08	-0.342	0.02	0.188	-0.118	0.145
	(0.575)	(0.583)	(0.563)	(0.592)	(0.205)	(0.152)	(0.144)
TARGET_INNOV		-0.024**				-0.012***	-0.013°
		(0.007)				(0.006)	(0.008)
SOCIAL_FILTER			0.667***			0.598**	
			(0.197)			(0.198)	
REGION_INNOV				-0.046			-0.025
				(0.035)			(0.033)
EMNE_KB					0.003***	0.003***	0.003***
					(0.001	(0.001)	(0.001)
EMNE_STATUS						0.041	0.044
						(0.082)	(0.096)
YEAR DUMMY	YES	YES	YES	YES	YES	YES	YES
Observations	431	431	407	418	431	407	418
Log Likelihood	-8888.101	-8861.734	-8270.702	-8699.576	-5812.646	-5369.461	-5681.14

Models are estimated using Poisson Quasi-Maximum Likelihood. Standard errors in parentheses. Calculations were carried out to more decimal places than are reported. Robust standard errors in parentheses.
°<0.1, *<0.05, **<0.01, ***<0.001

Table 4. Regression results (Hypotheses 1 to 4)

	H1		H2		H3		H4	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SIZE	-3.147***	-3.030***	-3.160***	-3.028***	-3.160***	-3.049***	-3.060***	-3.258***
	(0.823)	(0.808)	(0.811)	(0.831)	(0.812)	(0.801)	(0.792)	(0.94)
FDI_EXP	0.071***	0.074***	0.047***	0.075***	0.052**	0.057***	-0.004	0.057***
	(0.013)	(0.009)	(0.02)	(0.021)	(0.018)	(0.014)	(0.014)	(0.015)
HOR_CBA	0.992**	0.812°	0.984**	0.871***	0.972**	0.797°	0.851***	0.679***
	(0.327)	(0.428)	(0.309)	(0.412)	(0.332)	(0.429)	(0.133)	-0.339)
INST_DIST	-0.041***	-0.028***	-0.038***	-0.021***	-0.037***	-0.025***	-0.051***	-0.029***
	(0.01)	(0.005)	(0.009)	(0.003)	(0.011)	(0.005)	(0.009)	(0.004)
CHINA	2.336***	2.302***	2.288***	2.341***	2.315***	2.289***	1.936***	2.175***
	(0.451)	(0.511)	(0.476)	(0.6)	(0.471)	(0.531)	(0.24)	(0.454)
U.S.	-0.169	0.092	-0.117	0.105	-0.12	0.141	-0.175***	0.193
	(0.181)	(0.175)	(0.151)	(0.163)	(0.163)	(0.158)	(0.081)	(0.15)
TARGET_INNOV	-0.030***	-0.033**	-0.012***	-0.011°	-0.014***	-0.017	-0.014***	-0.013°
	(0.007)	(0.012)	(0.006)	(0.006)	(0.007)	(0.01)	(0.006)	(0.007)
SOCIAL_FILTER	0.615**		0.611***		0.596**		0.683***	
	(0.199)		(0.15)		(0.199)		(0.15)	
REGION_INNOV		-0.026		-0.092***		-0.025		-0.155***
		(0.035)		(0.022)		(0.033)		(0.025)
EMNE_KB	0.003***	0.003***	0.003***	-0.005°	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
EMNE_STATUS	0.034	0.038	0.041	0.042	0.027	0.03	-0.298***	1.900***
	(0.083)	(0.098)	(0.082)	(0.101)	(0.084)	(0.097)	(0.132)	(0.476)
EMNE_KB x TARGET_INNOV	0.001***	0.001***						
	(0.001)	(0.001)						
EMNE_KB x SOCIAL FILTER			-0.001					
			(0.001)					
EMNE_KB x REGION_INNOV				0.001**				
				(0.001)				
EMNE_STATUS x TARGET_INNOV					0.018***	0.020***		
					(0.001)	(0.002)		
EMNE_STATUS x SOCIAL FILTER							0.349***	
							(0.096)	
EMNE_STATUS x REGION_INNOV								-0.242***
								(0.052)
YEAR DUMMY	YES	YES	YES	YES	YES	YES	YES	YES
Observations	407	418	407	418	407	418	407	418
Log Likelihood	-5253.423	-5578.702	-5368.946	-5342.217	-5341.299	-5650.063	-5146.965	-5551.241

Models are estimated using Poisson Quasi-Maximum Likelihood. Standard errors in parentheses. Calculations were carried out to more decimal places than are reported. Robust Standard errors in parenthesis. °<0.1, *<0.05, **<0.01, ***<0.001

Table 5. Two-stage model

	Baseline		**H1**		**H2**		**H3**		**H4**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FDI_EXP	0.210***	0.038***	0.237***	0.057***	-0.093***	0.082***	0.147***	0.102***	-0.066***	0.013°
	(0.008)	(0.007)	(0.008)	(0.007)	(0.006)	(0.007)	(0.008)	(0.009)	(0.007)	(0.008)
HOR_CBA	0.193***	0.208***	0.739***	0.343***	0.873***	0.830***	-0.182***	0.281***	-0.073	-0.306***
	(0.075)	(0.083)	(0.085)	(0.074)	(0.070)	(0.075)	(0.073)	(0.076)	(0.098)	(0.079)
INST_DIST	-0.077***	-0.063***	-0.008°	0.003	-0.035***	-0.125***	-0.060***	-0.012**	-0.125***	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
CHINA	1.933***	1.991***	1.875***	2.125***	1.375***	1.441***	1.844***	1.847***	1.055***	3.017***
	(0.062)	(0.047)	(0.049)	(0.045)	(0.048)	(0.060)	(0.045)	(0.049)	(0.057)	(0.066)
U.S.	0.031	0.947***	0.027	-0.346***	-0.394***	0.925***	0.093	-0.229***	0.419***	0.505***
	(0.074)	(0.077)	(0.072)	(0.068)	(0.067)	(0.072)	(0.074)	(0.069)	(0.067)	(0.093)
PRE_2008	0.224***	-0.356***	-0.309***	-0.699***	-0.306***	0.311***	0.198**	-0.770***	0.261***	0.432***
	(0.065)	(0.056)	(0.057)	(0.054)	(0.052)	(0.069)	(0.064)	(0.055)	(0.056)	(0.114)
MANUFACTURING	-0.205***	0.107***	0.314***	0.220***	-0.292***	0.770***	0.157***	0.073°	-0.205***	0.165***
	(0.045)	(0.046)	(0.041)	(0.040)	(0.042)	(0.044)	(0.041)	(0.043)	(0.042)	(0.044)
TARGET_INNOV	-0.010**	0.004	-0.027***	-0.026***	-0.011***	-0.009**	-0.007°	0.015***	0.032***	0.024***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.005)	(0.003)
SOCIAL_FILTER	0.175***		-0.399***		0.040		0.230***		0.853***	
	(0.024)		(0.028)		(0.037)		(0.026)		(0.026)	
REGION_INNOV		-0.195***		-0.269***		-0.309***		-0.341***		-0.360***
		(0.012)		(0.014)		(0.014)		(0.014)		(0.018)
EMNE_KB	0.003***	0.003***	0.003***	0.004***	0.003***	-0.001***	0.003***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
EMNE_STATUS	0.008	0.060***	0.039**	0.136***	0.150***	0.169***	0.024	0.108***	-0.362***	1.539***
	(0.015)	(0.013)	(0.014)	(0.013)	(0.013)	(0.015)	(0.017)	(0.014)	(0.021)	(0.119)

Table 6

	Baseline		**H1**		**H2**		**H3**		**H4**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EMNE_KB x TARGET_INNOV			0.001***	0.001***						
			(0.001)	(0.001)						
EMNE_KB x SOCIAL FILTER					0.001***					
					(0.001)					
EMNE_KB x REGION_INNOV						0.001***				
						(0.001)				
EMNE_STATUS x TARGET_INNOV							0.005	-0.004		
							(0.004)	(0.003)		
EMNE_STATUS x SOCIAL FILTER									0.428***	
									(0.016)	
EMNE_STATUS x REGION_INNOV										-0.228***
										(0.016)
CONSTANT	0.232	2.141***	-0.643***	1.635***	0.039	2.518***	0.039	2.577***	1.179***	1.920***
	(0.161)	(0.181)	(0.155)	(0.168)	(0.134)	(0.193)	(0.134)	(0.172)	(0.169)	(0.206)
N	2427	2427	2427	2427	2427	2427	2427	2427	2427	2427
ll	-1391227	-1516699	-1357081	-1360973	-1345718	-1333748	-1306336	-1386665	-1305140	-1507718

Models are estimated using Sample Selection Poisson Model. Standard errors in parentheses. Calculations were carried out to more decimal places than are reported.
The selection equation includes size, industry, country of origin, solvency capability, knowledge base, country of origin, ownership.
*<0.1, *<0.05, **<0.01, ***<0.001