

OWNERSHIP IN CROSS-BORDER ACQUISITIONS AND ENTRY TIMING OF THE TARGET FIRM¹

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Abstract:

We examine how the entry timing of targets influences the initial and the post-entry percentage of ownership acquired by multinationals. We argue that targets that have entered earlier into the market launch signals of lower uncertainty in contexts where first-mover advantages exist. As a consequence, multinationals are willing to buy higher levels of ownership in these early entrant targets and to increase their participation in the subsidiary equity in the post-entry stage. Finding support for these relationships, we study how market age and innovative behaviour of the target reduce the importance of leading time as determinant of the ownership decision.

Keywords: *cross-border acquisitions, initial ownership, ownership variation, leading time, first-mover advantages, market age, technological change*

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1. INTRODUCTION

Cross-border acquisitions (CBAs), as key mechanisms in the internationalization of multinational enterprises (MNEs), have received increasing attention from international business literature (Bauer et al., 2018; Cuypers, Ertug, & Hennart, 2015; Fuad & Gaur, 2019; Kumar, et al., 2019; Lahiri, Elango, & Kundu, 2014; Powell & Rhee, 2016). One of the most important decisions that firms have to take when they face a CBA is the level of equity ownership, as it has implications in terms of control, risk and resource commitment (Anderson & Gatignon, 1986) and the likelihood of survival (Li, 1995). In order to select the adequate level of ownership, MNEs should balance the expected benefits and the costs derived from different levels of ownership (Chari & Chang, 2009), assessing the contribution of the acquisition in the generation of competitive advantages and the subsequent risks. These risks increase in contexts where assessment of the potential value provided by the acquisition is more complex. In contrast to domestic acquisitions, MNEs that expand abroad through CBAs have to cope with higher levels of uncertainty derived from the differences in economic, social and political structures compared to their home countries (Shimizu, Hitt, Vaidyanath, & Pisano, 2004). This uncertainty can be seen both from an *ex ante* and an *ex post* perspective (Chari & Chang, 2009). *Ex ante* uncertainty is related to information asymmetries and adverse selection problems, while *ex post* uncertainty refers to problems of moral hazard and opportunism related to managers' discretion in post-acquisition decisions. Both types of uncertainty make it difficult for MNEs to assess the potential of value creation in CBAs, and reduce the incentives to acquire high levels of ownership in the new subsidiary (Chari & Chang, 2009).

Identifying the factors that influence the uncertainty that acquirers face will help companies to improve their decision-making process. Previous studies have identified

several external and internal factors that influence the percentage of ownership held by MNEs (Ilhan-Nas et al., 2018; Xie, Reddy, & Liang, 2017). Malhotra and Gaur (2014) demonstrate how geographic distance influences both *ex ante* and *ex post* uncertainty. Similarly, other authors demonstrate that environmental distance favours or diminishes the level of uncertainty that affects the firm in its decision (Dow, Cuypers, & Ertug, 2016; Liou, Chao, & Yang, 2016). Other external factors, such as country risk (Chari & Chang, 2009), institutional pressures (Chan & Makino, 2007) and political influences (Pan et al., 2014), have been considered. The literature has also analysed the role in the ownership decision of MNE-level factors, such as international experience in different environments (Powell & Rhee, 2016) and the adoption of English as an external reporting language in the company (Jeanjean et al., 2015). However, these prior studies have mainly focused on characteristics of home and host markets and on the attributes of the acquirer firm, ignoring the study of one of the key parties influencing the level of uncertainty—the target firm. Except for one study (Chari & Chang, 2009), the influence of the target firm’s characteristics in the decision on level of ownership acquired by the MNE has been underexplored.

Targets possess attributes that can impact the *ex ante* and *ex post* uncertainties of the acquisition process and thus influence MNEs’ incentives to acquire a higher or lower level of ownership. In contexts where first-mover advantages exist, earlier entrants obtain a higher performance than late newcomers (Lieberman & Montgomery, 1988, 1998). The entry timing of the target firm can act as a signal for its potential to be profitable in the future, reducing uncertainty and thus increasing the MNE’s willingness to hold a higher level of ownership. To our knowledge, an analysis of entry timing has not been previously integrated into the study of equity ownership in CBAs.

Furthermore, previous studies have adopted a static viewpoint by focusing on the initial ownership acquired by MNEs. In contrast, this research insists on the importance of considering the CBA as a dynamic process that begins with selection of the target and negotiation of the initial level of equity to acquire, and continues with the post-acquisition period during which the MNE should integrate the subsidiary into its organizational structure (Shimizu et al., 2004). After the initial acquisition, where *ex ante* and *ex post* uncertainties can be seen as key factors in determining the ownership initially acquired, MNEs' perception of the potential of the target to generate value may change as a consequence of learning; thus, MNEs might adapt their levels of ownership to the perceived uncertainty. For instance, Inkpen and Beamish (1997) posit that partial ownership is usually turned into full ownership as MNEs gain knowledge of the local conditions and as partner dependency decreases. Other studies show that companies complete acquisitions sequentially, not all in one go at the outset (Xu, Zhou, & Phan, 2010). In this vein, studies have recently started to analyse the changing position of MNEs' commitment when developing CBAs to gain strategic flexibility. As MNEs face initial *ex ante* and *ex post* uncertainty, they prefer to enter through low-commitment modes. Once they have gained experience and information from the new market and partners, they can decide to increase their commitment (e.g. establish a wholly owned subsidiary), to decrease it or even to terminate the relationship (Petersen, Welch, & Welch, 2000). Although recent studies have shed light on this topic (Li & Li, 2010; Puck, Holtbrügge, & Mohr, 2009; Putzhammer et al., 2018; Putzhammer, Puck, & Lindner, 2019; Santangelo & Meyer, 2011; Swoboda, Olejnik, & Morschett, 2011), prior studies have not considered the role of entry timing of the target firm in signifying potential performance that can affect post-entry ownership variations.

The objective of our study is to analyse the effect of the entry timing of the target firm on the level of ownership held by the MNE when a CBA takes place by integrating the equity ownership and first-mover literatures through a dynamic perspective. Firstly, we propose that, as the time elapsed between the entry of the pioneer and the target—the leading time—increases, the ownership of that target initially acquired by the MNE will be lower. Secondly, with the aim of incorporating a dynamic perspective into the study, we also analyse the effect of leading time on variations in the level of ownership after the initial acquisition. Finally, given that first-mover advantages erode with market age and the introduction of new technologies (Gómez, Lanzolla, & Maícas, 2016), we expect that these two moderating factors will weaken the relationship between leading time and initial ownership and post-entry variations of ownership.

The contribution of this article is twofold. Firstly, while previous studies on ownership equity have mainly focused on country-level and MNE-level determinants, we focus on a key target attribute—namely, the leading time between the entry of the pioneer and that of the target into the market. This is a key variable that influences current and potential performance in those industries where first-mover advantages exist (Gómez & Maícas, 2011). In this way, we integrate the first-mover advantages literature into the analysis of ownership strategy in CBAs, responding to the Zachary et al.'s (2015) call for a broader view of business entry. These literatures have usually been treated independently, with the exception of Isobe, Makino, and Montgomery (2000), who find a negative relationship between the degree of a foreign firm's control over a joint venture and the early entry of this foreign firm in an emerging market.

Secondly, we incorporate a dynamic perspective into the study by analysing the effect of leading time not only on the initial level of acquired ownership, but also on the variation in ownership level in the post-entry period. Although prior literature has

recently started to analyse variation in entry modes and ownership strategies over time, the effect of leading time on this dynamic process has not previously been analysed. Moreover, as the market matures and subsidiaries introduce new technologies, first-mover advantages are eroded. This will make leading time less relevant as a determinant of the ownership decision.

2. LITERATURE REVIEW

2.1. Initial ownership level in foreign market entry

Choosing the initial level of ownership in a CBA is an important decision when MNEs enter into foreign markets. Acquisition of a higher level of ownership in the target firm allows complete control over operations, facilitating carrying out the functions of management within the company and access to a greater percentage of the profits; but it also entails greater risks and costs due to the commitment of resources and a lack of flexibility (Anderson & Gatignon, 1986). Alternatively, a lower level of ownership provides access to complementary resources that were not previously available and facilitates the diversification of risks (Anderson & Gatignon, 1986). The flip side of a lower level of ownership is that it leads to potential opportunistic costs associated with the post-acquisition integration, and to a lack of control. Previous studies have analysed the optimal percentage of ownership held by MNEs in terms of these costs and profits, highlighting the role of market imperfections in this important decision (Chari & Chang, 2009; Li & Li, 2010). Market imperfections, such as adverse selection and moral hazard, result in higher transaction costs and arise from a lack of knowledge of the host country (Malhotra & Gaur, 2014).

When MNEs expand to a new host market through a CBA, they often lack sufficient knowledge of the new context. The environment in their home country may be substantially different, which increases the challenge of understanding the complexities

of doing business in the host country (Kostova, 1999; Mezas, 2002). Because of differences in culture, norms and regulations, political and social structures, or economic conditions, companies face the difficulties inherent in being foreign in the new environment (Hymer, 1960, 1976; Johanson & Vahlne, 1977). The consequent information asymmetry does not allow them to assess properly the value of the acquired target and is manifested in two forms: the *ex ante* problem of adverse selection and the *ex post* problem of moral hazard.

Ex ante uncertainty, rooted in the information economics literature (Akerlof, 1970), arises because acquirers need to gather information about the target firm, the industry in which it operates and the country where it is established (Shimizu et al., 2004). This information helps acquirers to evaluate and then manage the target firm. In an acquisition, targets have better information about themselves than the acquirer has. The target company has greater incentives to disclose positive information to potential acquirers, which leads to an adverse selection problem (Balakrishnan & Koza, 1993; Reuer & Koza, 2000). As a possible solution to asymmetric information, MNEs may buy a small share in the target firm. Prior shareholders of the subsidiary will retain higher levels of equity to transmit a credible signal of confidence about the quality of the target (Chen & Hennart, 2004).

The *ex post* argument is grounded in the literature on transaction costs economics (Anderson & Gatignon, 1986; Hennart, 1991; Williamson, 1979). After the MNE has acquired a subsidiary, the latter has tacit knowledge about the business that can be critical to working effectively in the local environment, and thus to the success of the firm. Local managers understand suppliers and governments, have prior experience in managing relationships with the local workforce, and are familiar with the preferences of consumers. Therefore, MNEs prefer to delegate responsibilities to them (Kogut & Singh,

1988). The acquirer has to face the risk of a change in the motivation and behaviour of local managers after the acquisition. This lower motivation comes from the erosion of managers' incentives (Williamson, 1985) since, in the previously independent local company, they were subject to the discipline of the stock market and now they do not benefit from their direct interest in the ownership (Chari & Chang, 2009). In addition, Chen and Hennart (2004) point out that since acquisition contracts cannot be fully specified, managers of target firms may behave in an opportunistic way after the acquisition. Managers may delay the transfer of critical tacit assets such as knowledge and relationships with the local market to continue to be useful to the acquirer. Anderson and Gatignon (1986) posit that to confront this internal uncertainty, the acquirer should know how to evaluate managers' results and incentivize them. This may be easier in domestic acquisitions, but in a CBA it is necessary to have prior international experience to be able to identify and confront managers' opportunistic behaviour. When international experience is low or home and host institutional contexts differ, low control levels can be more efficient (Anderson & Gatignon, 1986). As a consequence, the acquirer will prefer to take less equity to preserve the incentives of the target company's managers to continue working with the same self-demanding levels as before the acquisition (Dow et al., 2016).

In sum, when companies are faced with high uncertainty, shared ownership structures can be employed to reduce the problem of adverse selection and moral hazard, and MNEs will tend to acquire lower levels of ownership (Malhotra & Gaur, 2014). Shared ownership encourages the acquired firm to disclose accurate information and enhances co-operation in the post-acquisition phase.

Previous literature has analysed factors that influence uncertainty and the subsequent ownership decision. For instance, geographic, institutional, linguistic and religious distances have been shown to increase uncertainty and reduce the level of

ownership held by MNEs (Cuypers et al., 2015; Demirbag, Glaister, & Tatolu, 2007; Malhotra & Gaur, 2014), while MNE international experience increases the level of equity ownership (Powell & Rhee, 2016). However, these prior studies have mainly focused on characteristics of home and host markets and on the attributes of the acquirer firm, ignoring the study of one of the key parties influencing the level of uncertainty, the target firm. The influence of the characteristics of the subsidiary in the decision on the level of ownership acquired by the MNE has been underexplored.

2.2. Ownership variation during the post-entry time

Once the acquirer has invested in the target firm, uncertainty may be reduced because the former can obtain direct information from the company, the local managers and the environment, which can lead to post-entry variation in its resource commitment in the subsidiary (Clark, Pugh, & Mallory, 1997; Petersen et al., 2000; Puck et al., 2009; Putzhammer et al., 2018; Putzhammer et al., 2019; Swoboda et al., 2011). Therefore, acquirers that entered with low control modes can vary their ownership in the target firm once they gain experience and learning. This ability and preparedness to change ownership in the post-entry time has been conceptualized as “strategic flexibility” (Petersen et al., 2000, p. 689). Although research in this field is still scarce, some authors have tried to determine the factors that influence post-entry changes in internationalization mode (Calof & Beamish, 1995; Petersen et al., 2000), in conversion from joint ventures to wholly-owned subsidiaries (Puck et al., 2009), in increased ownership (Jeanjean et al., 2015; Song, 2017), or in divestment and termination (Belderbos & Zou, 2009; Petersen et al., 2000). Based on organizational learning and experiential learning theories, we can group the determinants of this variation in the resource commitment during the post-entry time into four categories: internal

environment, external environment, managerial attitude and performance (Swoboda et al., 2011).

The internal environment refers to factors that are potentially under the control of a firm, such as strategy and resources (Calof & Beamish, 1995). After entry, the MNE obtains direct information from the activity of the target and is able to better evaluate its performance and managers' behaviour (Petersen et al., 2000), and the sources of uncertainty that existed prior to the entry tend to disappear. With this additional information, the MNE could decide to increase its resource commitment. It should be noted that the knowledge the MNE gains from the target can also be negative (e.g. because the MNE becomes aware that the initial valuation of the target was overestimated) and decide on disinvestment and even termination of the venture (Driffield, Mickiewicz & Temouri, 2016; Petersen et al., 2000).

Regarding the external environment, changes in factors that are outside the direct control of the MNE, such as political stability, government policy or competition, could cause changes in ownership levels. Deterioration of environmental factors could lead to disinvestments, while their improvement could result in a greater commitment of resources (Calof & Beamish, 1995).

Swoboda et al. (2011) also discuss about managerial attitudes as determinants of changes in ownership levels, where attitudes are defined as managers' intentions, beliefs and feelings about commitment (Calof & Beamish, 1995). Decisions are not always made rationally. Sometimes, managers' decisions are based on intuition, which can be equal to or more efficient than rational decisions (Dane & Pratt, 2007). The motivation to increase the commitment of resources may derive from managers' personal perception of favourable conditions (Boddeyn, 1985), or by personal attitudes (Fletcher, 2001).

Finally, the performance achieved by the target firm can also influence the level of commitment (Swoboda et al., 2011). The current and potential performance of the target is a decisive variable to change their ownership level in the post-entry time. If MNEs estimate that the target has great potential performance in the future, the probability of increasing the resource commitment will be higher; however, if they estimate low future performance, the effect may be the opposite (Petersen et al., 2000).

2.3. Entry timing and first-mover advantages

The literature on entry timing has been extensive since the publication of Lieberman and Montgomery's seminal article in 1988. First-mover advantages arise when the pioneers in a market obtain benefits in terms of profitability, value creation or survival (Lieberman & Montgomery, 2013). These advantages derive from the exploitation of scale and learning economies and reputation advantages, the creation of customers' switching costs, or the ability to create links with key stakeholders such as local government or suppliers (Gómez & Maícas, 2011; Lieberman & Montgomery, 1988). There is also a literature that focuses on the existence of first-mover disadvantages (Lieberman & Montgomery, 1988) that derive from the ability to 'free-ride' in first-mover investments, the resolution of technological and market uncertainty, the existence of technological discontinuities that provide 'gateways' to new entrants, and early entrants' difficulties adapting to environmental changes (Lieberman & Montgomery, 1988).

Focusing on a context where first-mover advantages exceed the disadvantages, academic research has identified three groups of factors under which early entry is a profitable strategy (Suarez & Lanzolla, 2007). First, resources and capabilities at the firm level, such as management skills (Murthi, Srinivasan, & Kalyanaram, 1996) and product development skills (Robinson & Chiang, 2002) favour the exploitation of first-mover advantages. Second, environmental factors, such as market transparency, environmental

uncertainty and the stage of the industry lifecycle determine the initial first-mover advantages enjoyed by the pioneer and their sustainability (Suarez & Lanzolla, 2007). Thirdly, isolating mechanisms prevent late entrants from catching up with the pioneers (Rumelt, 1987). The most widely accepted classification of isolating mechanisms (Lieberman & Montgomery, 1988) is based on three different categories: a) technology leadership, through the learning and experience curve or the existence of R&D patents; b) the pre-emption of scarce assets, which includes the advantages of choosing niche markets or economies of scale derived from investment in equipment; and c) switching costs and buyer choice under uncertainty arising from the formation of habits in buyers and the firm's reputation.

Previous research has usually demonstrated the existence of a positive relationship between early entry and firm performance (García-Villaverde, Ruiz-Ortega, & Parra-Requena, 2012; Gómez & Maícas, 2011), but mixed or contradictory results can also be found. For this reason, researchers have tried to address the question of whether early-mover advantages are static or can be eroded (Ferrier, Smith, & Grimm, 1999). There are circumstances that cause the disadvantages of being early entrants to outweigh its advantages (Lieberman & Montgomery, 2013). External factors can undermine the persistence of first-mover advantages through their negative impact on the effectiveness of isolating mechanisms (Gómez et al., 2016). Boulding and Christen (2003, 2008) show that, in more mature markets, the costs associated with late entry are compensated by some advantages associated with being a late entrant and conclude that pioneer advantages erode over time, usually after twelve to fourteen years. Similarly, Gómez et al. (2016) demonstrate that a technological discontinuity can reduce the sustainability of technological leadership or the effectiveness of resource pre-emption, negatively affecting the persistence of first-mover advantages.

3. HYPOTHESES

3.1. Subsidiary entry timing and initial ownership level

As noted, decisions about the initial level of acquired ownership are strongly conditioned by the existence of *ex ante* and *ex post* uncertainty resulting from information asymmetries. Information economics literature suggests that acquisitions are hazardous due to the adverse selection problem between acquirers and potential targets (see, for instance, Reuer & Ragozzino, 2008). Another source of uncertainty in these decisions is the existence of moral hazard because of managerial opportunism. In order to reduce this uncertainty, MNEs may choose to acquire lower levels of ownership in the target company (Balakrishnan & Koza, 1993; Chari & Chang, 2009).

One way to deal with this uncertainty is to pay more attention to the characteristics of target firms. Recent studies have emphasized the importance of taking into account the role of the target company in strategic decisions (Cuypers, Cuypers, & Martin, 2017). Some target attributes may help MNEs to assess the potential of the company to generate future profitability better, decreasing *ex ante* and *ex post* uncertainty. In a context of asymmetric information, and according to signalling theory (Spence, 1974; Riley, 2001), signals can be launched by companies to convey private information and improve the existing information imbalance. Empirically, Reuer and Ragozzino (2012) show that taking into account the signals launched by target firms reduces asymmetric information problems and allows MNEs to make better decisions about the level of ownership. MNEs should therefore pay attention to the attributes of the subsidiary with the aim of reducing the level of perceived uncertainty, which will increase the incentive to take higher control of the target company.

In a context where first-mover advantages exist, one signal for MNEs of the potential of the target company will be its entry timing into the market. Early entrants are

able to outperform late entrants in terms of profitability and market share (Lieberman & Montgomery, 2013). The leading time between the entry of the pioneer and the entry of the target company provides valuable information for MNEs when they decide the level of ownership to acquire in the target firm. If the acquired firm is an early entrant, MNEs receive valuable additional information about its greater expected performance, which reduces the cost associated with obtaining information to overcome the problem of adverse selection. In addition, early entrants usually enjoy a better reputation (Kerin, Varadarajan, & Peterson, 1992). As a consequence, the problem of adverse selection will be reduced. On the one hand, a better reputation decreases the acquiring company's costs derived from obtaining information about the target. On the other hand, the target firm enjoys a positive image, so it does not have as strong an incentive to retain ownership to transmit confidence to the acquirer. Therefore, when the subsidiary is an early entrant, MNEs will perceive lower *ex ante* uncertainty than when it is a late entrant. Consequently, the initial ownership acquired will be lower as the leading time increases.

When first-mover advantages exist and the target firm is an early entrant, its advantage will depend on resources and capabilities that have been built over time, such as technological leadership, exclusive access to strategic geographical locations, reputation and pre-emption of scarce resources, among others (Lieberman & Montgomery, 1988). Thus, the success of the company will depend more heavily on the entry timing than on the specific skills of local managers and their incentives to collaborate after the entry. Even the resignation of a local manager in the post-entry period would not reduce the value of the assets acquired, reducing the moral hazard linked to *ex post* uncertainty. Therefore, when the subsidiary is an early entrant, MNEs will perceive lower *ex post* uncertainty. Thus, the initial ownership acquired will be lower as the leading time increases.

As a consequence, *ex ante* and *ex post* uncertainties surrounding ownership acquisitions increase with the leading time—that is, the time elapsed from the entry of the pioneer and the entry of the subsidiary into the focal market. Consequently, MNEs will acquire a lower level of ownership when the target has entered later into the market than when it was an early entrant.

H1. The percentage of ownership initially acquired is negatively related to the leading time between the entry of the pioneer and the entry of the target.

3.2. Subsidiary entry timing and ownership variation during post-entry time

The extant literature has shown that many acquisitions are carried out sequentially to deal with information asymmetries (Xu et al., 2010). Although MNEs commit resources at the initial acquisition, they can change its ownership over time, either increasing or reducing it according to the information obtained from the new subsidiary and its environment (Belderbos, Tong, & Wu, 2019; Putzhammer et al., 2018; Putzhammer, et al., 2019; Song, 2017). During post-entry time, MNEs will obtain more precise information about the internal conditions and the external environment of the subsidiary, which can allow MNEs to better assess its potential to take advantage of the new opportunities available. This new information may lead to positive or negative variations in the ownership held by the MNE in the target firm (Swoboda et al., 2011).

First, with regard to the internal conditions of the target firm, the possession of first-mover advantages is observed by the MNE before the initial acquisition based on the available market information and the data that the target provides to the acquirer. Nevertheless, adverse selection may bias this information (Petersen et al., 2000). In the post-entry period, the MNE obtains direct information about the target, helping it to assess the existence and scope of first-mover advantages and the resources and capabilities that can help to maintain them over time. For example, MNEs can better assess the level of

explorative capabilities possessed by subsidiaries, which previous studies have shown to be positively related to potential performance (Lisboa, Skarmeas, & Lages, 2011). Subsidiaries that entered earlier in the market and enjoy first-mover advantages possess specific skills, knowledge and greater experience and, therefore, they have developed higher explorative capabilities than later entrants in both market and product development. The confirmation of the existence of explorative capabilities constitutes a signal of positive expected performance. Subsequently, MNEs are willing to increase their resource commitment in these subsidiaries. Likewise, the existence of key intangible assets possessed by early entrants, which could not be previously observed (just inferred) -such as technological capabilities that lead to first-mover advantages (Lieberman and Montgomery, 1988)- may also be confirmed. These explorative capabilities and intangible resources possessed by early entrants are a source of future market value and financial performance (Tahat, Ahmed, & Alhadab, 2018), which can motivate MNEs to increase their ownership once they are verified.

Second, after the initial acquisition, the acquirer also obtains direct information regarding the external environment in which the subsidiary develops its activity. Since a lack of familiarity with the host country conditions is one of the reasons of initially acquiring lower levels of ownership in CBA (Anderson & Gatignon, 1986), once the MNE gains experience in the host country and confirms its positive expectations about the subsidiary, we can expect that MNEs will be willing to acquire higher levels of ownership (Song, 2017). However, it should be noted that host countries differ in terms of their environmental stability (Makino, Isobe, & Chan, 2004). According to Swoboda et al. (2011), MNEs change their ownership positions depending on the evolution of environmental conditions, such as government regulations (Puck et al., 2009), corruption levels (Driffield et al., 2016) and labor costs (Song, 2017). Although these external

changes can create shocks in the market, Vecchiato (2015) posits that early entrants have been able to develop dynamic capabilities to anticipate and better adapt to the environmental shocks than late entrants as they have been competing in the market for a longer time and so have greater experience. For this reason, MNEs will have more incentives to increase their ownership in early entrants once first mover advantages have been confirmed since the dynamic capabilities developed serve to counteract the uncertainty that comes from a changing environment.

To summarize, after the initial acquisition, MNEs can better evaluate the potential of the subsidiary to generate future profitability and to counteract environmental changes that could diminish it. Driffield et al. (2016) insist on the importance of a target's characteristics to explain changes in ownership levels. Our logic is that those subsidiaries that are early entrants in a market may have developed valuable skills and resources that launch signals concerning higher future profitability. Among them, we can mention explorative capabilities that facilitate the identification of market opportunities, technological capabilities to exploit these opportunities and dynamic capabilities to identify and better adapt to environmental changes. Although MNEs can infer the possession of these valuable assets at the moment of the initial acquisition based on the target's financial statements, MNEs can only corroborate the existence of these resources after the initial acquisition. When first-mover advantages exist and MNEs verify them, MNEs will be willing to commit more resources to early entrants than to late entrant subsidiaries during the post-entry period since the sources of uncertainty are reduced. In this context, the size of these first mover advantages are often linked to the leading time between the entry of the pioneer and that of the subsidiary. Conversely, the advantages diminish when the subsidiary delays its entrance into the market, which reduces the incentives to buy higher shares of ownership.

H2. The variation in the percentage of ownership after the initial acquisition is negatively related to the leading time between the entry of the pioneer and the entry of the subsidiary.

3.3. The moderating effect of market age

Previous studies have found that early entry advantages dissipate over time (Brown & Lattin, 1994; Huff & Robinson, 1994; Robinson & Fornell, 1985). The main reason for this is that the isolating mechanisms that allow first-mover advantages (i.e. pre-emption of scarce assets, switching cost and technological leadership) (Lieberman & Montgomery, 1988) weaken over time as the market matures. If isolating mechanisms fail and first-mover advantages are eroded, the leading time will lose its value in reducing uncertainty and signalling potential performance.

Isolating mechanisms might lose value with market age for different reasons. Firstly, early-mover targets can pre-empt scarce assets. This confers early entrants a strong market position that, at the same time, constitutes an obstacle for followers to overcome (Boulding & Christen, 2003). Nevertheless, the appearance of new consumers and a change in preferences will widen the market and weaken the initial position of early entrants, thus decreasing first-mover advantages. Secondly, switching costs, which arise when consumers face additional costs to change from early entrants to a new firm due to procedural, financial and relational costs (Burnham, Frels, & Mahajan, 2003), might also decrease over time. Late entrants have to invest resources and time to attract established consumers, which reduces their performance. However, when the market matures, consumers are more familiar with the products and the competitors that supply them, which will erode the existing first-mover advantages. Thirdly, early entrants can enjoy technological leadership in terms of the experience curve (Lieberman & Montgomery, 1988). As a consequence of learning economies, early entrants are able to produce more

efficiently due to an increase in cumulative production. This allows early entrants to reduce costs in comparison to late entrants and enjoy higher profitability (Ghemawat & Spence, 1985). However, as time passes, later entrants also learn and are able to develop their own experience curves. Therefore, first-mover advantages derived from experience decrease progressively, finally disappearing. Thus, the advantages of early entrants may be eroded over time.

As a consequence, leading time loses importance as a determinant of uncertainty and potential performance because isolating mechanisms are weakened and first-mover advantages are eroded. Consequently, although MNEs could have more incentives to hold higher levels of ownership in subsidiaries with lower leading time (both at the initial entry and during the post-entry period), this negative relationship will be less negative as the market matures.

H3a. Market age positively moderates (i.e. weakens) the relationship between the percentage of ownership initially acquired by an MNE and the leading time between the entry of the pioneer and the entry of the subsidiary.

H3b. Market age positively moderates (i.e. weakens) the relationship between the variation of percentage of ownership after the initial acquisition and the leading time between the entry of the pioneer and the entry of the subsidiary.

3.4. The moderating effect of the introduction of a new technology

In addition to market age, the increasing dynamism of many industries makes first-mover advantages hard to maintain (Suarez & Lanzolla, 2007). For example, previous studies agree that rapid technological evolution makes it difficult for early entrants to maintain any advantage (Fosfuri, Lanzolla, & Suarez, 2013). The introduction of a new technology constitutes an important factor that can erode first-mover advantages (Lavie,

2006), impairing the effectiveness of isolating mechanisms. There are several reasons for this erosion. Firstly, new technologies reduce the likelihood of the pre-emption of scarce assets being sustained. The emergence of new technologies may, for example, change the relationship of the company with its current providers, modifying the value of important resources, even leading to a change in these providers (Gómez et al., 2016). Secondly, the effectiveness of switching costs will also be adversely affected. A new technology can affect experience (Wernerfelt, 1985) and the formation of preferences (Carpenter & Nakamoto, 1989), two antecedents of switching costs (Suarez & Lanzolla, 2007). New generations of products or services will appear and the existing ones will become obsolete (Anderson & Tushman, 1990). Thirdly, technological leadership is probably the isolating mechanism that can fail most often as a result of the introduction of a new technology. Firms that entered the market first will have gained advantages derived from experience or learning curves, obtaining a privileged position. However, the introduction of a new technology decreases the value of prior experience and can result in advantages for those companies that introduced the technological discontinuity into the market (Christensen, 2013), even if they were late entrants.

The innovative behaviour of a subsidiary through the introduction of a new technology provides a signal about its potential for obtaining future profitability, thus reducing uncertainty. If the new technology is successful, the subsidiary that first exploits it can achieve extraordinary results by destroying the benefits of prior technologies. This explains why companies that have advantages in old technologies are usually reluctant to introduce technological changes that can cannibalize the previous profitability (Christensen, 1997; Hill & Rothaermel, 2003). A subsidiary that introduces a new technology into the market assumes risks, but it can achieve a technological leadership to obtain extraordinary profits in the future by eroding the advantages of prior entrants. As

a consequence, the introduction of a new technology by a subsidiary launches a positive signal that increases its attractiveness for current and potential investors (Reuer & Ragozzino, 2012).

In sum, the introduction of a new technology erodes first-mover advantages and reduces the negative impact of leading time on the level of ownership in a subsidiary held by MNEs. Target companies that introduce new technologies will be especially attractive for the acquiring MNE, with the subsequent incentive to acquire higher levels of ownership initially and to increase the level of ownership held in these targets, even if they are late movers.

H4a. The introduction of a new technology by a subsidiary positively moderates (i.e. weakens) the relationship between the percentage of ownership initially acquired by a MNE and the leading time between the entry of the pioneer and the entry of the subsidiary.

H4b. The introduction of a new technology by a subsidiary positively moderates (i.e. weakens) the relationship between the variation of the percentage of ownership after the initial acquisition and the leading time between the entry of the pioneer and the entry of the subsidiary.

4. SAMPLE, METHODS AND VARIABLES

4.1. The mobile communications industry

The empirical analysis is carried out in the mobile communications industry. The available data offer the quarterly evolution from 2000 to 2016 in the ownership structure of 59 subsidiaries in which 36 MNEs participated as a result of 90 CBAs in 50 countries.²

² See Appendix 1 for a detailed list of the different host and home countries included in the sample. It should be noted that GSMA only provides information at the national level. As a consequence, countries where competition takes place at subnational level, such as the United States, Canada, Brazil or India, cannot be included in our sample of host countries.

Accordingly, we have a total of 90 observations of the initial ownership acquired and 2,231 observations referring to the ownership held by MNEs in each one of the subsidiaries for each period after the initial acquisition. Our information comes from multiple sources, but the main one is the GSMA Intelligence (2018) dataset. This publication gathers information on several variables of interest, such as the existing telecommunications MNEs, the ownership held in each subsidiary, and the date of entry of each subsidiary into each market and technology. The information about CBAs and entry timing is complemented by industry and corporate reports. Other sources of information, such as the Heritage Foundation and the World Development Indicators databases, have been used for control variables.

The mobile communications industry has seen impressive growth in the last two decades, and it has been the focus of attention of an increasing number of researchers (Birke & Swann, 2006; Fuentelsaz, Garrido, & Maícas, 2015; Gómez et al., 2016; Kitchen, Martin, & Che-Ha, 2015). This industry is especially appropriate for our research purposes for several reasons. Firstly, it is an industry with a high level of internationalization. For instance, 52 per cent of firms in the third quarter of 2017 were subsidiaries of telecommunications MNEs. The internationalization of these MNEs has been recent. At the beginning of 2000, there were 56 MNEs operating in 142 countries with 293 entries, while at the end of 2016, 76 MNEs were present in 205 markets, with a total of 926 entries. This means that 68.4 per cent of entries have taken place during the period under analysis. Moreover, this international expansion has mainly taken place through CBAs because of government restrictions.³

³ In this industry, governments usually determine the number of competitors. Companies that operate in each national market must obtain a licence to develop their activity, since the radio spectrum is considered a scarce resource (Gruber, 2005). The government decides the number and types of licences. At the European level, for instance, usually only three or four firms operate in each country. This means a restriction to the entry of new competitors through greenfields and makes CBAs the most frequent entry mode in this industry. For the countries included in our sample, only 35 per cent of entries were greenfields.

Secondly, first-mover advantages have been demonstrated to exist in an industry where competition takes place at the national level (Gómez & Maícas, 2011; Whalley & Curwen, 2012).⁴ It has been argued that early movers possess significant advantages that late entrants have found difficult to overturn as a consequence of isolating mechanisms (Atiyas & Doğan, 2007; Bijwaard, Janssen, & Maasland, 2008; Whalley & Curwen, 2012).⁵

Thirdly, this industry allows a detailed identification of the entry timing of each firm from the beginning of the industry in the 1990s. We are thus able to identify the entry timing of subsidiaries and the leading time from the entry of the pioneer in each market. Moreover, this industry allows identification of the firm that introduced a new technology into the market. Over the last decade, the most important technological change in the industry has been the transition from the second (2G) to the third generation (3G), which allowed consumers to use the internet on their devices, and the progressive substitution of voice and text services by data exchange (Fuentelsaz, Maícas, & Polo, 2008).

4.2. Methods

The empirical analysis is developed in two stages that consider the target firm of each CBA as the unit of analysis. In the first stage, we analyse the effect of leading time on the percentage of initial ownership acquired by a MNE when it enters a market (Hypothesis 1) and the moderation effects of market age and the introduction of a new technology on this relationship (Hypotheses 3a and 3b). As the percentage of initial ownership is a limited dependent variable subject to an upper (100%) and a lower (10%) bound, a classic ordinary least squares regression model will give biased and inconsistent

⁴ Consumers can only choose between competitors that operate in the same geographical market where they are located. This explains why the analysis of first-mover advantages in this industry has been limited to country-level competition (Gómez & Maícas, 2011).

⁵ A robustness analysis (not shown) has been carried out to confirm the existence of early-mover advantages in our sample. This analysis concludes that early entrants enjoy better results in this industry.

estimates (Maddala, 1983). In this case, a Tobit regression analysis is recommended (Greene, 1993). This estimation technique has been adopted in prior studies that analyse the determinants of ownership levels (Chari & Chang, 2009; Cuypers et al., 2015; Dow et al., 2016; Malhotra & Gaur, 2014; Pan et al., 2014).

The second stage analyses the effect of leading time on variation in the percentage of ownership during the post-entry period (Hypothesis 2) and the moderating effect of market age and the introduction of a new technology on the prior relationship (Hypotheses 3b and 4b). As we will explain in the next subsection, ownership variation is also a limited dependent variable subject to an upper (90%) and a lower (-90%) bound. This variation is analysed for each subsidiary over time, so we have a panel dataset with a limited dependent variable. To avoid the problem of unobservable heterogeneity, we use a random-effects Tobit estimation with panel data (Arellano, 2003).

4.3. Dependent variables

The dependent variable in the first stage is the percentage of *initial ownership* that the MNE (acquiring firm) acquires in the subsidiary (target firm). In line with recent studies (Cuypers et al., 2015; Dow et al., 2016; Malhotra & Gaur, 2014), we use a continuous variable that is bounded between 10 per cent and 100 per cent.⁶

Our dependent variable for the second stage is the variation in the percentage of ownership (*ownership variation*) that MNEs have after the initial acquisition. This variable is calculated quarterly for each subsidiary after the initial entry until the last quarter of 2016. The variable is measured as the difference between the percentage that the MNE held in that quarter and the initial percentage of ownership acquired by the MNE. It takes the value 0 if the MNE has not changed its investment in the subsidiary, a

⁶ We follow the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD) by considering the existence of a foreign direct investment when the multinational enterprise owns at least 10 per cent of the subsidiary's equity.

positive value when the MNE has increased its participation, and a negative value when the MNE has decided to sell some of its investment in that subsidiary. Consequently, the variable is bounded between -90 per cent and 90 per cent.

4.4. Independent variables

Leading time. This variable is calculated as the number of quarters between the entry of the pioneer into the market and the entry of the subsidiary.⁷ We consider that a firm was the pioneer if it was the first entrant into the market. Market pioneers show a time lag of zero, with positive values for followers or late entrants. Leading time is a constant variable over time. This measure has been previously used for similar purposes (see, for instance, Deng & Wang, 2016; Jakopin & Klein, 2012; Lieberman & Montgomery, 2013; Zachary et al., 2015).

Market age. This continuous variable reflects, in each period, the number of quarters elapsed since the emergence of the industry in each country—or, in other words, since the entry of the pioneer.⁸

New technology introduction. This variable is defined through a dummy that takes the value 1 if the subsidiary was the first firm to introduce 3G services and 0 otherwise. As we work with panel data in the second stage, this variable can change its value from 0 to 1 from the period that the target launched 3G services (if this happened during the post-entry time).⁹

⁷ As the market pioneer, we select the company that first entered into the second generation of mobile communications, given the scarce acceptance among consumers of the first generation (1G or analog), that only achieved a penetration rate of 0.92 per cent at the beginning of 1990 (Gómez & Maícas, 2011).

⁸ For example, imagine that the pioneer enters the market in the first quarter of 2002 and a second operator enters in the first quarter of 2005. The variable *market age* will take the value 12 when the second operator enters the market. *Market age* is a time-varying variable that increases each quarter after the entry of the pioneer.

⁹ If two or more subsidiaries in the same market introduced 3G services at the same time, this variable takes the value 1 for the two companies from the period in which they introduced 3G.

4.5. Control variables

As in previous studies, our models control for subsidiary-, MNE- and market-specific characteristics that can influence the level of ownership held in the two stages, that is, at the time of entry and in the post-entry period. With regard to subsidiaries' characteristics, we control for the *subsidiary size*, defined as the number of connections (in thousands) of the target firm in the market. Foreign firms will seek lower levels of ownership in local firms when these firms are larger than when they are smaller (Chari & Chang, 2009). We also control for the *subsidiary performance* measured through the EBITDA margin.¹⁰ MNEs will tend to acquire higher levels of ownership in subsidiaries that show better performance, since this represents less uncertainty for the acquirer. In addition, previous literature has shown that subsidiary performance could be a determinant of the increase or decrease in the commitment of resources after the initial acquisition (Swoboda et al., 2011).

With regard to MNE characteristics, we control for *prior presence* in a given country since it is expected to positively influence the level of ownership held in subsequent entries into the same market (Kogut & Singh, 1988). Chen and Hennart (2004) consider that previous experience in the market can help MNEs to evaluate target firms better, which is expected to reduce uncertainty. To consider this possibility, we use a dummy variable that takes the value 1 when the MNE had at least one subsidiary operating in the target firm's country before the acquisition and 0 otherwise (Chari & Chang, 2009; Dow et al., 2016; Malhotra & Gaur, 2014). We also take into account the number of countries in which the MNE was operating as a measure of *international experience*. We expect that companies with more international experience will better

¹⁰ The EBITDA margin is a ratio where the numerator is the total EBITDA obtained by the firm (total operating profit in the period before interest, tax, depreciation and amortization) and the denominator is the total revenue.

manage the risks of foreign operations and will therefore prefer to acquire higher levels of ownership (Anderson & Gatignon, 1986; Kogut & Singh, 1988). Moreover, different levels of international experience can influence the subsequent decision to commit resources in the post-acquisition period (Putzhammer et al., 2018). Given that larger firms may perceive lower uncertainty in ownership decisions because of their greater product diversity, market power, experience or other resource endowments (Scherer & Ross, 1990), we also control for *parent size*, defined as the number of connections¹¹ of the MNE in all markets where it is present.

Referring to market characteristics, we have included variables that control for the conditions of the country where the subsidiary is located, as well as variables that control for the distance between the conditions of the host and the home country of the acquirer. With regard to the variables that refer to the host country where the CBA takes place, we first include the *GDP per capita* (in thousands), provided by the World Development Indicators (WDI) database (World Bank, 2018). Countries with higher GDP per capita are usually considered as having lower uncertainty, thus being more attractive to international investment (Chan & Makino, 2007). In order to control for the country risk that can influence the ownership decision (Anderson & Gatignon, 1986; Dutta, Malhotra, & Zhu, 2016), we include the *GDP per capita growth* provided by the WDI database as a measure of economic fluctuations, as well as the *political stability* provided by the Worldwide Governance Indicators (World Bank, 2018). Additionally, as the industry is more mature and the knowledge is widespread, MNEs have fewer incentives to acquire higher levels of ownership to protect innovations and specific assets than in early stages in the industry (Anderson & Gatignon, 1986). To control for the maturity of the industry in the host market, we include *demand growth* (Li & Li, 2010) and level of *competition*

¹¹ Connections are measured by the number of SIM cards registered in the network of the subsidiary at the end of each period (GSMA Intelligence, 2017).

by counting the number of firms present in each market at any given time (Gómez & Maícas, 2011; Gómez et al., 2016). We also control for the occurrence of a *technological change* in the market, because uncertainty increases when a shock occurs in the market. We understand that a technological change took place when 3G was introduced into the market, so the variable takes the value 0 before the introduction of 3G into the country and 1 thereafter. Finally, we proxy the level of regulatory restrictions on performing business in a country through one factor resulting from the three dimensions of the *market openness* category of the Index of Economic Freedom obtained from the Heritage Foundation (Cebula & Clark, 2012).¹²

We also control for the distance between home and host market conditions through different variables. Firstly, we include the *geographic distance* between home and host countries. Distance increases firms' perceived uncertainty, as well as the agency and transaction costs for the acquirer (Malhotra & Gaur, 2014). In line with prior studies (Malhotra & Gaur, 2014; Malhotra, Sivakumar, & Zhu, 2009; Slangen & Beugelsdijk, 2010), we measure geographic distance, according to the Geobytes database, as the distance in kilometres between the capital cities of the acquiring and the target country. We also include *geographic distance squared* because the cost and benefit trade-off of full versus partial ownership varies at different levels of geographic distance (Malhotra & Gaur, 2014).

Secondly, it has been shown that when the linguistic and religious distances between the acquirer's home country and the target's home country are higher, the acquirer will tend to seek a lower equity share in the target (Dow et al., 2016). Accordingly, we include *linguistic distance* and *religious distance* measures in the

¹² The Index of Economic Freedom focuses on four key aspects of the economic environment over which governments typically exercise policy control. This index is based on 12 quantitative and qualitative factors, grouped into four broad categories, or pillars, of economic freedom. One of these pillars is the open markets category that includes trade, investment and financial freedom.

analysis. Similar to previous studies (Dow et al., 2016), we use a composite index created by Dow and Karunaratna (2006) based on the distance between the main languages/religions of the two countries and the incidence of the main languages/religions of a country in another country (for more details, see Dow & Karunaratna, 2006; Dow et al., 2016).¹³ Thirdly, we include a measure of *institutional distance* (Ilhan-Nas et al., 2018; Xu, Pan, & Beamish, 2004). Following previous studies, we computed institutional distance as the absolute value of the difference between the Index of Economic Freedom of the home and the host countries (Jiang, Holburn, & Beamish, 2014). Finally, we include *economic distance* to control for differences between the GDP per capita in the home country of the MNE and the host country (Caves, 1996).

Additionally, in the second stage model, we include a dummy variable to control for whether the MNE has a majority or minority initial ownership of the subsidiary. The incentives to increase the level of ownership may be different in the two cases. We can expect that once the MNE has reached a majority ownership—and control—in the initial acquisition, the incentives to increase the equity level will be lower than in cases where the MNE has entered through minority ownership and wishes to gain control. As the ownership variations will depend on the information and experience that the acquirer gains from the target firm after the initial entry (Petersen et al., 2000), we control the number of periods that have elapsed since the initial ownership acquisition through the variable *post-acquisition time*. As the last effect could be not linear, we include the second order variable *post-acquisition time squared*. Finally, we also include time and group effects, thus controlling for different business environments over time and groups.

¹³ Data were obtained 18 December 2018 from <https://sites.google.com/site/ddowresearch/>

4.6. Descriptive statistics

Descriptive statistics for the initial ownership and ownership variation stages are shown in Tables 1 and 2, respectively. As can be seen in Table 1, the average initial ownership for the 90 CBAs in our sample is 63.98 per cent, with a standard deviation of 32.6 per cent, in line with previous studies (Chari & Chang, 2009; Malhotra & Gaur, 2014). During the post-entry time, on average, there is a positive ownership variation of 10.7 per cent, with values ranging between divestments of almost 20 per cent and increases of up to 78 per cent. Leading time from the entry of the pioneer ranges from 0 (for market pioneers) to 88 quarters (for market followers). The average values of independent variables and control variables are similar in both stages.

Correlations are shown in Tables 3 and 4. Table 3 shows the correlations for the initial ownership model, while Table 4 shows the correlations in the ownership variation model. The level of ownership initially acquired by an MNE and the ownership variation are negatively correlated with the leading time from the entry of the pioneer in the market. The correlation between independent variables remains moderate in most cases. Before estimating the regression models, we carried out a test for potential multicollinearity and found that the variance inflation factor in our models in the two stages was below 10 (the maximum VIF is 7.76 in the initial ownership model and 6.98 in the ownership variation model), being the rule of thumb that suggests the presence of multicollinearity (Neter, Wasserman, & Kutner, 1990). Multicollinearity does not therefore pose a problem.

Insert Tables 1, 2, 3 and 4 about here

5. RESULTS

5.1. Analysis of the effect of the leading time on the initial ownership acquired

Table 5 provides the results of the Tobit regression for the first stage analysis (Models 1 to 5). Model 1 only considers the influence of the control variables in the initial ownership acquired by the MNE, while Model 2 introduces the effect of leading time (Hypothesis 1). Model 3 includes the interaction effect of market age on the main relationship (Hypothesis 3a), while Model 4 considers the interaction effect of new technology introduction (Hypothesis 4a). Finally, Model 5 is the full model that includes the two interaction terms. The likelihood ratio test shows that Model 4 is the model that best fits our data. That is why we employ it in interpreting the results of the main independent variables.

Insert Table 5 about here

The effect of control variables on initial ownership remains quite stable in Models 1 to 5. As can be observed, the level of ownership initially acquired in CBAs is higher in those countries with higher levels of GDP per capita, political stability, GDP per capita growth, demand growth and competition. The ownership initially acquired in the subsidiary is also higher when the acquirer has a greater size. However, the initial percentage acquired tends to be lower when greater institutional and economic distance exist, and when the target firm is smaller. However, other control variables, such as the international experience of the acquirer and the performance of the target firm, remain insignificant across the five models.

Hypothesis 1 states that leading time negatively influences the percentage in the subsidiary that MNEs initially acquire. Our results in Model 4 show that the higher the

leading time between the entry of the pioneer and the entry of the subsidiary, the lower the percentage initially acquired ($\beta=-2.564$; $p<0.01$). This effect remains negative and significant in all models. As a consequence, Hypothesis 1, showing that MNEs tend initially to buy higher levels of equity in subsidiaries that have entered into the market earlier, is supported.

With regard to the moderating effect of market age on the relationship between leading time and the level of ownership initially acquired, our results do not find support for Hypothesis 3a. As we can see in the likelihood ratio test, the introduction of the moderating effect in both Model 3 and Model 5 does not contribute to explain the initial ownership decision. Conversely, results from Model 4 support Hypothesis 4a, which states that the negative effect of leading time on the initial ownership acquired is positively moderated by the introduction of a new technology by the subsidiary. Our results show that the moderating effect between leading time and new technology introduction is positive and significant ($\beta=3.084$; $p<0.05$), confirming that the erosion of early-mover advantages makes late entrants more attractive under these circumstances at the time of the initial acquisition. A graphical illustration of this moderating effect is provided in Figure 1. We can observe a negative relationship between leading time and the ownership initially acquired (as stated by Hypothesis 1). However, the slope of this negative relationship is less pronounced for those subsidiaries that have been first to introduce a new technology into the market.¹⁴ As subsidiaries introduce technological changes, first-mover advantages are eroded and the leading time loses importance as the determinant of the ownership decision.

¹⁴ Although Hypothesis 4a is supported, our result may (at least partially) also be due to boundary effects. As shown in Figure 1, when leading time is low, the initial ownership level for companies that introduce a new technology is much lower than for companies that do not do it, which may be a reason to observe a less pronounced downward slope for the former. We acknowledge a reviewer for noticing us this point.

Insert Figure 1 about here

5.2. Analysis of the effect of the leading time on the ownership variation

Table 6 provides the results of the random-effects Tobit estimations for panel data for the ownership variation during the post-entry time (Models 6 to 10). Model 6 only includes control variables; Model 7 incorporates the effect of leading time (Hypothesis 2); Model 8 considers the interaction between leading time and market age (Hypothesis 3b); and Model 9 considers the interaction between leading time and new technology introduction (Hypothesis 4b). Model 10 is the full model, including the two interaction terms. The likelihood ratio test shows that Model 10 is the model that best fits our data. That is why we employ it in interpreting the results of the main independent variables.

Insert Table 6 about here

Once MNEs have acquired an initial percentage in a subsidiary, they can change their levels of participation. Models 6 to 10 in Table 6 show that the effect of control variables on ownership variation is quite stable. The effect of the MNE's international experience on the ownership variation is always positive and significant. The time elapsed after the acquisition has a positive and significant direct effect, and a negative and significant effect in the quadratic term. Thus, acquirers tend to acquire higher levels of ownership after the initial acquisition as they gain direct experience from the target firm, although they are less likely to increase the level of their ownership soon after the initial acquisition or when they have been established for a very long time. Similarly, the institutional distance has a negative and significant effect initially, but influences the ownership variation in a positive and significant way. Thus, once the acquirer has gained experience in the host country whose institutional conditions greatly differ from those of

its home country, it is more likely to increase its ownership of the subsidiary. Moreover, acquirers tend to acquire higher levels of ownership in the post-acquisition time when they initially entered with majority levels of ownership, as well as when the market is growing in terms of GDP per capita and demand.

Hypothesis 2 posits that leading time is negatively related to variation in the percentage of ownership after the initial acquisition. As observed in Model 10, leading time presents the expected negative sign ($\beta=-0.291$; $p<0.05$). This means that, even after the initial acquisition, the leading time between the entry of the pioneer and the entry of the subsidiary influences the variation in MNEs' participation in the target firm. However, this negative effect is only significant in those models that include the interaction with market age, partially supporting Hypothesis 2.

Results from Model 10 also support Hypothesis 3b, which states that the negative effect of leading time on ownership variation is positively moderated by market age as a consequence of the erosion of early-mover advantages. Our results show that the interaction between leading time and market age is positive and significant ($\beta=0.006$; $p<0.01$), confirming that the erosion of early-mover advantages makes late entrants more attractive. A graphical illustration of this moderating effect is provided in Figure 2, where we can observe the negative relationship between the leading time between the entry of the pioneer and the subsidiary and ownership variation (Hypothesis 2). As shown in the figure, the negative relationship between leading time and ownership variation in younger markets becomes positive in more mature markets (Hypothesis 3b). This confirms that, in more incipient markets, the leading time acts a key signal of potential performance, which reduces uncertainty about potential performance and makes parent firms more willing to increase their ownership level in the subsidiary. However, as markets mature,

first-mover advantages are eroded and late-mover advantages can be even more important in the ownership variation decision.

Insert Figure 2 about here

Hypothesis 4b states that the introduction of a new technology by a subsidiary after the initial acquisition positively moderates the relationship between leading time and ownership variation. Results from Model 10 support Hypothesis 4b, showing a positive coefficient for the interaction between leading time and the introduction of a new technology in the post-acquisition time ($\beta=0.242$; $p<0.01$). We illustrate this moderation effect in Figure 3, which shows the negative relationship between leading time and the variation of ownership after the initial acquisition (Hypothesis 2). We observe that this negative relationship is weaker for subsidiaries that have been the first to introduce a new technology. Thus, as subsidiaries introduce new technologies that erode existing first-mover advantages, the leading time loses importance as the determinant of the ownership decision.

Insert Figure 3 about here

6. DISCUSSION AND CONCLUSIONS

This research has analysed the effect of the entry timing of the target on the level of ownership acquired by an MNE when the latter carries out a CBA. The study is performed in two stages. We analysed the ownership acquired in the initial entry first, and then the variation in the level of ownership during the post-entry period. Drawing on information economics and transaction costs economics, we argue that CBAs entail a high degree of uncertainty that the acquiring firm should manage both in the initial moment of

acquisition and once the acquisition has happened. We claim that the entry timing of the target firm is an important predictor of this uncertainty, and that it helps to reduce information asymmetries between the acquirer and the target. Therefore, taking this information into account, the acquirer is in a better position to evaluate the assets and capabilities of the desired company and to make better investment decisions. Our findings show that, in contexts where first-mover advantages exist, MNEs acquire lower levels of ownership in targets that have entered into the market later. The greater the leading time between the entry of the pioneer and the entry of the target, the higher the uncertainty of the MNE, with a subsequent reduction in the level of ownership initially acquired.

Additionally, our study incorporates a dynamic perspective into the analysis. After the initial acquisition, MNE' perception of the potential of the target to generate value may change as a consequence of learning. As a result of information that is obtained directly from the firm, the acquirer is able to verify the existence of first-mover advantages and the potential of the target to generate future performance. Thus, the leading time will be a useful signal for acquirers to vary their levels of ownership. In fact, our results show that MNEs tend to increase their levels of ownership after their initial entry into subsidiaries that entered into the market earlier. As in the decision about initial ownership, a higher leading time is perceived as a negative signal that makes MNEs reluctant to increase their equity in subsidiaries.

Nevertheless, this negative relationship between leading time and ownership is not independent of the circumstances, but is contingent on two important elements that can erode first-mover advantages: market age and the introduction of a new technology by the target company. Our logic is that the passage of time and the innovative character of the target company weaken the isolating mechanisms that protect first-mover advantages, reducing the importance of leading time as a signal to counteract uncertainty. Our findings

corroborate that the introduction of a new technology that erodes the existing first-mover advantages reduces the negative effect of leading time on the initial ownership acquired, as well as on the ownership variation during the post-entry time. The innovative character of the subsidiary sends a positive signal about its potential to generate value in the future that makes entry timing less relevant. However, an unexpected result that should be mentioned at this point is the negative (direct) effect that the introduction of a new technology has on the initial ownership acquired. Although our analysis confirms that the innovative nature of the target company erodes first-mover advantages, one would expect that the direct effect of the introduction of a new technology positively impacts the initial ownership acquired. New technologies may lead to obtaining higher levels of growth, with a subsequent increase in expected performance. So, the negative sign of this variable seems to be surprising. One possible explanation is that innovation and growth also entail additional risks. Innovative firms face challenges such as size, internal turmoil and higher resource needs (Hambrick & Crozier, 1985) that should be balanced with future expected performance. Regardless, this relationship does not seem to be clear and should receive further attention in future research.

Furthermore, our findings show that market age also lowers the negative effect of leading time on the ownership variation, because late entrants are perceived as a less risky option when the market is more mature. However, market age does not have a significant effect as a moderator in the relationship between leading time and the level of initial ownership. A possible explanation can come from the fact that, when MNEs develop CBAs, they try to determine the scope of first-mover advantages based on the available information about the market and the target firm. Contrary to the case of the innovative character of the subsidiary, the effect of time on first-mover advantages erosion could be less perceptible to foreign investors since they do not possess a broad perspective of the

evolution of the scope of these advantages over time in the target market. After the initial acquisition, the MNE obtains direct and regular information on the market that helps the acquirer to verify not only the existence of first-mover advantages, but also their erosion as the market gets older. Consequently, market age may have a significant moderating effect on the relationship between leading time and ownership variation, but not on the relationship between leading time and the initial ownership.

The main contribution of this research has been the integration of entry timing literature into analysis of the level of ownership in CBAs by examining how the entry timing influences the ownership strategy in CBAs. In this way, this study answers Zachary et al.'s (2015) call for the development of a more unifying framework of entry strategy that integrates entry timing with other important dimensions. Moreover, we focus on a target-level variable—namely, its leading time. Previous studies have tended to focus on country-level and MNE-level determinants of ownership. In a context where first-mover advantages exist, the leading time between the entry of the pioneer and the entry of the target is confirmed to be a key determinant of the ownership decision in CBAs.

Secondly, we incorporate a dynamic perspective into the analysis by considering that ownership can vary over time. This paper explores how the leading time influences not only the initial ownership acquired in CBAs, but also the ownership variation during the post-entry period. Finally, we analyse the effect of the erosion of first-mover advantages on prior relationships. In doing so, we consider how market age and the introduction of new technologies by the target erode first-mover advantages, making leading time a less important determinant of the ownership held by an MNE.

Our study has some implications from a managerial point of view. Firstly, MNEs should take into account the importance of first-mover advantages enjoyed by the target company before deciding on the acquisition of a foreign subsidiary. When first-mover

advantages exist, the target firm is more attractive if it has entered into the market earlier; but this attractiveness is influenced by other variables, such as the stage of development of the market and the innovative character of the target firm. In mature markets, first-mover advantages will be reduced, and investing in a late entrant will not be as risky. The subsidiary's attractiveness will also be reduced if a late entrant shows an innovative profile. When the target firm introduces a key innovation—which may even replace the technology that originated the first-mover advantages—the entry timing of the subsidiary becomes less important in the ownership decision. Secondly, entering with lower levels of ownership allow MNEs to gain strategic flexibility in order to revise their risk position in the future and adjust the level of ownership held in the subsidiary. For this reason, it is very important that MNEs verify the existence of first-mover advantages after the acquisition of a new subsidiary to adapt the resource commitment to the expected profitability that comes from the existence of these advantages.

Our study is not without limitations. Firstly, the empirical analysis focuses on a single industry. With this decision, we avoid the influence of industry-specific variables that previous studies have shown to influence ownership decisions, such as industry technological level or industry R&D level (Chari & Chang, 2009; Dow et al., 2016). Future studies should develop this analysis in other industries where first-mover advantages are important in order to corroborate and go deeper into the analysis of the effect of entry timing on equity ownership. Secondly, we focus on a context where first-mover advantages have been demonstrated to outweigh first-mover disadvantages. It is possible that the same analysis in a context where there are late-mover advantages may report different results. Future research should explore this possibility. Thirdly, although we incorporate the yearly performance of the subsidiary as a control variable in the analysis, we should be conscious that when selecting the target firm, MNEs will use

additional information such as long-term profitability or brand strength, information that is not available for our research purposes. Finally, the study focuses on two factors—market age and technological discontinuities—that weaken isolating mechanisms and thus erode first-mover advantages. Although their importance has been highlighted in prior studies, there are other factors that can make isolating mechanisms less effective, such as changes in consumer preferences and regulation. Future research should pay attention to these factors that may also influence the equity ownership decision.

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Table 1. Descriptive statistics for the initial ownership model (N=90)

Variable	Mean	Std. Dev.	Min	Max
<i>Initial ownership</i>	63.98	32.64	10.3	100
<i>Leading time</i>	17.14	20.17	0	88
<i>Market age</i>	49.59	18.56	18	89
<i>New technology introduction</i>	0.09	0.29	0	1
<i>Subsidiary size</i>	48.69	76.99	0.08	323.8
<i>Subsidiary performance</i>	0.15	0.64	-3.43	0.81
<i>Prior presence</i>	0.03	0.18	0	1
<i>International experience</i>	14.06	9.64	1	43
<i>Parent size</i>	81.99	100.2	0.07	480.1
<i>GDP per capita</i>	21.69	25.65	0.55	111.9
<i>GDP per capita growth</i>	2.96	3.33	-5.99	16.23
<i>Political stability</i>	-0.05	1.17	-2.30	1.52
<i>Demand growth</i>	0.46	1.42	-0.13	13.57
<i>Competition</i>	6.19	3.02	3	18
<i>Technological change</i>	0.49	0.50	0	1
<i>Market openness</i>	0.37	1.19	-2.90	2.11
<i>Geographic distance</i>	0.39	0.38	0.02	1.70
<i>Geographic distance²</i>	2.92	5.15	0.00	28.90
<i>Linguistic distance</i>	-0.78	1.51	-3.87	0.53
<i>Religious distance</i>	-0.31	0.97	-1.55	1.53
<i>Institutional distance</i>	10.10	9.21	0.30	36.70
<i>Economic distance</i>	22.82	20.45	0.12	95.90

Table 2. Descriptive statistics for the ownership variation model (N=2231)

Variable	Mean	Std. Dev.	Min	Max
<i>Ownership variation</i>	10.73	18.09	-17.2	78.3
<i>Leading time</i>	14.13	16.81	0	88
<i>Market age</i>	66.71	18.98	19	118
<i>New technology introduction</i>	0.22	0.42	0	1
<i>Subsidiary size</i>	96.02	158.6	0.06	1,526
<i>Subsidiary performance</i>	0.13	3.92	-105	0.94
<i>Prior presence</i>	0.02	0.16	0	1
<i>International experience</i>	19.53	12.62	1	49
<i>Parent size</i>	169.6	162.0	0.18	655.7
<i>Majority ownership</i>	0.83	0.37	0	1
<i>Post-acquisition time</i>	24.09	14.69	2	64
<i>Post-acquisition time²</i>	795.8	850.9	4	4,096
<i>GDP per capita</i>	22.10	23.89	0	109.04
<i>GDP per capita growth</i>	2.41	3.98	-29.89	24.67
<i>Political stability</i>	0.02	1.01	-2.68	1.53
<i>Demand growth</i>	0.16	0.25	-0.38	1.77
<i>Competition</i>	6.25	3.03	3	18
<i>Technological change</i>	0.84	0.37	0	1
<i>Market openness</i>	0.50	1.12	-2.91	2.23
<i>Geographic distance</i>	0.36	0.41	0.02	1.88
<i>Geographic distance²</i>	2.96	6.68	0.00	35.48
<i>Linguistic distance</i>	-0.92	1.58	-3.87	0.53
<i>Religious distance</i>	-0.50	0.88	-1.55	1.53
<i>Institutional distance</i>	8.86	8.00	0	36.80
<i>Economic distance</i>	23.72	19.23	0.001	111.9

Table 3. Correlations for the initial ownership model (N=90)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1 <i>Initial ownership</i>	1.00																						
2 <i>Leading time</i>	-0.16	1.00																					
3 <i>Market age</i>	-0.07	0.62*	1.00																				
4 <i>New technology introduction</i>	-0.31*	0.02	0.11	1.00																			
5 <i>Subsidiary size</i>	-0.21*	-0.10	0.38*	-0.04	1.00																		
6 <i>Subsidiary performance</i>	0.17	-0.63*	-0.23*	0.01	0.20*	1.00																	
7 <i>Prior presence</i>	-0.00	-0.05	0.13	-0.06	0.34*	0.11	1.00																
8 <i>International experience</i>	-0.07	-0.21*	0.13	0.10	0.33*	-0.01	0.10	1.00															
9 <i>Parent size</i>	0.02	-0.15	0.28*	0.22*	0.30*	0.12	0.05	0.59*	1.00														
10 <i>GDP per capita</i>	0.20*	0.09	0.06	0.25*	-0.15	-0.03	-0.05	-0.04	-0.02	1.00													
11 <i>GDP per capita growth</i>	0.05	-0.15	-0.04	0.09	-0.02	0.12	0.00	-0.04	-0.10	-0.42*	1.00												
12 <i>Political stability</i>	0.21*	-0.07	-0.16	0.24*	-0.20*	0.01	-0.08	-0.08	-0.01	0.65*	-0.27*	1.00											
13 <i>Demand growth</i>	-0.12	-0.10	-0.13	-0.09	-0.08	0.04	-0.04	0.05	-0.01	-0.18*	-0.02	-0.21*	1.00										
14 <i>Competition</i>	0.10	0.09	0.15	-0.15	0.15	-0.03	0.32*	-0.21*	-0.13	-0.28*	0.24*	-0.33*	-0.04	1.00									
15 <i>Technological change</i>	-0.10	0.36*	0.60*	0.32*	0.36*	-0.17	0.07	0.21*	0.37*	0.16	-0.15	0.05	-0.20*	0.08	1.00								
16 <i>Market openness</i>	0.13	0.00	-0.01	0.28*	-0.09	-0.01	-0.02	0.08	0.07	0.67*	-0.48*	0.75*	-0.16	-0.38*	0.10	1.00							
17 <i>Geographic distance</i>	-0.29*	-0.11	-0.06	0.33*	0.01	-0.05	-0.16	0.22*	0.29*	-0.12	-0.07	-0.01	0.09	-0.10	-0.05	0.06	1.00						
18 <i>Geographic distance²</i>	-0.22*	-0.10	-0.01	0.41*	-0.02	-0.04	-0.10	0.23*	0.41*	0.06	-0.15	0.14	0.02	-0.11	0.00	0.20*	0.93*	1.00					
19 <i>Linguistic distance</i>	-0.19*	-0.03	-0.01	-0.14	0.25*	-0.04	-0.01	0.04	-0.10	-0.10	-0.04	-0.07	-0.07	-0.00	0.12	-0.09	-0.21*	-0.30*	1.00				
20 <i>Religious distance</i>	-0.37*	-0.06	-0.02	-0.02	0.09	-0.06	0.04	0.05	0.13	-0.34*	0.15	-0.29*	0.03	0.01	0.04	-0.35*	0.16	-0.02	0.31*	1.00			
21 <i>Institutional distance</i>	-0.40*	0.16	0.18*	0.12	0.01	-0.25*	0.12	0.05	-0.12	-0.18*	0.26*	-0.21*	0.13	0.14	0.13	-0.16	0.08	-0.02	0.33*	0.43*	1.00		
22 <i>Economic distance</i>	0.01	0.17	0.29*	0.08	0.18*	0.04	-0.11	0.09	0.16	0.21*	-0.05	0.08	-0.02	-0.07	0.32*	0.04	-0.12	-0.13	0.21*	-0.01	0.11	1.00	

* $p < 0.1$

Tables 4. Correlations for the ownership variation model (N=2231)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
1 <i>Ownership variation</i>	1.00																									
2 <i>Leading time</i>	-0.03*	1.00																								
3 <i>Market age</i>	0.04*	0.45*	1.00																							
4 <i>New technology introduction</i>	0.06*	-0.01	0.17*	1.00																						
5 <i>Subsidiary size</i>	0.18*	-0.02*	0.13*	0.01	1.00																					
6 <i>Subsidiary performance</i>	0.02	-0.11*	0.01	0.02	0.02*	1.00																				
7 <i>Prior presence</i>	-0.05*	0.00	0.08*	-0.06*	0.09*	0.01	1.00																			
8 <i>International experience</i>	0.03*	-0.12*	0.24*	0.11*	0.16*	0.04*	0.00	1.00																		
9 <i>Parent size</i>	0.06*	-0.11*	0.33*	0.25*	0.23*	0.03*	0.01	0.65*	1.00																	
10 <i>Majority ownership</i>	0.18*	-0.01	0.10*	-0.02*	-0.12*	-0.03	0.02	0.13*	0.05*	1.00																
11 <i>Post-acquisition time</i>	0.27*	-0.11*	0.46*	0.24*	0.09*	0.05*	-0.11*	0.22*	0.35*	0.14*	1.00															
12 <i>Post-acquisition time²</i>	0.26*	-0.10*	0.48*	0.22*	0.05*	0.02*	-0.09*	0.21*	0.21*	0.13*	0.95*	1.00														
13 <i>GDP per capita</i>	-0.02	0.11*	0.06*	0.04*	0.01	0.00	0.03*	0.14*	0.05*	0.08*	0.05*	0.09*	1.00													
14 <i>GDP per capita growth</i>	0.02	-0.06*	-0.03*	-0.01	-0.03*	-0.01	-0.01	-0.07*	-0.06*	-0.09*	-0.10*	-0.05*	-0.11*	1.00												
15 <i>Political stability</i>	0.00	-0.01	0.03*	0.10*	-0.05*	0.02*	0.01	0.01*	-0.00	0.12*	0.08*	0.09*	0.63*	0.04*	1.00											
16 <i>Demand growth</i>	-0.09*	-0.09*	-0.15*	-0.16*	-0.05*	-0.01	-0.03*	-0.13*	-0.13*	-0.14*	-0.32*	-0.10*	-0.17*	0.09*	-0.15*	1.00										
17 <i>Competition</i>	-0.00	0.11*	-0.04*	-0.14*	0.03*	-0.04*	0.14*	-0.05*	0.03*	-0.02*	-0.06*	-0.05*	-0.12*	0.08*	-0.25*	0.04*	1.00									
18 <i>Technological change</i>	0.06*	0.12*	0.45*	0.30*	0.31*	-0.01	0.06*	0.31*	0.38*	0.10*	0.42*	0.29*	0.24*	-0.12*	0.16*	-0.31*	0.12*	1.00								
19 <i>Market openness</i>	0.08*	0.05*	0.12*	0.17*	-0.05*	0.02*	-0.04*	0.16*	0.07*	0.15*	0.17*	0.16*	0.62*	-0.10*	0.60*	-0.17*	-0.18*	0.26*	1.00							
20 <i>Geographic distance</i>	-0.13*	-0.07*	-0.10*	0.04*	0.03*	-0.00	-0.09*	0.14*	0.18*	-0.06*	-0.08*	-0.10*	-0.15*	-0.02*	-0.06*	0.01*	-0.12*	-0.07*	-0.06*	1.00						
21 <i>Geographic distance²</i>	-0.11*	-0.04*	-0.07*	0.03*	0.02*	-0.00	-0.06*	0.13*	0.18*	-0.04*	-0.02*	-0.04*	0.01	-0.02*	0.07*	-0.01	-0.11*	-0.00	0.06*	0.93*	1.00					
22 <i>Linguistic distance</i>	0.12*	-0.07*	-0.09*	-0.07*	0.10*	0.00	0.01	0.07*	-0.06*	-0.14*	-0.09*	-0.09*	-0.09*	0.08*	-0.08*	-0.01	-0.06*	0.00	-0.08*	-0.03*	-0.13*	1.00				
23 <i>Religious distance</i>	-0.11*	-0.06*	-0.09*	-0.12*	0.12*	0.02*	0.06*	-0.01	0.14*	-0.24*	-0.19*	-0.15*	-0.36*	0.13*	-0.33*	0.08*	0.06*	-0.10*	-0.41*	0.28*	0.12*	0.38*	1.00			
24 <i>Institutional distance</i>	0.03*	-0.01	-0.05*	-0.05*	0.07*	0.00	0.01	0.11*	0.25*	-0.23*	-0.03*	-0.08*	-0.18*	0.01*	-0.25*	0.09*	0.03*	-0.08*	-0.29*	0.29*	0.21*	0.09*	0.24*	1.00		
25 <i>Economic distance</i>	0.03*	0.02	0.09*	0.07*	0.07*	0.03*	-0.07*	0.27*	0.27*	-0.08*	0.04*	-0.01*	0.01	0.00	-0.09*	-0.07*	-0.00	0.17*	-0.02*	0.11*	0.07*	0.10*	0.01	0.37*	1.00	

* $p < 0.1$

Table 5. Results for determinants of initial ownership

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Leading time</i>		-1.569*** (0.330)	-1.865** (0.715)	-2.564*** (0.582)	-3.045*** (0.917)
<i>Leading time x Market age</i>			0.006 (0.012)		0.009 (0.013)
<i>Leading time x New technology introduction</i>				3.084** (1.221)	3.127** (1.209)
<i>Market age</i>	0.738** (0.344)	1.853*** (0.428)	1.736** (0.476)	2.617*** (0.682)	2.413*** (0.731)
<i>New technology introduction</i>	-100.9*** (18.54)	-83.53*** (16.04)	-79.73*** (17.77)	-131.8*** (32.03)	-126.4*** (32.31)
<i>Subsidiary size</i>	-0.242*** (0.089)	-0.350*** (0.082)	-0.342*** (0.083)	-0.399*** (0.098)	-0.393*** (0.098)
<i>Subsidiary performance</i>	12.44 (6.982)	-10.98 (7.820)	-9.958 (8.100)	-13.99 (7.793)	-13.18 (7.900)
<i>Prior presence</i>	-26.76 (21.02)	-11.74 (18.06)	-10.59 (18.13)	-34.98* (20.01)	-32.01 (20.27)
<i>International experience</i>	1.460 (1.263)	-0.059 (1.073)	-0.037 (1.071)	0.667 (1.109)	0.659 (1.100)
<i>Parent size</i>	0.438*** (0.138)	0.371*** (0.118)	0.392*** (0.126)	0.216* (0.122)	0.254* (0.133)
<i>GDP per capita</i>	0.736** (0.312)	0.660** (0.278)	0.681** (0.280)	0.154* (0.300)	0.192 (0.302)
<i>GDP per capita growth</i>	10.533*** (2.661)	8.173*** (2.336)	8.012*** (2.344)	11.615*** (3.159)	11.293*** (3.128)
<i>Political stability</i>	11.30* (6.298)	12.15** (5.377)	11.70** (5.389)	19.56** (7.512)	18.14** (7.717)
<i>Demand growth</i>	6.123** (2.826)	4.144* (2.401)	4.178* (2.389)	8.846** (3.505)	8.757** (3.455)
<i>Competition</i>	5.666*** (1.967)	3.847** (1.641)	3.799** (1.626)	3.502** (1.719)	3.381* (1.713)
<i>Technological change</i>	21.62 (13.63)	24.63** (11.90)	21.91 (13.19)	55.94*** (19.50)	51.94** (19.96)
<i>Market openness</i>	-6.073 (6.385)	-2.792 (5.433)	-3.072 (5.456)	-1.750 (6.681)	-2.320 (6.801)
<i>Geographic distance</i>	13.46 (49.41)	61.73 (44.47)	57.58 (45.24)	-118.3 (77.18)	-122.3 (76.59)
<i>Geographic distance²</i>	-4.953 (3.819)	-7.640 (3.409)	-7.514 (3.412)	6.389 (5.765)	6.432 (5.701)
<i>Linguistic distance</i>	4.066 (4.400)	5.778 (3.723)	5.588 (3.713)	16.55** (7.635)	16.34** (7.527)
<i>Religious distance</i>	-4.332 (6.972)	-9.806 (6.065)	-9.277 (6.154)	-3.331 (6.583)	-2.969 (6.585)
<i>Institutional distance</i>	-2.659*** (0.669)	-2.847*** (0.585)	-2.814*** (0.588)	-4.223*** (1.112)	-4.223*** (1.095)
<i>Economic distance</i>	-1.073** (0.471)	-0.678* (0.410)	-0.653 (0.411)	-1.454** (0.661)	-1.405** (0.652)
<i>Dummy group</i>	Yes***	Yes***	Yes***	Yes***	Yes***
<i>_cons</i>	-8.400 (28.083)	-10.407 (24.611)	-1.238 (30.983)	57.015 (34.030)	73.179* (40.957)
<i>sigma</i>					
<i>_cons</i>	20.676*** (2.002)	17.752*** (1.700)	17.699*** (1.697)	16.558*** (1.581)	16.485*** (1.574)
<i>N</i>	90	90	90	90	90
<i>LL ratio test versus Model 1</i>		22.19***	22.41***	33.16***	33.65***
<i>LL ratio test versus Model 2</i>			0.22	10.97***	11.46***
<i>LL ratio test versus Model 3</i>					11.24***
<i>LL ratio test versus Model 4</i>					0.49

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6. Results for determinants of ownership variation

	Model 6	Model 7	Model 8	Model 9	Model 10
<i>Leading time</i>		0.184 (0.119)	-0.315** (0.138)	0.135 (0.118)	-0.291** (0.137)
<i>Leading time x Market age</i>			0.007*** (0.001)		0.006*** (0.001)
<i>Leading time x New technology introduction</i>				0.331*** (0.063)	0.242*** (0.064)
<i>Market age</i>	0.115* (0.067)	0.078 (0.071)	0.100 (0.070)	0.074 (0.070)	0.094 (0.070)
<i>New technology introduction</i>	-1.509* (0.881)	-1.441 (0.882)	-1.425 (0.872)	1.603 (1.052)	0.801 (1.051)
<i>Subsidiary size</i>	0.002 (0.002)	0.002 (0.002)	-0.004** (0.002)	0.002 (0.002)	-0.004* (0.002)
<i>Subsidiary performance</i>	0.117 (0.123)	0.159 (0.124)	0.150 (0.125)	0.150 (0.123)	0.145 (0.124)
<i>Prior presence</i>	-8.839 (9.155)	-8.047 (8.968)	-5.482 (9.087)	-9.328 (8.888)	-6.694 (8.978)
<i>International experience</i>	0.148*** (0.050)	0.148*** (0.050)	0.152*** (0.050)	0.187*** (0.051)	0.180*** (0.050)
<i>Parent size</i>	-0.011*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.009*** (0.003)
<i>Majority ownership</i>	20.28*** (1.152)	20.26*** (1.151)	20.21*** (1.140)	20.44*** (1.142)	20.33*** (1.135)
<i>Post-acquisition time</i>	0.512*** (0.103)	0.570*** (0.109)	0.499*** (0.109)	0.563*** (0.109)	0.503*** (0.109)
<i>Post-acquisition time²</i>	-0.007*** (0.001)	-0.007*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)	-0.005*** (0.001)
<i>GDP per capita</i>	-0.143** (0.071)	-0.142** (0.070)	-0.146** (0.070)	-0.151** (0.069)	-0.152** (0.069)
<i>GDP per capita growth</i>	0.116*** (0.044)	0.115*** (0.044)	0.099** (0.044)	0.098** (0.044)	0.089** (0.044)
<i>Political stability</i>	0.215 (0.522)	0.207 (0.521)	-0.132 (0.517)	0.118 (0.518)	-0.155 (0.515)
<i>Demand growth</i>	2.953*** (0.933)	2.931*** (0.933)	1.949** (0.931)	2.679*** (0.929)	1.880** (0.929)
<i>Competition</i>	-0.208 (0.569)	-0.036 (0.567)	-0.123 (0.574)	0.072 (0.562)	-0.033 (0.568)
<i>Technological change</i>	1.353* (0.698)	1.327* (0.698)	1.467** (0.690)	1.030 (0.696)	1.232* (0.691)
<i>Market openness</i>	0.123 (0.571)	0.189 (0.572)	0.415 (0.567)	0.222 (0.568)	0.416 (0.565)
<i>Geographic distance</i>	4.361 (15.79)	5.056 (15.44)	9.085 (15.64)	-1.055 (15.35)	4.146 (15.50)
<i>Geographic distance²</i>	-0.862 (0.957)	-0.958 (0.938)	-1.176 (0.950)	-0.612 (0.931)	-0.898 (0.941)
<i>Linguistic distance</i>	0.983 (1.495)	0.775 (1.468)	0.587 (1.487)	1.012 (1.455)	0.781 (1.469)
<i>Religious distance</i>	-2.106 (2.870)	-1.626 (2.822)	-1.264 (2.859)	-0.780 (2.800)	-0.683 (2.827)
<i>Institutional distance</i>	0.361*** (0.065)	0.366*** (0.065)	0.247*** (0.066)	0.343*** (0.064)	0.245*** (0.066)
<i>Economic distance</i>	0.009 (0.025)	0.009 (0.025)	0.015 (0.025)	0.011 (0.025)	0.016 (0.025)
Dummy year	Yes***	Yes***	Yes***	Yes***	Yes***
Dummy group	Yes***	Yes***	Yes***	Yes***	Yes***
_cons	-24.678** (9.677)	-30.483*** (10.22)	-23.209** (10.33)	-28.655*** (10.14)	-22.753** (10.23)
sigma_u (_cons)	12.696*** (0.989)	12.398*** (0.981)	12.572*** (0.995)	12.281*** (0.970)	12.407*** (0.981)
sigma_e (_cons)	5.396*** (0.083)	5.398*** (0.083)	5.330*** (0.082)	5.366*** (0.082)	5.316*** (0.081)
N	2231	2231	2231	2231	2231
LL ratio test versus Model 6		2.33	54.23***	29.54***	68.30***
LL ratio test versus Model 7			51.90***	27.21***	65.97***
LL ratio test versus Model 8					14.07***
LL ratio test versus Model 9					38.76***

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

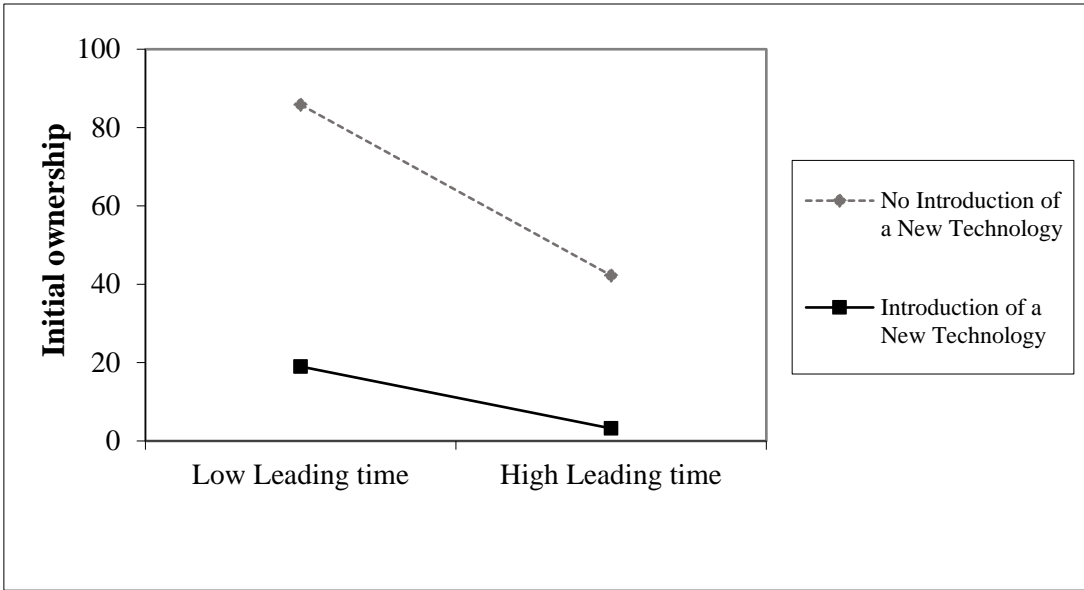


Figure 1. Initial ownership: Interaction between leading time and new technology introduction

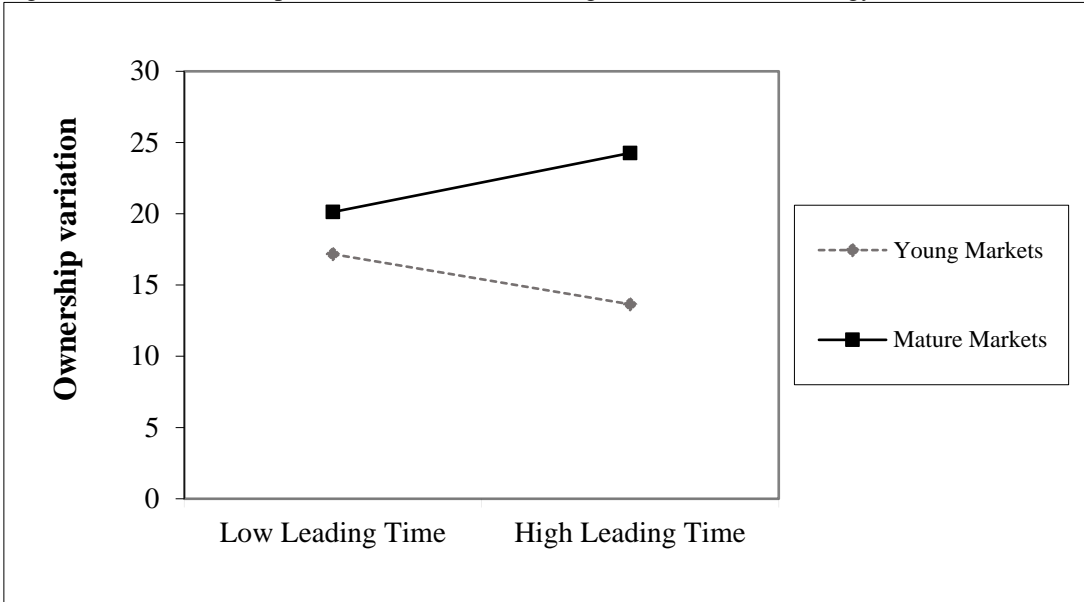


Figure 2. Post-entry time: Interaction between leading time and market age

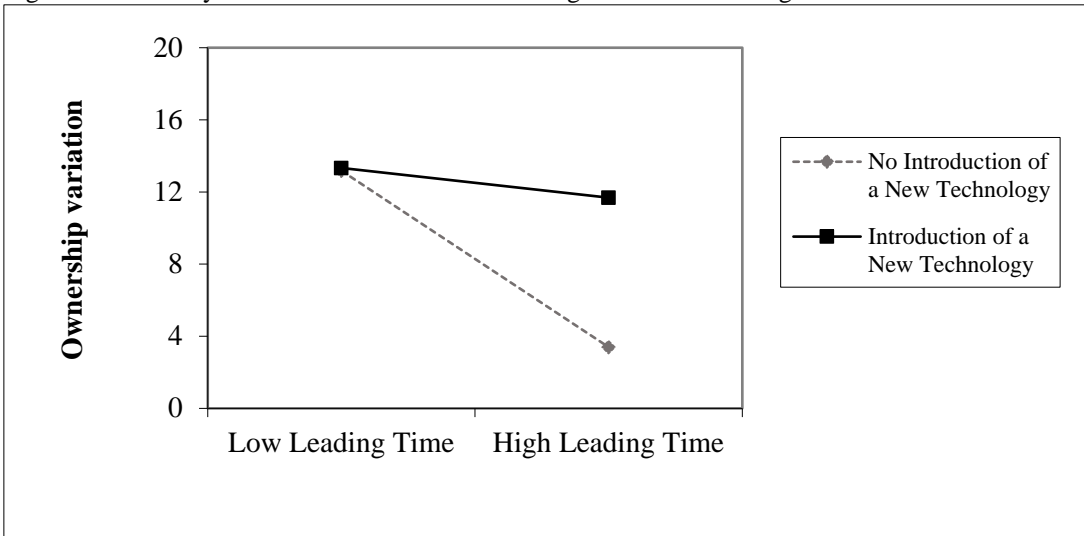


Figure 3. Post-entry time: Interaction between leading time and new technology introduction

APPENDIX. HOST AND HOME COUNTRIES INCLUDED

Host Countries (50 countries)				
<i>Australia</i>	<i>Egypt</i>	<i>Kazakhstan</i>	<i>Nigeria</i>	<i>Switzerland</i>
<i>Bangladesh</i>	<i>Estonia</i>	<i>Kenya</i>	<i>Norway</i>	<i>Turkey</i>
<i>Belgium</i>	<i>Greece</i>	<i>Korea, South</i>	<i>Poland</i>	<i>Uganda</i>
<i>Bulgaria</i>	<i>Hong Kong</i>	<i>Laos</i>	<i>Saudi Arabia</i>	<i>Ukraine</i>
<i>Chile</i>	<i>Indonesia</i>	<i>Latvia</i>	<i>Serbia</i>	<i>United Kingdom</i>
<i>Colombia</i>	<i>Iran</i>	<i>Luxembourg</i>	<i>Singapore</i>	<i>Uruguay</i>
<i>Congo, Democratic Republic</i>	<i>Ireland</i>	<i>Malta</i>	<i>Slovenia</i>	<i>Uzbekistan</i>
<i>Croatia</i>	<i>Italy</i>	<i>Morocco</i>	<i>Spain</i>	<i>Venezuela</i>
<i>Côte d'Ivoire</i>	<i>Japan</i>	<i>Nepal</i>	<i>Sri Lanka</i>	<i>Yemen</i>
<i>Denmark</i>	<i>Jordan</i>	<i>New Zealand</i>	<i>Sweden</i>	<i>Zambia</i>

Home Countries (24 countries)		
<i>Australia</i>	<i>India</i>	<i>Saudi Arabia</i>
<i>Austria</i>	<i>Italy</i>	<i>Singapore</i>
<i>Belgium</i>	<i>Japan</i>	<i>South Africa</i>
<i>Denmark</i>	<i>Kuwait</i>	<i>Spain</i>
<i>Egypt</i>	<i>Malaysia</i>	<i>Sweden</i>
<i>France</i>	<i>Norway</i>	<i>USA</i>
<i>Germany</i>	<i>Qatar</i>	<i>United Arab Emirates</i>
<i>Hong Kong</i>	<i>Russian Federation</i>	<i>United Kingdom</i>