Entry Timing and Uncertainty in Transition Economies: Location and Firm Contingencies Revisited

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Abstract

In this paper we examine the entry strategies that multinational enterprises (MNEs) pursue when investing in transition economies. Using real option theory combined with notions from institutional- and resource-based theory, we investigate how uncertainty is related to entry timing strategies and how this relation is moderated by host country- and firm level characteristics. Estimating hazard models on entry timing data of 39 multinational banks (MNBs) across 17 different transition economies from 1991 to 2007, we find that uncertainty encourages a wait-and-see strategy and decreases the likelihood of market entry. Furthermore, we find that the relation between uncertainty and market entry strongly depends on institutional features, competitive conditions, MNE size and regional investment experience.

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Key words: multinational enterprise; real option theory; entry timing strategies; uncertainty; competition; institutions; MNE resources; transition economies

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1. Introduction

In recent decades many multinational enterprises (MNEs) from developed market economies that were confronted with intense competition and slow economic growth have sought to penetrate new foreign markets in search of growth opportunities. MNEs have been particularly interested in extending their operations into transition economies, which became viable investment locations as they opened up to foreign investment and offered large untapped markets with significant growth potential (Meyer and Tran, 2006; Peng, Wang and Jiang, 2008). When expanding in these markets, MNEs have to decide on the optimal time to enter, their so-called entry timing strategy. Entry timing is an essential strategic decision with substantial implications for survival and performance (Luo, 1998; Pan and Li, 1998; Gielens and Dekimpe, 20 01; Tan, Hung and Lui, 2007; Tan and Vertinsky, 1996; Fisch, 2008). However, deciding the right time to enter a transition economy is complex since this decision is subject to considerable uncertainty. Given that most MNE theories are not well equipped to study investment decision under uncertainty, international business research has increasingly relied on real options theory.

Real option theory emphasizes that entry timing under uncertainty represents a trade-off between flexibility and commitment (Ghemawat, 1991; Miller and Folta, 2002). On the one hand, when the value of an investment cannot be predicted accurately due to uncertainty, MNEs should postpone entry and implement a wait-and-see strategy to retain flexibility and minimize their risk exposure. However, delaying investment until uncertainty subsides is not always the most optimal strategy to pursue, since by making an early commitment MNEs might secure valuable growth opportunities and reap the benefits of an early mover strategy. This tension between flexibility and commitment applies particularly well to the context of transition economies as these markets are not only characterized by considerable uncertainty but also by many promising investment opportunities (Luo and Peng, 1998).

Several studies have considered the empirical analyses of the antecedents of entry timing in transition economies (Gaba, Pan and Ungson, 2002; Paul and Wooster, 2006; Pennings and Altomonte, 1996; Tan *et al.*, 2007). Their research has been insightful in delineating how firm specific and country-level characteristics impact on entry timing decision and the choice between flexibility and commitment in these uncertain markets. However, this work has not explicitly incorporated the influence of uncertainty into their analyses. Only Pennings and Altomonte (1996) consider how uncertainty in transition economies actually affects entry timing into transition economies and although they also make a distinction between industries

based on structural characteristics, they do not consider other contingencies that are likely to have a strong effect on how foreign investors will respond to uncertainty. Our aim is to combine and extend this literature by explicitly incorporating the effect of uncertainty and examining the interplay between uncertainty, firm specific and country-level characteristics and entry timing. A such, we wish to address the following questions.

First, how does MNE entry timing under uncertainty depend on the institutional environment in transitions economies? Research has shown that the sunk costs involved in entering a new market has a great bearing on entry timing decisions (Folta and O'Brien, 2004; Folta, Johnson and O'Brien, 2006) as these costs increase downward risk and potential losses involved in investing in uncertain markets. By integrating real option theory with an institutional perspective, we argue that institutional features in transition economies, particularly formal laws and regulations, are relevant to entry timing as they influence the sunk costs involved in entering a transition economy (Li, 2007). Second, to what extent does competition influence the choice between flexibility and commitment? Previous research indicates that a flexible entry strategy is less beneficial when the market is highly competitive and significant early mover advantages can be preempted (Folta and O'Brien, 2004; Fisch, 2008). Competitive conditions constitute an important consideration in transition economies. These economies are not only characterized by significant growth potential and early mover advantages (Luo and Peng, 1998) but also by increased competition which are a direct consequence of the market liberalization policies introduced in these countries (Hunya, 1998).

Third, how do MNE level attributes have an influence on entry timing strategies under uncertainty? Extant literature has demonstrated that heterogeneity in tangible and intangible resources can often explain differences in entry timing behaviour in transition economies (Gaba, et al, 2002; Tan *et al.,* 2007). This heterogeneity will most certainly affect the extent to which MNEs consider uncertainty in their entry timing decisions as it affects their attitude towards risk and their ability to commit early and benefit from an early mover strategy (Tan *et al.,* 2007). Given that real options theory does not directly address how these firm specific characteristics are related to strategic decision making under uncertainty (Kulatilaka and Toschi, 2009; Vassolo, Anand and Folta, 2004), we integrate real options theory with insights from the resource-based view (RBV) to consider this issue and investigate how heterogeneity in resources drives entry strategies under uncertainty.

Consequently, the main objective in this research is to examine MNE entry timing strategies under uncertainty in transition economies and to evaluate the moderating influence of several host country- and MNE level characteristics on the relationship between uncertainty

and entry timing in transition economies. We develop a multi-theoretical framework, combining real options theory with elements from the resource-based view and institutional theory. We address our research question and test our hypotheses using data on MNEs that invested in the transition economies of Central and Eastern Europe (CEE) during the period 1991-2007[1]. Consistent with our expectations, our results demonstrate that investment deferment is more likely in circumstances of high uncertainty. Furthermore, we find host country and firm level factors, namely competition, formal institutions, MNE size and previous investment experience are important variables that moderate the relationship between uncertainty and entry timing.

We contribute to existing literature in a number of ways. First, we develop a multi-level theoretical perspective, combining real options theory with notions from the RBV and institutional theory. This allows us to study entry timing under uncertainty and develop contingencies that can better account for the impact of host country- and firm level characteristics on entry timing strategies. Second, even though some studies do address MNE entry timing decisions under uncertainty (Campa, 1993; Fisch, 2008; Pennings and Altomonte, 2006), empirical evidence remains rather limited (Fisch, 2008). Furthermore, in contrast to studies which only consider industry level data (Li, 2007), we focus on firm-level data to study entry timing. Such a perspective seems warranted given that studies focussing on the industry level cannot take account of firm level variables that will, undoubtedly, have a great influence on entry timing behaviour.

The remainder of this paper is structured as follows. In section 2 we provide a theoretical background and formulate several hypotheses concerning the effect of exogenous uncertainty on entry timing strategies and how this relation depends on host country- and firm specific variables. In section 3 we describe the empirical context, data and the variables used in the analysis, and also provide a methodological discussion of the appropriateness of hazard models for studying entry timing decisions. In section 4 we present the result of our analyses, which are subsequently discussed in section 5.

2. Theory and hypotheses

2.1 A real options perspective to entry timing decisions

[1] Although we wanted to include all entries between 1990-2007 this was not feasible due to missing data on some of the variables in our model. Consequently, we could only analyze data entry timing in the time period 1991-2007.

Real option theory provides valuable new insights into our understanding how MNEs choose investment strategies under uncertainty (Buckley and Casson, 1998; Meyer and Peng, 2005; Li, 2007). Myers (1977) was the first to suggest that there is a strong analogue between corporate investments in real assets and financial options. He asserted that the value of an investment does not only depend on current cash flows that are derived from an investment, i.e. dividends, but also on future opportunities created by an investment. Depending on how conditions in the external environment develop, a current investment often creates opportunities to defer, increase or abandon an investment opportunity. These real options confer the right, but not the obligation, to undertake future strategic action (Amram and Kulatilaka, 1999). Having discretion to adjust strategic decisions is particularly valuable when there are sunk costs involved in the investment decision and there is considerable uncertainty regarding the future cash flows from an investment. By actively exploiting the flexibility created by real options, there is an asymmetry in the performance distribution, because firms can pursue opportunities with substantial upside potential by exercising the option, while limiting downward risk when uncertainty resolves unfavorably (Buckley and Casson, 1998; Li and Rugman, 2007).

From a real option perspective, the optimal time to invest under uncertainty must balance the benefits of waiting with the advantages of moving quickly into a market. This is essentially a trade-off between flexibility and commitment under uncertainty (Ghemawat, 1991). Much of the literature on real options has emphasized the option to wait as an important consideration in investment timing under uncertainty (Dixit and Pindyck, 1994; Folta, 1998; Tan et al, 2007). When an investment is surrounded by uncertainty and it is unclear whether future cash flows justify making a large sunk investment, MNEs could postpone entry in order to limit downward losses. However, entry deferment is less optimal in situations when firms can secure valuable growth options on future expansion opportunities by moving quickly. Similar to the option to wait the growth option increase with uncertainty. However, while the option to wait induces firms to preserve flexibility and adopt a careful wait-and-see strategy, growth options may encourage accelerated commitment to a foreign market and, hence, an early mover strategy (Kulatilaka and Perotti 1998; Folta and O'Brien, 2004; Fisch, 2008). Industry level- and host country level characteristics are an important consideration in this respect as they affect both the options to wait and grow and, as such, determine how the choice between flexibility and commitment eventually resolves.

For instance, in some industries growth option values are closely related to early mover advantages (Folta and O'Brien, 2004). In these contexts, firms might have more to gain from an early mover entry strategy so as to prevent rivals from preempting valuable growth options

and erode real option values (Rivoli and Salorio, 1996; Fisch, 2008). Another locational characteristic with a strong bearing on real option values and MNE entry strategies under uncertainty concerns the institutional environments in host countries. Examining how institutional characteristics affect MNE strategies under uncertainty requires integrating the institution-based view (North, 1990; Scott, 1990) with real options theory. North (1990) defines institutions as "the humanly devised constraints that structure political, economic and social interactions". Scott (1990) further asserts that institutional frameworks consist of three elements, namely normative, cognitive and regulatory institutions. Here we focus on formal institutions, which consist of the formal laws and rules in countries. These institutions partly determine how easy it is to enter a market (Buettner, 2006; Desai, Gompers and Lerner, 2003; Djankov *et al.*, 2001; Djankov *et al.*, 2002) and the entry costs that are involved in establishing local operations (Cuervo-Cazurra, 2008; Dikova and Witteloostuijn, 2007; Eden and Miller, 2004) Because these entry costs directly relate to the value of waiting, regulatory institutions will also impact MNE entry timing strategies under uncertainty. Relying on an institutional perspective is particularly appropriate for studying MNE strategies in transition economies since these countries are not only characterized by high exogenous uncertainty, but also display considerable inter-temporal as well as cross-national variation in institutional quality (Peng and Heath, 1996; Hoskisson *et al.*, 2000; Peng *et al.*, 2008).

Besides host country characteristics, internal factors and, especially, inter-MNE differences in resource profiles will also be an important determinant of MNE entry strategies in uncertain markets. Given that real options theory does not adequately consider how real options are related to firm level resources and capabilities, it is necessary to connect real option theory with the resource-based view (Penrose, 1959; Wernerfelt, 1984; Barney, 1991) with real options theory (Leiblein, 2003; Kim and Kogut, 1996; Tong and Reuer, 2007). Using both perspectives allows for an enhanced investigation into the relationship between heterogeneity in resource profiles and MNE entry timing decisions. The RBV conceptualizes firms as bundles of tangible and intangible resources, including, among others, managerial skills, organizational routines, technological, marketing and other knowledge-based, intangible resources and capabilities. These resources, especially those that are valuable, rare and inimitable are an important driver of firm level strategies and are the main source of a firm's competitive advantage (Barney, 1991). Through the lens of real options theory, these resources provide future discretionary opportunities and can thus be viewed as a bundle of real options on foreign investment opportunities (Bowman and Hurry, 1993; Kogut and Kulatilaka, 2001). Because MNE resources and capabilities determine the strategic choices available and the cash flows

that can be expected to accrue from a particular investment, heterogeneity in MNE resources will also affect the options to wait and grow and, accordingly, the MNE's entry timing strategies.

2.2 Hypotheses development

2.2.1 Entry timing strategies under uncertainty: the option value of waiting

Foreign investment decisions often have to be made under considerable uncertainty stemming from various exogenous sources, including exchange rate fluctuations, inflation volatility, demand fluctuations and political instabilities (Cuypers and Martin, 2010; Chung *et al.*, 2010; Song *et al.*, 2015; Tong and Reuer, 2007). This exogenous uncertainty is considered to be one of the most fundamental forces that MNEs have to contend with and has a great influence on the entry timing strategies that they pursue in foreign markets (Rivoli and Salorio, 1996; Song *et al.*, 2015). Because this uncertainty mainly resolves over time (Folta, 1998) and increases the downward risk associated with an investment, there is an option to wait. This option to wait is valuable, because by postponing their investment decision MNEs can collect more information that allows for a better informed decision in the future once key uncertainties are resolved and value of an investment opportunity can be more accurately predicted (Li and Rugman, 2007). MNEs will only decide to undertake the investment and enter the market when the present value of the investment cash flows exceeds its costs by the option value of waiting will (Pennings and Altomonte, 2006). Because uncertainty increases option value, MNEs are likely to adopt a flexible wait-and-see entry strategy in the presence of considerable exogenous uncertainty.

The option to wait is likely to be an important consideration for MNEs that are contemplating to invest in transition economies. Transition economies are characterized by considerable exogenous uncertainty (Gelbuda, Meyer and Delios, 2007; Gielens and Dekimpe, 2007). This uncertainty was particularly evident during the earlier stages of economic transition (Luo and Peng, 1998) and was caused by macroeconomic shocks and political instability (Hoskission *et al.*, 2000). These volatile conditions in the external environment made it difficult for MNEs to evaluate local market conditions and significantly increased the downside risk and the value of waiting associated with making an investment. Given the high level of uncertainty in transition economies, MNEs will want to maintain their flexibility and choose to implement a cautious wait-and-see strategy. Only a few studies actually consider how uncertainty and entry timing are related in the context of transition economies (Altomonte and Pennings, 2006; Brito and de Mello Sampayo, 2005). Altomonte and Pennings (2006) calculate the likelihood that

MNEs will invest the transition economies of CEE in the time period from 1990-1998. Consistent with real option theory, they find that there is a negative relationship between exogenous uncertainty and entry timing. Similarly, Brito and de Mello Sampayo (2005) use an option-pricing model to consider how uncertainty regarding the attractiveness of transition economies and other developing countries has an influence on MNE investment timing. Their results also demonstrate that MNEs postpone entry and wait for the resolution of uncertainty before undertaking their investment. Based on the foregoing we thus hypothesize:

Hypothesis 1: There is a negative relationship between exogenous uncertainty and MNE entry timing in transition economies.

2.2.2 Entry timing and host country characteristics: institutions

Real options theory suggests that the optimal time to invest under uncertainty will strongly depend on the amount of sunk costs involved in the investment (Dixit, 1992). Sunk costs make investments less reversible and increase downside risk when investment conditions are unpredictable (O'Brien *et al.,* 2003; Tan *et al.,* 2009). Because sunk costs involved in an investment cannot be recouped should conditions deteriorate, they increase the option value of waiting under uncertainty and the benefits of being able to delay entry. Several studies have explored the issue of sunk costs and investment and demonstrate that firms are more likely to wait-and-see and delay committing to an uncertain market when the investment entails considerable sunk costs (Folta and O'Brien, 2004; Folta *et al.,* 2006; O'Brien at al., 2003).

The sunk costs involved with an investment in a host country market can arise from several sources. Common examples of sunk costs include the costs associated with accumulating foreign market knowledge, adverting and building up a brand, setting up production facilities and a distribution network. Besides these factors, the institutional environment and, principally, formal institutional quality will also determine the sunk costs that are incurred in entering through FDI. Transition economies, especially during the early transition years, suffered from weak institutional environment. Characteristic institutional features included ineffective legal frameworks (Bevan *et al.,* 2004; Chan, Isobe and Makino, 2008), unclear and arbitrary regulations (Estrin and Prevezer, 2010; Meyer, 2001), inefficient bureaucracies (Dikova and Witteloostuijn, 2007), administrative barriers (Estrin, Meyer and Bytchkova, 2006) and significant corruption (Meyer, 2001). These institutional features inhibit the efficient functioning of markets which can result in high costs for MNEs when entering transition economies.

When establishing operations in transition economies through either a Greenfield investment or an acquisition, MNEs need to obtain various local resources. High transaction costs are involved in securing these complementary resources as local markets for these resources do not function properly in most transition economies (Dikova and Witteloostuijn, 2007; Estrin *et al.*, 2009; Meyer *et al.*, 2008). For instance, establishment costs due to underdeveloped real estate and labor markets, complex and time-consuming bureaucratic procedures and negotiations with inexperienced local government agencies to obtain permits and licenses can be considerable when entering through a Greenfield investment (Meyer and Peng, 2005). Acquisitions are also prone to market imperfections and high transaction costs (Peng and Heath, 1996). To start, investors have to gather information and search for the right acquisition target (Dikova and Witteloostuijn, 2007). Once a suitable target has been found, investors have to invest their time, effort and resources to perform due diligence (Meyer *et al.*, 2009) and negotiate with shareholders and country governments and policymakers who are often large shareholders and deeply involved in privatization processes (Uhlenbruck and De Castro, 2000) and pursue objectives, i.e. political and social, that do not necessarily coincide with those of foreign investors (Meyer, 2002; Uhlenbruck and De Castro, 2000). Moreover, post-acquisition investments are considerable given the need to integrate and rigorously restructure the acquired company (Estrin and Meyer, 2011; Peng, 2006). Finally, on a more general level, it has been suggested that corruption has been a persistent and pervasive feature of many transition economies that suffer from weak institutional structures (Uhlenbruck *et al.*, 2006; Estrin, Aidis and Mickiewicz, 2007) and the costs associated with corruptive practices can be a substantial burden to foreign MNEs (Cuervo-Cazurra, 2008; Eden and Miller, 2004).

Putting these arguments together, a weak formal institutional environment increases search, contracting, negotiation and, more generally, transaction costs associated with entering a transition economy. These capital outlays constitute an important source of sunk costs associated with entering transition economies. When institutional weaknesses increase these costs there is a higher value of waiting, which encourages MNEs to implement a wait-and-see strategy. Accordingly, based on the previous discussion we expect the relation between uncertainty and entry timing to be stronger in transition economies with a weak institutional environment. Thus we propose:

Hypothesis 2: The negative relationship between exogenous uncertainty and MNE entry timing will be stronger in transition economies with a weaker formal institutional framework.

2.2.3 Entry timing and host country characteristics: competition

The competitive conditions prevailing in the industry of a foreign market can also exert a great influence on real option values and the strategic choices that MNEs make under conditions of uncertainty (Kulatilaka and Perotti, 1998). The competitive situation affects the entry decision as it drives the value of the option to wait and grow through its effect on the delayability of an investment (Rivoli and Salorio, 1996). The degree to which an investment can be delayed generally revolves around two issues, namely whether a real option is proprietary and whether the option can be strategically preempted by other competing firms (Smit and Ankum, 1993; Miller and Folta, 2002).

Some real options are inherently proprietary. For instance, when a firm possesses unique firm specific advantages that confer a sustainable advantage over competitors, there is little reason to enter a new market quickly when confronted with high uncertainty and make an investment that is largely irreversible (Rivoli and Salorio, 1996). Due to the proprietary nature of the investment opportunity, potential competitors are largely unable to erode option value by preemptively exercising their own options through a strategic investment (Miller and Folta, 2002). In case the option to invest is not proprietary, delaying entry is not a preferred strategy. More specifically, when an option is not exclusive and many MNEs hold similar options on foreign investments, the waiting option decreases value and MNEs have less to gain from delaying an investment decision and implementing a wait-and-see strategy. An early commitment can be justified under these circumstance to prevent option value from being eroded (Trigeorgis, 1996; Folta and O'Brien, 2004) by preemptive investments from other firms (Miller and Folta, 2002).

Competitive pre-emption is a particularly serious concern when MNEs can benefit early mover advantages (Rivoli and Salorio, 1996; Smit and Trigeorgis, 2006) that generate valuable growth options (Kulatilaka and Perotti, 1998; Folta and O'Brien, 2004). Early mover advantages can be attained in several ways and sustained through several isolating mechanisms, including customer switching costs, buyer uncertainty, scale and scope economies, technological leadership, learning curve effects and the preemption of scarce assets (Lieberman and Montgomery, 1988). By adopting an early mover strategy MNEs are likely to obtain sustainable quality and cost advantages over later entrants (Tan *et al.*, 2007). Growth options are more valuable in situations when substantial early mover advantages are associated with an early investment (Kulatilaka and Perotti, 1998; Folta and O'Brien, 2004; Leiblein and Ziedonis, 2007). In market environments where early mover advantages generate valuable future growth

opportunities, a wait-and-see entry strategy is unlikely to be the optimal course of action because the growth option value will likely exceed option value of waiting.

Despite abundant theoretical contributions on the subject, empirical research that investigates how competitive conditions have an impact on entry timing decisions under uncertainty is relatively scarce. Based on a sample of firms in research-intensive industries, Folta and Miller (2002) investigate whether the decision to exercise the option to grow is determined by the threat of competitive preemption. Their results show that the resolution of uncertainty triggers commitment and that the option to grow and acquire additional equity is exercised earlier by investors when the growth option is susceptible preemption. Bulan *et al.*, (2009) examine the interrelatedness of competition, option value, and entry timing for developing real estate projects. They find that firms often delay their investment decision in order to remain flexible when conditions are highly uncertain and the investment involves considerable sunk costs. They also demonstrate that when the number of competitors increases, firms invest more quickly in order to avoid further erosion of option value. However, these studies do not focus on entry into international markets and do not reveal how competition affects the entry timing decision of MNEs in the context of transition economies.

Growth options and prospects to attain early mover advantages are an especially important element in transition economies (Luo and Peng, 1998; Meyer and Gelbuda, 2006; Nakata and Sivakumar, 1997; Pan *et al.*, 1999; Tan *et al.*, 2007). Early entrants in transition economies can pre-empt the most favourable investments locations, human resources, potential acquisition targets and market (distribution) channels. Furthermore, early movers also tend to receive preferential treatment from host country governments (Tan *et al.*, 2007). Early movers can also build up their brand and increase buyer switching costs by building their brand and shaping consumer preferences, who often consider early entrants as more legitimate than firms that enter the market at a later moment in time (Carpenter and Nakamoto, 1989; Kerin, Varadarajan, and Peterson, 1992). In addition, MNEs that are quick to establish operations in a transition economy will have opportunities to accumulate local market knowledge and learn how to operate in these markets. Acquiring market knowledge is imperative given the peculiarity nature of these market environments.

Because these early mover advantages and the option to invest in transition economies are not strictly proprietary in nature, the threat that other firms entering the market will erode early mover advantages and associated growth option values is substantial. Non-proprietary growth opportunities linked to early mover advantages in transition economies means that MNEs have more to gain from committing resources quickly instead of implementing a wait-

and-see strategy to preserve the option value of waiting. We therefore propose the following hypothesis:

Hypothesis 3: Competition positively moderates the negative relationship between exogenous uncertainty and MNE entry timing in transition economies.

2.2.3 Entry timing and firm level attributes: firm size

Previously, we identified competition and institutions as important contingencies that influence the option value associated with investment in transition economies and the inclination to pursue either a flexible wait-and-see or an early mover strategy based on commitment. The option to grow often makes the entry timing decision more unambiguous since it competes with the option value of waiting (Kulatilaka and Perotti 1998; Lin and Kulatilaka, 2007). However, the value attributed to the options to grow and wait are unlikely to be distributed evenly among firms. More specifically, in situations of uncertainty some firms might benefit more from immediate investment, while others might have more to gain from deferring entry to preserve the option to wait and possibly enter at a later moment when uncertainty has reduced and the cash flows from the investment can be assessed more accurately. This suggests that MNE level characteristics will also be important in explaining differences in entry timing strategies under uncertainty. Here we focus on firm size, which is considered a crucial resource-based characteristic related to firm level strategies (Chatterjee, Wernerfelt, 1991; Ekeledo and Sivakumar, 2004; Johnson and Tellis, 2008) and entry timing decisions (Fuentelsaz, *et al.*, 2002; Gaba *et al.*, 2002; Schoenecker and Cooper, 1998).

MNEs that are larger tend to possess resources and capabilities that can be used to enter foreign markets quickly in order to secure growth options and early mover advantages (Tan *et al.*, 2007). For instance, large MNEs have more financial, managerial and slack organizational resources available (Belderbos and Zou, 2009) to dedicate to international expansions (Fuentelsaz *et al.*, 2002; Nakos and Brouthers, 2002) and which can be exploited to gain a competitive advantage over later entrants (Tan *et al.*, 2007; Tan and Vertinsky, 1996). Slack resources can be especially critical as they represent a repository of real options (Bowman and Hurry, 1993) that confer flexibility and allow MNEs to explore and exploit investment opportunities (Lin, Cheng and Liu, 2009), such as entering new product- and geographical markets (Yiu, Lau and Bruton, 2007). Furthermore, MNEs that are larger are credited with the ability to leverage political clout to influence host country governments (Wan and Hillman,

2006; Schuler, Rehbein, and Cramer, 2002) and can exercise more bargaining power (Pan, 1996; Tan *et al.*, 2007). This can result in preferential treatment from host country governments, thereby enabling these MNEs to secure vital local resources and favourable operating conditions (Tan and Vertinsky, 1996). Smaller MNEs, on the other hand, face substantial resource constraints that limit their access to, and potential to exploit, future growth opportunities.

Larger MNEs will also perceive a lower option value of waiting compared to their smaller counterparts because they are in a better position to manage the risks and costs involved in entering a foreign market (Terpstra and Yu, 1998). This directly affects entry timing decisions through its effect on downside risk and the option value of waiting. More specifically, organizational slack can function as a buffer against risk and environmental shocks (Lin *et al.*, 2009; Tan et al. 2007) and affect an MNE's tolerance for, and the attitude towards, uncertainty (Tan and Vertinsky, 1996). Due to their deeper financial pockets, large MNEs are also better able to bear the high sunk costs that are generally involved in foreign investments (Tan and Vertinsky, 1996) and the large capital outlays required will only account for a small portion of the total resources available to the MNE. Smaller MNEs, on the other hand, are much more sensitive to the downside risk and potential losses related to high uncertainty and, so, attach greater importance to the option value of waiting (Tan *et al.*, 2007).

These resources possessed by larger MNEs will also determine the entry strategies that MNEs pursue in transition economies. As mentioned previously, entry timing decisions in transition economies are often related to the potential to benefit from promising future growth opportunities (Chung and Beamish, 2005; Gielens and Dekimpe, 2007) and valuable early mover advantages (Luo and Peng, 1998; Meyer and Gelbuda, 2006; Isobe, et al, 2000; Pan, et al, 1999). Growth option values will be high for large MNEs as they are more likely to have the resources and capabilities available needed to exploit early mover advantages in these markets. This suggests that MNEs might have more to gain from committing resources quickly, despite high exogenous uncertainty, than retaining flexibility by implementing a wait-and-see strategy in transition economies. Consistent with the above arguments, extant international business research indicates that firm size generally increases the likelihood that an MNE will be an early entrant in transition economies (Gaba *et al.*, 2002; Tan *et al.*, 2007).

This discussion suggests that because large MNEs are likely to perceive substantial growth opportunities, i.e. growth options, when contemplating investing in transition economies and are also less affected by the downside risks associated with entering these

markets, i.e. the option to wait. Therefore, the relationship between uncertainty and entry timing is likely moderated by MNE size. To capture this, we formulate our next hypothesis:

Hypothesis 4: MNE size positively moderates the negative relationship between exogenous uncertainty and entry timing of MNEs in transition economies.

Another MNE level attribute that is likely to have a strong bearing on entry timing is the extent to which an MNE has previous international investment experience. MNEs that operate in multiple national environments are exposed to a variety of business environments, consumer preferences, competitive conditions, cultures and institutional configurations. Through this exposure to diverse setting and the process of organizational learning, MNEs accrue an extensive and diverse knowledge base (Gielens and DeKimpe, 2007). This international investment experience and the knowledge it generates constitutes a valuable firm specific intangible and inimitable resource as it allows MNEs to develop capabilities and routines (Barney, Wright and Ketchen, 2001) that can often be transferred and redeployed in other foreign markets should new expansion opportunities emerge (Barkema *et al.,* 1996). However, especially when considering investment into transition economies, it is imperative to recognize that some experience is much more relevant than others (Ionascu, Meyer, and Erstin, 2004; Uhlenbruck, 2004).

Transition economies represent idiosyncratic environments. Evaluating local market conditions and formulating effective investment strategies to gain a competitive advantage in these markets is exceedingly challenging (Meyer and Gelbuda, 2006). This even holds for internationally experienced MNEs, given that knowledge, routines and capabilities that MNEs have acquired and developed through their previous international expansions are not easily transferred and adapted to the transition economy context (Tallman, 1992). Traditional business strategies that might have worked in other market environments are not a natural gateway to successful entry into these uncertain environments (Khanna, Palepu and Sinha, 2005). Instead, when investing in transition economies, previous experience in economically and culturally similar markets and, especially, other transition economies is much more relevant and beneficial (Gielens and DeKimpe, 2007). Based on real option reasoning and resource-based theory, experience with operating in transition economies affects entry into other transition economies through its effect on the option value of waiting and the growth option value.

First, MNEs with experience in transition economies are likely to be less deterred by high exogenous uncertainty. The real option literature argues that exogenous uncertainty caused by

macro-economic volatility can only be resolved over time (Bowman and Hurry, 1993). However, while it is true that this uncertainty is not influenced by the actions taken by firms, the extent to which this uncertainty creates downside risk and a high option value of waiting might differ substantially from firm to firm. MNEs that already have subsidiaries in transition economies are likely to have developed capabilities and routines that are designed to better manage and operate under conditions of exogenous uncertainty (Song, 2013). Second, an MNE with prior investment experience is likely to possess other resources that might facilitate expansion into other transition economies. Due to previous investments MNEs can more easily adapt to environmental peculiarities of transition economies and navigate the complex bureaucratic- and wider institutional environment that characterizes these markets. More experienced MNEs also find it easier to gain and raise legitimacy amongst host country constituents (Kostova and Zaheer, 1999) and have developed marketing capabilities that are geared towards local consumer preferences (Uhlenbruck, 2004). Consequently, MNEs that are experienced with operating in transition economies tend to possess the capabilities necessary to cope with uncertainty, identify emerging opportunities, establish, develop and grow local operations.

The foregoing discussion implies that an MNEs prior experience with operating in transition economies will influence entry timing into other transition economies characterized by uncertainty through two mechanisms, namely by decreasing the option value of waiting and increasing the growth option value. This leads to the following hypothesis:

Hypothesis 5: Previous investment experience in transition economies positively moderates the negative relationship between exogenous uncertainty and entry timing of MNEs in transition economies.

3. Empirical setting, data, methodology and variables

3.1 Empirical setting: multinational banks in Central and Eastern Europe

In this study we test our hypotheses on a sample of multinational banks (MNBs) that entered the transition economies of Central and Eastern Europe (CEE). There are several reasons why we decided to test our propositions in the context of the banking industry. First, the recent wave of foreign direct investment (FDI) in the financial sectors of the CEE region provides a unique opportunity to examine the strategies that MNBs pursue in these markets. Many CEE governments were quick to lower entry barriers in the banking industry, because they

recognized the important role that foreign MNBs could play in establishing a well-functioning banking sector which was considered vital to facilitate economic growth and development. Second, the lack of intense competition and the (anticipated) increased demand for banking services means that many new immediate and future growth opportunities materialized for MNBs. Attracted by these opportunities, foreign MNBs have recently established a considerable presence in Central and Eastern Europe.[2] This presence is clearly reflected by the foreign ownership of total banking assets in the CEE region, which grew from approximately 14 percent in 1996 to over 70 percent in 2007 (EBRD, 1998, 2008). In some countries such as Estonia and the Slovak Republic, this ratio currently approaches 100 percent (Poghosyan and Poghosyan, 2010).

Third, applying real options reasoning is especially relevant in the context of entry timing of MNBs in CEE transition economies. When entering a new foreign market MNBs have to incur considerable sunk costs. Besides regular sunk costs, such as accommodation and legal fees, MNBs need to invest in the development of valuable intangible resources (Blandón, 2001), predominantly in the form of a strong brand name (Dick, 2007) and local market knowledge (Miller and Parkhe, 2002). As argued by Örs (2006), commercial banks direct substantial investments to advertising and marketing given that reputation and service quality constitute important differentiation advantages (e.g. Berger and Mester, 2003). Moreover, MNBs have to commit resources to obtain and develop human capital, technology and market information, in order to acquire the knowledge needed to successfully operate in a new foreign market (Eriksson *et al.*, 1997). The amount of sunk costs involved in acquiring market knowledge can be particularly high in transition economies, because the idiosyncrasies of the business environment limits the applicability of market knowledge developed in other developed market economies (Li and Meyer, 2009). The high sunk costs associated with market entry implies that MNBs will be careful to invest in a transition economy under conditions of high uncertainty. Fourth, due to limited product differentiation, banking is a relatively standardized service (Focarelli and Panetta, 2003). This is a convenient feature as it eliminates the need to control for characteristics of the firm's product mix when examining differences in MNB strategic behavior. Fifth, because many investment opportunities are not proprietary in the banking

[2] In this study, CEE consists of Central Europe (CE), South Eastern Europe (SEE), the Baltics, and the Commonwealth of Independent States (CIS). CE includes Poland, Hungary, Czech Republic, Slovakia and Slovenia. SEE includes Croatia, Romania, Bulgaria, Serbia, Bosnia-Herzegovina, and Albania. The Baltics include Estonia, Latvia and Lithuania. And finally, CIS includes Russia and the Ukraine.

industry (Blandón, 2001), entry timing considerations are especially relevant in this context, since competition can easily preempt opportunities and destroy option values.

3.2 Data

As our primary data source, we use the BANKSCOPE database provided by Bureau van Dijk, which contains balance sheet information for approximately 2,450 banks in the CEE region (2009 edition). To derive the entry strategies adopted by MNBs to expand across CEE in the period from 1991 to 2007, we extracted information on the investment patterns of foreign MNBs in CEE transition economies. We only include entries up to year 2007 to avoid our results being influenced by the crisis years and the associated systemic risk that plagued the global banking industry (BRON??). By only focusing on pre-crisis years we eliminate the impact that the financial crisis could have had on MNBs internationalization and investment strategies. Following Miller and Parkhe (2002), we use subsidiaries rather than branches or representative offices because subsidiaries require a high level of resource commitment (Francis *et al.,* 2009) and cannot as easily be withdrawn as branches or representative office. This implies that the option value of waiting and the tension between commitment and flexibility will be particularly relevant to subsidiary investments.

The selection of the subsidiaries in our sample depends on three criteria: specialization, the degree of foreign ownership and data availability. First, because of considerable heterogeneity among the different bank specializations, we restricted our sample to those MNBs and subsidiaries that are active in wholesale and retail banking only[3]. Second, only subsidiaries where a foreign MNB owns more than 20 percent of its shares are included. In this way, the sample is restricted to subsidiaries in which a parent MNB has a strategic influence and which is likely to involve a considerable commitment from the parent company. Third, we consider only those foreign MNBs for which we were able to identify all entries that occurred throughout CEE between 1991 and 2007. Some banks establish multiple subsidiaries in a host country and we only consider the first subsidiary entry in a foreign country. Balance sheet data of particular MNBs reveals various omissions in BANKSCOPE on key independent variables, although some missing data could be obtained from Thomson One Banker. As a result of the sample selection process and the limitations regarding the availability of (balance sheet) data, our final sample consists of 145 subsidiaries operating in 17 transition economies in the CEE region.

[3] According to the classification used by BANKSCOPE, the dataset is limited to commercial banks, savings banks and cooperative banks.

3.3 Methodology

Our main objective is to examine the forces in the business environment that impact the entry timing decisions of MNBs in CEE transition economies. In situations when the object of observation is the time that elapses before the occurrence of an event, such as the time to market entry, survival analysis is an appropriate econometric method to apply (Cleves *et al.,* 2008). The main purpose of survival analysis is modeling the hazard rate, which measures the instantaneous probability that the event of interest occurs during the time interval from *t* to *t* + Δ*t*, provided that the event has not occurred prior to the beginning of this interval (Ursacki and Vertinsky, 1992). In our study, the conditional probability that a MNB enters a transition economy during this time interval is equal to $\Pr(t + \Delta t > T > t | T > t)$, and the average rate of foreign bank entry is equal to this probability per unit of time. Consequently, in order to obtain the instantaneous rate of bank entry at time *t* this function must be evaluated when $\Delta t \rightarrow 0$, or more formally:

$$h(t) = \lim_{\Delta t \to 0} \frac{\Pr(t + \Delta t > T > t | T > t)}{\Delta \mathrm{t}}$$

There are different ways to model the hazard rate. One parameterization that has been used extensively in the literature on investment timing is the proportional hazard model proposed by Cox (1972). This model asserts that the hazard rate for the *i*th subject at time *t* is equal to a baseline hazard rate, that is $h_0(t)$, multiplied by an exponential function that depends on a vector of predictor variables and parameter estimates. The exponential function, $\exp(x_i\beta)$, is chosen to prevent the probability of entry and the hazard rate from taking on negative values. The baseline hazard in this function is the same for all subjects in the data and differences in hazard rates between subjects only result from variations in the underlying values of the covariates. A popular transformation is to measure the log relative hazard, or risk score, which is simply equal to the linear combination of explanatory variables.

The model proposed by Cox has a number of technical advantages. First, parameter estimates β can be obtained by means of maximum likelihood estimation without having to make any distributional assumptions regarding the baseline hazard function $h_0(t)$. This is possible because the likelihood function evaluates the ratio of hazard functions in order to compute conditional probabilities and, as a result, the baseline hazard cancels from the equation (Cleves *et al.,* 2008). Given that specifying an incorrect functional form can result in biased parameter estimates, being able to leave the baseline hazard unspecified can be extremely

valuable (Lawless, 1982). Consequently, the Cox model is ideally suited in research settings where the main interest lies in discerning the effects of different covariates on the hazard, and not the hazard function itself. A second advantage is that the Cox model can easily accommodate and correct for censored observations in the data, in which the time until the occurrence of the focal event is unknown for some subjects in the data (Cox and Oakes, 1984; Tan and Vertinsky, 1996). Third, the model facilitates the inclusion and estimation of different metric as well as non-metric predictor variables on the hazard rate.

A common difficulty with the application of survival analysis to the timing of investments is unambiguously defining the moment when an investment opportunity first emerges, that is defining *t* in the formula stated above. The issue is less problematic in studies that examine investment timing in the CEE region because institutional reforms and the rapid market liberalization initiated with the fall of the Iron Curtain at the end of 1989 provides a clear starting point for considering investment opportunities throughout this region (Pennings and Altomonte, 1996).

Given that the early 1900s provides a natural starting point for considering investment opportunities, in this study we examine the time that elapses between 1990 and the year in which entry occurs in CEE transition economies. The dependent variable is a binary variable that indicates, at each year-end, whether entry has occurred (1) or not (0) during the previous year for each MNB in a particular host country.

3.4 Variables, measures and model diagnostics

3.4.1 Variable specification

The main variables of interest are macro-economic uncertainty, competition, institutional weakness, MNB size and the scope of the MNB's regional investment experience. To begin with, we use inflation rates to measure the level of (exogenous) *uncertainty* in CEE transition economies[4]. Constructing a measure for uncertainty is not unambiguous and various methods have been proposed throughout the empirical literature. Often used methods and measures to operationalize uncertainty include a simple moving standard deviation (Koray and Lastrapes, 1989; Chowhury, 1993), ARMA models (Asseery and Peel, 1991) and ARCH/GARCH models (Folta, Johnson and O'Brien, 2006; Lee and Makhija, 2009). Most early empirical studies have

[4] Other empirical studies commonly use exchange rate data to calculate a measure of macro-economic uncertainty. However, in the context of CEE transition economies using exchange rates is not feasible given that many countries pegged their exchange rate to another currency, mostly the Dollar or Euro, thereby eliminating most macro-economic uncertainty.

applied a simple moving standard deviation to measure the level of macro-economic uncertainty in a host country environment. Despite its extensive use, this approach suffers from a serious shortcoming, namely that a simple moving standard deviation does not accurately measure uncertainty when fluctuations in the underlying variable are predictable (Folta *et al.*, 2006). Recent studies have generally relied on ARCH/GARCH models to operationalize uncertainty. In contrast to a moving standard deviation, these models consider unpredictable movements about the predicted trend in the data allowing to distinguish between predictable and unpredictable variable fluctuations. Despite the advantages of using ARCH/GARCH models, we were not able to use these methods due to the limited time series span. Consequently, we measure the level of uncertainty as the log of the mean of the previous 12 monthly squared residuals from a simple ARMA(1,1) regression model on monthly inflation data. Data on inflation levels were obtained from the WIIW database provided by the Vienna Institute for International Economic Studies. An advantage of this uncertainty construct is that it accounts for general movements and incorporates temporal variation in uncertainty (Koray and Lastrapes, 1989; Chowdhury, 1993).

To define *competition*, we use a relatively simple measure based on the number of banks that operate in the host country industry. This measure includes domestically owned as well as foreign owned banks. The number of bank subsidiaries is divided by the country population in order to correct for differences in country size. Data for this variable were obtained from the Bank for Reconstruction and Development (EBRD). We are aware that a wide range of other measures for competition have been proposed in the literature, including concentration ratios (Beck, Asli Demirgüc-Kunt and Levine, 2006; Degryse and Ongena 2007), the Hirschman-Herfindahl index (Chong and Ongena, 2013), the Panzar and Rosse (PR) H-statistic (Bikker and Haaf, 2002; Claessens and Laeven, 2004). However, due to data limitations we were not able to use these competition measures.

Consistent with other studies (Bevan *et al.*, 2004; Lensink and De Haan, 2002) we operationalize institutional development using the transition indicators developed and published each year by the Bank for Reconstruction and Development (EBRD). The indicator scores range from a value of 1 to 4.33, where a value of 1 represents very little progress in the reform process, while a value >4 indicates that a country has made substantial progress in the transition process and developed standards and structures typical of advanced industrial economies (see EBRD, 1994 for a detailed description). Similar to Lensink and De Haan (2002) we use factor analysis to construct an institutional reform variable based on six transition indicators, namely small scale privatization, large scale privatization, enterprise restructuring,

banking reform and interest rate liberalization, competition policy and price liberalization. Because we are interested in investigating how *institutional weakness* deters entry we multiplied the reform variable by minus one, so that a higher variable value corresponds to weaker institutions.

Besides these host country variables, we also include two MNB level variables in our regression models, namely the size of the MNB and the MNB's previous investment experience in the CEE region. *Parent size* is measured as the log of total company assets. Data on total assets were obtained from the BANKSCOPE database. In line with the banking literature (e.g., Lanine and Vander Vennet, 2007), we use inflation-adjusted balance sheet data from consolidated bank reports whenever more than one set of accounts is provided. Finally, consistent with measures used in previous literature (Carter, Pantzalis and Simkins, 2003), we define *regional experience* as the number of transition economies where an MNB has established a local bank subsidiary.

Data about the number of subsidiaries at each year-end were collected from parent company and subsidiary websites and other online sources such as bank annual reports. Online databases, notably BANKSCOPE and ZEPHYR, were also used to obtain additional information concerning, for instance, acquisition dates and ownership levels of a subsidiary.

Based on the outcomes of previous empirical research, we incorporate several variables in the regression models as controls. First, previous research has underlined that greater *geographical distance* between the MNBs' home country and a foreign subsidiary raises transaction costs by impeding knowledge transfer, effective coordination, and the monitoring of bank clients (Bevan *et al.,* 2004). We measure geographical distance as the distance, in kilometers, between the MNBs' headquarter and the capital of the host country under consideration. Furthermore, the decision to enter a new foreign market is also related to a number of other MNB specific characteristics. *Profitability* is one factor that can have an influence on entry timing into a new market (Powell, 2014; Tan and Vertinsky, 1996), also in the context of banking (Fuentelsaz, Gomez, and Polo, 2002). We expect to find a positive relation between profitability and MNB entry, since more profitable firms are likely to possess the (slack) resources needed for expansion into new markets (Fuentelsaz *et al.,* 2002). In this study, we measure profitability as the return on assets (ROA) of the parent company in each year. Blandón (2001) posits that the capital position of a bank will also drive entry decisions. The capital position, measured as the *capital ratio* (CR), relates to the soundness of the bank and it signals the bank's attitude towards taking risk. A higher ratio is associated with MNBs that are more averse to taking on risk, such as entering an uncertain foreign market environment.

We used BANKSCOPE to collect data on these MNB level variables. To control for any remaining host country- and firm heterogeneity not accounted for by the variables in our model, we also include 17 host country- and 39 MNB dummy variables in our model.

3.4.2 Descriptive statistics and model diagnostics

Means, standard deviations and pairwise correlations of the variables in our model are shown in Table 2. These statistics reveal a moderately high correlation between uncertainty and institutional reform, which might cause problems of multicollinearity. To evaluate the potential impact of multicollinearity we compared the estimated standard errors and coefficients of the correlated variables across regression models, including all three subsets of these variables. The estimates are relatively stable across these regression models and indicate that multicollinearity is not an issue in our subsequent analyses.

[Table 1 about here]

The main assumption in the Cox regression model is that the effects of the independent variables on the hazard ratio do not vary with time. If the proportional hazard assumption is violated the model is not correctly specified and may yield biased coefficient estimates. To determine whether the assumption holds for our data, we performed a test based on the scaled Schoenfeld residuals (Cleves *et al.,* 2008). When running a regression of the model residuals on functions of time a significant non-zero slope for any particular variable would indicate that the proportionality assumption is violated. To ascertain the appropriateness of the proportional hazard assumption we tested each variable individually and we also performed a global test based on the regression model with all variables included. The individual tests suggest that the proportionality assumption is satisfied for all the main (interaction) variables at a one percent level.. The assumption does fail to hold for some host country- and company dummies. However, these variables are not a main concern in testing our hypotheses.

4. Results

4.1 Main results

The results of the Cox proportional hazard regressions are reported in Table 3. It should be mentioned that the results report exponentiated coefficients, which measure how the hazard

ratio changes for a one-unit increase in the corresponding variable (see Cleves *et al.*, 2008). A coefficient smaller than one implies that the hazard ratio decreases when the value of the variable increases, while a coefficient larger than one means that the hazard ratio increases when the corresponding variable increases. In other words, when a particular variable in our model, say uncertainty, has a coefficient smaller (larger) than one, the probability that an MNB will enter a CEE transition economy with a subsidiary, that is the hazard ratio of bank entry, decreases (increases) with the level of uncertainty.

Table 2 about here]

Model 1 in Table 3 is the baseline regression. This model includes all the independent variables except for host country- and MNE dummy variables. The estimates in Model 1 show that uncertainty has a negative, although insignificant, effect on the hazard of bank entry (β=0.98, $p>0.10$). Model 1 further demonstrates that competition, MNE size, regional experience, geographical distance and profitability are all statistically significant. Finally, institutional weakness is significant in the model, although it variable has a counterintuitive effect on the hazard ratio. However, this is not a serious concern since we have not controlled for country- and company fixed effects in the baseline model.

In order to control for this firm- and host country heterogeneity, we incorporate 17 host country dummies in Model 2 and complement these with 39 MNB dummies in Model 3. The difference in log likelihoods between the first three models clearly shows that these host country- and firm fixed effects are jointly significant and should be added to our regression models to obtain unbiased estimates. Model 3 contains the results pertaining to our first hypothesis, which states that there is a negative relation between the level of uncertainty in a transition economy and the hazard ratio of bank entry. Consistent with our proposition, the estimates show that the hazard ratio is lower in countries with higher uncertainty (β=0.68, $p<0.01$). The size of the coefficient implies that a one standard deviation increase in the level of uncertainty, i.e. $\sigma_{uncertainty}$=1.33, decreases the hazard ratio with just over 32 percent. This is a considerable decrease in the hazard ratio of entry and clearly demonstrates that foreign MNBs are less likely to invest when a transition economy characterized by high uncertainty.

We next turn to Hypotheses 2 and 3, which examine how host country level characteristics, namely competition and institutional weakness, moderate the negative relation between uncertainty and entry timing. The second hypothesis proposes that institutional weakness negatively moderates the relation between uncertainty and the hazard ratio of bank

entry in transition economies. Model 4 provides no statistical evidence supporting this proposition (β=0.89 $p>0.10$), although the variable coefficient is smaller than one as we would expect. Hypothesis 3 asserts that the negative effect of uncertainty on the hazard ratio is positively moderated by the extent of competition. The significant interaction term between uncertainty and competition in Model 5 supports this premise (β=1.11, $p<0.01$).

While the preceding two hypotheses consider how the relation between uncertainty on entry timing is moderated by host country level variables, Hypotheses 4 and 5 we designed to investigate how MNE level attributes impact on entry timing under uncertainty. Hypothesis 4 proposes that uncertainty will have a smaller negative effect on the hazard ratio for larger compared to smaller MNBs. The results are reported in Model 6. The positive significant interaction parameter (β=1.19, $p<0.01$) shows that differences in the hazard ratio of entry caused by differences in uncertainty are indeed smaller for larger firms. The outcomes pertaining to our fifth and final hypothesis are reported in Model 7. This hypothesis posits that the extent of regional diversification has a positive moderating effect on the relation between uncertainty and entry timing. The findings support this conjecture (β=1.07, $p<0.05$) and provide evidence that MNEs are less deterred from entering a host country with an uncertain environment when it has already invested in other transition economies.

In the foregoing we examined each interaction term on an individual basis. Based on these regression models, we concluded that uncertainty in the macro-economic environment significantly deters MNBs from entering new markets, although the magnitude of this uncertainty effect strongly depends on competitive conditions, the size of the firm and the extent of its regional experience. However, to truly assess the relative importance of each interaction effect, it is imperative to run a regression model with all interaction terms included simultaneously. The outcomes of this final analysis are reported in Model 8. Similar to our earlier results, uncertainty is significant and decreases the hazard ratio of bank entry. Furthermore, the interaction between uncertainty on the one hand and competition, regional experience and parent size on the other hand are still greater than one and statistically significant. However, in contrast to our previous results, in Model 8 institutional weakness now also has a significant moderating effect (β=0.70 $p<0.01$) and amplifies the negative effect that uncertainty exerts on the hazard ratio. Overall, these results provide evidence supporting all Hypotheses.

The interactions in Model 8 are illustrated in Figures 1 and 2. Each graph plots the hazard ratio for low, median and high uncertainty against another host country level- or firm level

variable[5]. The base in the hazard ratio calculation has the same covariate values as the focal hazard, except for uncertainty which is fixed at a very low level, namely the 1st percentile of the uncertainty distribution[6]. In this way we isolate the effect of the main- and interaction variables on the hazard ratio of bank entry. Figure 1 plots hazard ratios for low, median and high uncertainty against institutional weakness (left) and competition (right), while the graphs in Figure 2 show how the hazard ratio varies with MNB size (left) and regional diversification (right). A few things stand out. First, in each graph the curve representing high uncertainty lies below the curve for median uncertainty, which in turn always lies below the curve for low uncertainty. This clearly demonstrates that the hazard ratio is a decreasing function of uncertainty. Second, except for institutional weakness, as each moderating variable and, hence, interaction term, increases in value, so does the hazard ratio, although this effect differs in size and significance across variables. Third, the interaction effect increases for higher values of each interaction variable and uncertainty, which is a natural consequence of the exponential nature of the Cox regression model. Fourth, even though the results show that three of the interaction parameters are positively related to the hazard ratio and that the increase in the hazard can be substantial, the hazard ratio never exceeds a value of 1. This implies that the effect that uncertainty exerts on the hazard ratio of bank entry is negative over the entire range of these variables[7].

Finally, there are several interesting aspects regarding the control variables in our regression models. First of all, geographical distance is statistically significant in every regression model and decreases the hazard ratio of bank entry in transition economies. This shows that MNEs are inclined to expand faster into new foreign markets that are in close geographic proximity to their own home country, i.e. where the firm's headquarters are located. Furthermore, in line with previous research we find that profitability has a positive and, in most regressions, significant effect on the hazard of entry, while the capital asset ratio in most cases significantly decreases the likelihood that entry will occur in a transition economy. Finally, the joint significance of the country and company dummies demonstrates that there are fixed country- and firm specific variables that are not included in our regression model, but that are nonetheless important in explaining entry timing behavior of MNBs in transition economies.

[5] Low, median and high uncertainty are defined as the 25th, 50th and the 75th percentiles of the uncertainty distribution, respectively.
[6] The hazard ratio is defined as: hazard ratio = focal hazard / base hazard, where the focal and base hazards are the exponential of the linear regression model, i.e. $\exp(x_i\beta)$.
[7] [7] When the level of competition exceeds 19.5, the hazard ratio of bank entry becomes positive. Since no entries actually occurs when competition exceeds this value, the regression function is unlikely to produce reliable estimates of predicted hazard ratios for high values of competition. Consequently, we decided not include the entire range of competition in the interaction plot.

4.3 Robustness analyses

In Table 2, we relied on monthly inflation rates to construct a measure for exogenous uncertainty in CEE transition economies. However, many extant studies that examine the relationship between foreign investment and exogenous uncertainty have instead relied on exchange rate volatility to measure uncertainty (Campa, 1993; Goldberg and Kolstad, 1994; Servén, 2003, Bénassy-Quéré, Fontagné and Lahrèche-Révil, 2001). Consequently, to check the robustness of the previous results, we create another proxy for uncertainty using monthly exchange rates. More specifically, we will use a monthly index of the real exchange rate between the national currency and the euro, which we similarly obtained from the WIIW database. Again, we construct this proxy using the mean of the (previous) twelve monthly (squared) residuals, at each year end, obtained from an ARMA(1,1) model fitted to these data. The results are show in Table 3 below.

[Table 3 about here]

Overall, we obtain similar results using this alternative measure. Model 1 contains only the main independent- and other control variables, while we add host country and headquarters dummies in Models 2 and 3, respectively. Model 3 shows that exchange rate uncertainty has a significant and negative effect on the hazard of bank entry in transition economies ($\beta=0.71$, $p<0.01$). The coefficient is very similar in magnitude to the one in Table 2 ($\beta=0.68$, $p<0.01$). The interaction in Model 4 between institutional weakness and uncertainty is also similar in size and, like before, this effect is not significant ($\beta=0.92$, $p>0.10$). However, in contrast to our earlier findings, this coefficient does not turn significant in the final model where all interactions are included. Also contrary to our earlier findings is the results that we find no evidence that competition moderates the relation between uncertainty and entry timing, although the coefficient in Model 5 does have the expected sign ($\beta=1.06$, $p>0.10$). Models 6 and 7 show that the size of the parent ($\beta=1.32$, $p<0.01$) and the extent of previous regional experience ($\beta=1.11$, $p<0.01$), respectively, significantly moderate the association between exogenous uncertainty and the hazard of entry. This provides additional evidence in support of hypotheses 4 and 5. Furthermore, these interactions remain significant in Model 8, which incorporates all interactions.

Compared to Table 2, the analyses in Table 3 used fewer entries and observations. The reason is that for some host countries time series data of monthly exchange rates do not go as far back in time as those for monthly inflation rates. Consequently, as a final check, we ran regressions with inflation uncertainty and used only those observations where both inflation and exchange rates were available. This ensures that the same observations are used in each analyses and maked the robustness analyses more reliable. The results, not shown here, indicate that, although the significance levels change, all interaction effects in the final model remain significant at a 5 or 10 percent level and support all hypotheses.

4.2 Additional analyses

In the previous analyses, we included all entries made by MNBs in the CEE region without making a distinction between subsidiaries based on their entry mode. Previous research indicates that entry mode choice constitutes an important strategic consideration and that different entry modes are associated with different real option values (Brouthers and Dikova, 2010; Fisch, 2008; Li and Li, 2010). To check whether our previous results hold when considering this distinction, we split the sample into acquisition- and Greenfield entries. The results of this analysis are reported in Table 3. When comparing the results, we see that exogenous uncertainty has a negative effect on the hazard ratio of entry in the acquisition sample ($\beta=0.50$ $p<0.05$) and the Greenfield sample ($\beta=0.72$ $p<0.05$). This finding is not surprising given that acquisitions and Greenfields can both involve sunk entry costs (Dikova and Witteloostuijn, 2007) and thus have an option to wait to invest. However, the coefficient is considerably smaller for the acquisition sample, which implies that uncertainty has a greater deterrent effect in the case of an acquisition. The reason for this could lie in the observation that acquisitions often involve higher non-reversible costs, since MNEs can limit their initial resource-commitments when using a Greenfield entry mode. Greenfield investments thus offer a good alternative to acquisitions as they offer a valuable growth option which allows investors to minimize downside risk by pursuing an incremental expansion pattern in uncertain markets (Brouthers and Dikova, 2010; Pacheco-de-Almeidaet al., 2008). This argument fits particularly well in the context of banking in transition economies, where Greenfield bank subsidiaries set up by foreign investors were often considerably smaller compared to banks that were acquired through privatization of large state-owned enterprises (Bonin, Hasan and Wachtel, 2002).

Model 4 in Table 3 also points to other distinctions between acquisition and Greenfields. In the case of acquisitions, host country characteristics, i.e. institutional weakness ($\beta=0.36$, $p<0.01$) and competition ($\beta=1.28$, $p<0.05$), have a significant moderating effect on the relation between uncertainty and entry timing, whereas firm level characteristics seem to play no role

of significance. Exactly the opposite applies to Greenfield entries, where only firm level characteristics influence the relation between exogenous uncertainty and entry timing decisions. Given that most privatized state owned banks in transition economies were larger than Greenfield operations, acquisitions are associated with a high option to wait (Bonin, Hasan and Wachtel, 2002) and these costs might be exceedingly high in institutionally weak environments. The differential effect of competition can be explained by the threat of competitive preemption. Potential acquisition targets can be preempted by rival firms and this threat is not a consideration for Greenfield investments. Consequently, competition is more likely to be important in entry timing decision with respect to acquisition, as it decreases the relevance of the waiting option and increases the opportunity costs of investing (Gilroy and Lukas, 2005).

In the Greenfield sample parent size (β=1.14, $p<0.05$) and regional experience (β=1.10, $p<0.05$) have a positive significant moderating, suggesting that both decrease the negative effect of uncertainty on entry timing. When using a Greenfield investment, the MNE builds a subsidiary operation from scratch and must rely on the parent company's resources and capabilities, i.e. reputation, marketing and technological capabilities, human resources and financial resources. Research has shown that larger and internationally experience MNEs are more likely to enter developing countries using Greenfield investments (Dubin, 1975)[8]. These Greenfield investments can serve as a platform to expand their operations through once new expansion opportunities emerge. Hence, MNEs will be better able to benefit from the growth option inherent in many Greenfield investments, especially in fast growing markets.

Another interesting finding concerns the main effect of institutional weakness in the Greenfield sample. Contrary to what might be expected, the coefficient is significantly larger than one, which implies that a Greenfield entry strategy becomes more likely as institutional weakness increases. Although this finding may seem surprising, there is a plausible explanation. In the beginning of the 1990s institutional development related to privatization and enterprise restructuring in many transition economies were not well developed and, as a consequence, many foreign investors, particularly in the banking industry, choose Greenfields to enter transition economies.

5. Discussion

Our main objectives in this research were to twofold. First, to examine how exogenous uncertainty in the macro-economic environment of transition economies has an influence on

[8] Cited in Kogut and Singh (1988)

entry timing strategies that MNEs pursue when investing in these market. Second, to uncover how other host country- and firm level contingencies impact on how MNEs formulate entry timing strategies under uncertainty. The previous section shows that exogenous uncertainty has a negative impact on the hazard of entry which, from a real option perspective, suggests that uncertainty increases the option to wait and the opportunity costs associated with making an early commitment (Dixit, 1989). However, the results clearly point out that there are other concerns for MNEs in selecting the appropriate entry timing strategy under uncertainty. Particularly, incentives to maintain flexibility under uncertainty is stronger when transition economies are also characterized by weak institutions, whereas competition, firm size and regional experience tends to induce MNEs to commit more quickly.

These results carry several important implications for policymakers in transition economies and, more generally, emerging and developing economies. Attracting foreign investors is an important objective for many governments, as FDI can enhance economic performance by facilitating spillovers that enhance productivity (Liu and Wang, 2003; Xu, 2000) and economic growth (Borensztein, De Gregorio and Lee1996; Hermes and Lensink, 2003) and by improving efficiency and consumer welfare through increased competition (Hoekman and Javorcik, 2003; Saggi, 1996). Given that foreign investors shy away from committing resources when confronted with uncertainty, the implication is quite clear: governments should strive to contain macro-economic instabilities in order to create a more stable investment climate that is conducive to FDI inflows. Furthermore, ineffective and complex institutional structures significantly deter foreign investors due to increased risk and higher transactions costs associated with establishing local operations (Bevan, Estrin and Meyer, 2004). Hence, a necessary condition for attracting more FDI seems to be creating a sound institutional framework that is supportive of market based transaction and decrease the costs and risks involved in establishing local operations.

This research suffers from several limitations. First, we examined entry timing decisions without investigating how the chosen entry strategy has an influence on post entry performance. As such, we were unable to draw clear managerial implications from our findings. However, a considerable body of research has already examined the implications of entry timing for post entry performance in transition economies (Isobe, Makino and Montgomery, 2000; Luo, 1998; Luo and Peng, 2007; Magnusson, Westjohn and Boggs, 2009; Pan, Li and Tse, 1999). Generally, this work shows that early entrants outperform later entrants on several dimensions of performance, although the relation between entry timing and performance is highly contingent on other firm- and country level factors.

Second, to measure the extent to which an MNE possesses intangible- and tangible resources, we used the size of the MNE, which is a very crude measure to say the least. Although firm size is correlated with the availability of tangible and intangible resources, this measure does not reveal which resources an MNE actually has at its disposal to that will facilitate an early investment. Third, although we find that institutions are significantly related to entry timing decision at an aggregate level, we do not know which institutions matter most to foreign investors. As shown by Bevan et al. (2004), some institutional development might be beneficial to foreign investors, while others institutional advancements might be more advantageous to indigenous companies and local consumers.

Fourth, apart from only considering subsidiaries with a minimum equity stake of 20 percent, we did not differentiate subsidiaries based on the amount of invested capital by MNEs. Not taking these distinctions into account could certainly have affected our results, since the option to wait is partly determined by the amount of (sunk) capital invested in a foreign subsidiary. Fourth, we did not consider all entries into a host country. For instance, in some cases MNBs first entered with a representative office, branch office or by acquiring a minority equity stake in a subsidiary before making a larger commitment. Similar to the previous point, these entries could influence the real option values and the flexibility – commitment trade-off.

These limitations provide interesting avenues for future studies. For instance, future research should strive to introduce more fine-grained variables at the firm level to better assess which tangible and intangible resources actually drive entry timing decisions under uncertainty. Similarly, more research is needed to examine which institutions are important for attracting FDI in host countries characterized by high exogenous uncertainty. Finally, it would be worthwhile to consider how previous entries in host countries besides subsidiaries influence sequential decision making in uncertain market environments.

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Table 1: Descriptive statistics: means, standard deviations and bivariate correlations.

Variables	Obs.	Mean	s.d.	Min	Max	1	2	3	4	5	6	7	8
1 Uncertainty (inflation)	5479	1.12	1.33	0.06	8.80	1.00							
2 Competition	5479	6.70	4.21	0.61	23.23	-0.05*	1.00						
3 Institutional Weakness	5479	-0.08	0.91	-1.77	3.17	0.59*	0.06*	1.00					
4 Parent Assets	5479	18.73	1.50	14.58	21.58	-0.06*	0.01	-0.04*	1.00				
5 Regional Experience	5479	2.80	2.33	0.00	13.00	-0.19*	-0.03	-0.19*	0.28*	1.00			
6 Geographical Distance	5479	7.15	0.56	4.02	8.93	0.20*	-0.02	0.11*	0.21*	0.02	1.00		
7 Profitability (ROA)	5479	0.58	0.64	-1.10	6.62	-0.05*	-0.00	-0.06*	-0.26*	0.01	0.18*	1.00	
8 Capital Ratio (CR)	5479	10.87	2.80	-0.92	25.6	-0.06*	0.01	-0.05*	0.09*	0.06*	0.17*	0.43*	1.00

* $p < 0.01$

Table 2: Results Survival Analyses

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Uncertainty (inflation)	0.98	0.68***	0.68***	0.77**	0.34***	0.03***	0.57***	0.03***
	(0.07)	(0.07)	(0.08)	(0.10)	(0.09)	(0.02)	(0.09)	(0.02)
Competition	0.88***	0.81***	0.82***	0.84**	0.67***	0.82***	0.82***	0.61***
	(0.03)	(0.06)	(0.06)	(0.06)	(0.08)	(0.06)	(0.06)	(0.08)
Institutional Weakness	1.23*	0.63	0.72	0.92	0.71	0.77	0.69	1.41
	(0.14)	(0.18)	(0.20)	(0.37)	(0.19)	(0.21)	(0.18)	(0.51)
Parent Size	1.34***	1.50***	0.79	0.80	0.78	0.65*	0.79	0.69*
	(0.11)	(0.15)	(0.17)	(0.17)	(0.16)	(0.14)	(0.17)	(0.15)
Regional Experience	1.29***	1.32***	2.11***	2.11***	2.10***	2.14***	2.00***	2.00***
	(0.05)	(0.06)	(0.16)	(0.16)	(0.16)	(0.16)	(0.17)	(0.18)
Geographical Distance	0.37***	0.25***	0.08***	0.09***	0.08***	0.08***	0.08***	0.08***
	(0.05)	(0.06)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Profitability	1.56***	1.72***	1.85**	1.85**	1.87**	1.75**	1.78**	1.70**
	(0.18)	(0.21)	(0.49)	(0.48)	(0.50)	(0.45)	(0.46)	(0.44)
Capital Ratio	0.96	0.95	0.86***	0.87***	0.86***	0.87***	0.87***	0.88***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Uncertainty * Institutional Weakness				0.89				0.70***
				(0.09)				(0.09)
Uncertainty * Competition					1.11***			1.21***
					(0.04)			(0.06)
Uncertainty * Parent Size						1.19***		1.11**
						(0.05)		(0.05)
Uncertainty * Regional Experience							1.07**	1.07**
							(0.03)	(0.03)
17 Country Dummies	No	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
39 HQ Dummies	No	No	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
Log Likelihood	-786.95	-736.96	-686.31	-685.82	-682.10	-682.91	-683.78	673.54
No. of failures	145	145	145	145	145	145	145	145
No. of observations	5479	5479	5479	5479	5479	5479	5479	5479

*p<0.1; **p<0.05; ***p<0.01. Notes: Standard errors in parentheses.

Table 3: Results survival analyses

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Exchange Rate Uncertainty	0.98	0.71**	0.71**	0.74*	0.53**	0.00***	0.51***	0.00***
	(0.14)	(0.12)	(0.12)	(0.11)	(0.16)	(0.01)	(0.11)	(0.01)
Competition	0.87***	0.78**	0.80*	0.79*	0.73**	0.78*	0.77*	0.72**
	(0.03)	(0.09)	(0.10)	(0.10)	(0.11)	(0.10)	(0.10)	(0.11)
Institutional weakness	1.36**	0.78	0.95	1.05	1.08	1.00	1.01	1.27
	(0.19)	(0.27)	(0.29)	(0.42)	(0.33)	(0.31)	(0.31)	(0.48)
Parent Size	1.35***	1.48***	0.81	0.81	0.80	0.55**	0.79	0.57**
	(0.11)	(0.15)	(0.17)	(0.17)	(0.17)	(0.14)	(0.17)	(0.14)
Regional Experience	1.28***	1.32***	2.14***	2.14***	2.14***	2.19***	1.94***	2.00***
	(0.05)	(0.06)	(0.18)	(0.18)	(0.18)	(0.19)	(0.19)	(0.20)
Geographical Distance	0.35***	0.26***	0.09***	0.09***	0.09***	0.10***	0.09***	0.10***
	(0.05)	(0.07)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)
Profitability	1.55***	1.68***	1.97***	1.96***	1.98***	1.84***	1.96***	1.85***
	(0.18)	(0.20)	(0.44)	(0.44)	(0.45)	(0.37)	(0.41)	(0.36)
Capital Ratio	0.96	0.95	0.87***	0.87***	0.86***	0.89**	0.87***	0.89**
	(0.03)	(0.03)	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.04)
Exchange Rate Uncertainty*Institutional Weakness				0.91				0.92
				(0.18)				(0.17)
Exchange Rate Uncertainty*Competition					1.05			1.04
					(0.04)			(0.04)
Exchange Rate Uncertainty*Parent Size						1.32***		1.28***
						(0.12)		(0.12)
Exchange Rate Uncertainty*Regional Experience							1.11***	1.08**
							(0.04)	(0.03)
17 Country Dummies	No	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
39 HQ Dummies	No	No	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
Log Likelihood	-740.70	-694.47	-644.69	-644.55	-643.84	-639.40	-641.65	-637.08
No. of failures	138	138	138	138	138	138	138	138
No. of observations	5125	5125	5125	5125	5125	5125	5125	5125

*p<0.1; **p<0.05; ***p<0.01. Notes: Standard errors in parentheses.

Figure 1: Interactions between Uncertainty, Institutional weakness (left) and Competition (right).

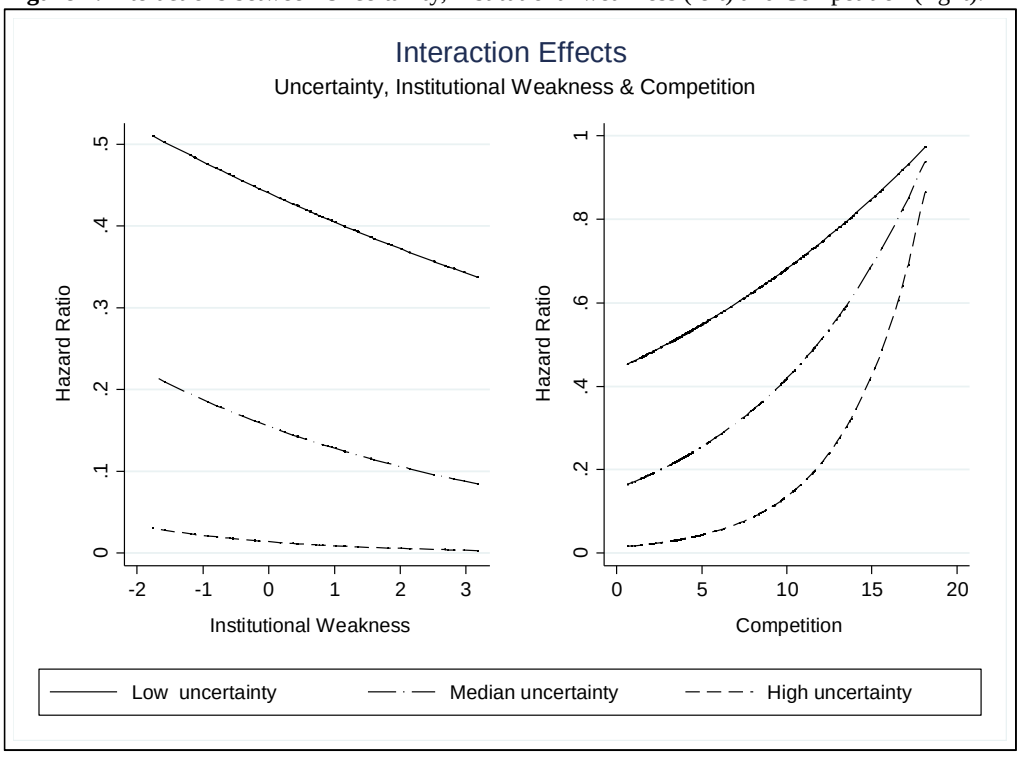

Figure 2: Interactions between uncertainty, MNB Size (left) and MNB Regional experience (right).

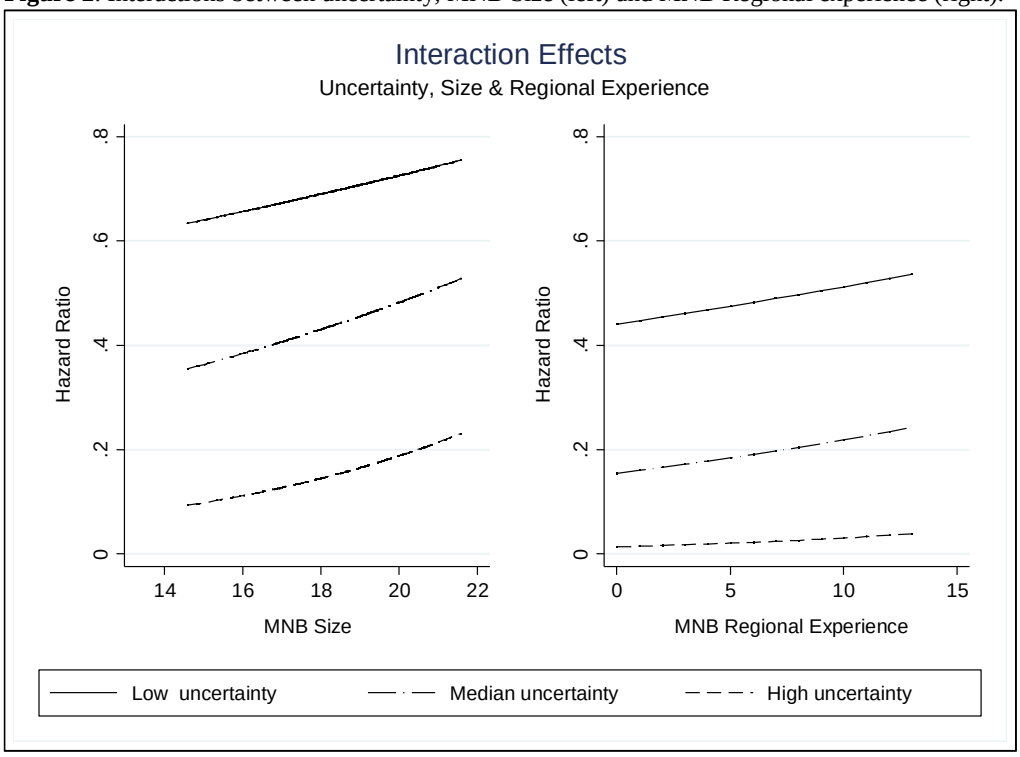

Table 4: Results survival analyses: Acquisition and Greenfield entries.

	Acquisitions				Greenfields			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Uncertainty	0.92	0.44**	0.50**	0.13	1.02	0.73**	0.72**	0.03**
	(0.10)	(0.15)	(0.15)	(0.18)	(0.10)	(0.09)	(0.09)	(0.04)
Competition	0.84***	0.58***	0.58***	0.42***	0.94	1.03	1.03	0.91
	(0.03)	(0.07)	(0.08)	(0.06)	(0.04)	(0.08)	(0.09)	(0.10)
Institutional Weakness	1.28*	0.47*	0.47*	1.91	1.19	3.16*	4.10**	4.31*
	(0.18)	(0.20)	(0.20)	(1.13)	(0.28)	(1.99)	(2.95)	(3.81)
Parent Size	1.30**	1.42***	0.90	0.88	1.52***	1.81***	0.82	0.64
	(0.15)	(0.19)	(0.26)	(0.26)	(0.23)	(0.31)	(0.29)	(0.23)
Regional Experience	1.26***	1.28***	2.57***	2.47***	1.42***	1.50***	1.81***	1.61**
	(0.05)	(0.07)	(0.30)	(0.28)	(0.08)	(0.13)	(0.41)	(0.38)
Geographical Distance	0.34***	0.23***	0.08***	0.08***	0.42***	0.28***	0.09***	0.09***
	(0.05)	(0.08)	(0.03)	(0.04)	(0.08)	(0.09)	(0.06)	(0.06)
Profitability	1.42**	1.57**	1.50	1.51	2.26***	2.44***	2.36***	2.10*
	(0.23)	(0.28)	(0.56)	(0.56)	(0.62)	(0.62)	(0.98)	(0.86)
Capital Ratio	0.99	0.97	0.92	0.92	0.86***	0.87***	0.82	0.84
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)	(0.11)	(0.10)
Uncertainty*Institutional Weakness				0.36***				0.97
				(0.14)				(0.12)
Uncertainty*Competition				1.28***				1.07
				(0.11)				(0.05)
Uncertainty*Parent Size				1.02				1.14**
				(0.08)				(0.08)
Uncertainty*Regional Experience				1.04				1.10**
				(0.04)				(0.04)
17 Country Dummies	No	Yes***	Yes***	Yes***	No	Yes***	Yes***	Yes***
39 HQ Dummies	No	No	Yes***	Yes***	No	No	Yes***	Yes***
Log Likelihood	-543.48	-509.16	-448.30	-440.79	-237.83	-207.45	-186.19	-182.15
No. of failures	99	99	99	99	46	46	46	46
No. of observations	5479	5479	5479	5479	5479	5479	5479	5479

*p<0.1; **p<0.05; ***p<0.01. Notes: Standard errors in parentheses.