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Formal Institutions and International Knowledge Transfer

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Abstract This paper adopts a systematic review method to summarize the major economic literature on the topics of international knowledge transfer. We pay special attention to studies exploring the role that formal institutions may have in guiding, intensifying, and enhancing international knowledge transfer in, to, and from emerging markets. Our findings identify five main transfer channels that we believe are predominant in the literature. The first refers to the role of multinational enterprises, and how industrial links affect international knowledge transfer through inward and outward foreign direct investment. The second addresses the effect of R&D internationalization on firm innovation performance. The third deals with the idea that firms learn from international trade and benefit from links with foreign markets by introducing either new products or processes. The fourth focuses on international collaborations and networks. Finally, the fifth addresses the human capital international mobility of managers and employees. However, the complex nature of these topics claims the need for supplementary studies that can help to further develop this theme.

Keywords International Knowledge Transfer; Institutions; Innovation, Emerging Markets.

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1. Introduction

Our purpose is to study the issue of Knowledge and Innovation *In, To and From* Emerging Markets. Coherently, our paper aims to summarize the economic literature on the topics of International Knowledge Transfer. Specifically, we refer to the literature related to the role that Formal Institutions may have in guiding, intensifying, and enhancing International Knowledge Transfer in, to, and from Emerging Markets.

To do this, we *initially* adopted a systematic review method. Nevertheless, the purpose of the paper is not intended to conduct a meta-synthesis of literature results, but to highlight whether and how foreign knowledge became available to emerging markets firms. In emerging markets, access to foreign knowledge and technology is crucial for firm innovation and, therefore, Institutions and Governmental policies may play a fundamental role in shaping international knowledge flow to facilitate local firms' knowledge acquisition and innovation capability.

However, while we are conscious that our scope is very broad, we do not think that it is too ambitious, in the sense that, it just seeks to analyze a theme that usually is covered with different surveys. Each of the five strands of research - successively pointed out in the paper - has a large amount of research, and each of them could well represent the key topic of separate surveys. Since international knowledge transfer is a large umbrella, and the literature that fits under it is huge, the choice of considering these (connected, but distinct) strands of research within the same paper makes our paper a novel survey. Therefore, instead of touching separately on the research on international knowledge transfer, we will try to give a comprehensive and organized view of the findings reported in more than 200 papers by proposing a wide-ranging discussion of different topics.

Further, another important issue in the paper is how "institutions" will be analyzed. Our survey refers to different institutional aspects that, to the best of our knowledge, never have been jointly investigated before. Even though there are some topics that, maybe, our paper does not touch upon, we designed it in such a way that it will have a specific focus on emerging markets' crucial aspects. So, we wish that our research could also encourage relevant and potentially promising future research.

Our research is framed conceptually on a broad view of knowledge transfer in, to, and from emerging markets, where the main issue refers to a better understanding of the role that institutions play in the process of knowledge sharing and dissemination around the world. With special emphasis on the impact of (and on) European innovation, we focus especially on how international knowledge transfer may boost the innovation of emerging markets firms and how emerging markets firms' innovation capability could be transferred to the advanced economies, allowing for a *reverse innovation process*.

Since firms in emerging markets, traditionally, learn from advanced economies to enhance their innovation capability, we refer basically to **latecomers** and **catch-up** literature, and to the processes by which latecomer firms **upgrade** their capabilities. Nevertheless, we pay special attention to literature explaining how these phenomena depend on economic, social, and institutional factors.

Economic and social factors turn out to be important because they reflect the competitive environment faced by firms, the access condition to financial resources, the labor market rigidity, the trade openness, and, in general, the growth perspectives that firms may have in the selected target market. However, the institutional factors affecting firms' innovation capabilities are even more important, since they embedded the willingness and support from institutions in absorbing and developing knowledge and innovations in local, national, or foreign boundaries.

The role of institutions should extend beyond the construction of a better legal system and contemplate political, social, and cultural aspects as well. Therefore, based on this argument, it turns out to be obvious that if the social, institutional, and economic perspectives are worse, latecomer firms will tend to rely on foreign countries. Differently, better opportunities may increase the probability that latecomers attempt to be more independent, allowing innovation capabilities could be transferred from emerging markets to advanced economies.

Summing up, since knowledge can be acquired, accumulated, upgraded, and transferred, this analysis starts to consider the following interconnected themes that literature suggests are linked to the concept of international knowledge transfer:

1) Emerging economies and their characteristics in terms of:
   - Innovation capabilities,
   - International activities and
   - Institutional environments.
2) Latecomer firms,
3) Catch-up processes.

In what follows, while Section 2 overviews the review protocol, in Section 3 we report the findings of literature investigating knowledge transfer related to emerging markets by identifying the following 5 themes that emerged during the review process: *a) foreign direct investment; b) R&D internationalization; c) learning from trade; d) international cooperation, collaborations and networks and e) human capital international mobility*. Finally, section 4 concludes the paper and discusses the main results.

2. Retrieving and mapping current research

The research protocol applied to systematically review the literature involves three main steps. First, we conduct a *"Keyword Search"* on Titles, Abstracts, and Author Keywords of published papers. Second, we carry on an *"Abstract Analysis"* to focus on relevant articles consistent with the specific themes that link formal institutions of emerging markets to international knowledge transfer and innovations. Third, we proceed with a *"Full Paper Analysis"* to map fields and highlight the key themes on which the literature has been focused.

Such an analysis may provide a better understating of the role that formal institutions may have in guiding, intensifying, and enhancing international knowledge transfer in, to, and from emerging markets. This could also suggest, to governments and policy makers, the best approaches to support knowledge transfer and sharing around the world, which in turn upgrade firms' innovation capabilities.

In recent studies, Gray and Durcikova (2006) and Gray and Meister (2004) described knowledge sourcing as a *"mechanism by which firms access others' knowledge"* and firms' internationalization is proved to be among the most beneficial tools for knowledge transfer and firms' innovation. For instance, Hitt, Hoskisson, and Kim (1997) reported that a broader internationalization improves the innovation capacity of multinational enterprises. Analogously, internationalization enhances firms' technological learning (Zahra, Ireland, and Hitt 2000). Also, Sambharya and Lee (2014) suggested that the number of patents registered by multinational enterprises increases with a wider and diversified internationalization.

Even though innovation literature has focused on developed countries, access to foreign knowledge is essential, especially for improving firm innovation in emerging markets. In particular, it is important to understand whether and how this framework should be modified in emerging economies, so we will surf the literature focusing on the innovative behavior of firms both in developed and developing countries.

Thus, since the literature recognizes that improving a firm's access to external (international) knowledge will lead to firm innovation, our study supports the idea that knowledge transfer promotes firms' innovation success. Building on this, we start our keyword search by focusing on *"formal institution"* and *"innovation"*, shedding light on to what extent favoring access to international knowledge may favor firms' innovation capabilities in developed, as well in emerging markets.

Keyword Search

Our *"Keyword Search"* was restricted to academic articles published and collected within the *"Web of Science"* (*WoS*) and *"Scopus"* archives.

The inclusion of both databases is justified since a preliminary keyword search provided the largest number of returns, allowing us to include also those works that were not present in the more restrictive *WoS* archive. So, as a starting point, a search protocol was applied to obtain the "*Formal Institution Literature"* bibliographic dataset. Each archive was interrogated using a basic keyword search as described by the search strings listed in Table 1 and applied to *"Titles"*, *"Abstracts"* and *"Author Keywords"*. The overall dataset consists of 4027 references and, after checking for duplicates (972), we have reached 3055 unique bibliographical references.

Table 1: Keyword search

WoS SCI/SSCI		**SCOPUS**	
Categories: 'Management', 'Business', 'Operations Research Management Science', 'Economics', and 'Business Finance'	N° of Papers	*Subject areas: 'Business, Management and Accounting' and 'Economics, Econometrics and Finance'*	N° of Papers
All years (1985 to May 2017)			
Formal Instit*	**1506**	Formal Instit*	**2521**
AND		**AND**	
Innovat*	197	Innovat*	241
AND (		**AND (**	
Emerging Market*	88	Emerging Market*	65
OR		**OR**	
Emerging Econom*	137	Emerging Econom*	91
OR		**OR**	
Latecomer* (Only Business, Management, Economics)	3	Latecomer*	3
OR		**OR**	
Upgrad* (Only Economics & Management)	3	Upgrad*	8
OR		**OR**	
Catch* (Only Business, Management & Economics)	9	Catch*	10
)		**)**	

As the first phase of our systematic review, we apply some exclusion criteria to reduce the output from our bibliographic dataset. Since the aim of our work is to analyze the role of formal institutions, all titles not strictly related to this issue were eliminated. Hence, our intermediate sample was composed of 1102 papers.

These articles were classified into 7 subgroups defined by 7 keywords. The groups and the number of records (in brackets) that populate each subset were the following:

1) Catch/ing-up (14)
2) Countries (434)
3) Emerging economy/ies (182)
4) Emerging Market/s (116)
5) Innovation (342)
6) Latecomer/s (5)
7) Upgrade/ing (9)

At this stage, we applied a preliminary selection of the papers. Our judgment was based on whether or not the findings summarized in each abstract were related to institutional policy interventions connected to knowledge transfer and/or innovations. Thus, many studies were eliminated because were ambiguous, not related to our purpose, or because of a lack of clarity. Where the abstracts included theories not linked clearly to knowledge transfer and/or innovations, these have been considered tangential. After this screening, we selected 230 bibliographical references for the *"Abstract Analysis"*.

Abstract Analysis

The second phase of our review was the *"Abstract Analysis"* and – for the purposes of the report – the goal is to exclude papers that are inconsistent with the specific themes that link *"Formal Institutions"* to *"International Knowledge Transfer"* and *"Innovations"*.

In reading the 230 abstracts, the main topics refer to subjects that are not at all relevant to those we believe fit our purposes (among others, *'fishing'*, *'forests',* and *'commons'*). This process highlighted the importance of writing clear, coherent, and explicative titles and abstracts. Namely, those that offer the reader a well-defined intuition of a paper's contribution to the specific field under investigation. We found, of course, topics related to emerging countries (and institutions), but nothing that had anything to do with *"Knowledge Transfer"* and/or *"Innovation"*. For instance, studies related to *'political transitions'*, *'school reforms'*, *'trade unions'*, and so on.

Moreover, the *"Knowledge Transfer"* we aim to investigate, is not the transfer of knowledge within a country. These topics focus on the role of *'Universities'*, *'Knowledge Transfer Offices'*, *'National Innovation Systems'*, and other institutional frameworks, but these issues relate more to externalities, spin-offs, and spillovers inside the national boundaries. Rather, what we would want to study is the *"INTERNATIONAL Knowledge Transfer"*.

There are fundamental aspects that characterize this specific *"Knowledge Transfer"* related to *"Emerging Economies"*. For instance - from other research external to the bibliographic dataset described above - le*arning by exporting/importing*, *reverse knowledge transfer*, *return migration of entrepreneurs/researchers* and the related international mobility of human capital are all relevant topics for the paper's purpose. Few of these, however, emerged from the *"Abstracts Analysis"*. Nevertheless, the retrieved literature appears too much and exclusively managerial and neglects all strictly economics issues. Moreover, in terms of methodologies used in the retrieved studies, we observed that many of them have not employed quantitative econometric methodologies. Since case studies and interview-based approaches rarely offer quantitative information that can be readily generalized, interpretation of the results requires caution. Specifically, 40% of papers represent case studies; about 30% of papers are interview-based studies and refer to qualitative approaches; more than 15% focus on reviews of evidence, and about 10% report exclusively descriptive statistics. Thus, only a small fraction of retrieved studies made use of quantitative methods and official data.

In the end, through the close reading of abstracts, and given the results obtained from the systematic review protocol, we reduced the list of primary articles to a very small number (*i.e. #10*). So, with this data, we had not been able to construct a meaningful map of the fields of study in terms of density, frequency, and research methods applied in studying the theme of *International Knowledge Transfer*.

Also, since the applied standard searching protocol did not work adequately in retrieving the relevant studies, we preferred to integrate this literature with other papers that we thought to be rather connected to our purposes. Therefore, through investigations conducted in our previous academic projects on similar themes, 209 papers were added to the list and, finally, 219 studies were reviewed in the *"Full Paper Analysis"* reported below.

Full Paper Analysis

The third phase of the literature review consists of the *"Full Paper Analysis"* aimed at highlighting the key issues on which the literature has been focused.

To map the fields, we first compared each of the 219 papers against the others to identify the main themes and to classify the belonging of each study to a specific thematic area. The aim was not intended to evaluate the existence of possible convergences in statistical terms. Differently, our purpose was to establish a clear categorization and conceptualization of different topics covered within the reviewed studies. Similar to a typical qualitative analysis, we adopted an iterative and inductive method of comparison of the paper to offer a detailed conceptual discussion.

However, since international knowledge transfer may occur through several channels (*i.e.* foreign customers/supplier relations, foreign direct investments, trade, technological spillovers, licensing, international mobility of individuals, internationalization of R&D activities, and so on), these topics are inexorably overlapping and interconnected. For instance, some papers find that multinational enterprises promote knowledge transfer between the parent company and subsidiaries because multinational firms conduct R&D abroad in countries hosting their subsidiaries and benefit from the internationalization of R&D. At the same time - thanks to inter-unit visits, training involving employees from different national divisions, and international committees – there is evidence that multinational enterprises facilitate knowledge diffusion because personnel international mobility reduces the

geographical distance between the host countries and the country of origin. Moreover, it is almost obvious that multinational enterprises are extensively involved in international trade and have strong links with foreign customers, suppliers, and competitors. Therefore, since some studies address more than one argument, any taxonomy may be subject to criticisms and refinements.

Furthermore, many papers examine specific institutional contexts, output and/or input measures of innovations, firms' characteristics, and their absorptive capacity. Thus, to disentangle this complexity and to give a comprehensive and organized view of the literature, we argue the findings in 5 thematic areas.

The first explores the role of multinational enterprises and how industrial links affect international knowledge transfer through inward and outward foreign direct investment. The second addresses the effect of R&D internationalization on firm innovation performance. The third deals with the concept that firms learn from trade and benefit from links with foreign markets by promoting both new products and processes. The fourth focuses on international firms' cooperation, collaborations, and networks, and their impact on innovation performance. Finally, the fifth addresses the human capital international mobility and, specifically, the effects of knowledge transfer by managers and employees returning to their native countries after a period of business experience and/or education in developed countries.

3. Reporting the findings

In "*Mapping the Fields*" we paid specific attention to studies exploring the role that formal institutions may have in guiding, intensifying, and enhancing international knowledge transfer in, to, and from emerging markets. Hence, we first introduce some general arguments useful to better understand the context in which firms in emerging countries operate, compete, and upgrade their innovative capabilities.

Knowledge, Internationalization, Innovation, and Institution in Emerging Economies

Knowledge transfer is a broader concept than **technology transfer**, which focuses essentially on patenting and licensing (OECD 2003). International Technology Transfer can be defined in general as the *"process by which a technology supplier communicates and transmits the technology through multiple activities to the receiver, across national borders"* (Nahar et al. 2006).

Differently, most of the literature does not explicitly explain the concept of **knowledge transfer** and, even if scholars may be divided into technology and human-oriented researchers, only a few papers attempted to define the notion of knowledge transfer. Although we found three different specific definitions (Argote and Ingram 2000; Dong-Gil, Kirsch, and King 2005; Szulanski 1996), each deals with the common feature of the source and the recipient of knowledge. However, most of the literature focuses on the channels or mechanisms of knowledge transfer. In particular, since the early 1990s, the endogenous growth models in the open economy suggest **international trade** as an important channel of knowledge and technology transfer (Grossman and Helpman 1991). In this context, international knowledge transfer occurs because **R&D investments** in one country determine knowledge spillovers to firms in other countries.

Therefore, since **knowledge transfer** can be viewed as the set of actions - which disseminate information, practice, experience, and skills - aimed at accelerating the use, application, and development of knowledge in economic sectors, the role of governments in this context is, therefore, that of implementing policies able to promote activities related to it. Among them, the encouragement of an international competitive environment may have a heavy impact on local development, through the creation of new jobs, new products and markets, and better education. Thus, by incorporating also **foreign knowledge** into the domestic **value chain**, it is possible to generate economic returns for the private and public sectors, and in general for society. Indeed, policies aimed at firms' **internationalization** lead to new knowledge, new ideas and processes, and better human resources, which result in **innovation**, higher productivity, wages, employment rates, and improved life quality in general.

Internationalization was the most intense phenomenon of the last century, and it has led to the birth of globalized markets where firms compete in a complex and integrated global environment. In this context, the term "**globalization**" refers to the process of integration and interdependence among different national economies. Therefore, since globalization removes barriers and accelerates competition between institutional systems (Hill and Mudambi 2010), the flows of international trade and knowledge intensify *"as much from and between emerging economies as from and between developed ones"* (Ramamurti and Singh 2009). Even though recent literature recognizes that elements affecting firms' internationalization processes are different for emerging markets compared

to the ones of developed economies (Luo and Tung 2007; Makino, Lau, and Yeh 2002), all the ongoing tendencies show that **developing economies** will prevail in the global market (Ramamurti 2010).

Emerging markets are those that rapidly grow, often associated with lower/middle-income countries and usually involved in significant policy reform such as trade liberalization, opening to foreign investment, privatization of state-owned firms, and so on (Khanna, Palepu, and Sinha 2005). Since both physical and human resources are poorer in emerging markets than in advanced economies in quantity and quality terms, their technological and innovative capabilities are meager. Also, given the lower purchasing power, the domestic market of developing economies adopts innovative products more slowly than the developed countries. Moreover, while institutions are often weak in emerging countries, they are more robust in advanced economies. Hence, firms in emerging economies differ in at least three characteristics from those in the developed ones. First, emerging market firms are often aimed to learn new **innovative capabilities** and competencies through internationalization. Second, the target market of innovative emerging economies firms is mostly oriented towards **foreign markets**. Third, the **institutional environment** of emerging market firms is often shaped by institutional weaknesses, strong political ties, structural inefficiencies, and resource constraints. Therefore, the development patterns of emerging and advanced countries (and their firms) clearly differ.

Despite this, in the last two decades there was a remarkable growth in the internationalization of emerging market firms and a rapid increase in both inward and outward internationalization activities (UNCTAD 2008). While the former occurs in the home country (importing, joint ventures, and inward foreign direct investments), the latter arises abroad (exporting, international R&D cooperation and investments, and outward foreign direct investments). Indeed, the direct interaction between firms of developing and developed economies provides firms of emerging markets the opportunity to learn technological skills and accumulate knowledge from abroad and, in turn, it offers them the actual opportunities to engage in outward internationalization successively (Luo and Tung 2007). In other words, when emerging market firms lack the capabilities to create technological know-how at home, they may absorb and assimilate foreign technologies and, as soon as they can improve the imported technologies, **latecomer firms** finally start to generate their technology and become competitive in the international market.

Thus, since countries and firms with low knowledge capabilities often rely on foreign knowledge, **catch-up** literature – which defines technological capability as the capacity to assimilate existing knowledge, skills, and experience, to create new technologies, and lastly to develop innovative products and processes – can be applied at both national and firms level. For instance, by highlighting their failure in international competitive markets, Gao (2007) and Lee and Oh (2006) empirically prove that, at the beginning of the catch-up stage, latecomer countries and firms are limited to merely adopting the technology of advanced countries.

However, although firms in emerging markets could be usually considered latecomers in innovation, recent studies indicate that firms in emerging economies promote innovation (Lu 2000). For instance, by introducing radical product and process innovation, some Chinese and Indian firms are leaders both in their domestic and international markets (Altenburg, Schmitz, and Stamm 2008). Nonetheless, the success of East Asian latecomer companies has been broadly explained in several models where latecomer firms, by **upgrading** the foreign adopted technologies, foster their knowledge and finally create their innovations at home.

Summing up, even though - as latecomers - emerging market firms have few advantages in developed economies, the acquisition of new foreign technology and/or knowledge through international activities has become the predominant strategy to become globally competitive.

As firms accumulate new knowledge and develop new innovative skills, they expand their innovation capabilities which, in turn, increase knowledge accumulation. R&D activities, which are crucial to boost firms' absorptive capacity at home, enhance their ability to absorb foreign knowledge (Cohen and Levinthal 1989, 1990). Thus, despite the lack of resources that emerging market firms devote to R&D activities, such efforts allow for strengthening the international knowledge transfer effects. Therefore, **absorptive capacities** in international knowledge transfer play a fundamental role in economic growth and development, and this role turns out to be even more critical when both emerging and advanced markets are involved. On the one hand, the large gap between advanced and emerging economies, in terms of institutional environments, pushes emerging market firms to escape from their domestic market researching more efficient institutions in developed countries. On the other hand, since competition is also fiercer in a global and international environment, firms have to rapidly upgrade their capabilities and competitiveness to offset their latecomer disadvantages.

Numerous authors suggest that social, institutional, and governmental support is fundamental to latecomers' success (Amsden 2001; Hobday 1995; Wade 1990). Most emerging economies do not have enough human capital and infrastructures to make their innovations and technologies (Stephenson 1997), and firms' performance and strategies are also sharply affected by institutional quality (Acs, Desai, and Hessels 2008).

Many scholars find evidence that both home and host institutions affect the internationalization strategies of emerging market firms (North 1990; Peng, Wang, and Jiang 2008), however, literature largely neglects the importance of the home institution (Meyer et al. 2009). The competitiveness of the domestic market represents a springboard where emerging market firms improve their absorptive capabilities essential to expand internationally (Lu, Liu, and Wang 2010). Nevertheless, drawing from the new institutional economics, this competitiveness also results from institutions and government commitment to guaranteeing property rights protections, actual contracts enforcement, and low transaction costs (Yiu, Bruton, and Lu 2005).

As institutions develop, the linkages between firms and government are weaker, foreign investments abundantly flow to emerging economies, and the market becomes gradually more internationally opened. Emerging markets, such as China, typically show heavy government involvement (Wright et al. 2005; Yang et al. 2009) which controls many strategic resources and interferes with private economic activities (Fan, Wong, and Zhang 2007; Sheng, Zhou, and Li 2011). Therefore, emerging market firms either make use of internationalization as an escaping strategy (Luo and Tung 2007; Witt and Lewin 2007) or they have to adapt and absorb the influence of local institutions (Hillman and Hitt 1999). For instance, by appointing administrators who have prior **political connections**, emerging market firms may establish governmental linkages and moderate the constraints imposed by local institutions (Hillman 2005; Li and Zhang 2007; Sun, Wright, and Mellahi 2010). So, in this case, they have less necessity for exploiting an escaping strategy. Indeed, while an obstacle to the international expansion of emerging market firms comes from political connection, at the same time, politically connected firms may be encouraged to internationalize for political and economic governmental goals (Lu, Liu, and Wang 2010; Yamakawa, Peng, and Deeds 2008). In this framework, since the possible consequences of political connections are well recognized in the emerging economies literature (Li and Zhang 2007; Sheng, Zhou, and Li 2011), high-quality institutions should shrink the dark side of political connections and encourage internationalization (Du and Luo 2016).

Typically, emerging markets are characterized by uncertainty, reduced infrastructures, weak legal and intellectual rights protection, and stuffy bureaucracy (Contractor et al. 2014). Differently, high-quality institutions are characterized by transparent rules, a well-defined regulation, and an impartial legal system, which, jointly with the lack of corruption and worthless bureaucracy, can stimulate firms' economic growth and increase business relations among individuals and organizations (North 1986; North 1993).

Institutions define the *"rules of the game"* (Scott 1995). So, by establishing laws, rules, and procedures, institutions may substantially forge firms' international strategies. Drawing from Acemoglu et al. (2003), Loayza et al. (2007), and Ramey and Ramey (1995), weak judicial enforcement negatively affects the performance of firms in emerging markets. Newman and Nollen (1998) argue that uncertainty and unstable institutions are obstacles to growth and innovation. Also, since corruption in formal institutions is often a source of instability, it limits and deters the development of firms' innovative capabilities (Doh et al. 2003).

Many studies examined the relationship between institutional quality and firms' internationalization behavior (Cuervo-Cazurra and Dau 2009; Shinkle and Kriauciunas 2010; Lu, Xu, and Liu 2009), suggesting that their export propensity increases in better institutional environments, favoring trade integration and knowledge sharing. On the other hand, multinational enterprises and exporting/importing firms are more likely to start relationships with international agents than firms operating exclusively within national boundaries. However, even if it is true that, through knowledge transfer, international partnerships and R&D collaborations encourage innovation and development (Cassiman and Veugelers 2002; Fritsch and Lukas 2001), international collaborations require solid, innovative capacities already established, because it is fundamental to have acquired – ex-ante – enough absorptive capacities to cooperate efficiently with foreign innovative firms. Therefore, governments and institutions in developing countries should encourage international collaborations and international trade, to self-enforcing firms' innovation capabilities and to avoid the trap of interactions exclusively among domestic firms (Arza and López 2011).

Trade openness, foreign competition, and whatever international activity, represent opportunities to absorb new knowledge resulting in improved productivity, strengthened technology, and higher innovation capacity of emerging market firms (Katrak 2002). Thus, a convenient strategy for emerging market firms is just that to acquire capabilities

unavailable in the home countries through international access channels, such as inward and outward foreign direct investment; foreign R&D investment; import and export activities; international cooperation, collaborations and networks; and learning through human capital international mobility.

Each of these fields is specifically discussed in the next paragraphs, where we report the findings related to the following thematic areas: *a) foreign direct investment; b) R&D internationalization; c) learning from trade; d) international cooperation, collaborations and networks; and e) human capital international mobility*.

a) Foreign direct investment

Foreign direct investment and multinational enterprises have become central topics of economic literature. By exercising ownership control through foreign direct investment, an enterprise is considered multinational because establishes subsidiary firms in different countries. Therefore, since foreign direct investment embodies foreign knowledge and technology, it come to be an important source of international knowledge transfer.

Literature usually distinguishes foreign direct investment between horizontal and vertical (Alfaro and Charlton 2009). They are horizontal when multinationals duplicate their production in another country (Markusen and Venables 2000; Markusen 1984), while they are vertical when production is functionally fragmented in different countries (Helpman 1984). Similarly, since subsidiaries are often established in poorer countries to take advantage of low factor costs, intra-firm trade is lower between rich economies than between rich developed and poorer developing markets (Helpman and Krugman 1985). Thus, important insights emerge from the macro literature on the effects of foreign direct investment on economic growth, and the role of policies and institutions (Alfaro, Kalemli-Ozcan, and Volosovych 2008; Balasubramanayam, Salisu, and Sapsford 1996). For instance, by comparing 69 emerging countries to developed countries, Borensztein, De Gregorio, and Lee (1998) argue that foreign direct investments are among the main sources of knowledge transfer from developed countries to emerging economies.

Differently, from a micro perspective, the main problem facing the literature on foreign direct investment has been instead the absence of official sources of firms' data. Thus, scholars have often used multinationals' activities as a proxy for foreign firm's activity. On the other hand, since globalization increases the interdependence among different economies and markets, internationalization also strongly contributes to the born of multinational enterprises which favor knowledge and technology transfer throughout both inward and outward foreign direct investment.

By attracting (inward) foreign direct investment, policy makers expect to pull innovative technology, new capital, and higher proficiency, which in turn increase the productivity of local firms by **knowledge spillovers**. For instance, China's development has been largely due to inward foreign direct investment and, as observed in other Asian economies, there are many advantages of absorbing knowledge through subsidiaries located in the USA, Europe, and Japan.

Otherwise, by stimulating outward foreign direct investment, the underlying hint is that multinational enterprises utilize knowledge created abroad by their affiliates. The result is knowledge transfer in a reverse direction (*i.e.* **reverse knowledge transfer**), that is, from subsidiaries to multinational headquarters. The latter phenomenon represents a recent and relevant theme especially in business studies (Criscuolo 2005; Ambos, Ambos, and Schlegelmilch 2006; Gupta and Govindarajan 2000; Håkanson and Nobel 2001; Rabiosi 2011).

Ambos (2015) specifies that, since the late 1990s, literature has identified multinational headquarters as knowledge receivers from their foreign subsidiaries. Foreign affiliates and divisions usually develop new products and technologies (Cantwell and Mudambi 2005; Yang, Mudambi, and Meyer 2008). By improving their innovation, they better compete both in the domestic and international markets. (Bell and Pavitt 1995; Figueiredo and Brito 2011). At the same time, they represent an access gate to knowledge of the subsidiaries' local markets (Criscuolo and Narula 2007; Frost and Zhou 2005).

On the one hand, multinational enterprises are aimed at the pursuit of foreign knowledge to be combined with existing resources. On the other hand, reverse knowledge transfer allows for a strategic position of subsidiaries in the multinational network (Borini et al. 2012), because their parent is encouraged to transfer them more competencies and capabilities. Interestingly, Chen, Chen, and Ku (2012) find that the subsidiaries' propensity to differentiate from the parent company reduces the knowledge transfer flow. Moreover, Rabbiosi and Santangelo (2013) claimed that knowledge transfer from younger subsidiaries is less intense than that from older ones.

However, it is the presence of a cooperative environment within the multinational networks that favors international knowledge flows by reducing subsidiary opportunistic behaviors (Kaufmann and Reossing 2005).

For all these reasons reverse knowledge transfer is a key feature in analyzing international knowledge flows especially from developed economies to emerging ones (Ambos 2015) where the institutional distance is higher and more complex (Hitt, Li, and Xu 2016). Kostova (1999) and Kostova and Zaheer (1999) highlighted the importance of **institutional distance** by referring to the inter-countries differences in the regulation and legislation aspects. While greater institutional distance would seem to reduce the likelihood of entering into foreign markets (Cuervo-Cazurra and Genc 2011; Henisz 2000), Xu and Shenkar (2002) suggested that multinational enterprises enter into markets at either greater or lower normative distance based on multinational enterprises' competitive advantages. Routine-based advantages push toward markets with adjacent institutions, whereas country-based advantages push toward markets with greater normative distance. Moreover, Liou, Chao, and Yang (2016) argue that formal and informal institutional distances have opposite effects on emerging markets multinational companies' ownership strategies in their cross-border mergers and acquisitions.

As far as **knowledge spillovers** of foreign direct investment inflows are concerned, the competitive pressure of foreign firms on local ones affects their performance in two opposite ways. First, foreign direct investment inflows push local firms to enhance innovation capabilities to be more competitive. Second, since the introduction of new foreign products in the local market reduces the market share of local firms, and foreign and local firms compete for skilled workers, capital and resources, this foreign competition may reduce local firms' profit (Yi et al. 2017).

Thus, empirical studies of knowledge spillovers from (inward) foreign direct investment find contrasting results. They offer positive, neutral and negative spillover effects (Rojec and Knell 2018). In this framework, knowledge spillovers take place because foreign subsidiaries increase the knowledge of domestic firms and multinational parents do not fully internalize this know-how (Smarzynska 2003). Therefore, whether and how these knowledge spillovers produce actual benefits to domestic firms remains an open question. For instance, Aitken and Harrison (1999) found a negative effect on the productivity of Venezuelan domestic firms. By studying Chinese firms, Lin, Liu, and Zhang (2009) argued that the effects change with respect to the origin of foreign direct investment. In contrast to previous research, finally, Javorcik (2004) suggested that *"positive spillover effects are larger in the case of **wholly owned** foreign subsidiaries rather than joint ventures"*.

Specifically, the literature identifies four main effects of how foreign subsidiaries diffuse technology to domestic firms in the host economy: imitation, competition, linkage, and training effect (Blomstrom and Kokko 1998). With a special focus on process and product innovation, Ornaghi (2004) underlines the differences among the above channels. Moreover, Demir (2016) argues possible spillovers in institutional rules when foreign subsidiaries affect the institutional settings in host countries.

Conversely, such effects may be also negative and may induce local firms to exit the market. This empirical evidence is found in many countries and in particular for Venezuela (Aitken and Harrison 1999), Morocco (Haddad and Harrison 1993), and the Czech Republic (Djankov and Hoekman 2000). However, many scholars point out the importance of having a satisfactory starting level of technology to capture positive spillovers. The host country absorptive capacity question was investigated for Bulgaria, Poland, and Romania (Nicolini and Resmini 2010), China (Jeon, Park, and Ghauri 2013), and Latin America (Laborda Castillo, Sotelsek Salem, and Guasch 2012). For instance, the effects of technology spillovers in emerging countries largely and often depend on infrastructure (Kinoshita and Lu 2006), the size of the host country (Knell and Rojec 2007; Sanchez-Martin, de Pinies, and Antoine 2015), its level of human capital (Borensztein, De Gregorio, and Lee 1998) and the investment and business environment (Moran 1998; Lim 2001).

Nonetheless, an important issue associated with foreign direct investment spillovers is the failure to separate between productivity and knowledge spillovers. Since it is difficult to measure international knowledge spillovers (Krugman 1991), empirical studies often focus on the effects of the presence of multinational enterprises on domestic firms' productivity (Görg and Strobl 2001). However, knowledge or technological spillovers *"requires that an increase in the average productivity [...] should be associated with an improvement in the techniques used by local firms"* (Perez 1998). Even though empirical studies usually regress firms' productivity on some indicator of the presence of foreign subsidiaries in the domestic country - translating the results as effects of knowledge spillovers on domestic firms - the first best measure of knowledge spillover effects should be the impact of inflow foreign direct investment on domestic firms' innovation performance. For instance, (Ornaghi 2004) suggests that, while knowledge spillovers improve the quality of products, the effects on the productivity of Spanish firms are lower. So, she claims

that productivity externalities are not a good indicator of knowledge spillovers. Indeed, by combining innovation and latecomer literature to catch-up strategies of Chinese firms, Li, Chen, and Shapiro (2010) investigate how inward foreign direct investments are actual channels for acquiring foreign knowledge. Also, their arguments strongly support that access to foreign knowledge is fundamental for promoting product breakthroughs in emerging markets.

Summing up, further efforts are required by economists to identify knowledge spillover effects and channels by which multinationals enhance firms' product and process innovations.

b) R&D internationalization

R&D is the most strategic activity of firms and, usually, it is largely performed at home (Cantwell, Glac, and Harding 2004). In centralizing their R&D at home, headquarters of multinational enterprises may better control and supervise the subsidiaries' activity (Caves 1996) and limit both the risk of imitation and the drain of information (Patel and Vega 1999). However, with the seminal studies of Florida (1997) and Cantwell and Janne (1999), the importance of foreign R&D has been investigated in contrast with the traditional product cycle theory (Vernon 1966).

So, also policy makers and entrepreneurs have begun to consider new advances in R&D strategies. R&D investments are progressively more internationalized (OECD 2008; UNCTAD 2008) and Booz & Company (2008) found that, in 2007, 55% of whole R&D expenditures were invested abroad. Moreover, even though foreign R&D activities are concentrated mainly in developed countries, an increasing share is invested in developing markets such as China and other Asian economies (Gugler and Michel 2010). For instance, from 1995 to 2003, R&D expenditure of USA multinationals in China increased from 35 to 565 million dollars (United States Department of Commerce 2008).

However, while at the beginning multinationals invested in R&D abroad essentially to adapt their products to foreign markets (Hegde and Hicks 2008), now the internationalization of R&D has the main role to acquire new knowledge (Cantwell 1995). Therefore, on the one hand, R&D abroad is considered a "*knowledge-exploiting*" activity, which allows for improving products according to foreign tastes, requirements, or regulations. On the other hand, it is defined in the literature as a "*knowledge-seeking*" activity, when seeking to acquire new knowledge (Cantwell and Janne 1999; Florida 1997; Zander 1999). Indeed, while the former activities imply that knowledge is transmitted from the parent firm to the subsidiary, the latter suggests that foreign subsidiaries develop their innovations with the abilities and skills of the host country.

Under this point of view, the internationalization of R&D activities represents a special subset of foreign direct investment, to which the findings of the previous paragraph can be applied. When knowledge accumulated from foreign R&D subsidiaries is transmitted to parent companies, foreign R&D activity increases the productivity of the company in the home country (Ben Hamida 2017). Thus, foreign knowledge may spill-over also to other domestic firms, fostering their innovation performance (Mudambi, Piscitello, and Rabbiosi 2008). Moreover, there is evidence of positive technology spillover from foreign R&D in the USA (Popovici 2005), Italy (Castellani and Zanfei 2006), and China (Huang and Wang 2009).

Literature on foreign R&D focuses on different issues and firms' motivations (Zander 1999; Gassmann and Han 2004), their ability to transfer R&D centers abroad (Cantwell and Mudambi 2000), and the consequences of R&D internationalization (Chen, Huang, and Lin 2012). Several studies suggest that R&D internationalization fosters the innovation of multinationals (Cantwell and Mudambi 2005; Cantwell and Zhang 2006). Kafouros et al. (2008) have found that foreign R&D sustains the company's competitiveness in international markets. Differently, both Sofka (2006) and Schmidt and Sofka (2006) argue that, due to the liability of foreignness, multinational enterprises with R&D in their home countries perform better than those who internationalize R&D activities. On the same line, (Hsu, Lien, and Chen 2015) find a U-shaped effect of internationalization of R&D activities on firm innovation performance, suggesting that the benefits of foreign R&D offset the costs only beyond some threshold levels.

However, while many studies usually focus on developed countries, and although the number of emerging markets multinational enterprises is growing and many of them perform foreign R&D activities, few papers examine the perspective of emerging market multinational companies (Chen 2004). Instead, especially for emerging market firms, R&D internationalization represents a channel to acquire knowledge and foreign advanced manufacturing know-how, which in turn offset their latecomer disadvantages and promote their innovation capacities (Luo and Tung 2007).

Nevertheless, since institutional constraints often bind the strategies of emerging market companies, foreign R&D may turn useful to avoid domestic institutional constraints (Peng, Wang, and Jiang 2008). Also, differently from most developed economies, usually, there is a worse intellectual property rights preservation, more corruption, and less transparency in emerging markets (Lee, Peng, and Barney 2007). Therefore, these institutional environments give additional motivations for internationalizing R&D of emerging markets multinationals and a greater amount of foreign R&D is found to lead to improved innovation performance (Phene and Almeida 2008). However, if institutional constraints may indirectly push up the innovation performance of emerging market firms through a reverse knowledge transfer, it is also true that the likelihood of performing R&D activities abroad is higher in countries with effective protection of intellectual property rights, where the risks and uncertainty are lower (Sanna-Radaccio and Veugelers 2007). Hence, the quality of emerging market institutions may also reduce possible knowledge spillovers from developed to developing economies, when the attractiveness of foreign direct investment inflows is strongly discouraged by weak institutional protections.

While some results already exist in this thematic research area, further improvements are welcome in order both to broaden and deepen the understanding of the strategic behavior of firms who perform R&D activities abroad and to identify - especially in emerging markets - the institutional characteristics able to favor firms' innovations through this knowledge transfer channel.

c) Learning from trade

As discussed in previous paragraphs, empirical evidence on international knowledge transfer largely focuses on the impacts of R&D and spillovers from foreign direct investment on firms' innovation and/or productivity. Differently, the evidence at the micro level of the relationship between international trade and knowledge transfer is weaker (Keller 2004). Moreover, while there is strong theoretical and empirical support for the hypothesis of self-selection into exporting (Bustos 2011; Becker and Egger 2013; Ebling and Janz 1999; Lileeva and Trefler 2010; Wakelin 1998), theories and evidence in favor of learning-by-trade are quite scarce (Greenaway and Kneller 2007; Wagner 2007, 2012).

Since foreign customers and suppliers, on the one hand, require innovative products and, at the same time, provide information and knowledge useful to realize them, literature falls into two main branches. The first refers to the higher likelihood of exporters investing in R&D, while the second considers whether or not exporters make use of foreign knowledge. Whereas the former represents an incentive for R&D investment, the latter investigates how firms integrate their research process with knowledge inputs coming from abroad.

However, both importing as well as exporting operations may advantage firms to develop innovation and, as noted by Damijan and Kostevc (2015), the sequence may proceed "*from imports through innovation, to exports, and to further innovation*". The authors suggest that firms mainly learn from imports and, once they are enabled to innovate, start to export, further favoring forthcoming product and process innovations.

So, the hypothesis of learning-by-trade is associated with the idea that firms innovate because they are influenced by links with foreign economies (Damijan, Konings, and Polanec 2014).

Numerous studies show that firms engaging in export activities are more likely to invest in R&D. For instance, a higher propensity to innovate was found for exporting firms from Belgium (Veugelars and Cassiman 2004), Canada (Baldwin and Gu 2004), Germany (Wagner 2006), Slovenia (Damijan, Kostevc, and Polanec 2010), Spain (Barrios, Görg, and Strobl 2003; Salomon and Shaver 2005), Taiwan (Aw, Roberts, and Winston 2007), UK (Criscuolo, Haskel, and Slaughter 2005; Bleaney and Wakelin 2002; Roper and Love 2002) and USA (Bernard and Jensen 1999).

Differently, studies about the effect of imports on firms' productivity and innovative performance are relatively scarce. However, the recent strand of literature analyzing learning through trade has reached interesting results by considering also the importing channel.

Amiti and Konings (2007) find that Indonesian firms benefit from import liberalization in terms of higher productivity. Also, Hungarian importers are found to be more productive than firms exclusively engaged in exports and, nonetheless, the effects of importing are higher relative to exporting (Halpern, Koren, and Szeidl 2011). A higher diversification in imported input varieties is shown to increase the productivity of French (Bas and Strauss-Kahn 2010) and Indian (Goldberg et al. 2011) firms. Moreover, Damijan, Konings, and Polanec (2014) argue that access to new varieties of imported input increases Slovenian firms' productivity growth. Finally, the other two studies explore directly the impact of importing on firms' innovation, even though the analysis is still limited to industrial-level

import information. Bertschek (1995) demonstrates that import-share has positive effects on product and process innovation of German firms. Aghion et al. (2006) find that, for the UK and the USA, the entry of foreign technologically advanced firms positively affects innovation mainly in those industries more technologically advanced.

Moving to the incentive and the push factors for international trade, the quality level of institutions also matters. By influencing firms' decisions both to import and export, governments and legal systems may favor or not the learning-by-trade process and the connected positive knowledge spillovers.

International trade studies at the macroeconomic level have found evidence that foreign trade is strongly affected by legal institutions in the home country (Nunn 2007). At a micro-level, the quality of institutions affects the transaction costs for international traders and, it also determines the profitability to start to export and import. Additionally, it is largely recognized that imposing trade tariffs is negatively associated with firms' productivity.

More importantly, developed legal institutions play a fundamental role in lowering implicit and explicit costs for exporters, as well as for importers, and the reduction of international transaction costs at the border contributes to increasing trade (Li, Vertinsky, and Zhang 2013). LiPuma, Newbert, and Doh (2013) demonstrate that high-quality legal institutions enhance firm export growth and overall economic development in emerging economies. Since exporters have more information about their product quality, importers may be at risk of having poorer quality products (Ranjan and Lee 2007). Therefore, reliable legal institutions may reduce uncertainty and asymmetric information between importers and exporters through safe contract enforcement (Berkowitz, Moenius, and Pistor 2006). Finally, the absence of corruption also matters. When corrupt government officials can collect bribes, law-enforcement institutions must be effective (Anderson and Marcouiller 2002).

So, governments considering policy reforms should design institutions that move toward economic liberalization, guaranteeing the quality of contract enforcement, preservation of property rights, and lawfulness in general. Overall, by facilitating international trade, access to foreign information helps firms to be more innovative and allows for transferring knowledge through multiple channels.

By considering the discussion so far, however, we believe that further efforts are required to identify possible selection effects connected with firm innovation activity and international trade involvement. Also, it is fundamental to clarify to what extent formal institutions may balance the positive and negative effects of international competition on less productive domestic firms.

d) International cooperation, collaborations and networks

Literature suggests that firms' absorptive capacity and size are among the main drivers of cooperation among firms (Cassiman and Veugelers 2002; Giuliani, Pietrobelli, and Rabellotti 2005; Veugelers and Cassiman 2005). There is also evidence that external collaborations improve firms' innovation performance (Un, Cuervo-Cazurra, and Asakawa 2010) because they provide access to new and complementary knowledge and reduce the riskiness of R&D activities and innovation projects (Schilling 2013). Moreover, once firms observe better innovation performance, they learn from these collaborations and mature an attitude to cooperate more with other firms in future innovation processes. Thus, it creates a virtuous cycle. On the other hand, by increasing the likelihood of becoming innovators, cooperation helps to develop new networks (Hagedoorn, Roijakkers, and Van Kranenburg 2006).

Overall, cooperation with various actors, national or international, private or public, represents a source of knowledge that intensifies firms' competencies and increases their innovation capabilities (Hagedoorn 2002). Firms start collaborations within the same sector (Mowery 1989; Vonortas 1997) or with universities and research institutes (Faulkner and Senker 1994; Lee 1996; Leyden and Link 1999) to increase their efficiency (Belderbos, Carree, and Lokshin 2004) and to improve their products (Fındık and Beyhan 2015).

For instance, linkages with the public sector encourage the introduction of new products (Freel 2003). A positive relationship has been found between inter-organizational collaborations and Belgian firms' innovation performance (Faems, Van Looy, and Debackere 2005). Huang and Yu (2011) show that the impact of external collaboration differs according to the type of innovation of Taiwanese firms. The findings of Un and Asakawa (2015) demonstrate that, differently from other types of partnerships, only R&D cooperation with suppliers and universities favors process innovations.

Nevertheless, it has been argued that especially international cooperation is an important channel of knowledge transfer. Specifically, in contributing to the current debate between local versus international collaborations, Arza and López (2011) confirm the hypothesis that international cooperation favors technology innovation and that, on the other hand, encouraging *"local collaborations may perpetuate the innovation systems backwardness"* in Argentina.

Interestingly, because consulting services entail direct relationships and collaborations between sellers and buyers, international knowledge transfer is particularly intense when consulting services from consulting firms of developed markets have undertaken projects in emerging markets (Siggel 1986). However, the knowledge transfer costs - such as acquisition costs (licenses and fees) and learning costs (transferees' training and teaching) (Teece 1977) - are larger since these emerging markets lack a suitable absorptive capacity (Niosi, Hanel, and Fizet 1995).

Surprisingly, Fu and Li (2010) find that international collaboration among Chinese firms and universities of the most advanced countries, such as the USA, Japan, and Europe, does not appear to have a positive effect in promoting innovation in Chinese firms. Differently, cooperation with emerging markets universities, such as Hong Kong, Korea, Singapore, and Taiwan, seems to be effective and fruitful. The same positive results are found for the cooperation between Chinese firms and Russian, Brazilian, and Indian universities.

Coordination problems due to geographical distance may increase transaction costs of cooperation (Lhuillery and Pfister 2009) and the lack of empirical evidence of knowledge transfer from Western advanced economies to Chinese firms is consistent with the findings of Fu and Gong (2010) and Acemoglu (2002), who explain it through gaps between China and other industrialized markets in cultural and technological aspects. Differently, the case of technological alliances between Huawei and Brazilian or Iranian universities, for instance, represents a clear paradigm of an effective international technology transfer.

Summing up, in this branch of literature, scholars should provide supplementary evidence that access to new knowledge through international cooperation may enhance firms' innovations. Moreover, the main research questions should overcome the ongoing debate on the trivial comparison between national and international collaborations. Since, as far as we know, investigations on the role of institutions in this specific knowledge transfer channel are quite absent, it is more important to look wider at the instruments available to them to increase the knowledge diffusion among developed and developing countries, as well as among different emerging markets.

e) Human capital international mobility

By moving away from conventional analyses of knowledge transfer connected with multinational enterprises, trade, foreign R&D, and international cooperation, a recent branch of literature focuses on human capital international mobility as a possible vehicle for knowledge transfer.

Since the performance of firms also depends on the characteristics of their entrepreneurs and managers, specific international experiences, as well as personal knowledge acquired from abroad, may be especially relevant for emerging markets. In these countries, where managers might not have a broad comprehension of the mechanisms of market economies, those who gain knowledge and information from Western markets are likely to be more internationally oriented.

So, scholars emphasized the internationalization of emerging market entrepreneurial firms (Wright et al. 2005). For instance, both export orientation and performance of small Chinese firms were found to be positively correlated with the presence of a *"returnee"* entrepreneur (Filatotchev et al. 2009). Moreover, Liu et al. (2010) studied the effects of returnee entrepreneurs on the innovation performance of Chinese firms. Furthermore, Nielsen and Nielsen (2011) found that work experiences abroad of top executives enhance their international market knowledge. Nonetheless, Dai and Liu (2009) found that returning entrepreneurs outperform local entrepreneurs thanks to knowledge and international links acquired abroad. Thus, human capital mobility appears as a new phenomenon in stimulating the internationalization of innovative firms in emerging markets (Tan 2006).

Returning entrepreneurs from advanced economies are valued for their cultural gains in the native environment and they are lured by the chance to carry out a better lifestyle in their indigenous country (Patibandla and Petersen 2002). Therefore, governments and institutions in emerging markets are increasingly aware of the importance of integrating local firms into the global economy, offering advice centers, start-up loans, tax reductions, cheap offices, and other incentives to returning entrepreneurs (Li, Zhang, and Zhou 2005).

Inexperienced local entrepreneurs have lower absorptive capacity than returning entrepreneurs. Thus, the former are likely to be the early promoters of internationalization because they are also able to build stable partnerships with distant customers (Saxenian 2006). Yet, knowledge transfer occurs from abroad to other local entrepreneurs too. Skills and competencies are transmitted to local firms through the typical mechanism of foreign direct investment spillovers and knowledge transfer associated with labor mobility (Fosfuri, Motta, and Ronde 2001; Glass and Saggi 2002; Dasgupta 2012). Some key empirical contributions show, for example, that hiring managers from multinationals increase the productivity of domestic firms in Ghana (Görg and Strobl 2005), Norway (Balsvik 2011), Brazil (Poole 2013), and China (Liu, Lu, and Zhang 2014). Moreover, Klepper (2001) argues that employees of multinationals start entrepreneurial activities by making use of contacts and knowledge gained while employed in a subsidiary abroad.

Nonetheless and independently from the multinationals' context, the effects of labor mobility in terms of knowledge transfer refer also to the mobility of R&D personnel (Jaffe, Trajtenberg, and Henderson 1993; Maliranta, P., and P. 2009) and foreign specialists in general (Markusen and Trofimenko 2009; Hiller 2013). Therefore, since international mobility increases the circulation of information around the world, this phenomenon represents a multi-way knowledge flow among countries.

However, the role of international experience and international mobility should be evaluated in light of the ongoing academic and policy debate, focused on the international competition for talents. Thus, it would be helpful to better understand the mobility patterns of emerging markets' entrepreneurs and managers, and workers in general. As international mobility produces considerable and desirable knowledge flows among countries - with obvious repercussions on aggregate productivity, innovation, and growth - many countries have adopted quality-selective immigration policies, such as tax benefits and simplified immigration measures, aimed at attracting and retaining talents on a global scale. Therefore, as the ability to innovate strongly depends on the quality of the available firms' workforce, negative repercussions may also be expected. Indeed, institutional policies aimed at increasing the incentives to remain abroad may reduce the knowledge transfer benefits for home countries. Thus, further research should better investigate to what extent the concepts of the talents' circulation and the talents' drain overlap among them.

4. Discussion and Conclusion

The purpose of this review and the related exploration was to summarize the economic literature on the topics of international knowledge transfer. We highlight the role that formal institutions may have in guiding, intensifying, and enhancing international knowledge transfer in, to, and from emerging markets.

By considering possible and substantial differences in what way institutions may favor the knowledge transfer process in advanced and emerging economies (Geleilate et al. 2016), the aspect for which we believe there are significant effects, across both advanced and emerging countries, is for firms' internationalization involvement. Especially in emerging markets, socialist policy makers often use the worry of hurting local firms as a reason against further internationalization processes. The evidence, however, does not provide such a reason. Differently, it hints that internationalization not only raises the competitiveness of the firms involved but allows access to foreign information that may help also domestic firms to be more innovative and able to transfer knowledge through multiple channels.

Even though there are many different approaches to classifying and measuring international knowledge transfer, we recognize five main arrays of transfer mechanisms that are predominant in literature. The first refers to the role of multinational enterprises, and how industrial links affect international knowledge transfer through inward and outward foreign direct investment. The second addresses the effect of R&D internationalization on firm innovation performance. The third deals with the idea that firms learn from trade and benefit from links with foreign markets by introducing either new products or processes. The fourth focuses on international firms' cooperation, collaborations and networks, and their impact on innovation performance. Finally, the fifth addresses the human capital international mobility of firms' managers and employees.

Policies should be oriented toward supporting international knowledge transfers and avoid the trap of interactions exclusively among domestic firms. Governments should shrink constraints on foreign direct investment and remove trade obstacles. In doing so, they encourage the diffusion of foreign input and foreign advanced technology through the processes of learning-by-trade. Moreover, as multinationals increasingly invest abroad to acquire higher competencies and capacities, also local firms have to follow this tendency to maintain their competitiveness.

If firms understand what way to compete against international agents at home, internationalization could increase both firms' productivity and the likelihood of introducing innovations, in turn, it allows them to become more competitive also beyond the borders.

However, in many emerging markets, institutions usually are not able to provide effective support for innovation. Therefore, R&D internationalization in markets with high-quality institutions is an effective alternative to improve their innovation capacities. Politicians and managers should recognize these internationalization perspectives and their potential, by attracting foreign talent, promoting collaborations between local and foreign actors, and encouraging international mobility.

Further, by providing safeguarded property rights at home, a strong normative, judiciary, and regulatory system - as well as a strong control of corruption, the lack of political connection, effective contract enforcement, and lawfulness in general - favors the circulation of information and knowledge around the world, helping firms to be more innovative and allowing for international knowledge transfer through multiple channels.

Despite these insights discussed above, theoretical models and empirical evidence related to innovation by firms in emerging markets, often resume the same approaches applied to firms in advanced countries. However, these approaches should not be trivially extended also to firms in emerging countries. Therefore, we strongly suggest investigating whether and how inward and outward foreign direct investment, R&D activities, and international trade involvement of emerging market firms may favor access to foreign knowledge and an increased absorptive capacity.

Since a channel of knowledge transfer may have a greater impact on innovation than another, future studies could extend in several ways. First, due to a possible lack of absorptive capacity, even though they represent an actual channel of knowledge transfer, foreign direct investment may not be enough to enhance firms' innovation in the emerging market context. Thus, it may be essential that access to knowledge from abroad comes jointly with already established R&D investments that increase firms' absorptive capacity. Second, further research could evaluate the effectiveness of different channels to access international knowledge and, thus, compare and suggest which of them is meaningful to favor firms' innovation. Third, based on the availability of panel data, future research could examine both the dynamic of knowledge acquisition and the time-path sequences between R&D, international trade, and innovation.

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