

The role of knowledge in equity partnership agreements: the missing link in MNCs theory

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Abstract

Partnership agreements, i.e. greenfield joint venture and partial acquisition, are a common alternative for firms looking for complementary assets held by another firm in a foreign country. Surprisingly, this alternative has been scarcely investigated. Using a sample of 355 foreign entries made by firms from 32 different countries in Italy, over a ten-year period (2005-2015), we investigated the effect of different types of knowledge on this choice. Specifically, we focused our analysis on the effects produced on this choice by the knowledge held by both the investing and the local firms. Results show that MNEs with product-specific knowledge investing in an industrial cluster are more likely to choose a partial acquisition rather than a greenfield joint venture. If the local firms have high levels of intangible assets then a greenfield joint venture is the more likely outcome. The theoretical implications of these findings for IB theory are discussed.

Keywords: *Greenfield joint venture; partial acquisition; knowledge; industrial cluster; intangible knowledge; transaction cost economics.*

INTRODUCTION

Firms entering foreign countries often need a partner and use either a greenfield joint venture (JV) or invest in partial acquisition of a local firm. This kind of shared investments is increasingly important. In the last decade, 1,500 JV deals have been completed annually (Rinaudo & Roswig, 2016), and 73% of participants in the McKinsey's 2018 survey declare that expect their company to increase the number of partnerships. Both types of partnerships assume crucial relevance for managers. Indeed, according to PWC's 2016 Global CEO Survey (McGahan, Smith, Moldenhauer, & Cohen, 2016), 49 per cent of global executive is planning to establish a greenfield JV and 42 per cent a cross-border partial acquisition. Based on this empirical relevance and on the rich literature on this topic, a recent survey paper by Nippa and Reur (2019) argue in favour of further studies on greenfield JVs and on aspects that surround them, to provide insights into unexplored factors and advance not only IJV research but also the more general field of IB. The present paper intends to address this call for further research in the field.

Greenfield JVs and partial acquisitions have two relevant aspects in common. First, they are partnership agreements in the sense that the investing company create a link (through equity investment) with a partner. Second, the return for the investing company is residual in the sense that investor's return is determined ex-post as a percentage of the residual profits of the venture and not ex-ante by a fixed payment. Given these common traits, some authors even consider these two entry modes as equivalent (Hennart, 2009). However, even if these entry modes have some common characteristics they also show some structural differences that make them not only theoretically different but also very diverse in terms of management requirements. Greenfield JVs are independent companies, built from scratch where the two (or more) investors allocate very specific resources while partial acquisitions allow the investors to gain some degree of control over an already existing, company. The alternative is part of the so-called

establishment mode (EM) choice (Brouthers, L. E., Brouthers, K. D., & Werner, S. 2000) where firms have to choose between greenfields projects or (partial or full) acquisitions (Brouthers, & Hennart, 2007). We argue that while an extensive literature has investigated the factors behind the choice between JV and full acquisition previous research has not sufficiently investigated, with very few exceptions (Arslan & Larimo, 2015; Chen, 2008), the alternative JV vs. partial acquisition. However, this second alternative is not only empirically relevant but also theoretically important and deserves further attention.

In order to analyse this choice we use Transaction Cost Economics (TCE) theory since this is the most common theoretical framework in the EM literature (Slangen & Hennart, 2007). Departing from Brouthers & Hennart (Brouthers et al., 2007: pagina) that argue that JVs and partial acquisitions “*occur when both the local and foreign assets are hard to transact*” we investigate the special role of knowledge i.e. of an asset typically costly to exchange through the market. Contrary to most of the previous literature that consider just the investing side of the agreement we include in our analysis both the investors characteristics but also those of the local partner (Sestu and Majocchi; 2018) with a special attention on the knowledge shared by the two partners. The focus on the role played by knowledge is justified by at least three reasons: first because knowledge is an asset generally quite complex to transact since it is frequently subject to market failures that makes it difficult to transfer through arms-lengths contracts (***). Therefore, residual sharing contracts such as JVs or partial acquisitions are often chosen when firms form partnerships to share this kind of assets difficult to price in the market (*****). We argue that the choice between JVs and partial acquisition depends on the characteristics of the knowledge shared in the agreement. The second reason refers to the role of knowledge in promoting firm-specific advantages (FSA) that are a necessary condition for international investments. As argued by Rugman and Verbeke (2003: 127) FSAs are “*knowledge bundles that can take the form of intangible assets, learning capabilities and even privileged*

relationships with outside actors.” However, to lead to international investments, FSA need to complemented by country specific advantages (CSA) located in another country that, when bundle with FSA and governed through hierarchies, generate higher return compare to arms-length transactions (Rugman Verbeke 2003 + ***). In the words of Verbeke & Kano, (2015): 420): “*International success ultimately depends on the firm’s ability to achieve an efficient combination of country-specific and firm-specific advantages*”. However, CSAs are not always freely available in the market (Hennart, 2009). This because they are owned by local firms that cannot be acquired or because they are localized, as it is in the case of clusters and can be access only firms that are part of a local network that “share resources, knowledge, relationships and routines...” (Rugman & Verbeke, 2003: 160). To take into account also these aspects our analysis include also the knowledge owned by target firms and we include firms located into industrial clusters. The third reason to focus on the role of knowledge is empirical and refers to the increasing importance of knowledge as a main source of competitive advantage (Citare Porter/Pisano) and consequently as a main driver of the increasing number of equity partnership agreements involving knowledge.

In this paper, we contribute to the literature in three ways. First, we contribute to the TCE theory demonstrating that different types of firm-specific knowledge have different effects on the type of partnership created. More precisely, we show that when knowledge is firm-embedded and difficult to codify then its transferability, even to a JV is difficult and that acquisition (in or case partial acquisition) are the more efficient choice. Second, and more generally, we add to the limited literature on the choice between greenfield JV and partial acquisition. More specifically, we respond to the recent call by EM scholars (Chen, 2008b: 469) to further investigate the choice since the distinction between “partial acquisitions or acquisitive JV represents a tricky entry mode that has been overlooked in previous studies”. Third, we build on the literature on

industrial clusters showing that the knowledge shared by a firm located in an industrial cluster is a factor that influence the EM choice that has been largely ignored in previous research.

In order to address these issues, we use a sample of 355 foreign entries made by firms from 32 different countries in Italy, over a ten-year period (2005-2015). The sample is composed of 130 greenfield JVs and 225 partial acquisitions.

The paper is divided into four main sections. The first section provides an outline of the literature on EM choice and the role of knowledge as a specific asset affecting the transaction. The second section develops hypotheses. The third section describes the methodology used in the empirical analysis and the data. The fourth section presents the main findings of the research. The final section of this paper presents our discussion, with a special focus on the theoretical implications of our results, the limitations of this study, and conclusions.

THEORETICAL FRAMEWORK

IB theory has clearly identified the conditions that lead firms to establish FDI. In order to combine firms specific assets, such as marketing technology or process innovations, with assets located in another country the market is often not an efficient or even a viable solution so that firms find more convenient to transfer internally these assets through FDI. IB scholars (Buckley & Casson, 1976; Hennart, 1982, 2015 ; Kogut & Zander, 1993; Rugman & Verbeke, 2001) have thoroughly investigated the conditions and the characteristics of the assets that are difficult to trade contributing to develop the current well-established theory of MNCs. Rugman and Verbeke (2001) refer to the assets owned by the investing firms that are not tradable as FSAs. They also point out that in order to promoter FDI these FSAs should be combined with CSAs located in a foreign country that are location bounded. In order to combine the firms specific assets with the foreign – location bounded – assets firms find efficient to transfer the

firm specific asset internally generating FDIs. The most common - but not the only - example of an asset difficult to transact is knowledge (Kogut & Zander, 1992; Teece, 1977). So, to make an example, firms with superior production technology with a high degree of tacitness can efficiently exploit this FSA investing in low labour costs countries that are close to large destination markets. The large flows of US investments in Mexico after the signing of the NAFTA agreement can be largely explained by the will of American firms to combine their technological skills with Mexican the low labour costs.

However, not all the location bounded country specific assets are freely available to foreign firms (Hennart, Sheng, & Pimenta, 2015) as it is the case of cheap labour. Some location bounded assets are owned only by local firms. For example, Airbus industries set up a majority JV with Chinese partners to develop the political connection necessary in order to enter into the Chinese highly-regulated and politically sensible aircraft market. Similarly, Twitter invested in a minority share of the Indian start-up ShareChat to enter in the local social media market using regional local languages. These local connections have a high economic value because they allow access to local market knowledge or to localized knowledge owned by indigenous firms. Arm's length transactions are difficult because the knowledge embedded in the company has often a tacit and proprietary nature that makes knowledge difficult to be evaluated and negotiated (Chen, 2005). Similar issues arise when the assets owned by the local firm are not separable from the firm; again this is the quite common in the case of knowledge that is typically firm-embedded. In all these cases, MNCs that want to access local knowledge located in a foreign countries cannot rely on market transactions. The only way to access these resources is through international investments. The empirical evidence that MNCs use foreign investments to procure proprietary knowledge possessed by local firms is very strong (Anand & Delios, 2002+ ***). If the local knowledge is not freely available but is firm specific i.e. owned by local firms then the only way to access the resources is through a full acquisition or a partnership

(EJV or partial acquisition). So far, the large majority of studies has investigated the alternative full vs partial acquisition (*references*). However, we claim there are many circumstances when a full acquisitions s is not a viable or an efficient solution. In all these cases firms have, as their only viable alternative, the choice between JVs and partial acquisitions.

Full acquisitions are an option only if the owners of the indigenous owners of the firms are willing to give away full control of the company. Frequently this is not the case and the alternative is not even feasible either because regulation enforces limits to foreign acquisitions, because the owners do not want to give away control or for economic and strategic reasons.

In many countries a number of regulatory limits to full, acquisition are in place. India, just to name one important FDIs recipient country, is an example of a country where the current regulation allows foreign investments up to a certain percentage of ownership in some specific sectors such as telecom services, petroleum refining, pharmaceutical or power exchanges. However, these kind of limits are not only common to emerging economies, but have been recently introduced in different forms also in many advanced economies such as the US¹.

A potential additional limit to full ownership is the owners' willingness of to maintain control. This is a common case with family firms where owners have a strong preference for control (Casson, 1999; Lester & Cannella, 2006). Again, this is a quite pervasive and common limit in many countries and across many industries. The majority of companies around the world are family-owned (Feldman, Amit, & Villalonga, 2016) and this implies that when an assets is owned by a family firms in most of the case the full acquisition option is not even on the table.

¹ See for example the recent approval of the the Foreign Investment Risk Review Modernization Act (FIRRMA) by the US Congress in 2018.

Sestu and Majocchi (2018) argue that when the local owner is a family owner will typically prefer to maintain control and that acquisition would become more difficult making JV the most likely outcome (é vero?).

Finally, there are number of cases when full acquisitions are not the best solution for both economic and strategic reasons. While it is true that partnerships increase the costs of managing the new ventures because of the need to accommodate for all the possible different point of views of the partners (Anderson and Gatignon 1986), partnership can bring a number of benefits to the partners involved.

For example, this is the case when the relative dimension of the investment is much larger than the required assets i.e. when the value of the assets is relatively small compare to the value of the target company. Similarly, full acquisitions are not convenient when the value of the target is much larger of that of the MNCs. In other words, partial acquisitions are a way to minimize capital commitments and reduce the overall financial risk (Harrigan 1988). ~~Once again, the benefits accrue for all the companies involved in the deal, as argued by Chen (Chen, 2008: 458):~~ “~~Pooling complementary assets... benefits both partners, in that MNEs save on the costs of acquiring the target assets externally or creating them internally; indigenous firms extend their existing assets~~”. Moreover, since in international partnership the partners, by definition, come from two different countries the valuation of the resources pooled is even more difficult, complicated and costly (Kogut and Singh,). Partnerships allow the firms, with limited investment in resources, to have a direct access and buy additional time for a more detailed, careful and informed examination either of the resources shared in the new ventures (in the case of JVs) or of the other partners resources as in case of partial acquisitions. (inserire referenze).

In all these cases, partnerships through greenfield JVs or partial acquisitions are the only or the more efficient solutions. However, while JVs and partial acquisitions are similar since they are

both hierarchical solutions where the partners are paid for their inputs through a share of the profit they still maintain differences both from the theoretical and the managerial point of view. From the theoretical point of view, the most relevant difference is that the two solutions represent two different establishment mode: JVs are greenfield while partial acquisitions refer to investments in already existing and operating company. This theoretical distinction has also relevant managerial implications. JVs require that the asset allocated by two partners are clearly defined before the agreement. Moreover, being a new initiative, the JV also have to face some of the typical problems that are encountered by new projects: developing relationships with pairs, establish links with customers, suppliers and local institutions. Consequently, JVs require more time compare to partial acquisition that allow a quick entry in a foreign market.

Partial acquisitions are a way to enter in the already established venture. Through partial acquisitions, foreign companies can also evaluate and have access to those assets that are part of the target companies but that cannot be clearly separated and therefore that cannot be allocated to a JVs. An example of an assets embedded in the company is the social capital the firms located in industrial clusters develop through time. At the same time the local company thanks to the foreign capital receive not only additional funds in the form of equity but also access to additional intangible resources like the international network of the investing companies, new board members with their competences, access to different knowledge and new technology. (qui bisogna inserire citazioni/casi).

To conclude we argue that the alternative JVs partial acquisition is an empirically relevant and theoretical question and that, much to our surprise, this choice has been scarcely studied. While previous models of international investments assume that:

- The investing firms hold some FSA non easily tradable in the market;

- These assets can efficiently be bundle with assets located in another country that are location bounded (CSA);
- The location bounded assets owned by local firms;
- These local assets cannot be efficiently sold in the market and can be access by foreign firms only through acquisition or through equity sharing agreements such as JVs or partial acquisitions.

We add a supplementary condition to this set of requirements: i.e we consider all those cases when full acquisitions are not a possible or an efficient choice, a condition that we claim is very frequent and common.

Based on the above arguments we develop a series of hypotheses about the choice between partial ownership or a greenfield JV. We argue that the knowledge characteristics developed both by the investing and the target company affects this choice. We also investigate the role of the location of the target companies and more specifically the role of location within specialized clusters since the location in those areas allow the firm to access specific location-bounded knowledge.

HYPOTHESES DEVELOPMENT

Arslan and Larimo (Arslan & Larimo, 2015).

According to IB theory, firms choose establishment modes that minimize the transaction costs generated by the need to negotiate, monitor and govern transactions, and enforce contracts. IB literature has extensively investigated the determinants at the international level of transaction costs affecting establishment mode alternatives. Traditionally EM choice literature has

unilaterally focused on the characteristics of MNC investing in the foreign countries. However, recent literature, has convincingly argued that, in order to explain the establishment choice the characteristics of two assets owned by both the investing and the target company should be considered. More generally, Gomes-Cassares (1989) and Hennart (2009) argue that EM decisions are based on transaction costs generated not only by the characteristics of the assets held by the investing firm (the MNC) but also by the characteristics of the assets that the MNC intends to control and which are owned by a local company in the host market. Local assets such as technical knowledge, consumer knowledge, stable relationships with local suppliers and political connections (Yeung, Mirus, & Yeung, 1989) are often not freely available in the host country. These assets are frequently owned by local firms and consequently affect the MNCs foreign entry mode and establishment mode choice. Hence, a comprehensive entry mode theory should consider both the rents of the entering firm (the MNC) and those of the local company. Chen, (2008b: 457) for example argue that bundling assets within a joint venture or a partial acquisition: “benefits both partners, in that MNEs save on the costs of acquiring the target assets externally or creating them internally; indigenous firms extend their existing assets to cover a wider product line without full investment in production facilities”. Hennart (2009: 1435) clearly made this point in his 2009 seminal paper where he presents a model that explains a firm’s foreign entry as being the result of the interaction between the owner of the assets to be transferred internationally and the owner of the local assets. In his words (Hennart, 2009: 1435): “EJVs will arise when at least two owners hold complementary assets that they want to bundle, and the market sale of those assets would incur high information, bargaining, and enforcement costs”. While a wide range of goods and assets are subject to market failure (Akerlof, 1970) knowledge has been considered as the main example of an asset that, under certain conditions, can be difficult to transfer given the high markets transaction costs. This because of two main reasons. First, because knowledge has often a relevant tacit component

that makes arms lengths transactions difficult. The second reason refers to the so called Arrow disclosure paradox. In his seminal article Arrow(1962) argues that market failures are frequent when the assets to be transferred is knowledge-related and this because the seller is caught in a trap. On the one side, in order to obtain the full value of the assets, the seller should detail all characteristics of the knowledge that want to sell; but on the other side, if the knowledge is fully detailed then the economic value of the assets disappears.

Establishment mode literature (Hennart & Park, 2008) has frequently argued that MNCs use greenfield investments to transfer complex management practice that allow the investing firms to quickly and easily introduced management practices in the new venture. Traditionally EM theory has measured the level of knowledge using R&D expenditure, or more precisely the ratio of R&D on sales (R&D intensity). However, R&D expenditure has at least three limits. First, it is a flow measure reported in the income statement, a measure that can be extremely volatile and subject to very short-term concerns. Second, R&D is a measurement of the effort and not of the R&D results. Finally, R&D measurement is a very imperfect, if not wrong, measurement of the advanced management practices that are at the heart of the arguments that support the view that these firms prefer greenfield to acquisition. We argue that is not the amount of R&D but that what really count is the typology of knowledge that is transferred. More precisely, whether or not the knowledge can be codified and patented compare to the knowledge that is highly firm-embedded as typically is for the management practices. Highly codifiable knowledge is typically not embedded in the firm and is generally reported as a separate and distinctive item in the firm books at its accounting value. **Qui dobbiamo dimostrare che è vero: la consocenza codificata è riportata nei book.**

Based on these arguments we model the choice between greenfield JV and partial acquisition considering the level of tacitness and embeddedness of the knowledge that is bundled with the investment. Knowledge codifiability allow firms to isolate the asset the produce the knowledge that can be potentially be allocated in another concern in order to be bundle with assets from a partner entity. On the contrary tacit knowledge, may be because has been developed in firm routine or is shared by group of workers is very hard to separate from the firms. Therefore, when the knowledge is codifiable and can be effectively packaged with knowledge from a partner then the more efficient governance mode will be a greenfield JV rather than a partial acquisition. Greenfield JV allows also the firms to exactly identify the knowledge that is shared with partner while in partial acquisition typically the investing partner has a direct access to all the pool of knowledge of the target firm.

These advantage of the JV hold for both the MNC and the incumbent firms. Thus, we formulate Hypothesis 1 and 2:

Hypothesis 1: *If the local firm has developed codified knowledge reported in the book the foreign firm will more likely opt for a greenfield JV rather than for a partial acquisition of the local firm.*

Hypothesis 2: *If the foreign firm has developed codified knowledge reported in the book a greenfield JV with a local partner is more likely rather than a partial acquisition.*

and Hypothesis 2.

Foreign firms are often interested in the product-specific knowledge of the local firm, i.e. in the knowledge of a particular industry about how to manufacture particular products (Hennart et al., 2008; Slangen & Hennart, 2008). Such knowledge is typically largely experiential and tacit, and hence costly to develop internally and difficult purchase on the market in disembodied form. MNEs that expand abroad to manufacture products which are very different from those manufactured at home generally lack the knowledge required to manufacture such products and

should hence prefer to make acquisitions, as this is the most efficient way to obtain this tacit experiential knowledge of the local firm. Larimo (2003) finds that this knowledge is highly tacit and difficult to acquire in disembodied form, and costly to develop internally in a new venture (Larimo, 2003) so that the most efficient solution is a partial acquisition.

Based on these arguments we posit:

Hypothesis 3: *If the MNE is interested in the product specific knowledge of the local firm a partial acquisition is more likely rather than a greenfield JV.*

Da fare: 1) definizione di knowledge interna al distretto (da letteratura distretti). Far vedere che chi sta nel distretto ha specific knowledge ce non si riesce a trasferire

Industrial clusters are characterized by a system of interactions between firms (network centrality) located in the same area (geographic proximity) (Bell, 2005). This means that, when firms are located in industrial clusters the knowledge is embedded in the firm and cannot be easily identified, to allocate this knowledge to a third party as a greenfield JV become more complicated. A firm investing in an industrial cluster may benefit from the set of externalities (skilled labour force, availability of complementary services and intermediate products, knowledge transfers) deriving from the agglomeration of related firms (Roberto, 2004). MNEs investing in these clusters are typically interested in the networks of relationships of the local firm. While, through a partial acquisition, the MNE can take advantage of the incumbent's tacit knowledge, existing relationships, and established networks. Thus, the only way to have access to this complex knowledge (not codifiable) is to directly invest in the local firm with a partial acquisition. Thus, we posit:

Hypothesis 4: *If the MNE is interested in industrial cluster specific knowledge a partial acquisition of the local firm located in the cluster is more likely rather than a greenfield JV.*

To summarize our hypotheses, we report in the following matrix (Figure 1) the most efficient solutions between greenfield JV and partial acquisition according to the level of codifiability/embeddedness of the knowledge transferred and on the owner (local vs MNCs).

Insert Figure 1 about here

METHODS

Sample selection

We tested our hypotheses using a database compiled by collecting data from multiple sources: Zephyr and Orbis (two datasets provided by Bureau van Dijk), Italian National Institute of Statistics, and Eurostat. The sample is composed of greenfield JVs and partial acquisitions completed in the period ranging from 2005 to 2015.

Because of our interest in studying the effect of the knowledge specific of industrial clusters, we choose a home country suitable for this purpose. Thus, we choose Italy as host country (location of the partnership). Indeed, Italy has a long tradition of many industrial clusters in different sectors (Cucculelli & Storai, 2015). Choosing only one host country allows us to minimize all the variance not necessary for the purpose of our study. Moreover, Italy is also a suitable country to study partnerships because it does not have specific legal requirements in terms of foreign partners, as happens in other countries where foreign firms are obliged to have

a local partner through a JV if they want to enter a foreign country. For instance, foreign carmakers that want to enter in China are obliged to establish a greenfield JV with a local partner. Thus, in our sample, the choice between the two partnerships is not affected by legal requirements. The deals are made in Italy and each of them involves a local firm (as a partner in a greenfield JV or target of a partial acquisition) and a foreign firm. Foreign firms come from 32 different countries. Following prior research, we define a partnership using the threshold of 95 per cent of equity (Chen, 2008a; Padmanabhan & Cho, 1999). Because we are interested in establishment mode choice, thus first-time entry, we selected only deals in which the foreign firm has a null initial stake in the local firm. Thus, the partial acquisition is not the result of an incremental acquisition, and the greenfield JV is created with the selected investment. To be sure to select only the strategic investments, excluding all the financial ones, the foreign firm should acquire at least 10 per cent of stakes. Overall, our sample consists of 355 foreign entries, 130 out of which are greenfield JV and 225 partial acquisitions.

Variables and measures

Dependent Variable

Following prior studies, we measure our dependent variable, the establishment mode choice, through a binary variable which takes the value of 1 if the foreign entry is a greenfield JV, and 0 otherwise.

Independent Variables

We captured firms' intangible knowledge with the book value of intangible assets one year before the investment. We lagged these two variables by 1 year because we assume that exists a minimum time lag between the effect of the book values variables and the decision of the establishment mode choice. Thus, the first and the second hypothesis are tested respectively by the following variables: *Local Intangible* and *Foreign Intangibles*.

To test the third hypothesis, we construct a binary variable *Industrial Cluster*. This is coded “1” if the city of the local partner is located in an industrial cluster in 2001 and/or 2011. Data on the cities belonging to an industrial cluster in 2001 and 2011 have been collected from the Italian National Institute of Statistics (ISTAT), for 2001 and 2011.

The specific knowledge of the industry might have a different impact on the establishment choice if the investing company is going abroad to manufacture a product that does not produce elsewhere. In this case, the MNE lacks the product-specific knowledge and to acquire this tacit knowledge in disembodied forms through the greenfield is difficult and costly (Slangen & Hennart, 2007, Larimo, 2003). MNEs that are entering a foreign market to manufacture a product unrelated to their business are more likely to choose a partial acquisition investment. To measure the effect of the product specific knowledge we build a binary variable (*Product Knowledge*) equal to “1” if the local partner is a manufacturing firm active in a different 3-digit SIC industry from the investing firm (Hennart et al., 2008).

Control Variables

According to the different theoretical frameworks, previous studies on establishment modes have identified determinants at the firm, country, and industry level (Dikova & Brouters, 2016). However, for the reasons explained above and in the light of the study of Chen (Chen, 2008a) it is difficult to extrapolate general conclusions from previous studies and to infer the choice between greenfield JV and partial acquisition from them. We included some of the most used variables in previous studies as per the transaction cost theory to control for their effect on the establishment choice.

Diversification. Diversified firms are able to reduce the transaction costs related to new acquisition investments because through diversification they have developed management control system capabilities (Drogendijk & Slangen, 2006; Slangen & Hennart, 2008). We

measure the diversification with the number of 3-digit SIC industries in which the investing firm is active.

Country Experience. Uncertainty increases the costs of integration. Thus, is more likely that firms with limited country experience prefer acquisition rather than greenfield to exploit partner's country-specific knowledge and to overcome the liability of foreignness (Larimo, 2003). Experience in the host country allows the investing firm to have a specific knowledge of the host country reducing the transaction costs. Thus, this experience is likely to reduce the uncertainty surrounding the investment and to affect positively the probability of greenfield JV. We measure the *Country Experience* with a binary variable coded "1" if the MNE made previous investments in Italy.

Psychic Distance. Psychic distance is likely to positively affects the probability of greenfield investments because it makes difficult to transfer MNE's practices in the acquired firm. While, in a new subsidiary established from scratch, the employees are more likely to accept the practices. Thus, the transaction costs are lower with a greenfield investment. We measure the psychic distance with the composite index of Dow and Karunaratna (2006) (Dow & Larimo, 2011).

Industry Growth. In industries growing at a fast rate the entry barriers deriving from the incumbent firms are likely to be more severe than in industries with a low growth rate. Thus, high industry growth is likely to affect positively the likelihood of a greenfield rather than an acquisition (Brouthers & Brouthers, 2000; Somlev & Hoshino, 2005). We collected data on the industry growth rate from Eurostat website. These data are 1 year lagged.

Relative Size. We controlled for the effect of the relative size of the two firms using the ratio of total sales between the two (Makino & Neupert, 2000). The greater is the local firm relative to the MNE, the more difficult will be for the MNE to acquire the local.

Time. Because the sample contains investments made over a ten-year period, ranging from 2005 to 2015, we control for the time fixed effect using a dummy variable for each year. Our baseline dummy is the year 2005.

RESULTS

Descriptive Statistics

Table 1 provides detailed information on the variable we use.

Insert Table 1 about here

The descriptive statistics of the continuous variables and the frequency of the binary variables appear respectively in Table 2 and 3.

Insert Table 2 about here

Insert Table 3 about here

In table 4 we provide the distribution of the established partnerships per year. We examine the variance inflation factors in order to test for multicollinearity. All the scores are below 2, thus multicollinearity is not an issue.

Insert Table 4 about here

We present the variance inflation factors and the correlation matrix in Table 5.

Insert Table 5 about here

Hypotheses Testing

Our unit of the analysis is the partnership established between two firms. In order to test our hypotheses, we assess if firm intangible knowledge, industrial cluster knowledge, and product specific knowledge affect the type of partnership. Because our dependent variable is binary, we use a logistic regression model. Table 6 shows the results of the 5 models estimated. Model 1 presents the control model without any variable related to the knowledge effect. From Model 2 to Model 5 we add respectively one variable at a time. Thus, Model 5 is our complete model. We reported the marginal effect of the coefficients in the last column of Table 6. In testing Hypothesis 1 and 2, we focus on the effect of firms intangible knowledge, respectively for the local and the foreign partner. While the effect is significant and positive for the local firm ($p < 0.001$), it is not significant for the foreign partner. Thus, Hypothesis 1, differently from Hypothesis 2, is supported. If the local firm owns high level of intangible knowledge is more likely (with an increase by 2% of the probability) to establish a greenfield JV, rather than a partial acquisition with a foreign partner. The coefficient of *Industrial Cluster* is negative and significant ($p < 0.05$). Thus, we find support also for Hypothesis 3. When the foreign firm makes an investment in an industrial cluster is more likely to establish a partnership through a partial acquisition in order to acquire the knowledge of the local incumbent firm. Indeed, the probability of a greenfield JV decreases by the 30 per cent. The coefficient of *Product Knowledge* is negative and significant ($p < 0.10$), supporting Hypothesis 4. When the foreign firm decides to establish a partnership with a local partner because wants to acquire its product specific knowledge a partial acquisition is more likely. The probability of a greenfield JV decreases by 12 per cent. Among the control variables we found a significant effect only for the

Psychic Distance. An increase in the Psychic Distance determines a higher probability (+ 5%) of a greenfield JV rather than a partial acquisition. Thus, the higher psychic distance between home and host countries, the higher is the need for a local partner to understand the local business. However, a high level of psychic distance between partners could also mean high integration costs in a partial acquisition. Thus, a greenfield JV is more likely.

Aikake Information Criterion (AIC), Hosmer–Lemeshow statistic and the Pseudo R^2 are provided for each model. The AIC value decreases by Model 1 to 5, indicating that the quality of the model specification increases. The Hosmer–Lemeshow statistic for Model 5 has a χ^2 value with 8 degrees of freedom equal to 7.06 ($p=0.5302$). Model 5 correctly classifies 72.39% of observations.

 Insert Table 6 about here

Robustness Tests

We performed a variety of robustness tests to support our results. We use alternative measures for independent variables. We use the Research and Development intensity rather than Intangible assets to capture the effect of intangible knowledge of both the local and the foreign firm. Results are consistent with those presented in Table 6. The first hypothesis is still supported, while the second is not. We use the Cultural distance measured according to Kogut and Singh (Kogut et al., 1988) index instead of Psychic distance. We measure the relative size of the two partners in terms of the number of employees instead of total sales. Results are consistent.

Endogeneity

Since intangible assets may not randomly be distributed we also test perform some additional endogeneity tests. To address the non-random treatment effect of intangible knowledge we used

the propensity score matching technique (Dehejia & Wahba, 2002; Reeb et al., 2012). Thus, we address the endogeneity issue eventually derived from the two variables: Local Intangibles and Foreign Intangibles. We do this using a propensity score matching methodology. According to this procedure, we build a new variable High Intangible, which is equal to 1 if the firm has Intangible assets higher than the average of its industry, 0 otherwise. The propensity matching methodology matches firms in the sample on the basis of all the variables used in the logistic regression. They differ exclusively for the level of intangibles, higher or lower than average. With this method, we eliminate all differences among firms. Then, we estimate the average treatment effect of high intangible assets on the probability to choose a greenfield joint venture rather than a partial acquisition. Results are consistent. Hypothesis 1 is still supported, while we do not find support for Hypothesis 2.

First, we estimate the propensity score, which is the probability, given a set of covariates, that a firm has intangible assets higher than the average of its industry based on a matching algorithm. Then we match the two samples on their predicted propensity. In this way, we create statistically matched pairs of firms that differ exclusively in terms of the level of intangible assets and are equal for all the other observed characteristics (covariates included in the logistic regression). Indeed, as explained by Caliendo and Kopeinig (2008, pp.32), this procedure allows “to find in a large group of non-participants those individuals who are similar to the participants in all relevant characteristics. That being done, differences in outcomes of this control group and of participants can be attributed to the programme.” We perform a one-to-one matching without replacement in a descending order (Reeb et al., 2012). This approach, highly restrictive, matches only the nearest neighbour propensity score. Finally, as the last step in the procedure, we estimate the effect to be a firm with higher intangible assets than average on the probability to choose a greenfield joint venture, using only firms in the matched sample. To test our first and second hypothesis we repeat this procedure changing the variable selected to build the

propensity score. Thus, while to test the first hypothesis we calculate the probability to be a local firm with a high level of intangible assets, to test the second hypotheses we calculate the probability to be a foreign firm with a high level of intangible assets.

We report the covariate balancing tests for the three models in Table 7. The results of this test show that the matching procedure has effectively removed the differences between the two samples both for the local firms and foreign firms. Indeed, the median bias is reduced respectively by 56,19% for local firms, and by 38,35% for foreign companies. Thus, the matching procedure was effective in reducing the bias and after matching none of the covariates is significant. The pseudo R-squared decreases approximately to zero in the case of local firms (5%), while for foreign firms is 12%. This sharp decrease testifies that covariates do not have explanatory power in the matched samples.

The values of the average treatment effects are reported in Table 8. In the case of local firms, having a high level of intangibles increases the probability of greenfield JV by 14.43 per cent, while for foreign firms it increases by the 13.89 per cent.

These results support our hypotheses that intangible knowledge affects the choice of the type of partnership, and in particular, firms owning this type of knowledge are more likely to establish a greenfield JV, both in the case of local and foreign firms.

Insert Table 7 about here

Insert Table 8 about here

DISCUSSION AND CONCLUSIONS

Our paper examines the effect of various types of knowledge on the choice between different types of partnerships: greenfield JV and partial acquisition. Previous research on entry modes has mainly investigated the role of knowledge as a driver of FDIs, without distinguishing

between different types of knowledge and differentiating among FDIs. Moreover, the literature on establishment modes has scarcely investigated the determinants of this choice (Chen, 2008; Arslan & Larimo, 2015). We fill in this gap in the literature investigating the role of intangible knowledge, industrial district specific knowledge, and product specific knowledge on the choice between these two types of FDIs. Our findings show that when the local firm owns a high level of intangible assets is more likely that the foreign partner will establish a greenfield JV with it, rather than to acquire a portion of its stakes. This because the local firm can share its intangible assets, codified in the books, through a greenfield JV. These results are supported also when we address the endogeneity issue. Moreover, the knowledge related to industrial cluster has the opposite effect on the choice. A firm that is interested in acquiring the knowledge external to the firms and spread in the cluster, but also the knowledge internal to an incumbent firm (its network relationships) will prefer to make a partial acquisition of a local firm, rather to establish a greenfield JV. Finally, we demonstrate also that greenfield JV is the preferred solution whenever the foreign firm is interested in having access to the specific knowledge of a local firm on how to manufacture a product or related to the industry. Everything else equal, for the local firm, is better to sell a portion of its stakes rather than to replicate this knowledge in a greenfield JV. Indeed, this knowledge is highly experience related and require time to be replicated even for a firm that already owns it.

Our study offers three main contributions. First, the TCE theory states that firm-specific assets and different types of firm-specific knowledge have different effects on entry mode choice. We investigate the different role of knowledge in the choice between greenfield JV and partial acquisition. While previous studies generally claim that specific assets have an effect rather than another on entry mode we go into detail and we demonstrate that specific assets and different types of specific knowledge have different effects on the mode selected. We

investigate the different role of knowledge in the choice between greenfield JV and partial acquisition.

Second, we contribute to the literature on establishment mode. The choice between greenfield JV and partial acquisition has been overlooked in previous studies, with only a few exceptions (Arlsan and Larimo, 2015; Chen, 2008), we contribute to the literature shedding light on this specific choice. Even if the establishment and entry mode decisions are determined by a different set of factors, the choice between greenfield and acquisition should be studied taking into consideration also the presence or not of a partner. Indeed, if a firm decided to have a partner, it is important to know which are the discriminants in the decision to establish a greenfield JV with it or to partially acquire it. We add to the limited literature on the choice between greenfield JV and partial acquisition. Entering a foreign country with a local partner requires to choose the establishment mode (greenfield or acquisition) on the basis of the type of knowledge transacted. We show that this subject deserves more attention and that it is a promising topic.

Third, we contribute to the literature on industrial clusters. The industrial cluster specific knowledge is an important variable scarcely investigated in entry mode studies. Future studies should investigate further this aspect in entry mode choices. Indeed, while previous literature claimed that the location is an important driver of entry modes, it failed to investigate the role of clusters. Previous studies on entry modes focused more on the location at the country level. To fully benefit from the entrance in an industrial district the foreign firm has to partially acquire an incumbent firm. Using a single host country we were able to study more deeply the different location in one single country, demonstrating that the cluster location is an important determinant of transaction costs and therefore of the establishment mode decision. According to our results, we state that the network specific knowledge is a significant factor.

Our study also has some limitations that should be considered when interpreting the results. First, we do not have data local partner's network relationships. Moreover, our measure of experience is a binary variable. Thus, the complexity and the heterogeneity of this variable is limited. A further issue that was not assessed in this study is the effect of the ownership of the two companies. Future research could study how the family, financial, state control affects establishment mode decision.

In spite of these limitations, our paper contributes to the literature on partnerships by investigating the effect that different types of specific knowledge can have on the choice of the establishment mode. We encourage future research to investigate further the role of industrial clusters on the choice of different entry modes. Scholars on the two streams of research should integrate these different kinds of literature.

Our paper has also important implications for managers. Indeed, as claimed by the most important consulting firms in their recent reports, partnerships, JV, strategic alliances and M&As are increasingly important and are dominating the landscape of strategic deals. Thus, is crucial to provide guidance to managers that needing a partner they have to choose how to establish the partnership: when is better through a JV and when through a partial acquisition.

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Figure 1 The theoretical model

	Owner of the knowledge	
	Local Firm	MNC investing firms
High codifiability Low embeddedness	Greenfield JV (<i>Knowledge: intangible assets</i>)	Greenfield JV (<i>Knowledge: intangible assets</i>)
Low codifiability High embeddedness	Partial acquisition (<i>Knowledge: clusters relationships or product knowledge</i>)	

Table1 Variables description

Name	Description (Source)
Local Intangibles	Intangible assets (balance sheet value) of the local firm, 1-year before the investment (Orbis)
Foreign Intangibles	Intangible assets (balance sheet value) of the foreign firm, 1-year before the investment (Orbis)
District Knowledge	Dummy =1 if the local firm is located in an industrial district (Italian National Statistical Institute)

Product Knowledge	Dummy =1 if the Foreign and Local firm are in two different sectors (3-digit SIC) and the local partner is a manufacturing firm (Orbis)
Diversification	Number of sectors in which the foreign firm operates
Industry Growth	Annual % growth in the foreign country of the gross value added by NACE industry 2-digit (Eurostat)
Psychic Distance	Psychic distance between foreign-home and local-host (Italy) country, calculated as the Dow and Karunaratna (2006) index
Country Experience	Dummy =1 if the foreign firm made previous deals (proxy for experience) in the host country Italy (Zephyr)
Relative Size (Sales)	Relative size in terms of sales of the local firm in comparison to the foreign, 1-year before the investment
Time	Dummies identifying the year during which the deal has been concluded (Zephyr)

Table 2 Descriptive statistics of the continuous variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Local Intangibles	355	412287.9	2505984	1	2.58e+07
Foreign Intangibles	355	2036114	6912123	1	4.25e+07
Diversification	355	1.909859	1.561467	1	8
Industry Growth	355	0.0167042	0.0668002	-0.23	0.48
Relative Size	355	328891.1	4281447	0.9997013	7.89e+07
Psychic Distance	355	1.331042	1.462213	0.45	7.79

Table 3 Frequency of the binary variables

Variable	Absolute Frequency	Relative Frequency
Partnership	130	36.62
Industrial Cluster	41	11.55
Product Knowledge	94	26.48
Country Experience	131	36.90

Table 4 Year of the partnership establishment

Year	Absolute Frequency	Relative Frequency
2005	33	9.30
2006	43	12.11
2007	49	13.80
2008	34	9.58
2009	24	6.76

2010	26	7.32
2011	21	5.92
2012	17	4.79
2013	41	11.55
2014	36	10.14
2015	31	8.73
Total	355	100.00

Table 5 Variance inflation factors and correlation matrix

	VIF	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Partnership	1.18	1									
2. Local Intangibles	1.15	0.2097*	1								
3. Foreign Intangibles	1.17	0.0803	0.1261*	1							
4. Industrial Cluster	1.11	-0.1649*	0.0586	-0.0365	1						
5. Product Knowledge	1.12	-0.1116*	0.0935	-0.0546	0.1427*	1					
6. Diversification	1.08	0.0327	0.0082	-0.2135*	-0.0639	-0.1291*	1				
7. Industry Growth	1.10	0.0472	0.1132*	0.0701	-0.0760	-0.0402	0.0015	1			
8. Relative Size	1.05	0.0936	0.1326*	-0.0816	-0.0264	-0.0402	0.0693	0.0338	1		
7. Country Experience	1.15	0.0246	0.0077	0.2733*	-0.0389	-0.1149*	-0.0344	0.1428*	-0.0568	1	
10. Psychic Distance	1.12	0.0290	-0.0903	-0.0766	0.2128*	0.1762*	0.0034	-0.0245	-0.0136	-0.0303	1

Note: VIF scores and pairwise correlations are not reported for Year dummies.

Table 6 Results of the logistic regressions (Dep. Var. equal 1 if the partnership is a greenfield JV)

	Model 1	Model 2	Model 3	Model 4	Model 5	Marginal effect
Local Intangible		0.105*** (0.0291)	0.101*** (0.0293)	0.113*** (0.0301)	0.122*** (0.0306)	0.0224
Foreign Intangible			0.025 (0.0216)	0.028 (0.0221)	0.026 (0.0222)	0.0047
Industrial Cluster				-1.602** (0.520)	-1.606** (0.525)	-0.2950
Product Knowledge					-0.645* (0.313)	-0.1185
Diversification	0.037 (0.0770)	0.042 (0.0788)	0.062 (0.0809)	0.047 (0.0822)	0.022 (0.0838)	0.0041
Industry Growth	-1.174 (1.927)	-2.272 (2.151)	-2.406 (2.174)	-3.339 (2.260)	-3.491 (2.290)	-0.6412
Relative Size	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	1.23e-07
Psychic Distance	0.117 (0.0843)	0.146 (0.0874)	0.152 (0.0871)	0.232* (0.0934)	0.264** (0.0970)	0.0486
Country Experience	-0.097 (0.254)	-0.090 (0.259)	-0.164 (0.268)	-0.182 (0.274)	-0.249 (0.279)	-0.0458
Year						
2006	0.329 (0.493)	0.206 (0.501)	0.155 (0.505)	0.300 (0.515)	0.410 (0.520)	.0859
2007	0.759 (0.480)	0.628 (0.489)	0.610 (0.489)	0.576 (0.498)	0.669 (0.503)	.1419
2008	0.644 (0.523)	0.576 (0.534)	0.592 (0.534)	0.773 (0.546)	0.941 (0.556)	.2008
2009	0.973 (0.560)	0.922 (0.575)	0.862 (0.579)	0.761 (0.586)	0.896 (0.591)	.1912
2010	-0.061 (0.569)	-0.144 (0.581)	-0.170 (0.582)	-0.186 (0.589)	-0.147 (0.591)	-.0292
2011	-0.058 (0.600)	-0.029 (0.607)	-0.014 (0.610)	0.024 (0.620)	0.119 (0.625)	.0243
2012	0.459 (0.618)	0.309 (0.635)	0.303 (0.634)	0.464 (0.653)	0.574 (0.658)	.1213
2013	-0.866 (0.555)	-0.980 (0.566)	-0.969 (0.566)	-0.961 (0.575)	-0.831 (0.580)	-.1472
2014	-1.355* (0.625)	-1.507* (0.632)	-1.522* (0.634)	-1.507* (0.644)	-1.359* (0.649)	-.2153
2015	-1.544* (0.686)	-1.756* (0.691)	-1.792* (0.696)	-1.715* (0.704)	-1.604* (0.709)	-.2401
Constant	-0.784 (0.420)	-1.418** (0.463)	-1.580** (0.487)	-1.630*** (0.493)	-1.583** (0.497)	
Observations	355	355	355	355	355	
Log-likelihood	-208.483	-201.503	-200.843	-194.968	-192.772	
AIC	448.966	437.007	437.686	427.936	425.544	
Pseudo-R²	0.106	0.136	0.139	0.164	0.173	

Standard errors in parentheses * p<0.05, ** p<0.01, *** p<0.001

Table 7 Balancing test

Sample	Ps R2	LR chi2	p>chi2	Mean Bias	Median Bias	B	R	% Var
High Local Intangibles								
Unmatched	0.051	21.09	0.002	17.1	19.3	27.4*	18.65*	75
Matched	0.017	8.78	0.186	9.3	8.4	16.2	99.72*	100
High Foreign Intangibles								
Unmatched	0.124	52.71	0.000	22.2	13.3	68.5*	0.22*	60
Matched	0.023	9.31	0.317	10.1	8.2	35.8*	0.78	60

Table 8 Average Treatment Effect

High Local Intangibles	Sample	Treated	Controls	Difference	S.E.	T stat
Greenf_JV	Unmatched	.385026738	.280991736	.104035002	.055291261	1.88
ATT	Matched	.385026738	.240641711	.144385027	.075353169	1.92
High Foreign Intangibles						
Greenf_JV	Unmatched	.381944444	.31097561	.070968835	.05428191	1.31
ATT	Matched	.381944444	.243055556	.138888889	.082071527	1.69