Does the home country system of innovation affect the choice of FDI mode for emerging multinationals?

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Abstract

The characteristics of the home country and the preference for mergers of acquisition (M&A) are two outstanding arguments in the comprehension of Emerging Multinationals (EMNE). In this paper, we combine these two issues to analyze the modes of firms? internationalization and to detect the relevance of the home national system of innovation (HNSI) in the choice of EMNE between Greenfield FDI and M&A. The question is whether and to what extent the weaknesses or strengths of HNSI affect the FDI mode choice; particularly, how the development level of the home country and the preference for M&A can be related to a dominant learning from abroad strategy. The empirical analysis is built upon a sample of 77 countries with dissimilar levels of development. Using factorial analysis we build a composed index of HNSI over some of the main pillars of the NSI conceptual approach and we estimate dynamic panel data model in the period 1996-2010. Our findings confirm that although the HNSI factor affects the two modes of FDI, there is a negative effect in cross-border M&A from developing countries leading to the learning from abroad argument and the institutional and technological escape as prevailing strategies of EMNE. For the case of Greenfield FDI, there is a positive linkage with the HNSI. Moreover, the presence of foreign MNE in developing economies affects directly the internationalization via M&A, being this effect negative in developed countries.

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Key words: Emerging Multinationals, Home country, Mergers and Acquisitions, National System of Innovation, IDP Theory

1. INTRODUCTION

The emergence of MNE from developing countries -that has been named as the emerging multinational enterprises (EMNE) phenomenon- occupies a prominent place in the international business agenda (UNCTAD, 2011), challenging the pioneer internationalization theories and especially the OLI approach based on the combination of ownership, location and internalization advantages to explain the existence of MNE. One relevant question would be to what extent the premise built over traditional ownership advantages stay still as the driving force explaining the firms' internationalization processes in the case of those countries outside the world frontier that generally are considered as developing economies, or it is necessary to combine those advantages within a more complex set of explicative factors.

Some of the particular features of the EMNE are the speed of the firms' internationalization process, the type of target countries and the revealed preference for mergers and acquisitions (M&A) as mode of entry (Buckey et al., 2007; Kalotay and Sulstarova, 2010, Ramamurti, 2012; Gammeltoft et al., 2012). Although, it is broad the consensus among scholars about the relevance gained by the characteristics of the home country (HC) as a key argument for understanding the EMNE success (Porter, 1990; Cuervo-Cazura and Genc, 2008; Dunning, 2009; Guillén and García-Canal, 2010, Gammeltoft et al., 2010; Kalotay and Sulstarova, 2010; Hennart, 2012; Luo and Wang, 2012; Ramamurti, 2012), available empirical evidence refers indeed to the weaknesses detected at the home country level to understand the rapid expansion of MNE from emerging economies such as China, Brazil, or India-. This confirms that knowledge-seeking becomes one of the main driving forces for firms' foreign expansion, being dominant the strategy motivated by technological escaping from their HC. In such a case, M&A is a more suitable mode for acceding in a more accelerated manner to knowledge assets of the firms acquired abroad and this makes more likely the substitution of those missing capabilities in their home national system of innovation (HNSI) (Anand & Delios, 2002; Chen and Cuervo-Cazurra, 2012).

In this paper, we analyze the foreign expansion modes of EMNE adopting an approach based on the peculiarities of the NSI that allow us to find what characteristics differ between developed and developing countries (Nelson, 1993; Lundvall, 2007; Alvarez & Marín, 2010) considering also the postulates of the IDP theory (Dunning and Narula, 1996; Narula and Dunning, 2010). Our main contribution is the detection of those aspects in the home national systems of innovation (HNSI) that would explain the choice of foreign expansion modes, differentiating among Greenfield FDI and M&A, and between developed and developing countries. The relevant question would be to what extent a more or less advanced HNSI affects the mode of FDI, and therefore whether the strategy of exploitation or acquisition of capabilities abroad prevails. Moreover, we also contribute to the literature integrating in our analysis what is the

role played by some IDP arguments in the firms' internationalization of countries with different levels of development.

Additionally, in this contribution we analyze separately Greenfield FDI and cross-border M&A as the two possible modes of EMNE foreign expansion, while the vast majority of the existing evidence regards mainly the former one. On the other hand, it is relatively new to study the firms' internationalization process in developing economies according to the HNSI aspects, in spite of the call of its interests (i.e. in Dunning, 2009). On the other hand, it has not yet been analyzed up to our knowledge the effects of the IDP theory on the EMNE internationalization through M&A. Therefore, it can be expected that this could derive into potential new conceptual and empirical developments that would reveal how the HC affects the preferable FDI mode of EMNE.

The development of our conceptual proposal makes a linkage between the two FDI modes and the HNSI according to two main internationalization motives: knowledge-seeking and market-seeking reasons, considering also the presence of foreign MNE in the home country. For the empirical test, we analyze the two modes of firms' foreign expansion in both developing and developed economies. The sample integrates data for 77 countries with dissimilar levels of development in the period 1996-2010. As a first step, we build a HNSI composed index resulting from a factorial analysis that takes technological, institutional and human capital as main pillars of the NSI. For the estimation of the model, dynamic panel data techniques are applied and the main sources of statistical information are UNCTAD and the World Bank.

Our findings show that the firms' internationalization releases on the existence of a path dependent process of capabilities accumulation. The factors defined at the home country level affect differently the two FDI modes and there are also differences between developing and developed countries. On the one hand, the M&A choice adopted by MNE in a less advanced HNSI encourage the acquisition of capabilities abroad, and this is led by the prevailing technological escape and learning abroad arguments associated to the strategy of EMNE. It is also important to recall the role that foreign MNE may play for knowledge transfer in host location, an aspect that would justify the option of M&A in the case of developing countries. On the other hand, HNSI has a positive effect in developed home economies while the presence of foreign MNE affects negatively, a result that would refer to a more compensated situation between both sources of knowledge internal and external. Meanwhile, in the case of Greenfield FDI, the effects of both HNSI and the presence of MNE are positive, being consistent with the fact that a more advanced HNSI also enjoys a higher degree of capabilities accumulation in the home country.

The next section of the paper revises the literature background. The third section contains the conceptual framework and the development of hypothesis. Section fourth

shows the empirical analysis and the discussion of results. Finally, section fifth has some conclusions and guidance for policies.

2. LITERATURE BACKGROUND
2.1. Emerging Multinationals: Home country and learning abroad

We have assisted to the third wave of MNE since the 1990s. MNEs from developing countries, such as China Brazil or India, have become important actors in the international business agenda. This fact implies to take emerging economies as home countries of MNE instead of their traditional host country position that the geography of previous foreign investments motivated. Therefore, the EMNE phenomenon has developed a huge set of studies and most of them tries to compare the validity of the extant theories and arguments that hold in the explanation of the MNE from developed economies (Cuervo-Cazurra, 2011; Cuervo-Cazurra, 2012;Ramamurti, 2012; Hennart, 2012).

One of the most important agreements among scholars is the recognition of different patterns of MNE from developed countries and the new EMNE. The presence of different characteristics in the case of the latter was a challenge for the application of the traditional international business postulates, such as those proposed by the OLI approach (Hymer, 1976; Dunning, 1988), and by the resource based view (Peronse, 1959). Ownership advantages is one of the main differentiated aspect when EMNE are concerned, this together with the speed in the internationalization process and the prevalence of M&A, as it is rightly summarized in Ramamurti (2012).

The concept of Ownership Advantages (Oa), largely considered as the main engine of the MNE's success abroad becomes more limited when we talk about EMNE. It is plausible to think that MNE from an emerging environment normally lack superior assets such as technology or brand proficiency which were recognized since the pioneering contribution of Hymer(1976) and latter integrated in the OLI paradigm (Dunning, 1988) to explain the success of MNE abroad. To solve this dilemma, EMNE scholars mostly recognized the existence of a different set of Oa that could justify the existence of MNE in developing economies (Guillén and García-Canal, 2010; Cuervo-Cazurra, 2012, Ramamurti, 2012).

In the search of more convincing arguments for the new phenomenon, the characteristics of the home country come to gain a differential role in the explanation of EMNE (Gammeltoft et al., (2010), Kalotay and Sulstarova, (2010); Cuervo-Cazurra(2012), Ramamurti, (2012), Álvarez and Torrecillas(2012). The idea is that the strength of internationalized firms from a developing home country can be able to transform initial environmental disadvantages into advantages (Guillén and García-Canal, 2010; Cuervo-Cazurra and Genc, 2008), and therefore this process allows them to compensate the home weaknesses abroad (Child and Rodrigues, 2005; Guillén and

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García-Canal, 2010). In this line of thinking, the specific institutional framework of the home country –sometimes weak or unstable in the case of developing context- can confer firms several political abilities and knowledge for their success in the international locations (Cuervo-Cazurra and Genc, 2008).Therefore, less developed institutions may act as a push factor for EMNE; this is recognized in the related literature as the *Institutional escape hyphotesis*[1] (Witt and Lewin, 2007; Peng et al., 2008; Kalotay and Sustarova, 2010).

Moreover, another aspect of the home country environment that has been largely agreed as important is the existence of *linkage*s between foreign and local firms that can lead to a good channel for knowledge and capabilities transmission that may end up with the internationalization of firms. The presence of foreign MNE can generate positive effects in the domestic firms through the experience and capabilities accumulated as well as by the generation of positive spillover effects, and these aspects can lever and enhance their international expansion (Child and Rodrigues, 2005; Mathews, 2006; Luo and Tung, 2007; Narula, 2012; Álvarez and Marin, 2013).

On the other hand, the use of M&A has been the preferred mode for the firms' internationalization process in developing economies (Buckley et al., 2007; Kalotay and Sustarova, 2010; Gammeltoft et al., 2012) and together with the speed of the EMNE phenomenon impose new challenges also to the incremental internationalization theory (Johnason and Vahlne ,1977). An idea that justifies the trend of M&A in EMNE is the *learning abroad* argument defended among others by Mathews (2006) and Luo and Tung (2007) who argued, in the Linkage-Leverage approach and the Springboard Investment perspectives, that abilities are acquired and not exploited; that is to say, abilities are *building* instead of *exploiting* abroad (Mathews, 2006; Luo and Tung, 2007 Dunning, 2009; Gammeltoft et al., 2010) challenging thus the pioneer idea in international business studies that was based on the accumulation of capabilities at home and their exploitation in a foreign market. More recently and closely related to the HC and learning abroad arguments we find the development of the *technological escape hypothesis* which argue that EMNE escape from its home innovation system and this explain the acquisition of high-technology firms in advance economies (Chen and Cuervo-Cazurra, 2012). This would predict that a weak technological base in the HC will also push firms to go abroad for learning using M&A.

In sum, a less advanced environment in the HC may allow firms to develop a new set of Oa (Guillén and García-Canal, 2010; Cuervo-Cazurra and Genc, 2008), related to their abilities to deal with specific institutional context and the advantages derived of the foreign linkages. This new set will constitute a minimum level of Oa that EMNE need to

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[1] It is important to mention here that some aspects included in the term "institutions" as can be the governments and the governments' aid have been considered as a facilitator of the EMNE (Child and Rodrigues, 2005; Buckley et al., 2007)

have in order to be successful abroad (Narula, 2012). But when this minimum level of Oa is guaranteed, firms can learn abroad as it is agreed by the technological escape view and the learning abroad perspective (Mathews, 2006; Luo and Tung, 2007).

2.2. Foreign expansion mode and Home national system of innovation

The huge increase of M&A flows from developed and developing countries justifies that increasingly economic analysis have started to study M&A separately from Greenfield FDI (Bjorvatn, 2004; Raff et al., 2007; Nocke and Yeaple, 2007; Neary, 2009) while, traditionally, these two FDI modes were studied jointly under the form of foreign investment. The main difference between the two can be found in the international strategy that acts as guidance for the foreign expansion. In this sense, the use of M&A has been associated with the acquisition of knowledge abroad, while Greenfield FDI is used when firms pursue to exploit capabilities abroad. Therefore, the chosen modes of FDI- M&A or Greenfield FDI- will depend on the dominance of Knowledge-seeking or Market-Seeking strategy that firms seek abroad (Harzing, 2002; Anand and Delios, 2002; Madhok and Keyhani, 2012).

This way of reasoning can be complemented by the level of development in the home country. Greenfield FDI and thus the exploitation of capabilities requires a previous set of capabilities developed in the home country (Anand and Delios, 2002), while the use of M&A does not necessarily implies them but they may be the consequence of a lack of firms' capabilities that is more likely in least developed home economies (Chen and Cuervo-Cazurra, 2012). Therefore, it is broadly accepted that the characteristics of the home country play a key role in the explanation of the chosen FDI mode of internationalization by MNE (Buckley et al., 2007; Tolentino, 2010; Kalotay and Sulstarova, 2010; Uddin and Boateng, 2011; Sauvant et al., 2011; Dailami et al. 2012; Stoian; 2012).

Given the expected influence that the home country may have in the choice of FDI mode (Rossi and Volpin, 2004) and considering the emergence of MNE from developing countries (EMNE phenomenon), it is possible to study the effects of the home country following the approach of the National System of Innovation (NSI) framework that can be easily associated with the IDP postulates considering the relevance of the institutional and idiosyncratic aspects, as it is done for Eastern European countries in Stoian (2012).

The NSI approach is suitable for the analysis of the relationship between the economic environment of the home country and the mode of firms' foreign expansion. In particular, adopting the notion of the NSI as the set of political, social, economic and cultural factors that allows the development of a country, region or sector through knowledge, aspects such as the institutions and the technological factors are found as crucial in the explanation of MNE (Nelson, 1993, Carlsson, 2006; Lundvall, 2007; Narula

and Dunning, 2010). Therefore, learning capacities, absorptive capabilities and the institutional framework play a main role as determinant factors of the strength and efficiency of the NSI and these allow us to understand the different possibilities for the expansion of MNE abroad. This is not absolutely new in the literature since the role of the home NSI as the engine of the foreign expansion mode has been early recognized (i.e. in Patel and Pavit, 1991) and the main argument was focused on those home countries where global technological advantages are created, an aspect that lead the presence of a more advanced HNSI and the exploitation of those capabilities abroad. On the other hand, more recent contribution has argued that less developed economies will encourage the internationalization of firms through M&A in order to acquire knowledge and compensate the weaknesses of the HNSI (Chen and Cuervo-Cazurra, 2012).

In addition, the IDP theory connects Inward FDI, countries' development and Outward FDI, and the presence of MNE can be considered as an important innovation driver and one of the main sources of knowledge in those less developed foreign location (Narula and Dunning, 2010; Cantwell and Santangelo, 2006). Therefore, the presence of foreign MNE may have a distinctive role in the process of capabilities accumulation because the potential transfer of knowledge and capabilities to local firms, the generation of spillover effects that are more likely in presence of domestic absorptive capacities, and all these effects may encourage the development of countries as well as the outward foreign direct investment (OFDI) (Narula, 1996; Narula and Dunning, 2010). This approach predicts different stages according to the level of IFDI received on the one hand, and the countries' development and the emission of OFDI on the other. In this sense, developing economies such as China Brazil or India will have higher level of IFDI and lower level of OFDI, being around stage 2; however, the huge increase of OFDI from this economies and the preferable use of M&A reveal new research questions to complement the validity of the IDP postulates including these facts.
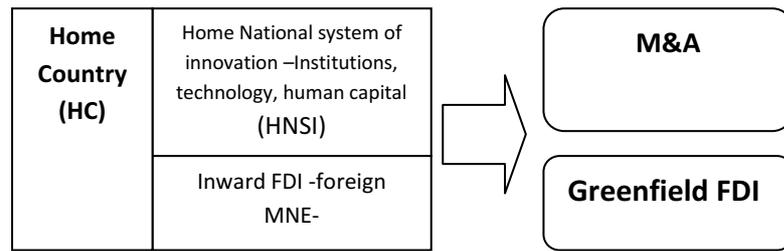
3. Conceptual proposal and Hypothesis development

The proposal of this paper is built over the idea that some specific elements found at the level of home countries contribute to explain the FDI mode chosen by internationalized firms. Particularly, we use the NSI approach to develop our working hypothesis and in such a framework the arguments of the IDP are also considered. In terms of our contribution, we try to show that a more or less advanced HNSI may affect the choice of FDI mode along the main MNE' motivation and this relationship may differ between developed and developing economies.

In Figure 1 we find two main elements of the HC: On the one hand, the HNSI that is defined according to the institutional, technological and human pillars. On the other, the external influence that foreign MNE can generate through the transference of capabilities in the HC. These two aspects may contribute to enhance firms'

internationalization but the effects may differ by the FDI modes. Regarding the possible FDI modes, we consider Greenfield FDI and M&A since these are the most important among others. It is plausible to assume that each FDI mode is more intense connected with some motives[2] and particularly, the use of M&A is usually more associated to knowledge-seeking than others because the acquisition of assets abroad is done in a faster manner. Meanwhile the choice of Greenfield FDI can be easily justified –although not only- by market-seeking reasons (Anand and Delios, 2002; Álvarez and Marín, 2010).

Figure 1: Linkage between the Home Country and MNE choice of FDI mode

| Home Country (HC)	Home National system of innovation –Institutions, technology, human capital (HNSI)	M&A
	Inward FDI -foreign MNE-	Greenfield FDI

Source: Own elaboration

The NSI is a suitable framework for the qualification of those aspects found at the home country level that affect the internationalization process through FDI. In a very single way, figure 2 shows the theoretical relationship between the level of advance of the HNSI and the possible FDI motives, each of them qualified by the predominant motivation of MNE to go abroad. We can expect that those firms from more advanced HNSI are able to choose indifferently between the two considered FDI modes. However, in the case of firms from countries where the NSI is less advanced, knowledge-seeking may be the dominant motive for OFDI and this would justify choosing M&A. Therefore, it is plausible to think that the choice of firms in *an advanced HNSI* would be either Greenfield FDI or M&A given the fact that in these economies the process of technological accumulation has helped them to develop the necessary ownership advantages to succeed abroad. Thus, whether some countries have accumulated the advantages justifying the internationalization process via the two modes (Hymer,1976; Dunning, 1988), it is more likely that the choice among Greenfield FDI and M&A will depend on the final motives that firms pursuit. However, in a *less advanced HNSI,* M&A can be seen as the mode that minimizes the time for acceding to knowledge and capabilities abroad. This would be related to the learning abroad argument and the technological escape hypothesis since it would work as a mode of compensation the potential weaknesses of the home country (Mathews, 2006; Luo and Tung,2007; Chen and Cuervo-Cazurra, 2012; Witt and Lewin ,2007; Chen and Cuervo-Cazurra, 2012). Nonetheless, it is important to emphasize that although

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[2] We are considering only market seeking and knowledge seeking motives. Other motives such as asset seeking or efficiency seeking motives are not incorporated in this analysis.

M&A can be justified by the predominant motive of acquiring new knowledge abroad, a minimum level of capabilities and advantages in the home country is needed to guarantee the successful internationalization via FDI (Narula, 2012).

Figure 2: Linkage between Foreign expansion modes and HNSI
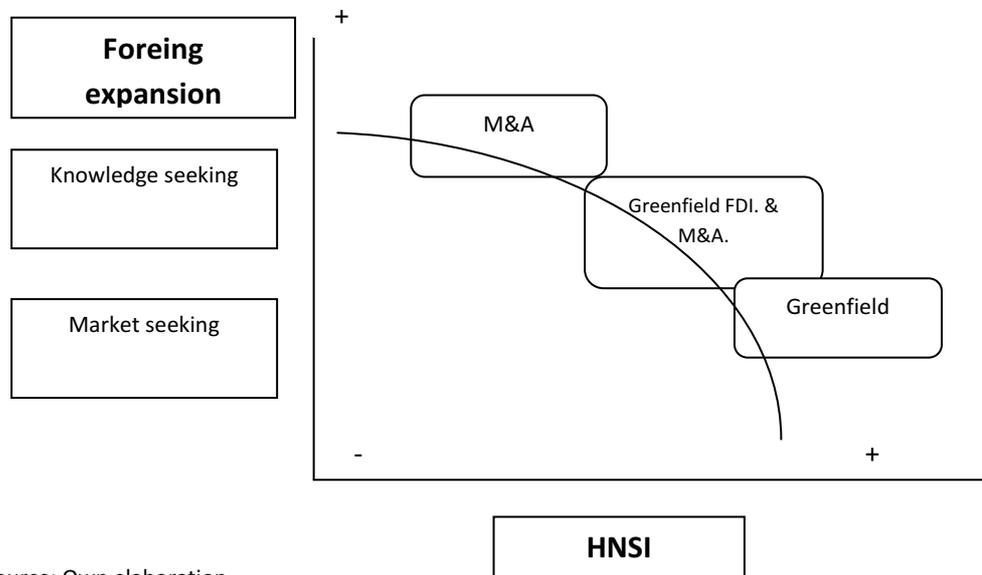
Source: Own elaboration

This relationship allows us to develop our working hypothesis: The elements of the HNSI may affect the choice of FDI in the firms' internationalization process and this depends on the level of development of countries (H1). Accordingly, this relationship can go in the following two directions: There is a negative relationship between the advance of HNSI and the choice of M&A mode (H1a). The reasoning is that a scarce level of advance achieved by the HNSI can motivate technological and institutional escape. On the contrary, when there has been a good level of capabilities accumulation in the HC, firms enjoy the necessary ownership advantages to go abroad and then the relationship between the advance level of HNSI and the choice of Greenfield FDI is positive (H1b).

Considering the potential effects that external factors of the HNSI such as the presence of foreign MNE may generate, the linkage among IFDI, country's development and OFDI can be analyzed considering different stages as the IDP theory justifies (Dunning and Narula; 1998). In general terms, developing economies are situated around the stage 2 of this theory where the level of IFDI is higher than the level of OFDI. Some EMNE's studies have proposed arguments challenging the validity of this proposal given the fact of the high volume of outward investments from developing countries when those countries have not accumulated the sufficient capabilities that justify their intense firms' internationalization process (Buckley et al., 2007; Gammeltoft et al., 2012). This will be the case of India where IFDI and OFDI has been increased more or less simultaneously (Sauvant et al., 2010). Moreover, aspects such as the institutional

elements and the preference for M&A must also be included (Luo and Tung, 2007; Gammeltoft et al., 2010; Kalotay and Sulstarova, 2010; Stoian, 2012). Generally speaking, a positive relation between IFDI and OFDI can be expected (Montobbio and Rampa, 2005; Stoian, 2012, Luo and Wang, 2012); although, from our view point this effect will depend on the FDI mode chosen by internationalized firms, an aspect that has received scarce attention in the literature until now. Therefore, our second working hypothesis is that the presence of foreign MNE will affect the internationalization of firms through FDI (H2), and this is developed through the next arguments: The relationship between IFDI, developing economies and M&A requires to consider that in many cases firms from developing economies go abroad for the acquisition of capabilities that has not been developed at home (Mathews, 2006). As already said in this paper, this implies that a less advanced HNSI may push firms to go abroad and compensate home weaknesses because the effects of IFDI or the presence of foreign MNE has not been so positive to compensate them. In particular, some developing economies may receive a high level of IFDI and therefore the likelihood of capabilities transfer will be higher but if the necessary absorptive capacities are not present, these external linkages also push to use M&A as a faster way to acquire new knowledge assets abroad. This leads to propose that there is not a direct effect of IFDI, development and the choice of M&A by internationalized firms but when the speed of the internationalization process in developing countries is considered, a positive and direct effect of IFDI and M&A can be expected (H2a). On the other hand, in the more advanced HNSI of developed economies, it is more likely to find a net effect of inward and outward FDI flows that is consistent with the IDP theory; therefore, the effect of IFDI allow the development of the HNSI transferring capabilities. This implies that as the level of HNSI increase the relationship between IFDI and M&A can be negative (H2b). All this new proposal which connect IFDI- Development and M&A can be found in the following figure (figure 3).

In the case of Greenfield FDI, IFDI can play a special role in the transmission of capabilities and although it depends on the home country level of development market seeking motives and the exploitation of home capabilities abroad would be the dominant effect. Accordingly, a positive relationship between IFDI and Greenfield mode of expansion is expected (H3). This is the usual prediction of the theory and no differences would exist between developed and developing countries

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Figure 3:M&A and the level of advance in HNSI
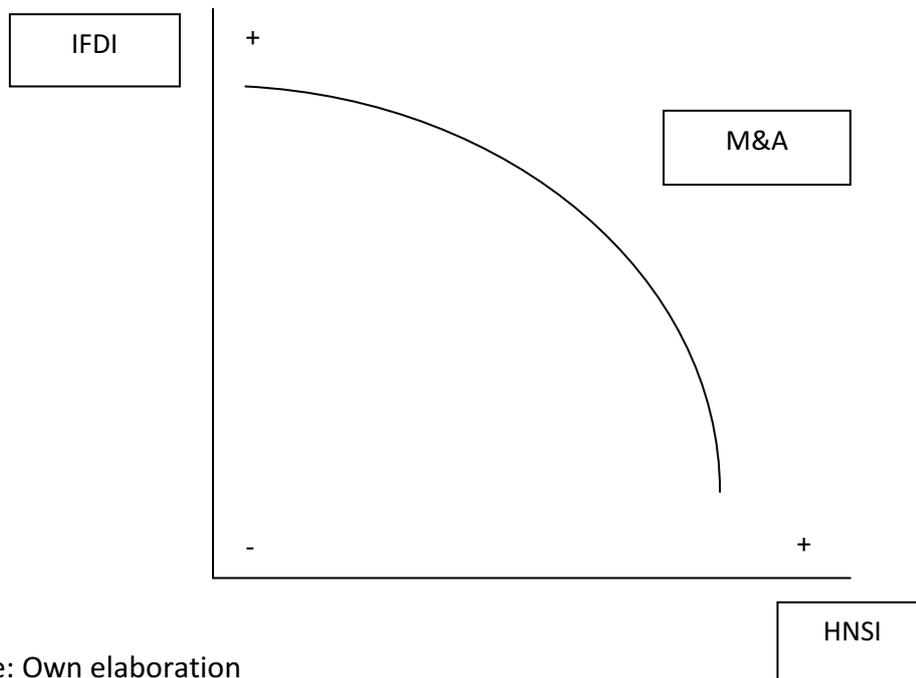
Source: Own elaboration

It is also important to consider some additional characteristics of the home country for the explanation of the problem and provide more robustness to the analysis. On the one hand, the economic –market- dynamism of the home country and also the level of factor costs, both of them largely considered in the most traditional theories of internationalization. These two elements are included through the following two proxies: GDP Growth for the first and Wages level for the second. As theoretically predicted, it is plausible to think that exists a positive relationship between the GDP growth and the two FDI modes and a negative relationship with the wages level (Kalotay and Sulstarova; 2010; Dailami et al., 2012Markusen, 2004). Table 1 shows the set of hypothesis and the expected signs for the estimated coefficients in the empirical model separately for each FDI mode of internationalization.

Table1: Hypothesis signs

Hypothesis Scope	Expected Signs			
	M&A		Greenfield FDI	
	Developing	Developed	Developing	Developed
H1a), H1b): HNSI	-	+	+	+
H2a), H2b) H3: IDP	+	-	+	+
Control Market Dinamism	+	+	+	+
Labour Cost	n.s	-	n.s	-

n.s is not significant

4. The empirical analysis

In this analysis we test empirically what elements defined at the home country level can influence the FDI choice of internationalized firms and whether they differ between developed and developing economies. In particular, we analyze the effect that the characteristics of HNSI has on the two FDI modes considered, Greenfield FDI and M&A, paying special attention to the learning abroad argument based on the technological and institutional escape hypothesis that have been previously supported by emerging MNE' scholars. The sample comprises 77 countries, including 40 developed and 37 developing countries. They are classified by the income level criteria (GDP per capita) used by the World Bank. The selection of countries has been conditioned by the availability of data for the time period analyzed -1996 to 2010- and the list of countries included on the Top 50 non-financial and Top Financial TNCs elaborated by UNCTAD (the list of countries can be found in the Appendix A. Table 1A). This period coincides with the emergence of new multinationals from developing countries in a more globalized economy and also with the increase of M&A as a preferred mode for foreign expansion in these economies.

4.1. Data description

The description of the main variables introduced in our analysis is first done for those variables related to firms' internationalization through the different FDI modes and, on the other hand, for the set of variables that is related to those technological and institutional aspects that would characterized the home country and particularly, the HNSI.

Graph 1 shows the evolution of M&A and Greenfield FDI flows distinguishing between developed and developing countries in the period 1996-2010. Given the lack of specific data for Greenfield operations in the information sources, we consider OFDI as such as

a proxy for Greenfield FDI. It can be noted that in developing economies, M&A and Greenfield FDI have followed a continuous increase in the last decade and the distance between Greenfield FDI and M&A is not so large; that is to say, M&A is playing a crucial role as a mode of foreign expansion in these economies. Regarding the developed world, M&A and Greenfield FDI have increased in general terms in the period analyzed with the exception of two peaks downshifts in 2000 and 2008. In these countries, the level of Greenfield FDI is higher that the level of M&A (see the distance between the line of M&A developed and Greenfield FDI developed).

Some basic statistics for the variables used in the analysis for both the samples of developed and developing countries allow us also to observe similarities and differences between the two groups of countries. All of them are presented in Table 3.

Graph 1: Cross-border M&A and OFDI in developed and developing countries. Period 1996-2010. Flows in Us$
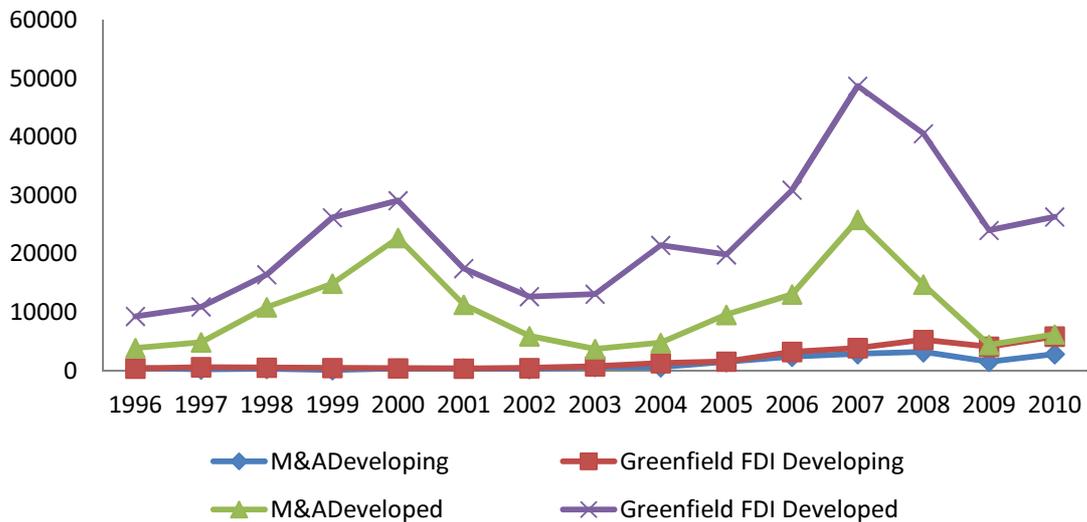
Source: Author's elaboration from UNCTAD database

Table 3.Descriptive Statistics: Average for the period 1996-2010

	Developed Countries		Developing Countries	
	Mean	Std. Dev	Mean	Std. Dev
Outward FDI(%GDP)	39.8043	61.1868	7.5099	18.9652
M&A (%GDP)	6.35e-0.8	5.76e-08	4.35e-08	5.50e-09
Inward FDI (%GDP)	51.0474	61.4666	29.7991	22.2350
Institutions	3.6482	0.5484	2.3449	0.5426
R&D (% GDP)	1.6148	1.0369	0.5023	0.3167
Education (%, School enrolment in secondary)	104.0467	14.1868	78.6476	17.1172
Patent application(%Pop)	2.939e-4	5.336e-4	2.57e-4	3.88e-4
Scientific and technical journal articles(%Pop)	4.899e-4	3.156e-4	3.53e-4	3.45e-4
Wages (millions US$, PPP constant 2000)	6.33e+11	2.96e+12	1.81e+12	7.21e+12
ΔGDP	3.0889	3.6101	4.0734	4.5631

Considering the HNSI, we include a set of indicators such as Patents, Scientific and Journals, Education, Institutions and R&D expenditures. The descriptive of them reveal lower values in average for the group of developing countries than for the developed ones, being smaller the heterogeneity in the latter. This comes to indicate that, a priory; the developed countries enjoy a more advanced HNSI than developing countries.

To being able to build a classification of HNSI between *advanced or less advanced* as it was previously mentioned, we have performed a Factor Analysis using the different indicators of the systems of innovation. This technique allows us to reduce the set of existing variables to a set of non-observable hypothetical or theoretical variables, called factors, which summarize most of the information contained in the original set. The strength of this technique is that the use of factors avoids the discriminatory selection between different proxies of the system. From the factor analysis, one factor has been obtained and this reflects both the *innovative capacity* measured by innovative Inputs (proxy by R&D expenditure), scientific output and technological output (patents), and the *absorptive capacities* measured by human capital (Education) and institutions (Castellacci and Natera, 2012) of the HNSI as a whole. The strength of this factor is that it reflects better the characteristics of the system than each of the individual variables could do. We applied a rotation technique that makes it possible to obtain more interpretable factors. Specifically, we have carried out a Varimax-type rotation, since the factorial pattern obtained by this procedure tends to be more robust than the one obtained from alternative methods and this option assures a maximum orthogonality between factors.

The validation or quality of the factor analysis is not only based on the statistical tests but also in the inherent logic of the factors obtained. The communalities of the variables (correlation of each variable with regard to the set of others making up this factor) are relatively high; in particular, KMO (Kaiser-Meyer-Olkin) test, which consider the correlation and the partial correlations between the variables is 0.72. This means that the factor analysis is adequate in our set of variables, an aspect that guarantees the reliability of the findings and indicates the high degree of preservation of their variance. Bartlett test as expected is significant (0.000) and the communalities of the variables (variance of each variable explained by the factors) is almost higher than 0.6, with the exception of the variable of patent which is 0.229; that is, the factor keeps the majority of information contained in the original variables. The second important criterion to judge the outcome of the factor analysis is that the extracted factors are consistent and interpretable in accordance with the theoretical or conceptual framework of our study. In other words, a factor analysis is useful if the results can be interpreted correctly from a theoretical point of view. In our case, the model with 1 factor is supported by the fact that they result from an objective processing (the main components analysis). In addition, the model itself is easy interpretable (since the variables are not saturated in more than one factor), the factor obtained match the theoretical postulates, and it is extremely robust, maintaining a high percentage of the original variance; in particular, the factor that we have named HNSI index is extremely robust and it retains almost the 60% of the original variance of the variables. In table 2 the factor matrix is presented[3].
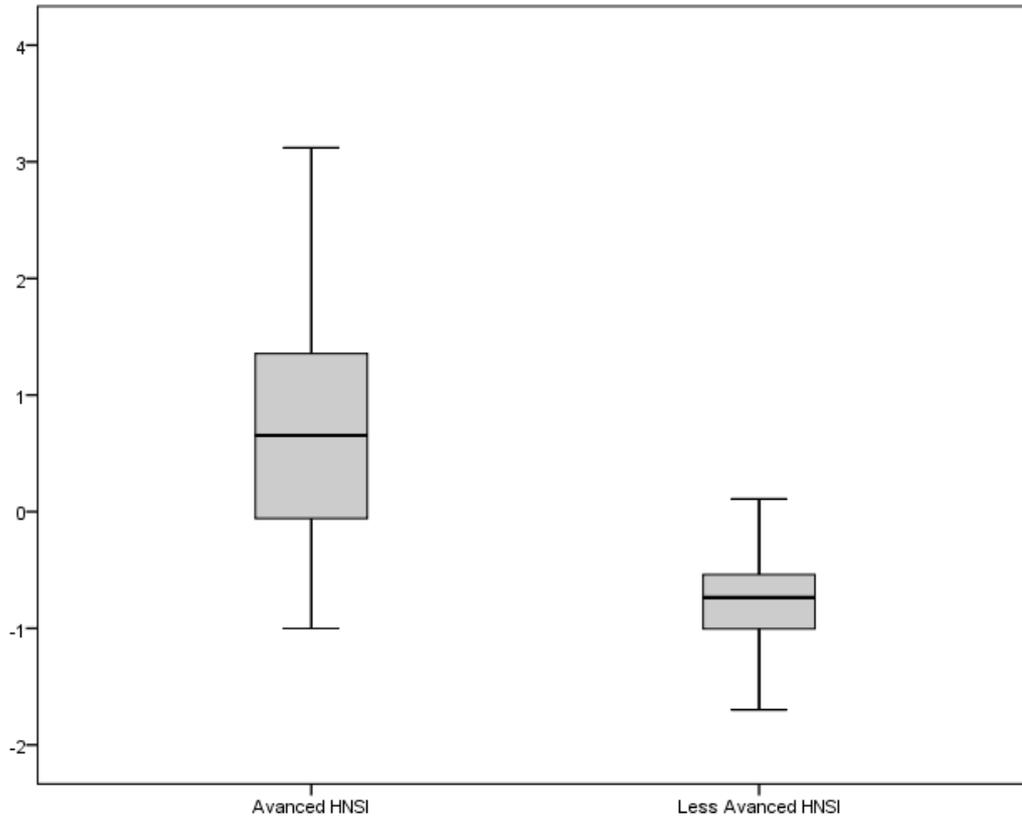
Table2. Matrix of Factors

Variables	HNSI(Factor1)
R&D	0.807
Patent	0.479
Scientific and Journals Articles	0.907
Education	0.748
Institution	0.832

Graph 2 shows how the HNSI composed index derived from the previous factor analysis takes higher values in average for the sample of developed countries than for developing ones. This would indicate that developed economies enjoy a more advanced HNSI while a less advanced HNSI predominates in developing countries. The descriptive statistics also reveals that the presence of MNE (inward FDI) serving as a driver of innovation is higher in developed than in developing ones (Table 3). Finally, as the indicators included as control variables such as those traditionally considered in the internationalization studies, GDP growth and wages level show that the former is greater in the group of developing countries while there are significant differences on

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[3] Matrix of rotated factors is not able to calculate given that there is only one factor.

the average values of wages between the two groups of countries, being higher the value of this variable for the group of developed countries as it is expected.

Graph 2. HNSI in developed and developing economies

4.2. The econometric model

We analyze here the relevance of the HNSI in the FDI modes choice of internationalized firms, to contrast whether differences exist between developed and developing countries. In particular, we test the effect of the HNSI (advanced or less advanced HNSI) in the internationalization through Greenfield FDI and M&A. Therefore, in the econometric model the dependent variables will be the FDI mode-Greenfield or M&A- and the independent variables will be the HNSI composed index, the presence of foreign MNE proxy by IFDI and some control variables previously described. In its general form, the empirical model adopts the following equation:

$$FDI\ Mode_{it}=\beta_0 + FDI\ Mode_{it-1} + \beta_1\ HNSI_{it} + \beta_2\ IFDI_{it} + V_{it} + \eta_{si} + \upsilon_{dt} + \varepsilon_{it}$$

Where *FDI Mode$_{it}$* will be Greenfield FDI and M&A in each specific case; *FDI Mode$_{it-1}$* shows the lagged dependent variable which would avoid the potential endogeneity problem of these models; *HNSI$_{it}$* represents the value of the index obtained in the factor analysis; IFDI shows the presence of MNE in the home country; *V$_{it}$* collects the control variables used in the analysis and η_{si}, υ_{dt}, ε_{it} are the specifities of the technique

used, which represents the individuals, the time effects and the random error term respectively. Estimations have been done according to the following sequence: First, the dependent variable is regressed against the HNSI index; secondly, the dependent variable against the HNSI index and IFDI; and finally, the whole equation with the control variables. This allows us to test the different effects of the independent variables on the dependent variable as well to perform some robustness test of the analysis.

The HNSI factor is composed by some basic elements of the NSI such as the innovative and the absorptive capacities of the home country. This value of the index or factor also determine whether it is an advanced or less advanced HNSI or, in other words, the likelihood of the lack or presence of firms' capabilities in its home country, which we expect will play an important role in the choice of the foreign expansion mode. Therefore, this factor collect some technological variables which constitute the *technological pillar* of the system, such as patents per capita, scientific and journal articles per capita and the expenditure in R&D (as a percentage of GDP) as well as the *institutional*[4] and the *human capital* pillars, proxy by the quality of the institutions and the education level. In addition, the presence of MNE is captured by the proxy of Inward FDI stock, and it tries to reflect the potential transfer of capabilities between foreign firms in the home country and local firms, an aspect that may also encourage OFDI. Finally, as control variables we consider GDP growth and Wages, in order to capture the traditional variables that in international business have explained the emergence of MNE (Markusen, 2004). Table 2A in the appendix shows the detailed description of the variables included in the analysis.

All the variables, with the exception of the HNSI[5] are transformed in natural logarithms in the estimations. We use the Dynamic panel data procedure, given the inherent endogeneity of the model; in other words, the path dependent trajectory or cumulative process that characterized the HNSI (Dosi, 1988; Castellacci, 2008). This method has two key advantages in order to solve our research question; firstly, effects over time are included in the model, and secondly, this methodology allows us to consider the individual effects (in this case country effects) in a dynamic perspective. The generalized method of moment (GMM) uses the first difference transformation dealing with the endogeneity of the model by the consideration of all the available lags as instruments and avoiding the individual effects (Arellano and Bond, 1991; Arellano and Bover, 1995; Roodman 2006, Roodman; 2009). Panel data estimations results are collected in table 4. Correlation matrix for the variables used in the model can be found in table 3A in the appendix.

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[4] Institution Index is composed by the average of a set of indicators: voice of accountability, political stability, government effectiveness, regulatory quality, role of law and corruption (Kaufman,2003)

[5] HNSI factor is composed by the variance of some variables; therefore in order to maintenance the % of representability of each variable we are no able to transform this factor in natural logarithms.

Table 4: Estimation Results

	M&A						Greenfield FDI					
	Developing			Developed			Developing			Developed		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
L.Y(-1)	0.249***	1.030***	0.870**	0.321*	0.273**	0.423***	0.793***	0.402**	0.582***	0.912***	0.828***	0.693***
	(0.073)	(0.014)	(0.3573)	(0.188)	(0.1185)	(0.144)	(0.072)	(0.170)	(0.136)	(0.069)	(0.093)	(0.093)
HNSI	-0.014	-0.162**	-0.001	0.208*	0.200**	0.108***	0.238*	0.347*	0.503*	0.084**	0.215***	0.135*
	(0.071)	(0.079)	(0.0238)	(0.109)	(0.091)	(0.036)	(0.133)	(0.199)	(0.286)	(0.041)	(0.079)	(0.081)
IFDI		0.126**	0.014		-0.095*	0.016		0.577***	0.603*		0.136	0.316***
		(0.0576)	(0.009)		(0.048)	(0.014)		(0.193)	(0.310)		(0.123)	(0.110)
ΔGDP			0.069***			0.405**			-0.323*			0.085
			(0.024)			(0.162)			(0.167)			(0.355)
W			-0.001			-0.016			-0.557			0.275
			(0.001)			(0.010)			(0.447)			(0.317)
cons	-12.732***	-8.103***	-2.429***	-11.506***	-11.998***	-10.633***	0.444***	-0.943***	13.186***	0.310***	-0.027***	-7.073***
	(1.271)	(2.573)	(6.047)	(3.211)	(2.019)	(2.140)	(0.146)	(0.511)	(10.65)	(0.179)	(0.212)	(8.618)
Hansen (prob>chi^2)	0.261	0.516	0.427	0.201	0.734	0.308	0.502	0.546	0.830*	0.18	0.130	0.629
Ar(1)	-2.54**	-2.60***	-1.73**	-2.13**	-2.80**	-2.90**	-2.50**	-1.83**	-1.80**	-2.65**	-2.39**	-1.84
Ar(2)	-1.60	0.61	-1.9	1.55	1.47	1.42	0.05	0.28	-0.75	-1.24	-1.16	-0.44
Observations	286	279	178	490	485	429	478	478	320	549	549	480
Intruments	7	15	7	16	45	19	6	31	11	30	33	7

GMM estimation two-step. Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.3. Discussion of the results

The results from the panel data estimations (in Table 4) confirm the relationship between the characteristics of the HC and the FDI mode of internationalized firms, and it is especially clear when both the characteristics of the HNSI and the presence of foreign MNE are jointly considered, revealing differences between developed and developing countries.

The cumulative experience in internationalization is a common aspect of the two FDI modes -Greenfield and M&A-. This is reflected by the significant coefficient of the lagged variable $Y_{(t-1)}$ that would reflect how past internationalization activities of Greenfield or M&A encourage firms' internationalization in the current time using the same FDI mode.

Regarding the estimation of M&A, HNSI shows a negative relationship for the sample of developing countries (Table 4-Column 2). This result would imply that firms go abroad in order to compensate the weaknesses of the HNSI, supporting the technological and institutional escape hypothesis and also the validity of the learning abroad argument. Moreover, the presence of MNE affects positively the internationalization through M&A (Table4-Column 2). This reveals that the external influence of the HC may play a special role in the capabilities' transfer, nourishing the firms' advantages that justify the use of this mode as a form of learning. These results allow us to confirm H1a and H2a for the sample of developing countries. Finally, the control variables included that serve as robustness test of the whole model (Table 4-column 3) confirm that the GDP growth is significant, denoting that the market dynamism and the development path of the home country is positively associated with an increase of M&A, not being relevant the level of wages in the explanation.

In the sample of developed countries, there is a positive relationship between the HNSI level of advance and the choice of M&A mode (Table 4-Column 5). This result was expected being aware of the fact that higher development achieved by HNSI facilitates the use of M&A due to the previous accumulated capabilities. The use of M&A doesn't pretend the compensation of weaknesses in the home country as the institutional and technological escape hypothesis predicted but it just confirm that a firm from a more advanced HNSI may choose indistinctly and knowledge-seeking as just one more motive among others. On the other hand, there is a negative effect of IFDI supporting the idea that those HNSI in developed economies diminished the potential role of the capabilities transfer process from foreign MNE that are more embedded in a more advanced system. Moreover, the increase of IFDI in one unit will avoid the necessity of going abroad using M&A. Therefore, H1 a) and H2b) are confirmed for the sample of developed countries. Finally the control variable GDP growth and wages behave similarly to the sample of developing countries.

Regarding Greenfield FDI, HNSI affects positively the use of this mode of internationalization for the sample of developing countries (Table 4 -Column 7, 8, 9-). This finding confirms the accumulation of capabilities argument in the home country and therefore its exploitation abroad argued by traditional internationalization postulates. Moreover, the presence of MNE affects the internationalization through this mode of FDI (Table 4-Column 8, 9-). This implies that H1b and H3 are confirmed for the sample of developing countries. Finally, the control variable GDP growth affects negatively to Greenfield FDI in this sample (Table 4-Column9).

The sample of developed countries also confirms the last finding for developing countries which also adds that Greenfield FDI will not be affected by the level of countries development. Therefore, H3 is also confirmed for the sample of developed countries. In this case control variables are not significant (Table 4-Column 10, 11, 12-).

These results confirm satisfactorily our working hypothesis. As it was expected, the characteristics of the HC affect the chosen FDI mode although the effects are different for the sample of developed and developing countries, respectively. As main finding, the relationship between the characteristics of the HC and the internationalization through M&A must be underlined. This confirms what previous EMNE' literature has predicted; in particular, as the strength of the learning abroad argument and the potential compensation abroad of the weaknesses at the home country level in terms of the science and technological capabilities and also the institutional framework of the HC since all these elements integrate the HNSI. In addition, these findings contribute to an aspect not deeply analyzed yet by the IDP approach since as previously commented, the effects of IFDI are higher in developing economies that in developed ones.

These findings justify the existence of differences at HC in the explanation of firms' internationalization between developed and developing economies that are clearer when the presence of foreign MNE is taken into account. This is especially relevant for getting a better understanding of the use of M&A as a preferred FDI mode by EMNE. It can be said that the elements of a less advanced HNSI are compensated by inward FDI and this relationship will be conditioned by the development path of countries.

5. CONCLUSIONS

The process of business internationalization is intimately related to the environment where firms come from and for this reason it is plausible to predict that the characteristics of the home country may become a key factor explaining the choice of FDI modes. The rapid increase of MNE from emerging economies has encouraged the interest in the potential contribution of national factors in the generation of advantages at firm level, given the fact that in developing contexts firms often lack the traditional ownership advantages. Moreover, taking into account that the more

dynamic FDI mode in the last decades have been M&A in both developed and developing countries, knowledge-seeking becomes one of the main motives that would justify this choice. The combination of these issues allows us to present an integrative framework in which the modes of firms' internationalization can be explained by the level of advanced achieved by the HNSI and the presence of MNE. Our empirical findings confirm that a less advanced HNSI encourage the use of M&A in order to compensate weaknesses in HNSI. Moreover the presence of MNE affects directly the use of this mode because the external influences do not compensate the lack of firms' capabilities to be successful abroad. However, for the case of developed economies HNSI shows a positive relationship with M&A while the presence of MNE will has a negative effect. These last findings add some new evidences to the IDP theory in relation to the use of M&A. On the other hand, the advance level of HNSI and the presence of MNE are positively associated to Greenfield FDI in both developed and developing countries, a result that reveals the importance of the capabilities accumulation process that this mode of FDI requires.

One potential implication for managers is that in the case of firms coming from an advanced HNSI the choice between Greenfield FDI and M&A is more clearly linked to the final motive that firms pursue in the internationalization process -market-seeking or knowledge-seeking- given that the HNSI provides the necessary knowledge basis that justify the choice. However, when firms come from a less advanced HNSI (institutions and technological base) the use of M&A may compensate the weaknesses in the home country and for the external acquisition of knowledge the linkages with foreign MNE may play a special role that justifies their success abroad.

This article provides some fresh empirical evidence about the internationalization process considering the home country and the specific characteristics HNSI and its effects in the chosen mode of foreign expansion. Moreover, this contributes to the literature of EMNE and especially to the explanation of the intense use of M&A as an escape strategy from the home country. Furthermore, differences found between developed and developing countries reinforce previous arguments in the literature of EMNE. Finally, the IDP theory is complemented by the consideration of the NSI and the differentiation between Greenfield FDI and M&A.

As a limitation of this study, we are not able to precisely measure the knowledge seeking or market seeking motives that justify the chosen FDI mode at the firm level. This limitation constrained the test at the firm level effect of analysis. However, the use of macro variables enables to capture the environmental conditions that could affect the chosen of the two FDI modes analyzed. This previous limitation also implies that our finding cannot be generalized as a pattern for all the firms in a country. Additionally, as a final limitation we can mention that the host country is not known, this could constrain the assumption of acquisition or exploitation of capabilities.

Therefore, future research could extend this proposal taking into account the micro elements of the internationalization process and considering both host and home countries.

Appendix A

Table 1A. Countries included in the analysis, classified in developed and developing countries (***).

Developed Countries (*)	Developing Countries (**)
Australia	Argentina
Austria	Brazil
Belgium	Bulgaria
Canada	Chile
Croatia	China
Cyprus	Colombia
Czech Republic	Costa Rica
Denmark	Egypt
Estonia	Guatemala
Finland	India
France	Indonesia
Germany	Jamaica
Greece	Jordan
Hong Kong	Kazakhstan
Hungary	Latvia
Iceland	Lithuania
Ireland	Malaysia
Israel	Mauritius
Italy	Mexico
Japan	Morocco
Korea, Rep.	Pakistan
Kuwait	Panama
Luxembourg	Peru
Macao	Philippines
Malta	Romania
Netherlands	Russian Federation
New Zealand	Serbia
Norway	South Africa
Poland	Sri Lanka
Portugal	Thailand
Saudi Arabia	Tunisia
Singapore	Turkey
Slovak Republic	Ukraine
Slovenia	Uruguay
Spain	Venezuela
Sweden	Zambia
Switzerland	Zimbabwe
Trinidad and Tobago	
United Kingdom	
United States	

* The group of developed countries is composed by the high income economies
**The group of developing countries is composed by the middle income economies
***Classification according to the income level criteria (GDP per capita used by the World Bank)

Table 2A. Definition of variables and sources of information

Variable	Definition	Source
Outward FDI (Y)	Outward FDIstock (%GDP) measured in natural logarithms	Unctad, FDI database
M&A(Y)	Value of M&A by region of purchaser (%GDP) measured in natural logarithms	Unctad, FDI database
Inward FDI	Inward FDI stock(% GDP) measured in natural logarithms	Unctad, FDI database
Institutions (INS)	Quality and Stability Institutions Indicator	World Bank, WDI 2013
R&D (RD)	Expenditure in R&D (% GDP) measured in natural logarithms	World Bank, WDI 2013
Patent (PT)	Number of patent application by resident, per capita	World Bank, WDI 2013
Scientific and technical journal articles (SC)	Number of articles published per capita	World Bank, WDI 2013
Education (EDU)	School enrolment in secondary education (% Total) measured in natural logarithms	World Bank, WDI 2013
Wages (W)	Compensation of employees ($US dollars) measured in natural logarithms	World Bank, WDI 2013
GDP Growth	Annual percentage growth rate of GDP (%)	World Bank, WDI 2013

Table 3A. Correlation matrix: Developed countries and Developing countries

DEVELOPING				
	HNSI	IFDI	W	ΔGDP
HNSI	1			
IFDI	0.3581	1		
W	-0.1232	-0.171	1	
ΔGDP	-0.0813	-0.0413	0.0643	1

DEVELOPED				
	HNSI	IFDI	W	ΔGDP
HNSI	1			
IFDI	-0.0013	1		
W	0.3247	-0.1797	1	
ΔGDP	-0.1508	-0.028	-0.105	1

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