

**THE INTERPLAY OF NATIONAL DISTANCES AND REGIONAL NETWORKS:
PRIVATE EQUITY INVESTMENTS IN EMERGING MARKETS**

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Abstract: Integrating social network theory with the literature on national distance, we examine how the investment strategy followed by a private equity (PE) firm in an emerging market is affected by the interplay between two important types of national distances—institutional and geographic—and the firm's centrality in the regional syndication network. Covering over 5,000 investment transactions, we use a dataset of more than 500 PE firms based in both developed and emerging markets targeting three emerging market regions—Latin America, Southeast Asia, and Eastern Europe—from 1996-2011. The results show that, depending on the level of centrality of PE firms in regional syndication networks, institutional and geographic distances can have differing effects—both in magnitude and direction—on their investment strategies in emerging markets. Moreover, these effects are contingent on whether the PE firm is from a developed market or an emerging market. We conclude that different types of national distances can operate in dissimilar ways depending on (1) firm-level factors defined at the regional level—such as centrality in the regional syndication network—and (2) the developed market or emerging market nature of the PE firm.

Keywords: emerging markets, private equity, networks, institutions, geography, venture capital

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INTRODUCTION

Given the increasing importance of emerging markets (EMs) in the world economy, the strategic decision to invest in an EM is important for any firm (Hoskisson *et al.*, 2000; Meyer *et al.*, 2009; Peng *et al.*, 2008; Wright *et al.*, 2005). The effects of national distances are an important and contentious issue in the international business (IB) literature (Berry *et al.*, 2010; Boeh & Beamish, 2012). Traditionally, the focus has been on trying to understand the effects of distances between home and destination markets on the international expansion of multinational firms (Tihanyi *et al.*, 2005; Xu & Shenkar, 2002). More recently, the effects of national distances on other types of investments, such as venture capital (VC), have also attracted some scholarly attention (Dai & Nahata, 2016; Jääskeläinen & Maula, 2014; Nahata *et al.*, 2014).

Integrating social network theory with the literature on national distance, we examine how the investment strategy followed by a private equity (PE) firm in an EM is affected by the interplay between two important types of national distances—institutional and geographic—and the firm's centrality in the regional syndication network. Our general argument is that different types of national distances can operate in diverse ways depending on firm-level factors defined at the regional level—such as centrality in the regional syndication network. To tackle this research question, our empirical study distinguishes between developed market (DM) PE firms and EM PE firms.

We define PE as “financing for early- and later-stage private companies from third-party investors seeking high returns based on both the risk profiles of the companies and the near-term illiquidity of these investments” (Leeds & Sunderland, 2003: 8). Focusing on PE in EMs—following a broad definition that includes not only traditional PE but also VC—is timely because this type of investment is becoming increasingly relevant in EMs and can play an important role in economic development (Taussig & Delios, 2015). PE also provides an excellent context to explore the role of national distance and regional networks in EMs: (1) the PE investment cycle depends crucially on national distances, (2) regional-level factors are very

important for many PE firms investing in EMs, and (3) PE firms frequently use the investment strategy of syndicating their investments with other firms instead of investing alone (Lerner, 1994).

An interesting feature of this study is its regional approach to define the network of investments—distinguishing between regions and destination countries. There is increasing evidence in the international business literature that foreign investment activity has a strong regional component (Arregle *et al.*, 2009, 2013; Qian *et al.*, 2013; Verbeke & Kano, 2016). Following a regional approach to study PE investments in EMs is fundamental because the number of valuable PE investment opportunities in these markets is typically lower than in DMs. Thus, PE firms often group EMs into regions when making investment decisions. In fact, it is common for multinational PE firms to set up funds with a regional focus. Geographic proximity and institutional commonalities among markets that belong to a particular EM region justify the aggregation and development of a “regional strategy” that allows building a more balanced portfolio.

We contribute to the literature by performing an empirical study that uses social network theory to understand the impact of institutional and geographic distances on PE investments in EMs. This study shows that, depending on a network-related factor like regional centrality, two important categories of national distances can have different and complex effects on the investment strategy of PE firms investing in EMs. We are not aware of any prior empirical study focusing on the interactive relationship between national distance and network-related factors in an EM context. One of the highlights of this research is to argue and show empirically that geographic distance can behave differently from institutional distance when the interactive effect with regional centrality is taken into account. Interestingly, we observe that the effect of regional network centrality and the interaction between geographic distance and regional centrality depend on whether the PE firm is from a DM or an EM.

THEORY AND HYPOTHESES

Institutional distance and PE investments in EMs

“Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of

conduct), and formal rules (constitutions, laws, property rights)” (North 1991: 97). Institutions play an important role in cross-border investments because firms operating across borders face the difficulties of managing institutional differences, especially when EMs are involved (Dikova *et al.*, 2010; Wu & Salomon, 2016). Firms can also exploit “institutional capabilities” developed at home when they operate domestically or in institutionally similar EMs (Carney *et al.*, 2016).

In this study, we focus on institutions that relate to the government’s ability to formulate and implement sound policies and regulations and the extent to which agents have confidence in and abide by the rules of society (for example, quality of contract enforcement, property rights, and the courts) (Abdi & Aulakh, 2012; Kaufmann *et al.*, 2011; Li & Zahra, 2012; Marano *et al.*, 2016; Meuleman *et al.*, 2017; Van Hoorn & Maseland, 2016). Institutions are inherently related to regulatory processes—rule-setting, monitoring, and sanctioning activities. “Regulatory processes involve the capacity to establish rules, inspect others’ conformity to them, and, as necessary, manipulate sanctions—rewards or punishments—in an attempt to influence future behavior” (Scott, 2008: 52). The capacity of PE firms to exploit their institutional knowledge—developed in their home markets—depends significantly on the differences in the quality of regulatory institutions between the origin and destination markets (Carney *et al.*, 2016; Holburn & Zelner, 2010). Due to the nature of this type of investment, PE firms must navigate effectively the laws and regulations of the destination market in order to successfully invest in an EM (Guler & Guillén, 2010b; Khoury *et al.*, 2015). Firms from markets with strong institutions face multiple complications when investing in EMs with weak institutional settings (Li *et al.*, 2014). For example, firms from markets with strong institutions are used to relying on accounting and financial information to evaluate investment opportunities. However, in weaker regulatory settings, reliable financial and accounting information is more difficult to obtain so investors tend to use it with more caution (Cumming *et al.*, 2010; Khanna, 2014). Conversely, PE firms from home markets with weak institutions that invest in destination markets with weak institutional systems are able to exploit or benefit from their knowledge and expertise about how to traverse weak institutional systems. For example, firms from markets with weak institutional settings that invest in markets with weak institutional settings can benefit from their experience and knowledge advantage—compared to firms from DM—about how to deal

with poor judiciary systems and weak contract enforcement (Bruton & Ahlstrom, 2003). Naturally, EM firms investing domestically are typically at an advantage in this regard because they do not have to deal with institutional differences between home and destination markets.

Geographic distance and PE investments in EMs

Geography and spatial factors can affect strategic decisions—such as locations, acquisitions, and R&D collaborations—in significant ways (Garmaise & Moskowitz, 2004; Schotter & Beamish, 2013). As Boeh & Beamish (2012: 526) put it, “simply, physical and temporal separation impedes information flows and communication, and inhibits the ability to monitor and control resources.” The construct of geographic distance has been the subject of many empirical studies in business and management (Beugelsdijk & Mudambi, 2013; Chakrabarti & Mitchell, 2013; Malhotra & Gaur, 2014; Petersen & Rajan, 2002; Reuer & Lahiri, 2014). A higher geographic distance between actors involved in a business transaction typically translates into greater information asymmetries, adverse selection risks, and higher transaction costs (Williamson, 1981). Previous studies have found that the geographic distance between PE firms and target companies has a significant impact on investment behavior (e.g., Chen *et al.*, 2010). Regarding PE in EMs, investments are more likely to occur when geographic distance is low. First, lower geographic distance levels facilitate finding and evaluating investment opportunities (Sorenson & Stuart, 2001), which can be particularly cumbersome in EMs. Second, monitoring investments in an EM is easier when the portfolio company is geographically close (Bengtsson & Ravid, 2009). More generally, a low level of geographic distance facilitates the frequent face-to-face communication and social interaction required throughout the PE investment process, which is especially critical in an EM context (Sapienza & Gupta, 1994). Naturally, compared to foreign PE investors, local investors can avoid the disadvantages associated with this type of distance due to their inherent geographic proximity.

Regional syndication networks and PE investments in EMs

One of the main characteristics of the PE industry is that firms frequently co-invest with partners (Dimov & Milanov, 2010; Guler & Guillén, 2010a; Zaheer & Bell, 2005). A syndicated investment occurs when two or more PE firms invest together in the same company. Firms' current and past syndicated investments generate a web of relationships between them that can be represented using a network. Network centrality—one of the most important measures in social network theory—refers to how well connected an actor is to the parts of the network with the highest connectivity (Bonacich, 1987). Firms with higher levels of *centrality* in a syndication network typically enjoy more influential and advantageous network positions that can translate into a higher probability of investment and success (Hochberg, Ljungqvist & Lu, 2007, 2010). Firms that are more central in the network can have better access to information about investment opportunities flowing through the network (Sorenson & Stuart, 2008). For instance, centrality in the network can improve access to more and better opportunities through third-party referrals (Batjargal & Liu, 2004). High centrality in the regional syndication network means a firm is well-integrated into the regional PE investment system. Due to the flow of information within a regional syndication network, centrality can be crucial in terms of identifying and coming across new investment opportunities in a region: information flowing through the regional syndication network tends to be industry-specific and can be especially useful in this regard. Also, a more central position improves the capacity to absorb knowledge flowing through a regional network of partners (Nachum *et al.*, 2008; Shenkar & Li, 1999).

There are also potential disadvantages associated with syndication and centrality that can be particularly apparent in an EM context. As Meuleman *et al.* (2017: 131) put it, “firms entering syndicates face considerable uncertainty given the unpredictability of the behavior of partners and the associated costs of opportunistic behavior.” Syndication and centrality could “expose” firms with exclusive contextual knowledge and unique information about investing in a particular EM (Dimov & Milanov, 2010; Meuleman *et al.*, 2009). For instance, there is a greater risk that unique knowledge and valuable information possessed by highly central PE firms could spill over to—and end up benefiting—other firms throughout the regional syndication network. Since EMs are typically characterized by significant information asymmetries and high

transaction costs, a firm can be more inclined to capture the value of better information and knowledge about a particular EM by making solo investments or limiting the amount of syndication and centrality (Dai *et al.*, 2012). Otherwise, other firms may ‘free ride’ on this knowledge through syndication while centrality may facilitate the dispersion of valuable knowledge throughout the network (Nachum *et al.*, 2008). The typically weaker legal systems and poor contract enforcement in EMs exacerbate this problem.

In short, centrality in the regional syndication network can be associated with different kinds of effects in EMs. This justifies studying possible interaction effects with other factors, such as national distances.

The interplay between national distances and centrality in the regional syndication network

The PE investment process includes five main stages: (1) finding investment opportunities, (2) evaluating investment opportunities, (3) closing the deal, (4) monitoring the investment, and (5) exiting the investment (Lerner *et al.*, 2012). PE firms try to anticipate and assess what will happen during those stages before deciding to look for investment opportunities in a specific market. Institutional similarities between a firm’s home market and a destination market are particularly important in stages (2) through (5). Compared to the case of centrality in the regional syndication network, it is less clear that low institutional distance between a PE firm’s home market and the destination market would facilitate finding or coming across new investment opportunities. Why would a similar quality of contract enforcement between the firm’s home market and the destination market help a PE firm in finding or coming across new investment opportunities? Low institutional distance does not necessarily relate to a higher flow of PE-industry-specific information about investment opportunities. On the other hand, similar levels of regulatory quality and contract enforcement between a firm’s home market and the destination market can certainly help to handle contracts associated with evaluating the opportunity, closing a deal, monitoring the investment, and exiting the investment.

Therefore, we argue that centrality in the regional syndication network and institutional proximity complement each other. While regional centrality can be especially useful in terms of finding or coming

across new investment opportunities due to better access to industry-specific information flowing through the network, institutional proximity helps to smooth the process of evaluating, entering, monitoring, and exiting the investment in a particular EM. This complementarity translates into a negative interaction between regional centrality and institutional distance. In other words, the positive effect of institutional proximity (or low institutional distance) on investment likelihood strengthens when combined with a high centrality in the regional syndication network.

Hypothesis 1: The positive effect of institutional proximity (i.e., low institutional distance) on the probability of investment in an EM destination is greater when the PE firm's centrality in the regional syndication network is high.

The case of geographic distance works differently. Geographic distance is unique because it is inherently related to face-to-face communication and physical presence in the destination market. The higher face-to-face communication and increased physical presence linked to low geographic distance facilitate the entire PE investment cycle—from finding or coming across a new investment opportunity, to evaluating the investment, closing the deal, monitoring the investment, and finally exiting the investment. We argue that these broader benefits of low geographic distance can substitute for a lack of regional centrality in a way that low institutional distance cannot. In other words, regional syndication and centrality in the regional network become relatively less useful or needed in terms of finding or coming across new investment opportunities when geographic distance is low. Being physically close to the place where the investment opportunities are located can make an important difference in terms of finding and coming across potential opportunities. At the same time, there is more direct access to information about the PE industry in a specific EM.

On the other hand, if a PE firm has too many syndication partners in the region or is too central in the regional network, it will be more difficult for the firm to capture the value created by its unique knowledge about a geographically proximate EM. More contextual information about a market is especially important and valuable when investing in EMs. PE firms that are located geographically close to or at the destination market can more easily develop a pool of destination-specific resources, capabilities, and local

contacts that facilitates finding, evaluating, and monitoring investments—which is particularly important for EM investments (Khanna & Palepu, 2010). This means that PE firms focusing on making geographically localized investments tend to be less reliant on the support of a regional network of partners to succeed. This makes them more likely to limit the level of syndication or simply proceed alone with their investments in the geographically proximate market. In other words, regional syndication and central positions in the regional network become relatively less attractive when the firm is close to the EM destination. A PE firm can be more effective in taking full advantage and capturing the value of its unique know-how about a geographically close EM by limiting syndication or following a stand-alone approach to investments. By following a more solitary approach, a firm can avoid “sharing” with other firms the value created by the unique advantages associated with low geographic distance to the EM destination (Brander *et al.*, 2002). This mechanism becomes most dramatic in the case of EM firms investing domestically (Mingo, 2013). These arguments can help explain why prior empirical evidence shows that VC firms in EMs have a tendency to invest without syndication partners (Khoury *et al.*, 2015, Lerner & Schoar, 2005).

Therefore, we should observe a positive interaction between regional centrality in the syndication network and geographic distance. In other words, a high level of regional centrality can counteract the positive effects of geographic proximity (or low geographic distance) on investment likelihood because there is a higher risk of not being able to capture and protect all the value created by the unique knowledge and information about a geographically proximate EM.

Hypothesis 2: The positive effect of geographic proximity (i.e., low geographic distance) on the probability of investment in an EM destination is greater when the PE firm’s centrality in the regional syndication network is low.

DATA AND METHODOLOGY

We focus on PE firms involved in one or more investment transactions in Latin America¹, Southeast Asia² or Eastern Europe³ between 1996 and 2011. The sample of PE investments comes from *Thomson ONE Investment Banking's Private Equity Module*. Our dataset is based on 5,181 investments made by 531 PE firms. Since our unit of analysis is the PE firm-destination market pair, this translates into a total of 42,751 observations.

Dependent variable

The dependent variable is a binary variable (*PE Invest*) that is equal to one if the PE firm made one or more investment transactions in a particular market during a year, and is equal to zero otherwise. As a robustness check, we also run the models using the actual number of PE investments as the dependent variable.

Independent variables

Institutional distance. To measure institutional distance, we focus on the regulatory quality and the rule of law dimensions from the Worldwide Governance Indicators (WGI) (Kaufmann *et al.*, 2011). Regulatory quality relates to the government's ability to formulate and implement sound policies and regulations; rule of law relates to the extent to which agents have confidence in and abide by the rules of society (for example, quality of contract enforcement, property rights, the police, and the courts). The variable that measures institutional distance between the firm's home market and the EM destination (*Instit Dist*) is built using a Mahalanobis distance procedure (Berry *et al.*, 2010).

¹ The Latin American markets included are: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Panama, Peru, Uruguay, and Venezuela.

² The Southeast Asian markets included are: Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam. All these markets are part of the Association of Southeast Asian Nations (ASEAN).

³ The Eastern European markets included are: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine.

Geographic distance. We measure geographic distance between two markets using their capital cities (Dai *et al.*, 2012; Jääskeläinen & Maula, 2014). The variable *Geo Dist* is the log of the great-circle distance (in kilometers and plus one) between the capital cities of two particular markets.

Network centrality. We build the syndication network for each region using the PE data described earlier. Similar to previous studies, a five-year window is used to build the network (Hochberg, Ljungqvist & Lu, 2007, 2010). Each node in the network represents a PE firm, while a tie between two firms indicates they invested together at least once during the five-year window. We use the variable *Net Centrality* to measure the firm's centrality within the network. *Net Centrality* is the Bonacich's (1987) *eigenvector centrality* of a PE firm in the regional syndication network. High centrality is achieved by establishing many connections to actors that also have high centrality. Eigenvector centrality is calculated by assessing how connected an individual is to the parts of the network with the highest connectivity (Bonacich, 1987).

Control variables

Firm-level control variables. The variables *Experience Reg* and *Experience Dest* measure the number of previous investments a PE firm has made in the region and the destination market, respectively. The variable *Funds Managed* is the number of funds managed by the firm. The logarithm of the firm's age (*Firm Age*) is also included. Using Berry *et al.* (2010)'s data, we control for four other types of national distances: cultural distance (*Cultural Dist*), administrative (*Admin Dist*), economic (*Econ Dist*), and political (*Political Dist*). Another control is the dummy variable *Same Market*, which is equal to one if the firm's market and destination market are the same. A set of dummies is used to control for the length of time since the last investment in the region: *No Previous Invest*, *Last Invest 3 Years*, and *Last Invest 4-5 Years*. We also use a binary control variable that is equal to one if the firm is based in a DM (*DM Firm*). This variable allows us to distinguish between DM and EM firms when we present our results. Finally, we control for the number of deals—in the previous 5-year window—in which a firm invested with different types of syndication partner firms. More specifically, we count the number of deals in which a firm invested in the region with: (1) a syndication partner with whom the firm invested more than one time in the region during the 5-year window (*Deals with Repeated*

Partner), (2) a syndication partner with whom the firm invested one or more times in the region prior to the 5-year window (*Deals with Known Partner*), (3) a syndication partner from the destination market (*Deals with Domestic Firms*), and (4) a syndication partner from the region where the destination market is located (*Deals with Regional Firms*). We add these last four control variables to separate the effect of network centrality from the effect of the type of syndication partners a firm may have.

Destination market-level control variables. Every model includes the following time-varying control variables at the destination-market level: total GDP, GDP per capita, imports as a percentage of GDP, FDI as a percentage of GDP, and market capitalization of listed companies as a percentage of GDP. The data come from the World Bank's World Development Indicators.

Regional-level control variables. We control for the number of firms syndicating in the region during a time window (*Size Synd Net*).

Finally, we include year, home market, and destination market indicators.

Statistical methodology

We use logit models to perform the main statistical analyses and we graphically analyze the interactions proposed in the hypotheses. In order to show separate results for DM and EM firms, we include in some of our models three-way interactions using *DM Firm* as the third variable.⁴ The use of three-way interactions provides a more nuanced analysis and fine-grained testing of our hypotheses by distinguishing between DM and EM firms. More specifically, the use of three-way interactions allows us to observe if these two important groups of PE firms behave similarly or differently regarding our theoretical predictions.

Since it is more likely that observations belonging to the same firm-destination market pair are more correlated than observations across these pairs, we cluster robust standard errors by firm-destination market. It is important to note that including the non-occurrence of investments ($PE\ Invest = 0$) as part of our data helps avoid some of the selection problems that have been prevalent in other studies.

⁴ We thank the senior editor and one of the reviewers for suggesting to show separate results for DM and EM firms. We also thank this reviewer for suggesting the use of three-way interactions.

RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics. Figure 1 shows network diagrams for each region in years 2002, 2006, and 2010. The network has a higher level of syndication and connectedness—with a larger main component⁵—in all regions for year 2002. This higher level of syndication and connectedness is due to the fact that the five-year window for 2002 includes the *Dot-Com Bubble* of 2000. On the other hand, the network diagrams for year 2010—given that the five-year window for 2010 includes the *Global Recession* of 2009—are less connected and the components tend to be smaller, showing that syndication was less prevalent and firms tended to have fewer syndicate partners during that period. Finally, it is interesting to note that the evolution of the network in each region tends to follow a similar pattern.

We perform regression analyses to explore the validity of our hypotheses (Table 2). The results in Model 4—the one including all the direct effects of the independent variables—show that centrality in the regional syndication network does not have a significant impact on the probability of investment. This is consistent with our theoretical discussion about potential conflicting effects of regional network centrality in EM settings. The coefficients on *Instit Dist* and *Geo Dist* are all negative and significant. These results show that low institutional distance and low geographic distance between a PE firm's home market and an EM destination are associated with higher investment probability.

In Model 5, the coefficients for the interaction terms are significantly negative in the case of *Net Centrality * Instit Dist* (p -value<0.01) and significantly positive in the case of *Net Centrality * Geo Dist* (p -value<0.01). In Model 6, the coefficients for the same interaction terms continue to be significantly negative and positive, respectively. Regarding the three-way interactions with the variable *DM Firm*, the coefficient on the variable *Net Centrality * Instit Dist * DM Firm* is positive but not significantly different from zero and the coefficient on *Net Centrality * Geo Dist * DM Firm* is negative and significant (p -value<0.01). Since interaction effects in logit and probit models cannot be assessed properly based only on the sign, magnitude, or statistical

⁵ According to Wasserman and Faust (1994), a *component* is a subset of nodes in which there is a path between all pairs of nodes and there is no path between a node in the component and any node not in the component. All pairs of nodes in a component are reachable.

significance of the interaction term coefficients, presenting results graphically at meaningful values of the variables facilitates their interpretation (Greene, 2010; Hoetker, 2007).

Figure 2 helps to visualize the interaction effects. In order to show the behavior of DM and EM firms separately, the graphs are based on the model that includes the three-way interactions (Model 6).⁶ Panels A and B illustrate the interaction effect between institutional distance and network centrality for a DM firm and an EM firm, respectively. Certainly, in the case of institutional distance, DM and EM firms seem to behave similarly. The negative slopes of both the high centrality and the low centrality curves in Panels A and B are consistent with the proposition that lower institutional distance is associated with a higher likelihood of investment. Regarding the interaction effect, Panels A and B show that if PE firms have a high level of centrality in the regional syndication network, the positive relationship between institutional proximity and the probability of investment strengthens. In other words, when firms are central in the regional syndication network, institutional proximity has a greater positive effect on investment probability than in the case of low centrality. Therefore, the results of Model 6 and Figure 2 (Panels A and B) provide support for Hypothesis 1. Interestingly, when institutional distance is high, the probability of investment is low for both low and high centrality levels and the difference between the two curves is not significant. In other words, as institutional distance increases, the interaction effect tends to disappear.

Panels C and D illustrate the interaction effect between geographic distance and network centrality for a DM firm and an EM firm, respectively. Figure 2 (Panel C) shows the interaction of network centrality and geographic distance in the case of DM firms. The negative slope of both curves is consistent with the proposition that lower geographic distance is associated with a higher likelihood of investment. The graph also suggests that if DM firms have a high level of centrality in the regional syndication network, the positive relationship between a higher level of geographic proximity and the probability of investment strengthens. Similarly to the case of institutions, when DM firms have high centrality within the regional syndication network, geographic proximity has a greater positive effect on investment probability than in the case of low centrality. Therefore, the results of Model 6 and Figure 2 (Panel C) do not provide support for Hypothesis 2.

⁶ See the *Statistical methodology* subsection for more details.

Figure 2 (Panel D) illustrates the interaction of network centrality and geographic distance in the case of EM firms. The negative slope of both curves is consistent with the proposition that lower geographic distance is associated with higher likelihood of investment. The graph also suggests that if EM firms have a low level of centrality in the regional syndication network, the positive relationship between a higher level of geographic proximity and the probability of investment strengthens. In other words, when EM firms have low centrality within the regional syndication network, geographic proximity has a greater positive effect on investment probability than in the case of high centrality. Therefore, the results of Model 6 and Figure 2 (Panel D) provide support for Hypothesis 2. Finally, when geographic distance is high, the probability of investment is low for both low and high centrality levels and the difference between the two curves becomes negligible (Panels C and D). Thus, as geographic distance increases, the interaction effect tends to disappear for both DM and EM firms.

Summarizing, we find support for Hypothesis 1 in both DM and EM PE firms. The complementarity between centrality and institutional proximity discussed earlier seems to be an important mechanism that affects the likelihood of PE investments in EMs. While high centrality in the regional syndication network facilitates finding and coming across business opportunities, low institutional distance eases the later stages in the PE investment cycle. The empirical results obtained for the interaction between geographic distance and network centrality are particularly interesting and intriguing because DM firms and EM firms behave differently. Based on the empirical evidence, DM firms seem to be always more likely to invest when centrality is combined with a high level of institutional or geographic proximity. Thus, in the case of DM firms, similar mechanisms seem to be operating both in the case of institutional distance and geographic distance. DM firms would be more comfortable investing when they are well-integrated to and enjoy central positions in the regional syndication network. We speculate that the higher level of liability of regional foreignness experienced by DM firms in EM regions can be so strong that the importance of regional network centrality supersedes any potential benefits associated with less networked positions when geographic proximity is high (Johanson & Vahlne, 2009; Qian *et al.*, 2013; Wu & Salomon, 2016).

On the other hand, the mechanisms associated with Hypothesis 2 do seem to be present in the case of EM firms. In this case, the liability of regional foreignness experienced by these firms would be much lower than the case of DM firms (Qian *et al.*, 2013). Due to a higher familiarity with EMs in general and with the particular EM region where they are located, EM firms are able to exploit more effectively the value of a unique know-how about a geographically close EM by limiting syndication and central positions in the regional network. Therefore, liability of foreignness in EM regions—which is certainly different depending on the DM or EM nature of the firm—would be a crucial factor that can limit the attractiveness of avoiding collaboration when making PE investments.

[Insert Tables 1-2, Figures 1-2]

We conduct multiple robustness checks, such as (1) rare events logistic models (King & Zeng, 2001); (2) zero-inflated negative binomial models with the actual number of PE investments as the dependent variable (Greene, 2003); (3) use of alternative combinations of WGI's dimensions as the institutional distance measure; (4) use of different methods to calculate institutional distance; (5) use of firm indicators as additional control variables; (6) deletion of observations for firms that have not made any investment in a region for more than 5 years (inactive firms); (7) use of free trade agreements, preferential trade arrangements, and political affinity between markets as additional control variables; and (8) multilevel mixed-effects logistic models to take into account the hierarchical component of our data. The results for all these robustness checks are consistent with our main regressions in Table 2.

CONCLUSION

Integrating social network theory with the national distance literature, we examine how the interplay between two types of national distances—institutional and geographic—and centrality in the regional syndication network affect the investment strategies of PE firms targeting EMs. Focusing on institutional and geographic distance, we show empirically that the magnitude and direction of the interplay between centrality and national distance is contingent on (1) the type of national distance under consideration and (2) the DM or

EM nature of the firm. Our main contribution is to show that different types of national distances operate in different ways depending on firm-level factors defined at the regional level—such as centrality in the regional syndication network—and the DM or EM nature of the PE firm.

The findings for geographic distance are particularly noteworthy: this type of distance seems to be of a different nature due to its unique implications about face-to-face communication and physical presence, which are crucial in the PE investment process. It is also interesting to observe that, in the case of geographic distance, the interaction effect with regional centrality is different depending on whether the PE firm is from a DM or an EM. PE firms from EMs are more likely to invest when there is a combination of low geographic distance and low regional network centrality than when the combination is low geographic distance and high centrality. In the case of institutional distance, EM firms are more likely to invest when the combination is low institutional distance and high regional network centrality. Thus, EM firms do not always value positively a central position in the regional syndication network. DM firms behave differently: they are always more likely to invest when a low level of distance—whether institutional or geographic—is combined with a high level of regional network centrality. We can infer that, compared to EM firms, DM firms tend to more consistently prefer a central position in the regional syndication network when making PE investments in EMs.

Future research can extend our arguments and findings on how the interaction between national distances and networks can affect investments in EMs (Ahlstrom & Bruton, 2006). It would be interesting to investigate the effects of other kinds of national distances—e.g., cultural, administrative, economic, and political—and different types of syndication—e.g., syndication between local and foreign investors, between EM and DM investors, and among EM investors. Interactions associated with other firm characteristics—e.g., whether or not firms are government-backed—and the composition of syndicates, are also worth exploring (Cumming *et al.*, 2017). Future work could examine the impact of other network structural characteristics, such as network cohesion or structural holes (Burt, 1992; Fleming, Mingo, & Chen, 2007). Finally, it would also be interesting to apply the theoretical framework of this paper to other phenomena, such as MNEs, international joint ventures, and mergers and acquisitions.

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Table 1. Descriptive statistics (selected variables)

Variable	Mean	Std. Dev.	Min	Max
<i>PE Invest</i>	0.038	0.192	0.000	1.000
<i>Net Centrality</i>	0.087	0.194	0.000	1.000
<i>Instit Dist</i>	1.517	0.812	0.000	4.371
<i>Geo Dist [ln(km)]</i>	7.831	1.988	0.000	9.883
<i>DM Firm</i>	0.710	0.454	0.000	1.000
<i>Funds Managed</i>	10.540	17.120	1.000	123.000
<i>FDI Dest [% GDP]</i>	5.383	6.175	-16.069	51.896
<i>Size Synd Net</i>	63.485	26.060	3.000	113.000
<i>Experience Dest</i>	0.524	3.380	0.000	151.000
<i>Experience Reg</i>	4.337	11.427	0.000	173.000
<i>No Previous Invest</i>	0.082	0.275	0.000	1.000
<i>Last Invest 3 Years</i>	0.411	0.492	0.000	1.000
<i>Last Invest 4-5 Years</i>	0.095	0.293	0.000	1.000
<i>Deals with Repeated Partner</i>	0.296	0.884	0.000	12.000
<i>Deals with Known Partner</i>	0.065	0.388	0.000	11.000
<i>Deals with Domestic Firms</i>	0.031	0.226	0.000	7.000
<i>Deals with Regional Firms</i>	0.280	0.729	0.000	7.000
<i>Culture Dist</i>	15.293	14.172	0.000	157.773
<i>Admin Dist</i>	17.195	16.892	0.000	171.593
<i>Political Dist</i>	1558	1440	0.000	7332
<i>Econ Dist</i>	12.318	12.243	0.000	85.805
<i>Firm Age [ln]</i>	2.398	0.960	0.000	5.323
<i>Same Country</i>	0.047	0.212	0.000	1.000

[N=42,751]

Table 2. Logit models predicting the probability that a PE firm will invest in an EM

Model:	(1)	(2)	(3)	(4)	(5)	(6)
<i>Net Centrality</i>	-0.187 [0.192]	-0.192 [0.190]	-0.187 [0.190]	-0.190 [0.189]	-0.536+ [0.307]	-0.837* [0.327]
<i>Instit Dist</i>		-0.496** [0.133]		-0.491** [0.139]	-0.411** [0.139]	-0.376** [0.140]
<i>Net Centrality * Instit Dist</i>					-0.590** [0.204]	-1.230* [0.522]
<i>Geo Dist</i>			-0.559** [0.155]	-0.532** [0.145]	-0.554** [0.144]	-0.484** [0.144]
<i>Net Centrality*Geo Dist</i>					0.164** [0.0536]	0.377** [0.0855]
<i>DM Firm</i>	1.461** [0.520]	1.960** [0.588]	2.424** [0.689]	2.829** [0.739]	2.828** [0.727]	2.862** [0.706]
<i>Net Centrality * DM Firm</i>						6.547** [1.801]
<i>Net Centrality * Instit Dist * DM Firm</i>						0.665 [0.560]
<i>Net Centrality * Geo Dist * DM Firm</i>						-0.967** [0.226]
<i>Funds Managed</i>	0.0105** [0.00234]	0.0106** [0.00236]	0.0105** [0.00235]	0.0106** [0.00236]	0.0104** [0.00235]	0.0108** [0.00236]
<i>FDI Dest</i>	0.0248** [0.00617]	0.0241** [0.00617]	0.0248** [0.00618]	0.0241** [0.00618]	0.0244** [0.00618]	0.0239** [0.00623]
<i>Size Synd Net</i>	-0.00738* [0.00315]	-0.00829** [0.00319]	-0.00608+ [0.00316]	-0.00705* [0.00321]	-0.00670* [0.00319]	-0.00736* [0.00321]
<i>Experience Dest</i>	0.0374* [0.0160]	0.0383* [0.0153]	0.0365* [0.0151]	0.0374* [0.0146]	0.0378** [0.0145]	0.0380** [0.0144]
<i>Experience Reg</i>	0.0145** [0.00545]	0.0134* [0.00523]	0.0140** [0.00534]	0.0130* [0.00512]	0.0128* [0.00510]	0.0125* [0.00506]
<i>No Previous Invest</i>	5.274** [0.238]	5.278** [0.238]	5.285** [0.238]	5.291** [0.237]	5.302** [0.238]	5.327** [0.238]
<i>Last Invest 3 Years</i>	4.058** [0.246]	4.059** [0.246]	4.046** [0.246]	4.050** [0.245]	4.058** [0.246]	4.075** [0.245]
<i>Last Invest 4-5 Years</i>	2.613** [0.282]	2.607** [0.282]	2.604** [0.281]	2.600** [0.281]	2.602** [0.282]	2.616** [0.281]
<i>Deals with Repeated Partner</i>	0.126** [0.0428]	0.127** [0.0426]	0.125** [0.0422]	0.126** [0.0420]	0.124** [0.0425]	0.143** [0.0418]
<i>Deals with Known Partner</i>	-0.175+ [0.0933]	-0.169+ [0.0921]	-0.180* [0.0919]	-0.174+ [0.0907]	-0.172+ [0.0937]	-0.162+ [0.0906]
<i>Deals with Domestic Firms</i>	0.0637 [0.103]	0.0573 [0.102]	0.0655 [0.103]	0.0580 [0.103]	0.0741 [0.104]	0.100 [0.103]
<i>Deals with Regional Firms</i>	-0.0176 [0.0660]	-0.0153 [0.0648]	-0.00961 [0.0654]	-0.00736 [0.0642]	-0.0178 [0.0644]	-0.0219 [0.0651]
<i>Culture Dist</i>	-0.00835* [0.00352]	-0.00744* [0.00346]	-0.00920* [0.00361]	-0.00828* [0.00355]	-0.00833* [0.00355]	-0.00826* [0.00344]
<i>Admin Dist</i>	-0.0223+ [0.0123]	-0.0221+ [0.0119]	-0.00934 [0.0120]	-0.00821 [0.0123]	-0.00870 [0.0123]	-0.0102 [0.0120]
<i>Political Dist</i>	-4.53e-05 [5.16e-05]	-3.19e-05 [5.06e-05]	-4.38e-05 [5.23e-05]	-2.99e-05 [5.15e-05]	-2.55e-05 [5.15e-05]	-2.37e-05 [5.14e-05]
<i>Econ Dist</i>	0.0170* [0.00743]	0.0165* [0.00728]	0.0211* [0.00914]	0.0210* [0.00893]	0.0213* [0.00874]	0.0216* [0.00888]
<i>Firm Age</i>	-0.148** [0.0487]	-0.149** [0.0487]	-0.142** [0.0490]	-0.143** [0.0489]	-0.142** [0.0488]	-0.137** [0.0492]
<i>Same Market</i>	3.027** [0.273]	2.539** [0.298]	-0.728 [1.109]	-1.010 [1.049]	-1.012 [1.035]	-0.381 [1.036]
Other control variables?	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-7.400** [0.660]	-6.818** [0.632]	-3.461** [1.338]	-3.064* [1.276]	-3.030* [1.258]	-3.777** [1.253]
Log likelihood	-4219	-4205	-4200	-4187	-4181	-4172

Below the value of each coefficient are the heteroskedasticity-robust standard errors clustered by firm-destination market combinations, shown in brackets. All models include **year, home market, and destination market indicators**.

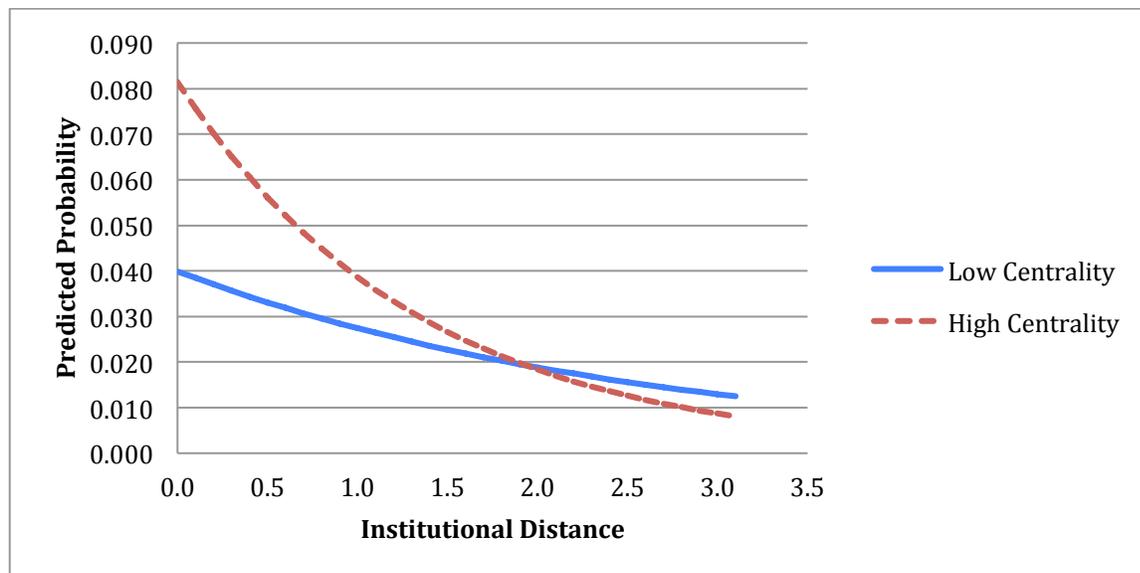
** $p < 0.01$; * $p < 0.05$; + $p < 0.1$. The number of observations is 42,751.

Figure 1. Network diagrams^a

^a The graphs exclude isolated nodes, i.e., firms that made only non-syndicated investments during the five-year window.

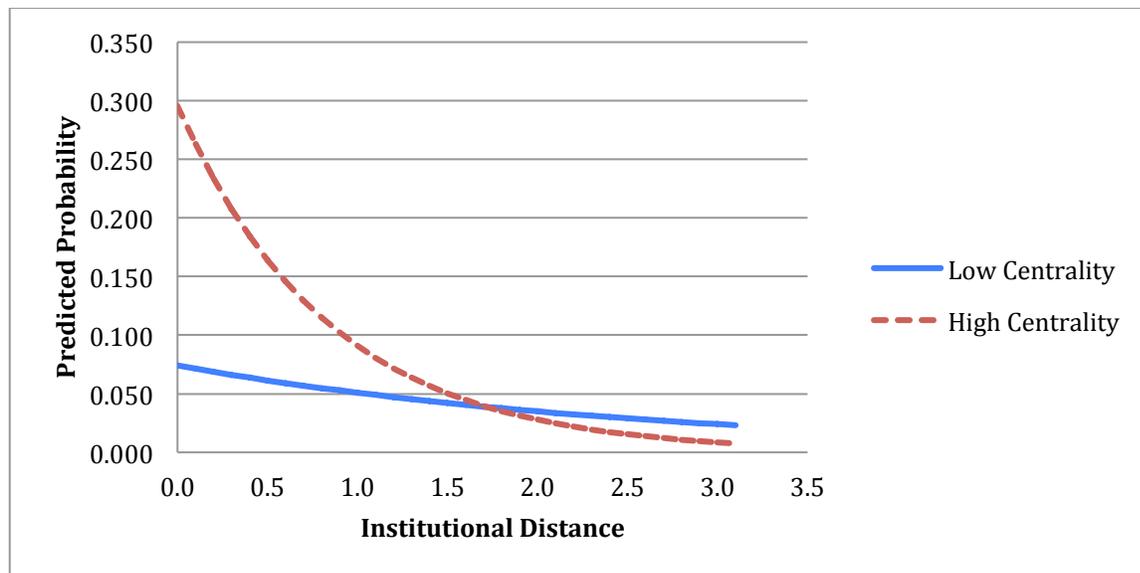
Figure 2. Interaction effects between network centrality and national distances⁷

Panel A [Developed Market Firm]



X-axis shows meaningful range of possible values.

Panel B [Emerging Market Firm]

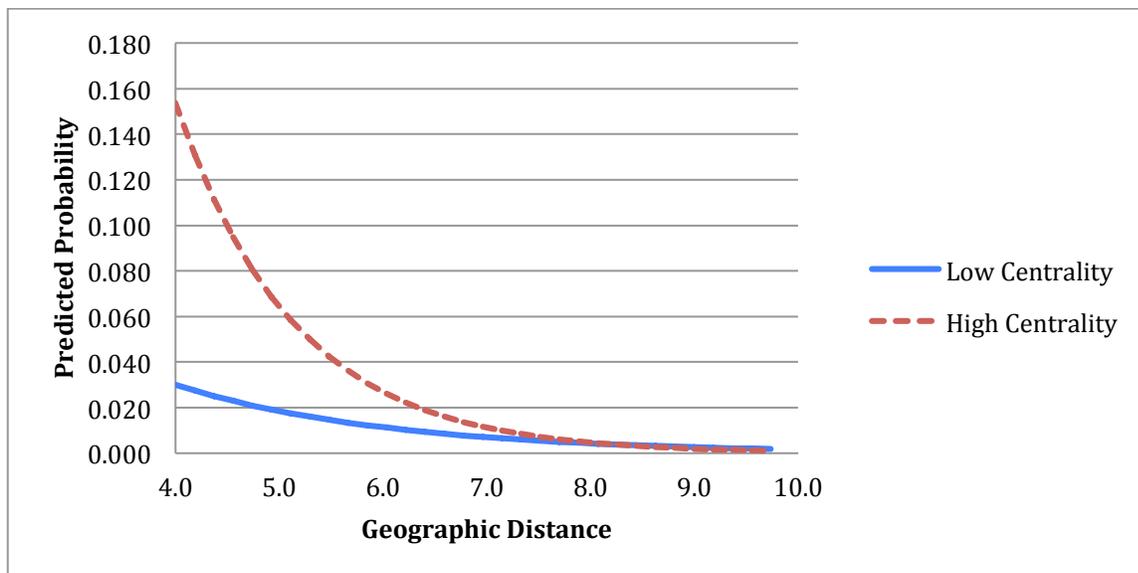


X-axis shows meaningful range of possible values.

⁷ Based on estimates from Model 6 in Table 2. “Low Centrality” corresponds to no syndication (centrality of zero); “High Centrality” corresponds to the 90th percentile of the centralities for the syndicated firms in the sample. Other variables are held at their mean values.

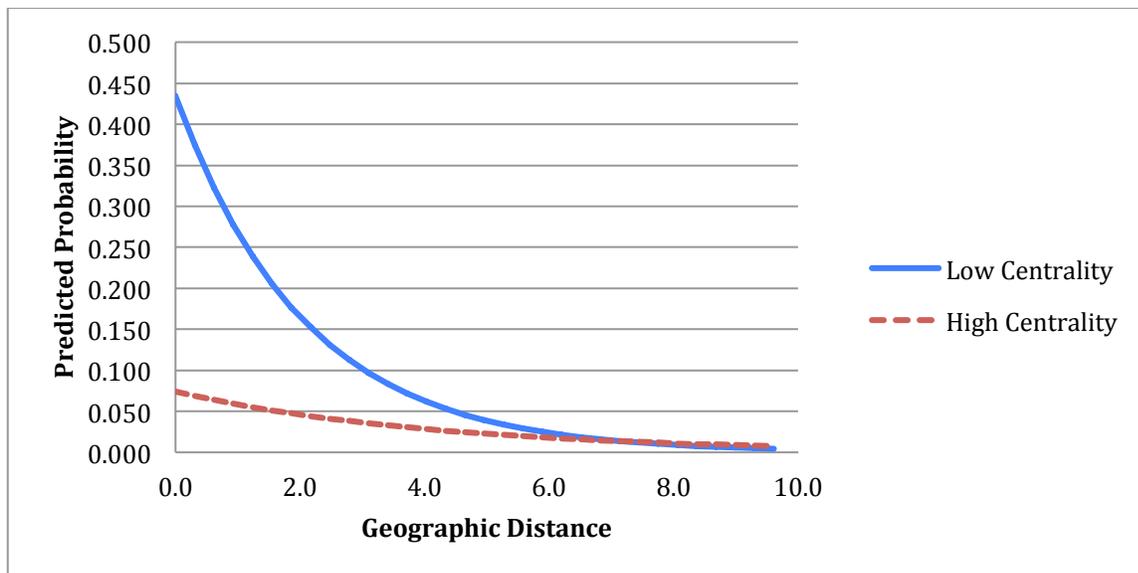
Figure 2. *Continued*

Panel C [Developed Market Firm]



X-axis shows meaningful range of possible values.

Panel D [Emerging Market Firm]



X-axis shows meaningful range of possible values.