

HOME-COUNTRY NETWORKS AND FOREIGN EXPANSION:
EVIDENCE FROM THE VENTURE CAPITAL INDUSTRY

Isin Guler

Kenan-Flagler Business School, University of North Carolina
McColl Building CB3490
Chapel Hill, NC 27599
(919) 962-0691
guler@unc.edu

Mauro F. Guillén

The Wharton School of the University of Pennsylvania
2016 Steinberg Hall-Dietrich Hall
Philadelphia, PA 19104
(215) 573-6267
guillen@wharton.upenn.edu

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We propose that home-country network advantages shape the pattern of foreign expansion of firms. We argue that social status advantage is transferable from one market to another as a signal of quality, while brokerage advantage is more context-specific and difficult to transfer. Furthermore, the value of network advantages changes as networks evolve. Using data on the foreign market entries of 1,010 U.S. venture capital firms, we find robust support for the effects on foreign market entry of social status. We also find that brokerage reduces foreign entry in the absence of partners in the new market, and increases it when partners are already operating in the new market.

Foreign market entry is a process fraught with difficulty for firms, given the unknowns associated with operating in settings that can be very different from their home countries. The literature on international management suggests that home-country advantages allow firms to compensate for the difficulties associated with operating abroad. This stream of research has tended to emphasize the advantages associated with the possession of brands, technology, know-how, and general management skills. (See Caves, 1996; Helfat & Lieberman, 2002 for reviews of this literature.) Little attention, however, has been paid to the effect on foreign expansion of network-based advantages in the home country, in spite of the large body of evidence documenting the influence of social networks on firm strategy and performance (e.g. Burt, 1992; Nahapiet & Ghoshal, 1998; Podolny, 2005). There is some international evidence indicating that both vertical relationships with suppliers or buyers and ties within business groups in the home country are associated with entry into specific foreign markets. This line of research shows that firms follow their peers, customers, or partners into foreign markets; it does not, however, examine the impact of firm-specific advantages arising from the firm's network position in the home country (e.g. Guillén, 2002; Martin, Mitchell, & Swaminathan, 1995; Martin, Swaminathan, & Mitchell, 1998).

Our theoretical point of departure is the theory of foreign expansion and its emphasis on firm-level advantages developed in the home country (Hymer, 1976; Kindleberger, 1969). We seek to show that the social network approach can offer a comprehensive and insightful analysis of the impact of a firm's home country on its pattern of internationalization. The network literature has identified two main advantages associated with a firm's position in social structure. First, networks confer social status (Podolny, 1993, 2001). One common way of thinking about social status is in terms of centrality, that is, the extent to which a node in the network is linked

to other nodes, especially those also characterized by high social status. Social status serves as a signal of the quality and trustworthiness of the focal firm, thus reducing so-called “altercentric uncertainty,” i.e., the uncertainty that potential customers, suppliers, or partners might feel about the focal firm (Jensen, 2003; Podolny, 2001). Second, the focal firm may be a broker or intermediary between clusters of firms otherwise disconnected from each other (Burt, 1992; Podolny, 2005). Thus, the broker occupies a distinctly advantageous position, as other firms depend on it to obtain crucial information, conclude deals, or get things done (Burt, 1992, 2005).

We argue that the advantages arising from a firm’s network position in the home country may affect both its propensity to pursue foreign opportunities and its choice of foreign markets to enter, two of the most fundamental research questions in the international management field. We propose to analyze the home-country social structure within which firms are embedded as a determinant, among others, of foreign expansion and market choice. We also examine how the impact of network-related advantages on foreign market entry changes as the network evolves over time.

Our core argument is that network-related advantages differ in terms of their transferability to foreign locations. Only advantages of universal applicability or appeal can be exploited across a large number of markets, industries, or locations (Buckley & Casson, 1976; Caves, 1996; Helfat & Lieberman, 2002; Hennart, 1982). Some advantages may be more location-specific (e.g., marketing skills), whereas others (e.g., technology or organizational capabilities) are transferable across a large number of locations (Chatterjee & Wernerfelt, 1991; Helfat & Lieberman, 2002; Teece, 1980, 1982). We argue that advantages arising from networks differ in their transferability to new markets or settings. Social status advantage, for example, is used by others as a signal of the overall quality or competence of the firm (Podolny, 2005), and

is valuable in multiple contexts. By contrast, brokerage advantage is context-specific in that it is local and contingent in nature (Burt, 1997; Gabbay & Zuckerman, 1998; Xiao & Tsui, 2007).

In order to examine the transferability of network-related advantages to new settings, we follow Bourdieu and Wacquant's (1992: 119) definition of network advantages (also called social capital), as "the sum of the resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." The idea that advantages originating from the network structure may be portable beyond the original structure is not new. Coleman (1988: S108) provided several examples in which "an organization that was initiated for one purpose is available for appropriation for other purposes, constituting important social capital for the individual members." In a similar vein, Uzzi and Gillespie (2002: 23) explored "how actor A acquires resources or competencies from actor B that are of value in its independent transactions with actor C" (emphasis in the original). More recently, Jensen (2003; 2008) examined the transferability of network-based advantages from one product market to another. We extend and complement the literature on the transferability of network-based advantages by examining the impact of these advantages on firms' propensity to expand abroad and on their choice of foreign markets to enter. Most importantly, we examine how focal firms with various levels of social status and brokerage advantages react to the entry of home-country partners into foreign markets, thus providing a dynamic perspective that takes into account how networks and the advantages associated with them change over time.

Our theoretical development is grounded in empirical evidence from the venture capital industry. We test our arguments using systematic empirical data on the foreign market entry decisions of U.S. venture capital firms between 1991 and 2002. We calculate the social status

and brokerage advantages of firms based on their structural position in the domestic syndication network—which accounts for more than 95 percent of all investments by U.S. firms—and examine the effects of these advantages on entry into foreign markets. In the final section of the paper, we discuss our findings and their generalizability to other industries.

By integrating theories of international business with those from the field of social network analysis, we strive to contribute to both research traditions. We extend prior work on foreign market entry by emphasizing firm-specific advantages that originate from the network structure as opposed to advantages that firms develop within their boundaries. This study also contributes to the research on interfirm networks by examining the portability of advantages originating from a given network outside the boundaries of the network. We argue and empirically demonstrate that network-based advantages differ in terms of their transferability, leading to varying rates of foreign market entry. We also complement prior research by highlighting how the impact of network advantages on foreign market entry changes as the network evolves.

RESEARCH CONTEXT

For the purposes of this study, we focus our attention on venture capital firms located in the U.S. and their investments abroad. Venture capitalists raise money from investors of various types, placing it into a fund that they use to acquire equity stakes in entrepreneurial ventures. At the end of a predetermined period—typically seven to ten years—the investments are liquidated and the proceeds are returned to the investors, less a management fee of about 20 percent.

In addition to funding, venture capitalists provide entrepreneurs and their ventures with strategic advice, contacts, and reputation (Gompers & Lerner, 2000, 2001). The venture capital

industry is “an intensely social business” (Freeman, 2005:163), as venture capital firms often syndicate their investments with others. They do so in order to share information, access to ventures, resources, expertise, and risk (Castilla, 2005; Gompers & Lerner, 2000; Sorenson & Stuart, 2001). The widespread practice of syndicating venture capital investments provides a unique opportunity to assess the impact of each firm’s social status and brokerage advantages (e.g. Podolny, 2001; Sorenson & Stuart, 2000).

Network-related advantages in the venture capital industry have been documented in earlier work. Social status provides firms with a key advantage in the venture capital community, because investments involve a high level of uncertainty, a “leap of faith” (Gompers & Lerner, 2001). Endorsement by a high social status venture capitalist greatly enhances a venture’s chances of success by providing a signal of the venture’s underlying quality to potential partners and investors (Lerner, 1994; Stuart, Hoang, & Hybels, 1999). High social status venture capital firms typically attract other high social status firms to investment syndicates (Piskorski, 2004), and help ventures perform better subsequent to financing (Hochberg, Ljungqvist, & Lu, 2007). Hsu (2004) demonstrated that entrepreneurs often accept a discount in order to bring a high social status venture capital firm on board, meaning that they are willing to pay a price to be associated with higher social status actors.

Brokerage provides equally important advantages to venture capital firms. Information on potential deals flows from one venture capital firm to another through the syndication network, as firms invest together. Brokers intermediate between multiple investment syndicates that do not often co-invest with each other, and this enables the brokers to access diverse investment opportunities, resources, and potential partners (Piskorski & Anand, 2005; Podolny, 1993). To illustrate the importance of such access, a venture capitalist at Internet Capital Group (ICG)

observed that, “several recent partner companies encouraged ICG to acquire an interest in them despite the fact that they were adequately capitalized because these companies wanted access to our partner company network” (eBrandedbooks, 2000: 233–234). Broker firms take advantage of the weak ties in their network by obtaining ideas and participating in deals through referrals. “VCs know that something that comes in as a referral is usually much better on average than something which comes in purely over the transom” (eBrandedbooks, 2000: 160–161). In short, brokerage advantage provides venture capital firms with access to a larger set of opportunities and resources.

Our theoretical perspective focuses on the transferability of social status and brokerage advantages across national boundaries, and on the way that these advantages change as the network evolves over time. We begin by examining the central role that home-country advantages play in the theory of foreign market entry.

THEORY AND HYPOTHESES

The literature on international business has long maintained that a firm’s decision to go abroad is a momentous one (Aharoni, 1966; Caves, 1996; Dunning, 1993). Firms ponder very carefully whether to go abroad and, if so, which foreign markets to enter, taking into account a variety of factors, including geography, culture, politics, and economics (Caves, 1996; Dunning, 1993). According to economic theory, firms go abroad only when the expected benefits of operating in a foreign market outweigh the expected costs of doing so (Caves, 1996; Hymer, 1976). When entering a new foreign market, firms face a “liability of foreignness” in that they experience a higher cost of operating than their domestic competitors (Hymer, 1976; Kindleberger, 1969; Zaheer, 1995). There are two main sources of this liability. First, a firm

entering a foreign country may not fully know or understand local rules, practices, and patterns of behavior in the new market; and second, it may lack the legitimacy to operate in the new market, since local actors do not know how reliable or trustworthy the entering firm is (Zaheer, 1995). Because the liability of foreignness makes it costly for firms to operate in foreign markets, firms tend to go abroad only when they possess firm-specific advantages that are valuable in the host country and can offset or reduce these costs (Buckley & Casson, 1976; Caves, 1996; Hennart, 1982). For instance, firms with technological capabilities, marketing know-how, branding skills, and/or organizational capabilities tend to enter new foreign markets in order to exploit these advantages across borders.

In spite of decades of research, the literature on international business has underemphasized whether and how advantages related to network position influence patterns of international expansion. When a firm enters a foreign market it also enters a new system of relationships, which are critical to its operations and success in the new market. The success of the firm in the foreign market partly depends on the demand that the firm can garner, the supplier relationships it can establish, and the human resources it can attract. Prior research documents the importance of attracting buyers and suppliers in the new markets. Martin et al. (1995), for example, show that most Japanese automobile manufacturers and suppliers have recreated their links in expanding to North America. Chang (1995) and Guillén (2002) similarly demonstrate that business-group ties have helped firms invest abroad by sharing technology, resources, and experience. Other studies indicate that the tendency of professional service firms to invest abroad increases with their access to human capital, and with their links to corporate and government clients (Hitt, Bierman, Uhlenbruck, & Shimizu, 2006). These studies underscore the importance of both new and prior network ties in the international investment decisions of firms, but they do

not examine the effect of advantages arising from the firm's network position in the home country. Therefore, it is germane to ask whether the network advantages developed in the home country influence the firm's decision to enter a foreign market by helping it secure access to customers, inputs, or other types of resources. While the impact of network advantages has been explored in the context of firms' entry into a new product line (e.g. Jensen, 2003, 2008), no previous study has undertaken either theory development or empirical testing of their effect on foreign market entry.

The literature on international management has long emphasized that the home country of a firm exerts a defining influence on its pattern of international expansion (Guillén & Suárez, 2005). Yet not all firms relate to their home-country environment in the same way. In particular, the extent and pattern of their embeddedness in local social networks vary. We focus our attention on the way in which the advantages from two key network positions in the home country—social status and brokerage—affect two types of decisions: the decision to go abroad, and the choice of foreign market to enter. Our theory development proceeds in two steps. First, we examine the effects of social status and brokerage advantages on foreign market entry, given a specific network structure. Second, we investigate the impact of social status and brokerage on foreign market entry in a dynamic context, namely, after a home-country partner of the focal firm enters the foreign market. In this latter step, we build on recent research emphasizing the evolution of networks as a result of continuing exchange (e.g. Burt, 2007; Piskorski & Anand, 2005; Soda, Usai, & Zaheer, 2004).

Social Status

Social status is the standing, worth, esteem, or prestige of an actor arising from its position in a given setting, that is, its relationships to others (Burt, 1982). Podolny (2005: 11) notes that in its sociological sense, “the concept of [social] status invokes the imagery of a hierarchy of positions—a pecking order—in which an individual’s location within that hierarchy shapes others’ expectations and actions toward the individual and thereby determines the opportunities and constraints that the individual confronts.” One frequent approach to assessing an individual’s or a firm’s social status involves examining the extent to which its relationships with others enhance its centrality in the social structure (Podolny, 2001). In other words, a firm’s social status depends on the social status of the other firms or actors to which it relates (Stuart et al., 1999).

It is important to note that social status is different from reputation. Reputation is based on the past performance of the focal actor, and is a more direct indicator of quality (e.g., Jensen & Roy, 2008; Washington & Zajac, 2005; Wilson, 1985). In contrast, social status is a structural attribute of individuals or firms given a certain social structure in which they are embedded (Gould, 2002; Podolny & Phillips, 1996). Social status is loosely linked to actual quality or performance, because information on changes in actual performance diffuses through the social structure only slowly and in an incomplete or biased fashion (Bothner, Kang, & Lee, 2007; Podolny, 1993). While social status may only exhibit a weak link to actual performance, it positively influences the collective perceptions of potential partners in regard to the firm and its outputs (Perrow, 1961), especially in the absence of any information about the focal firm’s actual quality or trustworthiness (Jensen, 2003; Podolny, 1993, 1994; Stuart et al., 1999). As Podolny

(2005: 18) argues, the social status of an actor helps others assess its quality or trustworthiness in situations in which those attributes are only “imperfectly observable”.

Firms with high social status enjoy several benefits as a result of their perceived quality, which help them improve their performance and reinforce perceptions of high quality through a virtuous cycle (Merton, 1968). First, high social status firms are more desirable as exchange partners, because affiliation with high social status actors enhances the social status of the partners (Podolny, 1993; Stuart et al., 1999). Second, they enjoy legitimacy and deference from others thanks to their standing in the social hierarchy (Gould, 2002; Phillips & Zuckerman, 2001; Podolny & Phillips, 1996). Finally, high social status provides firms with favorable access to resources, such as information (Bothner, Kim, & Smith, 2008), financial capital (Stuart et al., 1999), and human capital (Bothner et al., 2008; Phillips & Zuckerman, 2001; Podolny, 1993).

The advantages that accrue from a social status ordering not only persist over time with a loose link to prior performance (Podolny, 1993), but also can be exploited outside the network in which they originate, including in new markets. While a firm’s status is defined and measured in relational terms, signals of quality that emanate from status are available to all market participants, even to those that are not connected to the focal firm directly or indirectly because they are not part of the network. Research documents that status is particularly valuable as a signal of quality when potential exchange partners in a new market are uncertain about the quality or trustworthiness of the entering actor, and they seek information about the focal actor (Podolny, 2005:18, 35, 38). The social status signal diffuses to potential partners even when direct ties are not present, by attracting “the attention of industry analysts and the business press, as well as potential employees, suppliers and customers” (Stuart et al., 1999:319). Podolny (2005) provides illustrations of how potential exchange partners not connected to the focal firm

or its network may use status to infer quality in a variety of contexts, including diamond merchants, investment bankers, and British shippers. Similarly, Jensen (2003) found that high social status in commercial banking facilitated entry into investment banking, a market in which commercial banks did not have a presence, and hence no ties, due to legal reasons. The banks' social status in their original market served as a signal of the quality of their products or services in new markets, especially during the initial period of entry when other firms had little information about the entering banks and no prior market ties to them.

We argue that high social status firms will be more likely to enter foreign markets than their low social status counterparts because social status-related advantages help alleviate the lack of knowledge regarding the quality of the entering firm. As noted above, one of the key sources of the liability of foreignness is entering firms' lack of legitimacy to operate in the foreign market, since potential collaborators, suppliers and customers in that market do not know or do not yet trust the new entrant (Hymer, 1976; Kindleberger, 1969; Zaheer, 1995). Entering firms thus face a hurdle in that they must successfully convey their intent and operational ability to deliver their promised outputs (Zaheer, 1995). These observations echo the findings in the network literature that firms entering foreign markets face a high degree of "altercentric" uncertainty (Podolny, 1993: 16-17).

In such cases, social status in the home country may provide a valuable advantage by reducing the liability of foreignness. A firm's affiliations with other high social status actors in its home country provide assurance to potential exchange partners in the foreign market about the quality and reliability of its output, and hence they foster trust. Social status may increase the firm's legitimacy and desirability as an investment partner and subsequently enhance its access to local resources (Podolny, 1994; Stuart, 2000; Stuart et al., 1999). For instance, a high social

status venture capital firm may be in a better position than a lower social status counterpart to attract investment partners, suppliers, customers, and in turn, high-quality investment opportunities in a foreign market (Merton, 1968).

In sum, we expect that social status will increase the expected returns to market entry by reducing the firm-specific costs of establishing legitimacy and desirability as an exchange partner. The possession of a social status advantage in the home country will facilitate international expansion by reducing altercentric uncertainty and the liability of foreignness. Therefore, we predict:

Hypothesis 1: The greater the social status of a venture capital firm in its home-country network, the greater its rate of foreign market entry.

Brokerage

While high social status firms are more likely to enter foreign markets, we suggest that firms that enjoy a brokerage advantage in their home country are less likely to invest abroad. The reason has to do with the local nature of brokerage, the difficulty of using this advantage in a foreign market, and the superior returns to leveraging brokerage advantage in the home market.

Brokerage advantage refers to the benefits from regulating information flows. The broker benefits from its ability to bring together separate groups from opposite sides of the so-called “structural holes” in the network. The broker enjoys three interrelated benefits compared to other firms, namely, “access to a wider diversity of information, early access to that information, and control over information diffusion” (Burt, 2005: 16) (see also Adler & Kwon, 2002). Such firms generate more innovative ideas and enjoy more entrepreneurial opportunities by bringing together disparate parties (Burt, 1992; Nahapiet & Ghoshal, 1998; Walker, Kogut, & Shan,

1997). In contrast, a firm with many redundant ties—that is, few structural holes in its network—is more constrained in the extent to which it can benefit from its network position.

As opposed to social status advantage, which can be transferred from one setting to another, brokerage advantage is much harder to transfer. The literature has proposed several mutually reinforcing reasons for the “stickiness” of brokerage advantages. First, as a key theorist in the network literature has pointed out, brokerage “provides a temporary, local advantage” (Burt, 2005:233). In contrast to social status advantage, which can carry over without a firm’s actual presence in the new network, the benefits that accrue to a broker through accessing, relaying or withholding information are limited by the boundaries of its network and can change as actors pursue new relationships. For instance, a firm that bridges ties between two disparate clusters may come up with innovative ideas that span both clusters (e.g. Ahuja, 2000), but its brokerage role does not necessarily transfer to a third cluster with which it has no prior affiliation. Recent empirical evidence suggests that brokerage advantage is concentrated within an actor’s immediate network, with brokerage between indirect ties being of little value (Burt, 2007). Brokerage advantage is local and context-specific, and not applicable beyond the actor’s immediate network.

Second, the existence of brokerage advantages may lead potential partners to perceive the broker firm as opportunistic, and make the broker a less desirable potential partner in the new network. Brokerage advantages exist in social networks that are open structures, ones far from being saturated with redundant ties. As Coleman observed, it is difficult to enforce appropriate patterns of behavior and prevent opportunism in an open social structure because the “collective sanctions that would ensure trustworthiness cannot be applied” (Coleman, 1988: S108; see Portes, 1998 for a review of the lineage of this concept.). As a result, broker firms may find it

harder to forge new partnerships. In this vein, Jensen (2008) found that incumbent investment banks preferred to partner with entering commercial banks characterized by weak brokerage advantage in their own network, because they viewed entering banks with strong brokerage advantage as a threat to the stability of the industry's network.

The third reason that a brokerage advantage enjoyed in one setting is difficult to transfer to another setting has to do with potential differences in the normative legitimacy associated with the regulation of information flows in discriminatory ways. A variety of network scholars have found that an actor's ability to take advantage of its brokerage advantage can vary greatly depending on how legitimate or appropriate this exploitation is perceived to be (Burt, 1997; Fernandez & Gould, 1994; Gabbay & Zuckerman, 1998). Given our focus on foreign market entry, it is important to consider what network researchers have found about the normative legitimacy of brokers in different settings. A recent paper using data on social networks inside Chinese organizations has found that the benefits derived from brokerage in China are very small or even nonexistent because the concept of brokerage is at odds with the value placed on cooperation and information sharing in collectivistic cultures (Xiao & Tsui, 2007). Thus, an actor enjoying a brokerage advantage in its home country may be unable to use it in a foreign market in which the self-interested manipulation of information flows is seen as inappropriate.

Based on these interrelated arguments in the literature, we propose that firms enjoying a brokerage advantage in the home country will refrain from entering new markets. All else held equal, such firms will be more likely to exploit brokerage advantage in their local, home-country network through domestic operations rather than incurring the costs and facing the difficulties associated with international operations.

The venture capital industry provides an appropriate context in which to examine the local nature of brokerage advantages. In their home markets, venture capital firms occupying brokerage positions gain access to information on investment opportunities from their diverse syndicate partners (Piskorski & Anand, 2005; Podolny, 1993). However, since venture capital firms often invest in ventures in close geographic proximity (Sorenson & Stuart, 2001), their brokerage advantage in the local syndicate network is not likely to extend into international markets. We therefore expect venture capital firms that act as brokers in their local network to continue pursuing local opportunities rather than exploring international ventures, because in international markets they do not possess a structural advantage and face the additional costs of expansion. Given that the benefits associated with brokerage are context-specific, and thus difficult to transfer from one location to another, and that a firm occupying a niche rich in structural holes in its home country has little incentive to enter a new system of relationships in a foreign country, we predict the following:

Hypothesis 2: The greater the brokerage advantage of a venture capital firm in its home-country network, the smaller its rate of foreign market entry.

Two important qualifications to these arguments are necessary. First, the advantage related to high social status or brokerage in one setting might help the firm attain greater performance, grow in size, and accumulate experience. Greater size and experience have been found to correlate with a greater propensity to enter foreign countries (Caves, 1996; Dunning, 1993). Our argument is focused on the direct effect of social status and brokerage advantages on foreign market entry, controlling for the size, experience, and prior performance of the firm. The second qualification is that the continuity or sustainability of social status and brokerage

advantages over time depends on the actions of both the focal firm and those connected to it in the home country, as home-country partners can reduce or even eliminate the firm's advantages (Burt, 2005). While our first two hypotheses assumed a stable network structure, we now turn to an examination of how social status and brokerage advantages change as the network evolves over time.

Dynamics of Social Status and Brokerage Advantages

One of the key findings in the international business literature is that the presence of partners in foreign markets is an important determinant of the choice of foreign markets to enter (e.g. Guillén, 2002; Henisz & Delios, 2001; Shaver, Mitchell, & Yeung, 1997). Few studies, however, examine how the impact of partners on choice of markets to enter may vary according to the characteristics of the entering firm, and in particular, its network position. Social status and brokerage advantages stem from the way in which the firm relates to others. It is therefore important to assess how a home-country partner's decision to enter a given foreign market changes the social status and brokerage advantages of the focal firm, and how these changes, in turn, affect its decision to enter that foreign market.

The value of social status and the presence of home-country partners in the foreign market. When a home-country partner of the focal firm enters a foreign market, actors located in that market gain access to a wider array of information from which to draw inferences about the quality of the focal firm. The home-country partner may possess information about the focal firm that can be of use to actors in the foreign market. The new information that a home-country partner makes available to actors in the foreign market can change the potency and relevance of

the focal firm's home-country social status in reducing altercentric uncertainty, because actors in that market no longer have to rely on social status alone as a signal. As Podolny (1993:833) observed, social networks influence the use of social status as a signal of quality "by serving as access constraints, inhibiting contacts which could potentially alter perceptions." If actors in the foreign market can learn about the focal firm through direct experience with its home-country partners, the value of social status in signaling the quality and trustworthiness of the focal firm will decline.

This argument in no way implies that the firm's social status is eroded by the entry of a home-country partner, but rather that its value to actors in the foreign market partly dissipates. As argued above, social status is a noisy measure of quality because it is a lagging and biased indicator of changes in quality (Bothner et al., 2007; Podolny, 1993). Prior to the arrival of a home-country partner, actors in the foreign market have little choice but to assess the quality of the focal firm on the basis of its social status. The availability of alternative sources of information reduces the extent to which firms in the foreign market use social status to cope with the altercentric uncertainty about transactions or collaboration with the focal firm (Jensen, 2003). When less noisy signals of quality become available, home-country social status loses at least some of its significance as a firm-specific source of advantage that can be exploited in foreign markets. For example, Podolny (2005:38) argues that "previous exchange partners of an investment bank should rely less on status as a signal of quality to make inferences about the desirability of a subsequent exchange relation since they have private knowledge of the bank's quality." As a result, higher social status firms will see the signaling advantage of social status erode as one or more of their home-country partners enter a foreign market. It is of fundamental importance to note that we predict an erosion of the focal firm's social status advantage only in

those foreign markets in which at least one home-country partner of the focal firm has established a presence. In other markets, social status continues to be a practical way for local firms to draw inferences about the quality of the focal firm.

Based on our prediction above that social status reduces altercentric uncertainty in foreign markets and thus accelerates the rate of foreign expansion (Hypothesis 1), we cast our argument concerning the entry of a home-country partner into a foreign market as an interaction effect that moderates the positive effect of social status:

Hypothesis 3: The presence of a home-country partner of the focal venture capital firm in a specific foreign market reduces the positive impact of social status on the focal firm's rate of entry.

The value of brokerage and the presence of home-country partners in the foreign market. The entry of a focal firm's home-country partner into a new foreign market may have two interrelated effects on the firm's brokerage advantage. The first effect relates to the ability of the focal (broker) firm to enter the new market. The entry of a home-country partner into a foreign market extends the information reach of the broker's network. The partner, which now has access to information about conditions, opportunities, and possible collaborations in that market, can relay this information to the focal firm. Let us illustrate with an example. Assume that Firm X is a broker that bridges a structural hole between Firm A and Firm B, and that all three firms are located in the same home country. Firm X enjoys access to diverse information from both Firms A and B, and is therefore in an advantageous position vis-à-vis its two partners.¹

¹ The very act of brokering between firms A and B may in time create a link between these two firms, eroding Firm X's brokerage advantage. It is in this sense that brokerage advantages are

If Firm B enters a new foreign market and establishes a relationship with Firm C in the new market, this will expand the informational content of Firm X's network and increase Firm X's advantage. While Firm X had no informational access to the new market prior to Firm B's entry, Firm B can now provide information about suppliers, buyers, collaborators, and other firms that Firm X can pursue as potential partners in this market. In a way, Firm B's presence in the foreign market reduces the cost of entry for Firm X by decreasing the liability of foreignness. It is important to note that while brokerage advantages are still local to the network, the expansion of the boundaries of the network as a result of Firm B's foreign market entry increases the scope of information available to Firm X. Therefore, we propose that the first effect of the presence of a partner in a foreign market is to increase the broker firm's ability to enter the new market.

As we suggested above, the existing literature documents that firms frequently use their network ties to reduce the uncertainty associated with entering new foreign markets (e.g. Guillén, 2002; Henisz & Delios, 2001; Shaver, Mitchell, & Yeung, 1997). In the venture capital industry, firms expand their geographic reach by co-investing with other venture capital firms that have a presence in more distant markets (Sorenson & Stuart, 2001). Extending previous evidence that firms tend to follow their partners into foreign markets, we argue that broker firms are more likely to benefit than other firms from the presence of a partner in the new market. Because broker firms tend to search proactively for diverse information and exploit their ties to gain earlier access to opportunities, they are more likely than firms without a brokerage advantage to exploit their partners' presence when expanding into foreign markets.

transient (Burt, 2005). It is possible that Firm X might bridge many structural holes and proactively look for new holes in its network in order to pursue a brokerage "strategy" (Burt, 2005). For simplicity, we focus here on what happens with respect to a single structural hole.

The second effect of a partner's entry into a foreign market has to do with the impact of new ties on preexisting brokerage advantages. Such new relationships in a foreign market can create a situation in which "high returns to the brokers who bridge one structural hole can move to brokers who bridge a different structural hole" (Burt, 2005:235, note 9). It is useful to think of brokerage advantage as the opposite of network constraint (Burt, 2005). In our example, when Firm B establishes a non-redundant tie with a new partner in the foreign market (Firm C), it gains an additional degree of structural autonomy, therefore making Firm X more constrained (Jensen, 2008). By establishing its own direct relationship with Firm C, Firm X can increase the structural constraint of Firm B and reduce its own, although not to the original level prior to the establishment of Firm B's link to Firm C. Both Firm X and Firm B end up being more structurally constrained, but Firm X regains part of its original brokerage advantage (Burt, 2005).

This sequence of dynamic change in the network is clearly relevant to the foreign market entry of a focal firm's home-country partner. The brokerage advantage stemming from the bridging of a structural hole in the home country changes when the partner establishes a presence in a given foreign market. While the presence of a partner in the foreign market offers the focal firm an opportunity to exploit the available investment opportunities in that market, it also limits the focal firm's ability to control the information flow from the foreign market, since brokerage through indirect ties is of little or no value (Burt, 2007). The very presence of the partner in the foreign market has the potential to undermine the original brokerage advantage, as the partner can bypass or circumvent the focal firm and convey information about opportunities in the foreign market directly to its own contacts back in the home country. If the partner obtains information or develops relationships in the foreign market that can be of value to other firms in the home country, the brokerage advantage enjoyed by the focal firm in the home country can

become less profitable (Burt, 2007). The entry of the partner into a new foreign market thus creates an incentive for the focal firm to follow its partner into the new market in order to sustain its preexisting brokerage advantage.

The replication of the actions of one's network partners has been extensively discussed in the literature on social networks. As noted by Bothner (2003: 1180), "when a social actor's proximate rivals have adopted an advantageous trait, that actor is then likely to adopt it in order to avert the probable social and economic costs of falling behind." Actors are especially likely to emulate their rivals when they perceive the potential threat that the rivals will substitute for them in the social structure (Burt, 1987; White, 2002). At the organizational level, the pattern of competitive emulation to avert the threat of substitution has been empirically documented in the contexts of campaign contributions (Mizruchi, 1992), the adoption of new technologies or organizational practices (Bothner, 2003; Guler, Guillén, & MacPherson, 2002), and new market entry (Baum & Korn, 1996). We extend this logic of competitive network evolution to the context of foreign market entry, and argue that, when confronted with the possibility that a partner might accumulate a brokerage advantage of its own by bridging home and foreign clusters of relationships, the focal firm will seek to establish its own presence in the foreign market in order to preserve at least part of its original home-country brokerage advantage.

Since we predicted above that firms enjoying a brokerage advantage have less of an inclination to pursue foreign expansion (Hypothesis 2), we cast our argument concerning the focal firm's reaction to the presence of a home-country partner in a foreign market as an interaction effect that moderates the negative effect of brokerage. Thus, we propose the following hypothesis:

Hypothesis 4: The presence of a home-country partner of a focal venture capital firm in a specific foreign market reduces, and possibly reverses, the negative impact of brokerage on the focal firm's rate of entry.

DATA AND METHODS

We compiled international venture capital investment data from the VentureXpert database provided by Thomson Financial,² which collects information through an annual survey of over 1,000 private equity partnerships in the United States. This database has been used extensively in venture capital research, although mostly to examine investments in the U.S. (e.g. Gompers & Lerner, 2000; Guler, 2007; Hochberg et al., 2007; Shane & Stuart, 2001). Each of the firms has a presence in the venture capital industry, although some also invest in other forms of later-stage private equity. We focus on the foreign investments of the 1,010 U.S.-domiciled venture capital firms active between 1990 and 2002.³ According to VentureXpert, U.S. venture capital firms began making cross-border investments in 1989, so concern regarding left-

² VentureXpert includes “standard U.S. venture investing” in portfolio companies (ventures), as long as the venture is domiciled in the U.S., at least one of the investors is a venture capital firm, venture investment is a primary investment, and the investment entails an equity transaction.

³ While the number of venture capital firms represented in the sample may seem high, it should be noted that not all firms were active during the entire period of observation. We checked the sensitivity of our results by excluding venture capital firms that made fewer than three investments in the U.S. in each year. This yielded a sample of 552 firms and 242,017 firm-country-years. The results of the analyses with the reduced sample are qualitatively similar to those reported here.

censoring is minimal. The U.S. venture capital industry grew significantly during this period, in terms of both capital available for investment and the number and amount of actual investment. Activity in the U.S. and abroad peaked in the year 2000, which lies within our sample for analysis.

We compiled data on the economic and political characteristics of the complete population of 207 countries from the World Bank's World Development Indicators database; Henisz's (2000b) Index of Political Constraints; and the Centre d'Études Prospectives et d'Informations Internationales (CEPII) geographic distance database for the 1990–2002 period. We merged the venture capital investment data with country-level data and excluded observations in which country-level data were missing through a casewise deletion procedure. The final dataset includes all actual and potential investments of the sample of 1,010 venture capital firms in 95 countries for which we have complete information.

In order to capture causal relationships between the independent and dependent variables, we lagged all left-hand side variables by one year.⁴ We therefore examined investments over the twelve-year period between 1991 and 2002. As of the end of 2002, 216 of the 1,010 venture capital firms had made 1,714 rounds of investment in 920 ventures located in 40 different foreign countries.⁵ The largest investors were Warburg Pincus, Advent International Corporation, and Japan/America Ventures. The distribution of rounds by investment stage is as follows: startup or seed, 6%; early stage, 22%; expansion, 51%; later stage, 7%; buyout or acquisition, 7%; and

⁴ To ensure the best model fit, we estimated the models using three-, two-, and one-year lags. Independent variables with a one-year lag provided the best overall fit.

⁵ The location of the ventures refers to the location of their headquarters, not to the countries in which the venture may have additional operations or sales.

other, 6%. We included all of these rounds in our primary analysis. Since investment stage may affect the level of investment uncertainty (Gompers, 1995; Podolny, 2001), we repeated the analysis excluding the latter three categories. Our results were robust to this exclusion. We excluded from all analyses the 17 investments in ventures that had gone public before the U.S. venture capital firm invested. However, we retained in the sample the 794 firms that never invested abroad and the 55 countries in which no investments took place, because their exclusion would have introduced sample selection bias into our analyses. We nevertheless assessed the robustness of our results by repeating the analyses on a reduced sample that excluded these firms and countries, as reported below.

Measures

Dependent variable and unit of analysis. The sample consists of firm-country-year observations. Each venture capital firm is at risk of entering a country during a given year. The dependent variable (event) equals one if firm i entered country j during year t . We have complete data for 517,981 firm-country-year observations, representing 847 unique country-years. We estimated our models using two different samples. For the first sample, we excluded firm-country-year observations subsequent to the venture capital firm's first entry into each country j . This sample comprises 516,493 observations. For our second sample, we included repeated entries by the same venture capital firm into the same market, to test for robustness. Within the twelve-year time period we observed 688 nonzero firm-country-year combinations, 465 of which were first entries into a given country.

Independent variables. As noted above, prior research has established the importance of venture capital syndication networks in the flow of investment information and the establishment of social status in an industry (Castilla, 2005; Gompers & Lerner, 2000; Hochberg et al., 2007;

Sorenson & Stuart, 2001). We therefore measured the network advantages in the industry by examining the position of each venture capital firm in its home-country syndication network. We considered a network tie to exist only if two firms invested together in the same U.S. venture and in the same round. Following the established literature, we measured social status using Bonacich's (1987) eigenvector centrality measure. This indicator takes into account the centrality of the actors to which the focal actor is connected. Because it captures affiliation with other high social status actors, it is a better measure of social status than alternative centrality measures (Jensen, 2003; Nerkar & Paruchuri, 2005; Podolny, 1993, 1994). We only considered a tie to exist if two firms invested together in the same U.S. venture and in the same round. For each year t , we calculated the centrality score using the information for years $t - 2$, $t - 1$, and t (Castilla, 2005; Hochberg et al., 2007; Piskorski & Anand, 2005). The centrality score ranges between zero (for isolated firms with no contacts) and one (for firms that syndicate with other central firms only). Thus, the centrality score for firm i in year t is as follows:

$$c_i = \alpha \sum_j A_{ij} c_j$$

where α is the reciprocal of an eigenvalue and A is the adjacency matrix denoting the existing ties between firms i and j . The centrality of each firm i is a function of the centrality of the other firms to which it is connected. We assigned a score of zero to isolated firms with no ties to others.

We also followed the existing literature in measuring brokerage advantage in using Burt's (1992) reverse-signed index of constraint. We used UCINET to perform the calculations. In our brokerage measure, we assigned a value of zero, the maximum, to isolated nodes. The measure approaches -1 as the node becomes more constrained, that is, as the firm loses brokerage

advantage. Thus, the measure is increasing in brokerage advantage. For each year, we calculate brokerage advantage as follows:

$$B_i = -\sum_j (p_{ij} \sum_q p_{iq} p_{qj})^2$$

where p_{ij} is the proportion of i 's network that relates to j , p_{iq} the proportion of i 's network that relates to q , and p_{qj} the proportion of q 's network that relates to j , with $i \neq j \neq q$.⁶

Presence of syndicate partners in each country. We measured the presence of firm i 's syndicate partners in country j with a dummy variable that takes the value of one if any of firm i 's syndicate partners in the home country network has made at least one investment in country j up until year $t - 1$.

Interaction terms. We included two interaction terms in the full models. We tested the moderating effect of home-country partners on the social status–foreign market entry relationship (H3) by multiplying the dummy for the presence of firm i 's syndicate partners in each country j by the social status measure for firm i . We tested the proposed moderating effect of home-country partners on the brokerage–entry relationship (H4) by multiplying the dummy for the presence of firm i 's syndicate partners in country j with the brokerage measure for firm i . In order to reduce multicollinearity between main and interaction effects, we centered each continuous main effect (i.e., social status and brokerage) by subtracting the mean before

⁶ We tested the possibility that isolates may bias the results by estimating a two-stage model that first estimates the probability that a firm will be an isolate, and then estimates the rate of entry conditional on not being an isolate. The results remained unchanged.

calculating the interaction terms (Jacard & Turrisi, 2003). This correction reduces multicollinearity without affecting significance testing (Cronbach, 1987).

Firm-level control variables. We included five controls in all models in order to address concerns about the potential endogeneity of the network measures and other firm-level unobserved heterogeneity. First, we controlled for the performance of the venture capital firm i in the home country (i.e., the U.S.) to account for the possibility that the firm might enter foreign markets due to its capabilities and its prior performance regardless of its network advantages. We measured performance as the ratio of the cumulative number of ventures in firm i 's portfolio that had gone public through an IPO to the total number of the ventures that the firm had funded as of the year $t - 1$ (Hochberg et al., 2007). Second, we included the number of ventures funded by the venture capital firm i in the U.S. as of year $t - 1$ to account for unobserved firm heterogeneity in terms of experience or capabilities—what researchers have called venture capital firm “sophistication”—as well as size (Bottazzi, Da Rin, & Hellmann, 2005; Gompers & Lerner, 2000:236; Kaplan, Martel, & Stromberg, 2005). Third, we included the number of ventures funded by the venture capital firm i in foreign countries as of year $t - 1$, which controls both for unobserved firm heterogeneity in general and for the propensity to invest abroad in particular. Fourth, we added to all models the number of countries entered by the venture capital firm i up until year $t - 1$, which serves as an additional control for firm heterogeneity concerning the pursuit of foreign opportunities and for a greater propensity to go abroad. And fifth, we controlled for the age of the venture capital firm i in year t to account for differences in firms' propensities to enter foreign markets based on their age and cohort. As an additional sensitivity check, we repeated the analysis with a shared frailty term grouped over venture capital firms to

account for unobserved heterogeneity (Gutierrez, 2002). The results were similar with those reported. We report the results without the frailty term.

Country-level control variables. We included controls for the size of the economy, measured as gross domestic product (GDP) in constant 1995 U.S. dollars, and for the size and development of the local stock market, measured by total stock market capitalization as a percentage of GDP (World Bank, 2004). We also controlled for the level of regulatory instability in each country, measured as the reverse-signed political constraint index, which captures the checks and balances on policymakers that prevent unilateral changes in the policy regime (Henisz, 2000b). We controlled for the geographic proximity of country j to the U.S., measured as the simple distance in kilometers between the most populated cities, made available by the Centre d'Études Prospectives et d'Informations Internationales (CEPII). We added a dummy variable indicating whether English is the official or most widely spoken language in the country. We also controlled for the number of previous entries in country j by other U.S. venture capital firms up until year $t - 1$ as a control for the attractiveness of the country. Lastly, a summary analysis of the data revealed that the venture capital entries were concentrated in 11 countries (see Table 1). We therefore included eleven dummy variables, one for each of these countries, to account for other country-specific factors. As an additional sensitivity check, we repeated the models with fixed effects for each country. The results of the analyses were qualitatively similar. We report the models with the eleven country dummies.

Insert Table 1 about here

Estimation method. We estimated the rate of entry using two different approaches to ensure that our results were robust. First, we used a hazard model to analyze the rate of a venture capital firm's entry into a new country (Allison, 1995; Tuma & Hannan, 1984). The hazard function is defined as

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr\{t \leq T < t + \Delta t \mid T \geq t\}}{\Delta t}$$

and specifies the instantaneous rate at which entry occurs at time t , given that the event has not yet occurred (Allison, 1995; Kalbfleisch & Prentice, 2002). We used a hazard rate model because it accommodates time-varying independent variables and allows right censoring in the data (Allison, 1995).

We first estimated the hazard rate using a Cox proportional-hazards model. However, a test of the proportional-hazards assumption using Schoenfeld residuals revealed that the model did not satisfy the non-proportionality assumption, making significance testing difficult. We therefore modeled the hazard rate of entering a new country using the piecewise exponential model in Stata (Sorensen, 1999). Piecewise exponential models are semi-parametric models in which the baseline hazard rate is allowed to vary in an unconstrained way in each predefined time period. The benefit of this approach is the ability to model time dependence without the more restrictive assumptions of parametric models.

To estimate the hazard rate in each time period, we divided the data into yearly spells (Hannan & Freeman, 1989), and treated the observations as censored unless an event (i.e., an entry) occurred. In estimating repeated entries, we allowed observations to stay at risk for subsequent events instead of dropping them from the sample. Thus, we allowed each subject to

experience multiple entries (Allison, 1995; Kalbfleisch & Prentice, 2002). In defining the risk set at each failure time, we utilized the counting process approach developed by Andersen and Gill (1982), in which entry events are assumed to be equivalent and the models predict time to each subsequent event after the prior event has occurred. (For more detail on estimating repeated events in Stata, see Cleves, 1999.)

We updated the time-varying independent variables in each annual spell. We estimated the models using maximum likelihood in Stata. Because there are multiple observations for each venture capital firm and country, observations in the sample might not be independent. We therefore calculated robust standard errors clustered on each country-firm pair, implemented by the “cluster” option in Stata (Rogers, 1993; Wooldridge, 2002). We also estimated alternative models by clustering on firms or countries only; the results were unchanged.

Next, in order to address the fact that our data include few actual events and a large number of nonevents, we used rare-events logistic regression to estimate the probability of each venture capital firm i entering country j during year t . This is a logistic model that predicts the likelihood of entry and corrects the coefficients for the bias that arises from an excessive number of zeros (nonevents) in the sample (King & Zeng, 2001). When estimating the piecewise exponential models, we included twelve “time-pieces,” one for each year. When estimating the rare-events logistic models, we included eleven year dummies, omitting the year 2002.

RESULTS

In Tables 2 and 3 we present the descriptive statistics and the correlation matrix. Entry is positively correlated with both social status (proxied by centrality) and brokerage, although the magnitude of the correlation is higher for the former than for the latter. Entry is also positively

related to the number of previous entries in the country. Correlations between most of the independent variables are low, reducing concerns about potential multicollinearity. The only exception is the 0.71 correlation between social status and the number of ventures funded in the U.S. The exclusion of this last variable did not change the results of our analyses; we therefore report models with the number of ventures funded in the U.S. as a control.⁷

Insert Tables 2 and 3 about here

We present the empirical results in Table 4. Models 1–3 predict the rate of first entry and models 4–6 predict the rate of repeated entry, both using piecewise exponential models. Models 7–9 predict the likelihood of first entry and models 10–12 predict the likelihood of repeated entry, this time using rare-events logistic models. Within each set of models, the first model shows the results with controls only, the second model adds the main effects, and the final model is the full model with main effects and interaction terms.

Insert Table 4 about here

As predicted in Hypothesis 1, the higher the social status of the venture capital firm in the home country, the greater the rate of foreign market entry. This finding is robust to estimation method and to whether first or repeated entries are considered. The main effect of brokerage is negative but not significant in the main-effects models (2 and 4), failing to provide support for Hypothesis 2.

⁷ We also investigated whether firms with the highest centrality scores bias the results. Excluding these firms from model 3, for instance, generated results similar to those reported in Table 4.

In Hypotheses 3 and 4 we proposed that the presence of home-country syndicate partners of the focal firm in the foreign country would moderate the relationship between network advantages and market entry. We find that the interaction term between social status and the presence of a home-country partner is negative and significant in models 3, 6 and 12, though not in model 9, thus providing robust support for Hypothesis 3. Therefore, the evidence indicates that the presence of a home-country partner in the foreign country reduces the value of a firm's social status advantage. The interaction term between brokerage and the presence of a home-country partner is positive and significant in models 3 and 6, although it does not reach significance in the rare-events logistic regression models. Thus, we find some support for Hypothesis 4. It is important to note that the main effect of the presence of at least one home-country partner is positive and significant, confirming prior findings that firms in general tend to enter countries that other home-country firms have previously entered (e.g. Guillén, 2002; Henisz & Delios, 2001; Shaver et al., 1997).

Given the mixed results on the effect of brokerage, as reported in Table 4, we further examined the interaction effect between brokerage and partners by re-estimating our models using two separate subsamples, one including firm-country-year observations before any of the focal firm's partners entered each specific foreign market (i.e. the dummy variable equals zero), and the other including observations after the focal firm's partner entered, if it ever did (the dummy variable equals one). This procedure allows us to examine the effect of brokerage in each subsample. In these regressions, the effect of brokerage is negative and significant in the subsample with no prior entry by home-country partners, and it is positive and significant in the subsample with observations after one home-country partner had entered. Our tests reveal that each of these models provides a significantly better statistical fit than a corresponding model

without the brokerage effect, and the coefficient of the brokerage effect is significantly different from zero. Thus, we can safely conclude that the support for H4 reported in models 3 and 6 of Table 4 is not a statistical artifact.

Most of the control variables behave as expected. Entry rates increase with the number of previous entries by the venture capital firm into other foreign countries; with the age and performance of the venture capital firm; with the GDP of the country; and with the size of the stock market. Neither the use of English as a primary language nor the countries' geographical distance from the U.S. exerts a robust effect across models.

The effects of social status and brokerage are large in magnitude. In Figure 1 we depict the effect on the multiplier rate of different levels of social status and brokerage before and after a home-country partner has entered each country. The upper panel shows that higher social status firms are more likely to go abroad (as indicated by the upward-sloping curves), and that this effect is much larger before the entry of a home-country partner, as predicted by Hypothesis 3. In the lower panel we observe that before the entry of a partner, the greater a firm's brokerage advantage, the lower the multiplier of its rate of entry. However, after a partner has entered, the reverse is true, as predicted by Hypothesis 4. The interaction effect is large enough to offset the main effect of brokerage within the sample range.

Insert Figure 1 about here

Sensitivity Analyses

In order to examine the sensitivity of our results to sampling procedure and model specification, we conducted a battery of robustness checks in addition to those reported above. First, we estimated again all models after excluding the countries that received no U.S. venture

capital investment during the sample period as well as the venture capital firms that never entered a foreign country. This reduced the size of the sample to 254,883 observations. Although this procedure may introduce selection bias by reducing the number of observations at risk, it helped us test whether our results were robust to the exclusion of country or firm observations with no events. The results did not change in any substantial way.

Second, we repeated our models on a sample comprising only firm-years after modifying our dependent variable to represent the rate of foreign market entry regardless of the country being entered. This narrowed the sample to 7,035 firm-year observations. Note that this sample cannot be used to test Hypotheses 3 and 4, which require the identification of countries of entry and the inclusion of country-specific controls. However, it serves as an additional test of Hypotheses 1 and 2 on a smaller sample, helping to reduce any concerns that might accrue from the fact that our larger sample contains a large number of observations with nonevents. In these models, we find that the impact of social status on the rate of entry is positive and significant (H1), while the impact of brokerage on entry is negative and significant (H2).

DISCUSSION AND CONCLUSION

The decisions to go abroad and to enter specific foreign markets are driven by the characteristics of the firm and of the markets being considered, as the theory of foreign market entry proposes (Caves, 1996; Dunning, 1993). Above and beyond the effects discussed in prior research, we have argued that social status and brokerage advantages developed in the home market also shape patterns of international expansion. Our theoretical analysis was based on two interrelated aspects: the degree of transferability of home-country advantages to foreign settings, and the dynamic network effects following foreign market entry by the focal firm's partners.

The transferability of home-country advantages is a cornerstone of theories of foreign expansion (e.g. Caves, 1996; Dunning, 1993). We have found that while benefits arising from social status prompt firms to enter new foreign markets, those arising from brokerage do not. Thus, this paper builds on the insights of previous research concerning the transferability of network advantages (e.g. Burt, 2005; Jensen, 2003; Xiao & Tsui, 2007), and offers empirical evidence supporting their relevance for firms' foreign market entry.

Our theoretical analysis also incorporated the dynamic aspects of networks, building on the insight that actors deliberately seek to create, maintain, and enhance their network advantages over time (Burt, 1992; Nohria, 1992). We examined how social status and brokerage advantages change as a result of the actions of the home-country partners of the focal firm. We argued and provided empirical evidence consistent with the idea that a firm's social status loses value as a signal of quality in a given foreign market after a partner enters that market. This prediction was based on the important insight drawn from the social network literature that social status is a noisy proxy for quality (Podolny, 2005). We also argued that brokerage advantage can shift quickly from one actor to another (Burt, 2005). Specifically, we predicted and provided some empirical support for the prediction that a firm possessing strong brokerage advantage in the home country is likely to replicate a home-country partner's entry into a foreign market in order to preserve its network position in the social structure.

In our theory development regarding the ways in which social networks affect patterns of international expansion, we drew a series of connections between pairs of concepts proposed independently by the international business and social network literatures over the past few decades. In so doing, we argued that social network concepts can enrich theories of foreign expansion, and vice versa. For instance, we suggested that the concept of altercentric uncertainty

in social network analysis (Podolny, 2001) calls attention to an aspect of the liability of foreignness in international business research (Hymer, 1959; Zaheer, 1995) that has been relatively underemphasized. Firms entering a foreign market face an uphill battle not only because they lack knowledge about the local context, but also because they must convey to local suppliers, collaborators, and customers that they are trustworthy. Network advantages acquired in the home country may help reduce this aspect of the liability of foreignness.

We also established a parallel between the international business and social network research traditions in our argument that, under certain circumstances, firms tend to follow each other's entry into foreign markets. The international business literature provides ample evidence that the presence of the firm's partners or competitors is an important determinant of the choice of countries to enter (e.g. Guillén, 2002; e.g. Henisz & Delios, 2001; Shaver et al., 1997). However, few studies examine how the characteristics of the entering firms may influence the rate at which they will follow its partners into a foreign country. We extend this literature by arguing that firms enjoying a brokerage advantage are more likely to follow their partners to specific markets, while high social status firms are less likely to follow their partners to specific markets than their low social status counterparts. These arguments bridge an important gap between the international business and the social network literatures. Buyer-supplier relationships aside, international business theory expects firms to follow each other to foreign markets when their home-country industry is an oligopoly (Knickerbocker, 1973). Following the social network literature (e.g. Burt, 1992, 2005; Nohria, 1992), we have provided some evidence to the effect that firms enjoying a brokerage advantage in the home country react to their partners' foreign market entry by following them to the same locations abroad in order to protect their existing brokerage advantage. Our analysis shows that the fields of social networks and

international business can benefit from each other by defining mutually important questions, and by formulating and testing related predictions.

Our empirical setting, the venture capital industry, has certain features that may render our results harder to generalize. For instance, venture capital investments differ from other types of foreign investments in that they have relatively short time horizons (7–10 years), and investing firms have limited involvement in the ventures' operations. Furthermore, venture capital firms are professional service firms as well as financial intermediaries. They therefore do not need to make large infrastructure investments in the countries that they enter, and it may be possible for them to enter countries without establishing foreign branch offices by investing in ventures in the focal country. In industries in which large infrastructure investments are needed to enter a new foreign market, network structure may have a different influence on market entry.

We note that our results on transferability echo those reported by Jensen (2003, 2008) for U.S. commercial banks expanding into investment banking. Like investment banking, venture capital is an industry characterized by intense social relationships. In recent years many other industries have witnessed a sharp rise in interorganizational relationships and alliances (Jensen, 2008). Thus, we believe our results will be easily extended to industries such as biotechnology, semiconductors, automobiles or government contracting, as these are fields in which collaboration between firms is pervasive.

In this study, we have examined market entry decisions by venture capital firms headquartered in the U.S., thus keeping the home country constant. This enabled us to control for sources of variation that could interfere with the testing of our network predictions. However, U.S. venture capital firms may have unique opportunities or face specific constraints in transferring network-related benefits to other markets. Future work should examine the extent to

which firms headquartered in other countries are able to exploit their network advantages internationally, and the ways in which the characteristics of these home countries interact with the firms' network advantages.

The research reported in this paper is limited in several respects. First, the lack of complete data prevented us from directly testing whether firms replicate in new markets the network connections present in their home country. Additional data on the networks of host country firms and the relationships that entering firms establish with these firms would provide opportunities to examine this related question. Second, we have assumed that venture capital firms would be more likely to enter countries in which they would achieve better performance due to their network advantages. In other words, we assumed a positive link between expected performance and entry. Although firms may not be able to perfectly predict their future performance in a foreign market, this assumption is congruent with prior work in the international business and strategy literatures (e.g. Helfat & Lieberman, 2002; Henisz & Delios, 2001). Future work should investigate in greater detail the validity of the view that expected performance drives firms' decisions regarding foreign market entry.

Finally, we have not explicitly accounted for possible differences among venture capital firms in terms of their ability to exploit their network advantages. Rather, we have assumed that, controlling for investment experience, all venture capital firms are equally likely to exploit advantages resulting from their position in the home-country network (e.g. Shipilov, 2006). Subsequent studies might profitably examine the differences among venture capital firms regarding their capabilities to exploit network advantages in their investment decisions.

These limitations highlight opportunities for future research assessing the ways in which social networks affect the foreign market entry decisions of firms. It is our hope that the theory

development and empirical results provided by our study provide a useful first step toward a more advanced understanding of the role of network structure in the international expansion of firms.

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TABLE 1**U.S. Firms' Foreign Venture Capital Investments, by Host Country, 1991–2002 ^a**

Country	No. of ventures	No. of ventures (sample for analysis)	No. of rounds	No. of rounds (sample for analysis)
United Kingdom	183	176	441	431
Canada	135	128	242	233
Israel	109	107	147	145
Japan	91	86	103	95
France	55	41	101	83
Germany	54	53	96	95
China	43	38	81	73
India	35	35	95	95
Ireland	31	30	50	48
Netherlands	30	29	65	63
Singapore	25	22	49	46
Total	791	745	1,470	1,407

^a Only the top 11 host countries are shown.

TABLE 2
Descriptive Statistics^a

Variable	Mean	Std. Dev.	Min.	Max.
Entry	0.01	0.03	0.00	1.00
Social status (mean-centered)	0.00	0.03	-0.02	0.21
Social status	0.02	0.03	0.00	0.23
Brokerage (mean-centered)	0.00	0.25	-0.85	0.15
Brokerage	-0.15	0.25	-1.00	0.00
Presence of syndicate partners in country × social status	0.00	0.01	-0.02	0.21
Presence of syndicate partners in country × brokerage	0.00	0.02	-0.85	0.14
Presence of syndicate partners in country	0.03	0.17	0.00	1.00
Venture capital performance	0.20	0.32	0.00	1.00
Number of entries in U.S.	10.55	23.17	0.00	363.00
Number of entries in foreign countries	0.49	3.66	0.00	115.00
Number of countries entered	4.73	15.57	0.00	157.00
Venture capital firm age	10.19	8.83	0.00	51.00
Gross domestic product ($\times 10^{-12}$)	0.38	1.15	0.00	8.98
Regulatory instability	-0.57	0.28	-0.89	0.00
Stock market capitalization	42.81	50.71	0.01	329.96
Number of other entrants in country	0.74	4.42	0.00	40.00
English as primary language	0.22	0.41	0.00	1.00
Distance from U.S.	8.44	3.77	0.55	16.18

^a $n = 516,493$.

TABLE 3
Bivariate Correlations^a

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Entry	1.00															
2. Social status ^b	0.04*	1.00														
3. Brokerage ^b	0.01*	0.16*	1.00													
4. Presence of syndicate partners in country × social status	0.09*	0.35*	0.06*	1.00												
5. Presence of syndicate partners in country × brokerage	0.07*	0.20*	0.10*	0.58*	1.00											
6. Presence of syndicate partners in country	0.09*	0.23*	0.04*	0.65*	0.39*	1.00										
7. Venture capital performance	-0.00	0.08*	-0.05*	0.01*	-0.00	-0.01*	1.00									
8. Number of entries in U.S.	0.06*	0.72*	0.11*	0.32*	0.20*	0.23*	-0.01*	1.00								
9. Number of entries in foreign countries	0.11*	0.15*	0.04*	0.07*	0.05*	0.06*	0.00	0.30*	1.00							
10. Number of countries entered	0.08*	-0.02*	-0.01*	0.11*	0.08*	0.26*	-0.03*	0.04*	0.02*	1.00						
11. Venture capital firm age	0.02*	0.26*	-0.03*	0.09*	0.06*	0.06*	0.28*	0.31*	0.10*	-0.01*	1.00					
12. GDP	0.02*	0.00	0.00	0.04*	0.02*	0.06*	-0.00	-0.00	0.00	0.29*	-0.00	1.00				
13. Regulatory instability	-0.02*	0.00	-0.00	-0.07*	-0.04*	-0.10*	-0.01*	0.00	0.00	-0.17*	-0.01*	-0.21*	1.00			
14. Stock market capitalization	0.04*	-0.01*	-0.00*	0.09*	0.06*	0.16*	-0.01*	0.02*	0.01*	0.31*	-0.00	0.25*	-0.26*	1.00		
15. Number of other entrants in country	0.07*	0.18*	0.03*	0.08*	0.06*	0.07*	-0.03*	0.30*	0.40*	0.02*	0.08*	0.00	0.00	0.01*	1.00	
16. English as primary language	0.02*	0.00	0.00	0.05*	0.03*	0.09*	-0.00	-0.00*	0.00	0.16*	-0.00*	0.14*	-0.05*	0.22*	0.00	1.00
17. Distance from US	-0.02*	0.00	0.00	-0.02*	-0.01*	-0.05*	-0.00	-0.00	0.00	-0.09*	-0.00	-0.19*	0.22*	0.04*	0.00	0.15*

^a $n = 516,493$; ^b Mean-centered variables; * $p < 0.05$

TABLE 4
Piecewise Exponential and Rare-Events Logistic Models Predicting
Foreign Market Entry^{a,b}

	<u>Piecewise exponential models</u>					
	(1)	(2)	(3)	(4)	(5)	(6)
Social status (mean centered)		23.00*** (1.71)	23.38*** (1.79)		23.37*** (1.41)	24.49*** (1.50)
Brokerage (mean centered)		-0.11 (0.24)	-0.60** (0.23)		-0.24 (0.20)	-0.64*** (0.19)
Presence of syndicate partners in country × social status			-8.10*** (2.52)			-8.34*** (1.96)
Presence of syndicate partners in country × brokerage			8.38*** (2.03)			6.24*** (1.40)
Presence of syndicate partners in country	2.77*** (0.13)	2.33*** (0.14)	2.25*** (0.18)	2.66*** (0.12)	2.17*** (0.12)	2.18*** (0.15)
Venture capital performance	0.34*** (0.08)	0.24** (0.09)	0.19* (0.010)	0.35*** (0.07)	0.25*** (0.08)	0.22** (0.08)
Number of entries in U.S.	0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)
Number of entries in foreign countries	0.02*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.01*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Number of foreign countries entered	-0.01* (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.02*** (0.00)	-0.02*** (0.00)
Venture capital firm age	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
GDP	0.19+ (0.10)	0.20* (0.10)	0.21* (0.010)	0.18* (0.08)	0.19* (0.08)	0.20* (0.08)
Regulatory instability	-5.56*** (0.75)	-5.78*** (0.76)	-5.73*** (0.77)	-5.05*** (0.59)	-5.31*** (0.60)	-5.34*** (0.60)
Stock market capitalization	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Number of other entrants in country	0.09*** (0.01)	0.08*** (0.01)	0.08*** (0.01)	0.09*** (0.00)	0.08*** (0.00)	0.08*** (0.00)
English as primary language	-1.08** (0.35)	-1.08** (0.35)	-1.10** (0.36)	-1.02*** (0.30)	-1.06*** (0.30)	-1.08*** (0.30)
Distance from U.S.	0.10** (0.04)	0.11** (0.04)	0.11** (0.04)	0.09** (0.03)	0.11*** (0.03)	0.11*** (0.03)
Likelihood ratio chi squared	3642.65***	3809.42***	3851.13***	6616.69***	6866.16***	6908.59***
Change in likelihood ratio		166.78***	41.71***		249.47***	42.43***
Degrees of freedom	23	25	27	23	25	27
Observations	516,493	516,493	516,493	517,981	517,981	517,981

	Rare-events logistic models					
	(7)	(8)	(9)	(10)	(11)	(12)
Social status (mean-centered)		13.89*** (1.67)	14.56*** (1.75)		11.97*** (1.64)	12.97*** (1.68)
Brokerage (mean-centered)		0.23 (0.22)	0.10 (0.23)		0.17 (0.20)	0.02 (0.20)
Presence of syndicate partners in country × social status			-2.98 (2.00.)			-3.91* (1.93)
Presence of syndicate partners in country × brokerage			1.75 (1.33)			2.05+ (1.17)
Presence of syndicate partners in country	1.06*** (0.12)	0.70*** (0.13)	0.70*** (0.16)	1.03*** (0.11)	0.72*** (0.12)	0.73*** (0.14)
Venture capital performance	0.02 (0.07)	-0.06 (0.08)	-0.06 (0.08)	-0.03 (0.06)	-0.10 (0.07)	-0.10 (0.07)
Number of entries in U.S.	0.01*** (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.01*** (0.00)	-0.00 (0.00)	-0.00 (0.00)
Number of entries in foreign countries	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Number of foreign countries entered	0.01* (0.00)	0.01+ (0.00)	0.01+ (0.00)	0.01+ (0.00)	0.01+ (0.00)	0.01 (0.00)
Venture capital firm age	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
GDP	0.00 (0.06)	-0.00 (0.06)	-0.01 (0.06)	0.02 (0.06)	0.01 (0.06)	0.01 (0.06)
Regulatory instability	-3.47*** (0.88)	-3.50*** (0.89)	-3.51*** (0.89)	-3.13*** (0.69)	-3.137*** (0.69)	-3.16*** (0.69)
Stock market capitalization	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Number of other entrants in country	0.05*** (0.01)	0.05** (0.00)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.00)
English as primary language	-0.64* (0.31)	-0.62* (0.31)	-0.61* (0.31)	-0.61+ (0.33)	-0.60+ (0.32)	-0.60+ (0.32)
Distance from U.S.	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
Constant	-10.81*** (0.36)	-10.43*** (0.35)	-10.44** (0.35)	-10.69*** (0.36)	-10.39*** (0.35)	-10.41*** (0.35)
Likelihood ratio chi squared	1951.44***	2025.06***	2028.81***	3474.28***	3551.15***	3558.06***
Change in likelihood ratio		73.62***	3.75		76.87***	6.92*
Degrees of freedom	34	36	38	34	36	38
Observations	516,493	516,493	516,493	517,981	517,981	517,981

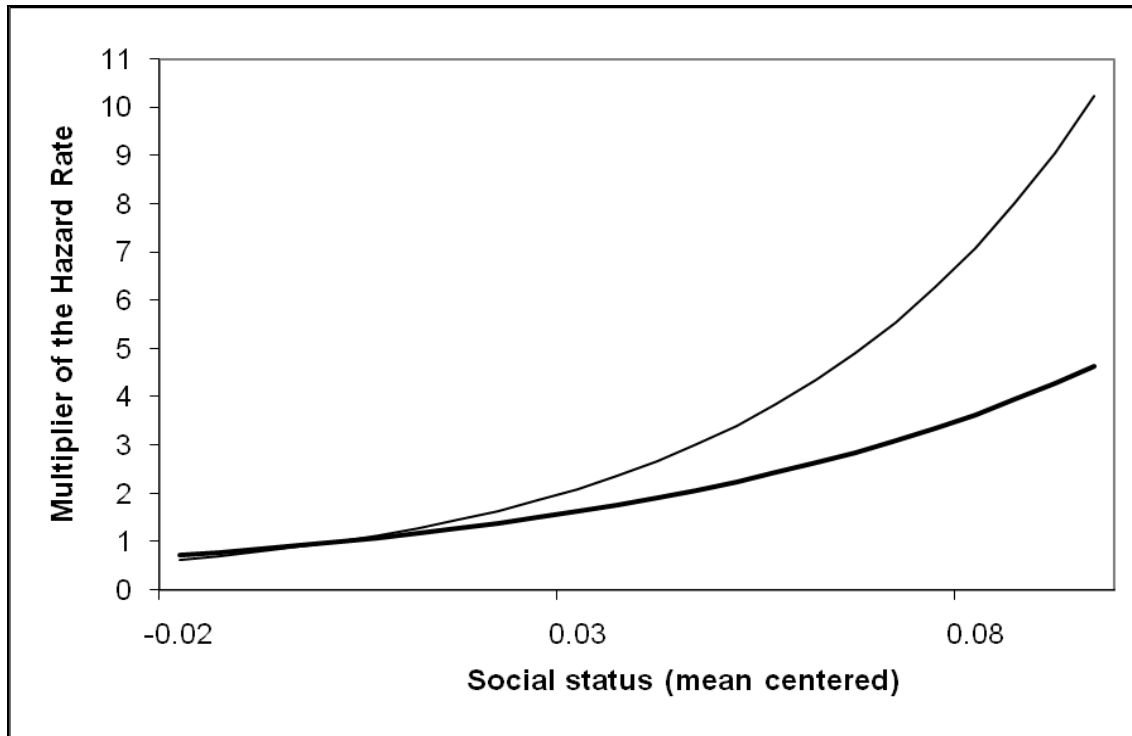
^aModels 1–3: Piecewise exponential models, first entries only; models 4–6: Piecewise exponential models, repeated entries; models 7–9: Rare-events logistic models, first entries only; models 10–12: Rare-events logistic models, repeated entries.

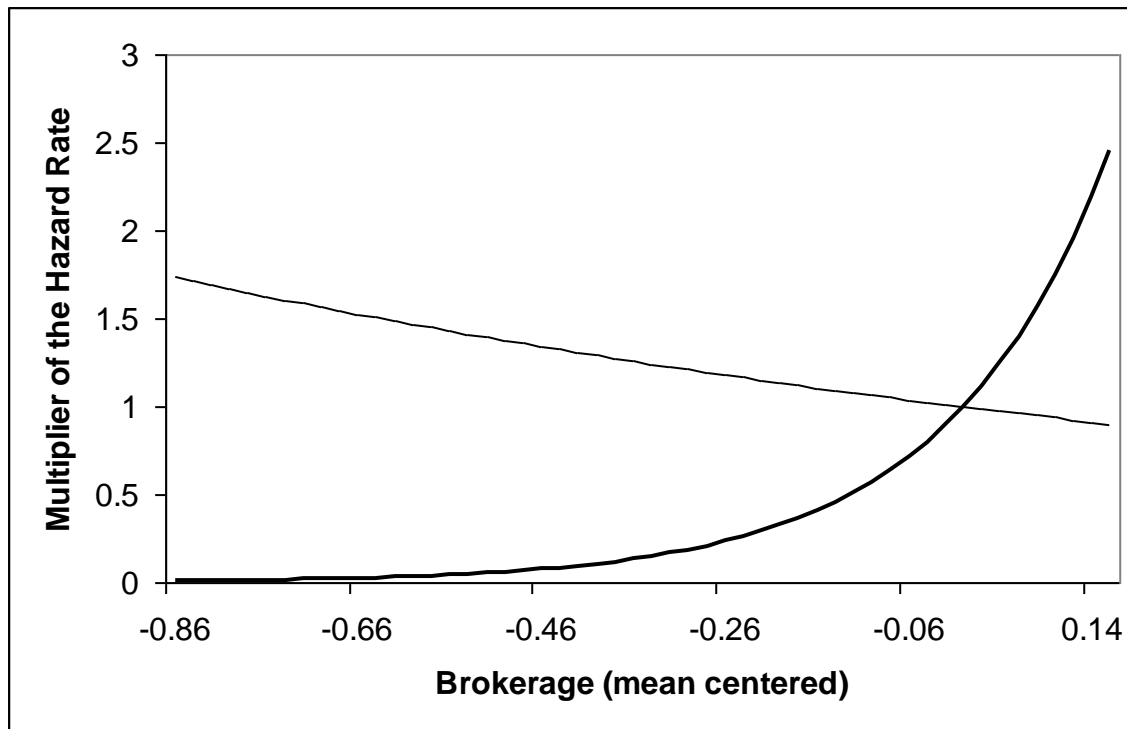
^bRobust standard errors in parentheses. Piecewise exponential models include 12 time pieces. Rare events logistic models include 11 year dummies, excluding the year 2002. All models include 11 dummies for countries in Table 1.

+ $p < 0.1$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

FIGURE 1

Multipliers of the Hazard Rate before and after a Home-Country Partner Enters a Foreign Market^{a,b}





^aThe thin (thick) line in each chart depicts the multiplier of the hazard rate before (after) a home-country partner entered a given foreign market.

^bBased on the parameter estimates from model 6 in Table 4.

BIOGRAPHICAL SKETCHES FOR THE AUTHORS

Isin Guler is an Assistant Professor of Strategy and Entrepreneurship at the Kenan-Flagler Business School of the University of North Carolina at Chapel Hill. She received her PhD in management from the Wharton School of the University of Pennsylvania.

Mauro F. Guillen is the Zandman Professor of International Management at the Wharton School and Director of the Lauder Institute at the University of Pennsylvania. He received his PhD in sociology from Yale and doctorate in political economy from Universidad de Oviedo.