

POONAM KHANNA: DISSERTATION ABSTRACT
THE DOWNSIDE OF REPEATED TIES: SYNDICATED VENTURE CAPITAL INVESTMENTS

My dissertation develops a conceptual framework to study the largely unrecognized negative side effects of repeated ties with the same partners. I argue that these social costs are manifest by biased partner search and evaluation; inadequate monitoring; and the adoption of suboptimal routines; and that network cohesion, and partner similarity moderate these costs. I also explore the effects of partner prestige and prior experience, on the likelihood of the partnership's success. Longitudinal analyses of 1,284 startups that received first round investments from venture capital syndicates between 1997 and 2001 provide support for several of the theoretical predictions.

Research on social networks has established that firms have a predisposition to enter into exchange relationships with their prior partners or their partners' partners (e.g., Eccles and Crane, 1988; Gulati, 1995¹) because of the lower search and governance costs, and an increase in mutual understanding and learning about each other's abilities (Gulati, 1995; Uzzi, 1996; Gulati and Gargiulo, 1999; Li and Rowley, 2002). The resulting familiarity facilitates trust-building, and the establishment of exchange norms based on an expectation of future interaction (Axelrod, 1984; Larson, 1992; Gulati, 1995; Chung, Singh and Lee, 2000). Repeated interaction also facilitates the development of a common language and routines that make subsequent interaction more efficient (Mohr and Spekman, 1996; Simonin, 1997; Inkpen and Dinur, 1998; Zollo, Reuer and Singh, 2002). The costs of engaging in repeated ties with the same partners have however, received only limited research attention, as have the costs of entering into exchange relations with prior partners' partners, particularly in the literature on inter-organizational alliances.

My dissertation fills this gap by developing a conceptual framework to study the negative side effects or social costs of repeated ties with the same partners. Drawing on insights from the literatures on social networks, prestige and endorsements, learning, expertise and small groups, I suggest that the costs of repeated ties with the same partners are manifest by a bias in partner search, evaluation and selection; inadequate monitoring of familiar partners; and the adoption of suboptimal, insufficiently adapted routines developed during prior exchanges. I ultimately argue that these costs can be high enough to outweigh the benefits of repeated ties partially, or even completely. I further argue that the level of cohesion in the network in which the actors and their partners are embedded, and the degree of similarity between them will moderate these costs. I also explore the effects of highly sought after partner characteristics such as their prestige/status and prior experience, on the likelihood of success of the partnership.

I develop and test specific hypotheses regarding the social costs of repeated ties and the other factors mentioned above on a longitudinal dataset of US-based new organizations or "startups" that received funding from a syndicate (i.e., two or more) of US-based professional venture capital (VC) firms for the first time during the period 1997 to 2001. Syndication is a very common practice in the VC industry (Sorenson and Stuart, 2001; Wright and Lockett, 2003) and VCs are repeatedly involved in selecting partners to syndicate specific investments with (Fenn, Liang and Prowse, 1997; Gompers and Lerner, 2000b). However, as discussed in detail later in this section, if the partners selected for syndication are inappropriate for the startup to which the syndicate provides funding, the syndicate's likelihood of success may decline. Therefore, the setting offers the opportunity to test predictions about the effects of repeated ties with the same partners. Moreover, investments made by a VC firm involve considerable opportunity costs and involve high levels of potential risk as well as returns, both in financial and reputational terms (Dixit and Pindyck, 1994). Given that a significant portion of VC firms' overall investment is made in syndicates, syndication can have a significant impact on a VC firm's performance, and thus, is also strategic and interesting to study in its own right.

THEORY AND HYPOTHESES

Impact of Repeated Ties

Drawing on key insights from the vast literature social networks, I develop a theoretical framework that suggests that the costs of repeated ties with the same partners are manifest by: (a) a bias in the search for, evaluation of, and selection of partners; (b) sub-optimal monitoring of familiar partners; and (c) a reliance on prior routines that are insufficiently adapted to the focal situation.

Bias in partner search, evaluation and selection: March and Simon (1958) proposed that rather than making fully informed decisions, people satisfice, that is, they terminate the search for further information as soon as they believe they have an acceptable solution (Borgatti and Cross 2003). Further, the extent to which people satisfice, is a function of the ease with which solutions are located; as solutions become harder to find, standards of search fall (Cohen, March and Olsen, 1972). Accordingly, I argue that by providing easily accessible and acceptable solutions, prior partners can cause firms to conduct biased or less expansive searches, that is, to satisfice in their search for suitable partners (Simon, 1947). In the present context, the extent to which a VC firm is able to add value to a startup depends on a number of factors including its network resources and its ability to anticipate and understand the strategic and management issues facing the startup. In turn, a VC firm's ability to anticipate and understand the needs of a new organization is a function, at least in part, of the nature of its prior investment experience as well as the prior industry and direct entrepreneurial experience of its partners (Bygrave and Timmons, 1992; Sorenson and Stuart, 2001). At the same time, startups too can differ considerably from each other in terms of their strategic and organizational requirements because of differences in their opportunities, technology, product offerings, the experience and skills of the entrepreneurial team, and so on. Therefore, the degree to which a particular VC firm is a "good match" for two different startups can vary significantly. Stated differently, a VC firm that was

¹ References are available upon request.

an appropriate partner for a particular startup funded in the past may not be optimal for the focal startup. Further, research suggests that actors frequently overestimate the quality of their prior partners because the familiarity and positive affect created by prior exchange relations may lead them to: (a) recall their prior exchanges favorably; (b) give greater benefit of the doubt when interpreting ambiguous information about their quality; (c) over-simplify the causes of past successes; and (d) over-attribute those successes to their partnership, although the causes of success are often difficult to ascertain (Zajonc, 1980; Johnson and Tversky, 1983; Coleman, 1990; Lawler, 1992; Li and Rowley, 2002; Slovic, Finucane, Peters and McGregor, 2002). Together with the limited search for potential partners, this over-estimation of partner quality can result in a misleading reduction in uncertainty, and a reduction in the perceived need to conduct an expansive search for appropriate partners, leading firms to make sub-optimal partner choices in terms of both quality and appropriateness for the focal context.

Inadequate monitoring of prior partners: A history of exchange leads to a presumption, possibly erroneous, of trustworthy future behavior, which in turn can lead actors to under-estimate the need for monitoring familiar partners (Granovetter, 1985; Coleman, 1990) or even deem it altogether unnecessary (Lewicki and Bunker, 1996). Further, the cognitive comfort and perception of reliability that accompany trust in a partner have the effect of reducing the search for information and attention to detail on the part of the trusting partner (Langfred, 2004). In effect, familiarity with partners may lead actors to under-estimate the need for monitoring them. Moreover, even if they believe it to be necessary, actors may be reluctant to monitor or challenge partners with whom they have prior ties. Research on social networks suggests that the fear of loss of ties or loss of network membership, which would render them unable to continue to derive benefits from the network, often forces actors to behave in ways that are acceptable to other network members (Burt, 1992; Brass, Butterfield and Skaggs, 1998). Similarly, social relationships between group members are also thought to create a reluctance to challenge fellow members and have been shown to significantly reduce, even eliminate debate, which is thought to have adverse effects on the quality of decisions made by the group (Nelson, 1989). This reluctance to monitor may stem from the common belief that monitoring of trusted members is both unnecessary and a violation of their mutual trust (Lewicki and Bunker, 1996), and thus, may have a detrimental effect on the existing relationship between the “monitoring” and the “monitored” partner (Feldman, 1984). For example, in the present context, the time consuming task of monitoring and advising funded startups is delegated to the Lead VC². However, startups funded by the Lead VC individually require the VC’s time and resources as much as the startup funded by the syndicate, creating a conflict between the VC’s individual interests and the syndicate’s collective interests. In the absence of effective monitoring mechanisms regarding the extent of time and effort the Lead VC devotes to the startup funded by the syndicate, the Lead VC may place his individual interests above the syndicate’s interests, and not devote the necessary amount of effort to the startup funded by the syndicate, which may compromise the syndicate’s performance. Monitoring of such partners can solve this moral hazard problem at least partially by providing an early warning to the other partners, enabling them to take corrective measures. However, such monitoring is likely to be perceived as both intrusive and curtailing the Lead VC’s decision making autonomy. This, as prior theoretical discussion suggests, may be seen to display a lack of trust by questioning the Lead VC or interfering with the manner in which it performs its role runs the risk of damaging its relationship with that firm.

Use of sub-optimal, ossified routines: One of the benefits of repeated exchange with the same partners is that over time, routines specific to the relationship are established and these enhance coordination, enabling the partners to work together more efficiently in the future (Bryman, Bresnen, Beardsworth, Ford and Keil, 1987; Zollo, Reuer and Singh, 2002). At the same time however, insights from learning theory suggest that routines are often transferred between contexts even if they are not appropriate (Cohen and Bacdayan, 1994; Kogut and Zander, 1996), or are transferred without being sufficiently adapted to differences in conditions. This literature further suggests that once transferred, inappropriate routines tend to persist because they are sub-optimal, but not incorrect (Singley and Anderson, 1989). Moreover, such inappropriate transfer and persistence are often compounded by the absence of explicit evaluation because established routines are simply taken for granted. In the context of syndicated investments by VCs, as noted earlier, startups can differ from each other considerably in terms of their strategic and organizational requirements, increasing the likelihood that routines developed during prior investment interactions will be inappropriate for the focal investment. Thus, the use of such inappropriate or ossified routines, such as the routines used to determine the extent of involvement of a non-Lead syndicate member with appointing the board of directors, hiring the management team or establishing contact with potential customers, can lead a VC syndicate to make sub-optimal decisions which can have a detrimental effect on the startup’s likelihood of success.

Based on the above arguments, I suggest that each of the three costs discussed above will increase with the number of prior ties. The benefits of repeated ties, on the other hand, are unlikely to increase in the same manner as the number of prior ties increases. Among the key benefits of prior ties identified by prior research, is mutual trust, which is thought to enhance partners’ ability to transfer complex and tacit information. However, neither the complexity, nor the tacitness of information to be exchanged between partners in VC syndicates is particularly high. Thus, in the present context, the greater trust resulting from repeated ties only provides limited benefits. Repeated interaction with the same partners also leads to

² When two or more VC firms invest in a startup as a syndicate, the task of overseeing the investment (i.e. monitoring the startup’s progress, providing advice to the management etc.) is delegated to one partner, known as the Lead VC firm.

the establishment of routines and a common language, which in turn increases the efficiency, reliability, and effectiveness in communication and coordination. While these outcomes can be highly beneficial in contexts with small differences across situations where partners are engaged in activities that rely on routines and require frequent communication and coordination, in contexts such as the present where the conditions surrounding each interaction differ considerably, routines provide only limited benefits. Thus, in the present context, the overall benefits from repeated interaction are likely to increase at a diminishing rate with an increase in the number of prior ties. Taken together, the above discussion suggests that while repeated interaction with the same partners will be beneficial initially, as the number of prior ties increases beyond a point, the costs will begin to outweigh the benefits. Therefore, as the number of prior ties between syndicate members increases, the likelihood that the startup funded by the focal syndicate will be successful will first increase and then decrease. More formally,

Hypothesis 1: The likelihood that the startup funded by the focal VC syndicate will be successful will have an inverted U-shaped relationship with the number of prior ties between the VC firms in the syndicate.

Network Cohesion

Cohesion, or the existence of mutual partners, facilitates exchange in networks by enabling the diffusion of information about members' reputations and thereby controlling their behavior (Mayhew, 1968; Burt, 1992). Trust develops more easily between actors embedded in cohesive networks (Baker, 1984; Coleman, 1988; Grief, 1989; Ingram and Roberts, 2000). Moreover, the level of trust and reciprocity increases with the cohesiveness of the network (Granovetter, 1985, 1992; Coleman, 1988) because the speed at which information flows through a network increases with density (Burt and Knez, 1995). Cohesion also facilitates the establishment of norms as well as social control of actors who violate those norms. High levels of network closure increase the likelihood that violators will be observed by network members (Merry, 1984). Normative violations then prompt negative gossip about the violators, which damages their reputation and reduces their ability to continue existing relationships and form new ones with other network members (Burt and Knez, 1995). Moreover, violators are frequently sanctioned by network members (Coleman, 1990), leading to the loss of repeat business and other points of interaction with existing partners (Macaulay, 1963; Granovetter, 1985), further diminishing violators' ability to continue to enjoy the benefits of network membership (Garguilo and Benassi, 2000). By enabling a greater number of actors to coordinate their actions, cohesiveness also increases the effectiveness, and therefore the costs, of sanctions (Coleman, 1990). Thus, cohesion increases not only the likelihood that actors who violate norms will face sanctions, but also the expected cost of those sanctions. In the context of this study therefore, the extant theory on social control would predict that a Lead VC firm embedded in a cohesive network with one or more non-Lead firms would perform its role of monitoring / advising the funded startup effectively in an effort to protect its reputation and avoid sanctions from network partners. However, the above discussion suggests that, contrary to the predictions of social control theory, in the current context, cohesion may actually prevent the non-Lead firms from monitoring the Lead firm since such monitoring is likely to be perceived as a sign of distrust and hence would lead to sanctions. Said differently, rather than promoting behaviors that are beneficial to the collective interests of all members, social control facilitated by cohesive networks may actually suppress such behaviors. That is,

Hypothesis 2: The likelihood that the startup funded by the focal VC syndicate will be successful will be negatively related to the degree of cohesion between VC firms in the syndicate.

As argued above, monitoring a familiar partner is seen as a violation of trust, which gives rise to negative affect in the monitored actor. Since trust increases with the number of prior ties, it follows that a greater number of prior ties between the actors will promote a more intense negative affect. In turn, this greater negative affect will increase the likelihood of the actor initiating negative gossip about the actor engaging in monitoring. Thus, as the extent to which the monitoring partner's cohesiveness with the monitored partner increases, so will the potential reputational damage and the likelihood and effectiveness, that is, the costs of sanctions. Therefore, I suggest that cohesion will heighten actors' reluctance to engage in monitoring to the extent they have prior ties with the monitored partner. The resulting inadequacy of monitoring will have detrimental effects on the quality and quantity of effort the Lead VC spends on the focal startup. More formally,

Hypothesis 3: The likelihood that the startup funded by the focal VC syndicate will be successful will be negatively related to the interaction of the number of prior ties and the degree of cohesion between VC firms in the syndicate.

Partner Prestige³

Not unlike the social networks literature, the literatures on prestige and endorsements have also largely focused on their beneficial consequences and those of association with prestigious / high status actors (Podolny, 1994; Podolny, Stuart

³ I use the terms prestige and status interchangeably.

and Hannan, 1996). Among the benefits of association with high levels of prestige / status are legitimacy, an assumption of competence, and access to high quality resources (e.g., Higgins and Gulati, 2003; Gulati and Higgins, 2003). Actors with relatively low levels of prestige/status can obtain access to these benefits by entering into ties with prestigious actors, and thus, prestigious actors are highly sought after as partners. I argue, however, that relationships with high status or prestigious actors may carry previously unrecognized costs which can be considerable. In addition to making them difficult to monitor because they are accustomed to deference, partner status/prestige also heightens concerns about protecting existing relationships with them, which in turn can make actors more reluctant to monitor them. In addition, actors may underestimate the need to monitor their prestigious partners because of the presumption of competence, due to which they are given the benefit of the doubt to a greater extent. This increase in costs may offset some of the beneficial effects of partner prestige, and consequently, I expect the net benefits from partner prestige to increase at a decreasing rate. Thus,

Hypothesis 4: The likelihood that the startup funded by the focal VC syndicate will be successful will increase at a decreasing rate as the status/prestige of VC firms in the syndicate increases.

Syndicate Member Prior Experience

In general, people's performance at tasks improves as they gain experience and familiarity at those tasks. The learning-by-doing model for the prediction of performance in the psychological literature on expertise suggests that performance improves with practice, that is, through trial and error learning (Anderson, 1987; Seifert, Patalano, Hammond and Converse, 1997). As decision makers gain experience, they learn to focus attention on dimensions that contribute the most variance to decision outcomes (Chase and Simon, 1973; Weber, 1980; Choo and Trotman, 1991). Experience also facilitates the codification of individuals' knowledge into categories based on strong links between concepts (Chi and Koeske, 1983; Gobbo and Chi, 1986; Fredrick, 1991). This codification enables experts to see more patterns and connections between individual elements of knowledge instead of disparate issues in comparison to novices (Kirschenbaum, 1992; Chattopadhyay, Glick, Miller and Huber, 1999). Therefore experts are able to utilize their knowledge more effectively. Prior research has provided considerable evidence of the significant beneficial effects of experience on outcomes such as manufacturing plant productivity (e.g., Argote, Beckman and Epple, 1990), service timelines (Argote and Darr, 2000) and hotel survival (Baum and Ingram, 1998).

It is generally presumed that individuals' expertise in a particular domain continues to increase with their level of experience in that domain. However, the literature on learning asserts that while knowledge does increase with experience, this increase occurs at a diminishing rate (e.g., March, Sproull and Tamuz, 1991). Psychological research on the effects of experience has also noted that while experience generally improves performance, there is reason to believe that as experience accumulates, the incremental benefits from such additional experience start to decline. Both streams of research suggest that one of the main reasons for the declining marginal benefits is that beyond a point, additional experience provides knowledge that is redundant with knowledge already gained, and is therefore unlikely to add to the individual's expertise in the relevant domain. Further, psychological theory and research on expertise also argues that as individuals' experience exceeds a certain level, they become trapped in certain ways of thinking. As the rigidity in their thinking increases (Nisbett and Ross, 1980), highly experienced individuals become unable to perform well at new tasks or situations that deviate significantly from what they normally see (Frensch and Sterberg, 1989; Koonce and Mercer, 2002). As noted earlier, initially, experience enables the codification of an individual's knowledge into categories. Subsequent experience then increases their familiarity with these codified knowledge structures. At the same time, this additional experience also increases their perceived familiarity with the range of likely situations and outcomes, which in turn, diminishes their ability to imagine outcomes other than the ones they have seen in the past. As a result, highly experienced individuals become increasingly less likely to engage in counterfactual thinking or make judgments based on step-by-step processing (Roese, 1997; Baron, 1998; 2000). Instead, they become increasingly more likely to make memory-based or associative/analogy-based judgments. This adds further to their inability to recognize differences between current and past situations, and thus to modify decision making processes accordingly (Feltovich, Spiro and Coulson, 1997). The effects of this rigidity in individuals' thinking are especially strong because it functions outside their awareness, due to which they are not even aware of its cognitive consequences (Wiersema and Bantel, 1992). These arguments have received empirical support from research on a variety of subjects including executives. Executives with long industry tenures tend to exhibit a greater commitment to the status quo in large part because increasing experience promotes greater reliance on "industry recipes," that is, common ways of thinking which form powerful constraints on their thinking (Spender, 1989; Hambrick, Geletkanycz and Fredrickson, 1993). Prior research further suggests that even if experts were to recognize the need for modification in their decision making processes, over time, it becomes harder for them to do so because of the increasing rigidity in their thinking. Therefore, together with the decrease in incremental benefits of experience, this increase in costs may result in overall negative effects of high levels of experience (see Einhorn, 1974; Camerer and Johnson, 1997).

Extending the above arguments to the context of VC syndication, I suggest that initially, experience with funding startups will lead to learning and therefore, an improvement in VC firms' performance. As experience begins to accumulate however, the incremental learning will decline, and thus further improvement in performance will occur at a decreasing rate. At the same time, with additional experience, the rigidity in VCs' thinking will increase, preventing them from recognizing

and accommodating the often significant differences in the organizational and strategic requirements of startups. In turn, this will lead to an over-reliance on partner selection criteria they used in the past and a failure to adjust such criteria to the particular needs of the funded startup. Thus, their ability to select the optimal (or the most appropriate) syndicate partners based on the needs of the funded startup will diminish as their level of experience increases. This loss of flexibility in their thinking will also have a detrimental effect on their ability to provide appropriate advice and resources to the startup after making the investment. In addition, as noted earlier, expertise increases at a declining rate at best with additional experience beyond a point. However, greater experience in a particular domain is generally presumed to increase individuals' expertise in that domain. Thus, partners of highly experienced actors will under-estimate the need for monitoring them to a greater extent. Moreover, as argued earlier, even if they correctly estimate the need for monitoring, syndicate members will be reluctant to engage in optimal levels of monitoring in the interest of protecting their dyadic relationship with the highly experienced Lead VC as well as protecting their network reputation against negative gossip initiated by such a partner. Additionally, as in the case of prestigious VCs, the likelihood that monitoring will damage their relationship with highly experienced VCs is also relatively high because they are also likely to be accustomed to other VCs deferring to their judgment and thus react more negatively to being monitored or challenged. Again, because experience is presumed to be correlated with expertise (Li and Rowley, 2002), monitoring of highly experienced partners is also likely to be considered non-normative and thus be discouraged or even sanctioned by the other members of the focal syndicate. Consequently, syndicate partners are less likely to engage in monitoring of highly experienced partners. This reluctance to monitor or challenge a highly experienced partner will at least partially offset the benefits of greater experience, and may even outweigh them completely. It may be argued that the negative effects of this increasing cognitive rigidity may be offset, at least in part, by the presence of group members with varying levels of experience or other types of diversity. However, the reversal of these effects requires a considerable amount of task related debate so that the alternative points of view can be expressed and the group is forced to thoroughly discuss them and choose the best. Such open debate may not occur in the presence of highly experienced partners because as in the case of prestigious partners, such debate may be seen as challenging the experienced partner, creating a risk of damaging the relationship with them.

To summarize, while additional experience increases knowledge, the increase occurs at a declining rate since a greater portion of the knowledge gained from additional experience is redundant with the knowledge already acquired. Thus, the benefits of experience will also increase at a declining rate. At the same time, the costs of experience such as an increased rigidity in thinking and increased inability to recognize and adjust for difference between the current and past situations continue to increase. The costs in this case are an increased likelihood of selection of less than optimal syndicate partners to fund the funded startup, which will in turn decrease the likelihood of its success. In addition, partners' reluctance to engage in monitoring highly experienced actors will continue to increase. Therefore, I expect the costs to offset at least part of the benefits of additional experience and hypothesize that the likelihood that the funded startup will be successful will increase at a decreasing rate with the syndicate members' prior investment experience. More formally,

Hypothesis 5: The likelihood that the startup funded by the focal VC syndicate will be successful will increase at a decreasing rate as the prior investment experience of VC firms in the syndicate increases.

Homogeneity

As the homogeneity of members increases, they become more trusting of each other and the level of cohesiveness in the group increases. In turn, this reduces conflict, and facilitates communication and coordination between them. However, I argue that, beyond a certain level, the costs of homogeneity, such as the redundancy of available information and expertise, and the suppression of divergent opinions, will begin to outweigh the benefits. Similarly, at the other extreme, the costs of very high levels of diversity will also outweigh the benefits. As diversity increases, so does the difficulty of communication by members who don't share the same values or a common vocabulary. However, given their cognitive limitations, members are unlikely to take note of the differences until they become considerably high. Thus, the level of diversity would need to be considerably high before such "us-versus-them" thinking is prompted and the attendant in-group and out-group biases are felt. This may be particularly likely in the context of VC syndication, given the prevalence of continued partnering with the same other firms as well as the considerable movement of executives between firms. The familiarity created by such repeated interaction and movement of executives across organizations may increase the tolerance for differences between partners. Taken together, this discussion suggests that while a minimum level of similarity may be essential for a group to be able to take advantage of the available resources (Lott and Lott, 1965), a very high level of similarity may lead to a different set of problems which interfere equally with group functioning. Therefore, I hypothesize that the extent of homogeneity among VC firms in a syndicate will have an inverted U-shaped relationship with the likelihood of startup success. More formally,

Hypothesis 6: The likelihood that the startup funded by the focal VC syndicate will be successful will have an inverted U-shaped relationship with the degree of homogeneity among VC firms in the syndicate.

Actors enter into social relations with others who are similar to them because similarity is a crucial determinant of attraction, and thus, members with pre-existing relationships are likely to have more knowledge and beliefs in common (Newcomb, 1961; Ancona and Caldwell, 1992). Moreover, people who have social ties to each other also tend to develop shared understandings of the issues they face, and thus, social ties increase the homogeneity of beliefs and attitudes (Friedkin and Johnsen, 1999). Therefore, as prior ties between members increase, so will the extent of cohesion in the group. At the same time, by increasing their exposure to each other, prior ties will also increase members' mutual attraction and the similarity of their ideas. Thus, groups consisting of members with a greater number of prior ties will tend to be more susceptible to the costs of similarity discussed above. Member diversity, on the other hand, will mitigate the negative effects of prior ties. Diversity among members prompts task-related debate and disagreement, which forces the group to consider alternative points of views and arrive at better, more thought out decisions. In addition, disagreement and cognitive conflict also reduce mutual attraction between members. Stated differently, the greater the diversity between members of a group, the greater will be the number of prior ties required to bring about a high level of attitudinal similarity between partners. Thus,

Hypothesis 7: The likelihood that the startup funded by the focal VC syndicate will be successful will be negatively related to the interaction of the number of prior ties and the degree of homogeneity among VC firms in the syndicate.

Syndicate Size

As noted above, groups have greater expertise as well as cognitive and other resources than individual members. Therefore, it may seem reasonable to expect that larger groups will always perform better than smaller ones. However, prior research has argued and provided empirical evidence that this does not necessarily happen. As group size increases, groups begin to experience process and motivation losses, which result in a decline in group performance. Process losses refer to coordination or interaction difficulties due to which groups are unable to optimally utilize the available resources (Steiner, 1972; Tindale and Davis, 1983; Stasser and Titus, 1985; Schulz-Hardt, Jochims and Frey, 2002; see Williams, Harkins and Karau, 2003 for a review). Research has provided considerable evidence that such problems increase with group size. Studies have demonstrated that as group size increases, it becomes increasingly difficult to build inter-personal relationships that further cohesion (Latane, Williams and Harkins, 1979; Wagner, 1995) and thus cohesiveness, cooperation and consensus decline (Shull, Delbecq and Cummings, 1970; Wagner, 1995). At the same time, coordination and communication difficulties increase (Blau, 1970; Shaw and Harkey, 1976). One of the outcomes of motivation losses is a phenomenon called social loafing, which refers to reduced effort by individual members (Steiner, 1972; Latane, Williams and Harkins, 1979). The loss of motivation is thought to promote social loafing because of the difficulty in evaluating individual members' input into the collective output of the group (Harkins, 1987; 2000; Szymanski and Harkins, 1993). This difficulty becomes especially acute as groups become larger (Herold, 1979; Gladstein, 1984). Evidence of social loafing has been provided in a variety of settings, using both laboratory and field studies involving evaluative tasks such as rating advertisements and resumes (e.g., Williams and Burmont, 1981; Erez and Somech, 1996), cognitive tasks such as remembering information relevant to a mock trial and looking for the appearance of specific signals on a computer (e.g., Harkins and Szymanski, 1988; 1989), physical tasks such as rowing and pumping air through a handheld device (e.g., Kerr and Bruun, 1983; Anshel, 1995), and work related tasks such as completing an in-basket managerial exercise and selling products (e.g., Earley, 1989; George, 1995; see Williams, Harkins and Karau, 2003 for a comprehensive review of the empirical evidence relating to social loafing; also see Karau and Williams, 1993 for a meta-analysis of 78 studies on social loafing).

Thus, individual members' contribution tends to decline, that is, they tend to contribute less than they might, as group size increases. In addition, larger groups are also faced with greater process losses which prevent them from harnessing available resources. However, considerable research on groups suggests that size is unlikely to have simple linear effects on performance. Rather, while performance may improve initially with an increase in the number of members because of the availability of greater resources, beyond a certain threshold, further increases in size can lead to dysfunctional member behavior, and therefore, to a decline in overall performance (Steiner, 1972; Hackman, 1987). The threshold or optimal group size tends to vary by the type of task the group is required to perform. For problem solving tasks that have at least one "correct" solution, this threshold may be relatively high at around 4-5 members. However, when the task involves making decisions under conditions of uncertainty, as it does in the present context, and one "correct" solution does not exist, the threshold may be considerably lower. Accordingly, I expect the number of syndicate members to be related to the performance of VC syndicates (and consequently, to the likelihood that the startup will be successful) in an inverted U-shaped manner. More formally,

Hypothesis 8: The likelihood that the startup funded by the focal VC syndicate will be successful will be related to the number of VC firms in the syndicate in an inverted U-shaped manner.

Stage of Development of Funded Startup

Entrepreneurial organizations suffer from the liability of newness which leads to high mortality rates during the initial years of their existence (Stinchcombe, 1965), although this liability decreases as the organizations move through

successive stages of development. Startups funded by VCs tend to experience even higher rates of failure than other new organizations in part because they are typically engaged in developing new products or technologies and the rewards of innovation are uncertain. The National Venture Capital Association (NVCA) categorizes VC funding provided to startups into the following stages based on their stage of (idea/product) development: (a) Seed stage: financing before there is a real product or company organized; (b) Early stage: financing a company in its first or second stages of development, when it has exhausted its initial capital and needs funds to initiate commercial manufacturing and sales; (c) Expansion: financing to help a company grow beyond a critical mass to become more successful, when it needs working capital for producing and shipping its products; and (d) Later stage: financing to help the company grow to a critical mass to attract public financing through a stock offering, or to attract a merger or acquisition with another company by providing liquidity. Given that the liability of newness declines as new organizations successfully go through successive stages of development (Stinchcombe, 1965), I expect that, all else equal, startups at later stages will be more likely to survive. As noted earlier, in addition to providing funds, VC firms add value to the startups they fund in a number of ways. This value addition can include addressing weaknesses in the startup's business model or its entrepreneurial team (Kaplan and Stromberg, 2004), providing advice on strategic matters, helping them to hire professional managers (Hellman and Puri, 2000; 2002) and providing access to their own networks which may enable the startup to reach potential customers and suppliers or form strategic alliances (Lindsey, 2002). However, as I also argued earlier, VC firms can select partners that are sub-optimal for the particular organizational and strategic requirements of the focal startup because they are biased in favor of their prior partners. Moreover, they may select partners without adjusting their selection criteria because they underestimate the differences in the needs of the focal startup from those of a prior startup in which they co-invested with the same firm, but for which that VC firm was more appropriate. Syndicates composed of sub-optimal VC firms may therefore not possess the skills and resources required by the focal startup. However, since a startup's dependence on its investors for value addition decreases as it grows through successive stages of development, this match between the VC firms' skills and resources and the startup's needs should be less critical at later stages than it is at earlier stages. Therefore, it seems reasonable to argue that startups that receive VC funding for the first time at later stages of development will be more capable of withstanding the negative effects of receiving funding from VC syndicates that include inappropriate, or less than optimal, VC firms. Thus, I hypothesize that startups at later stages of development will be more likely to survive and be successful as compared to startups at earlier stages. Further, startups at later stages of development will be more likely to be successful despite receiving suboptimal strategic and/or organizational support from their investors. More formally,

Hypothesis 9: The earlier the stage at which the startup funded by the focal VC syndicate receives VC funding for the first time, the lower will be its likelihood of success (that is, the likelihood of success will be the least for seed/early stage startups and the greatest for later stage startups).

Hypothesis 10: The likelihood that the startup funded by the focal VC syndicate will be successful will be negatively related to the interaction of the number of prior ties between the VC firms in the syndicate and the stage at which it receives VC funding for the first time (that is, the earlier the stage, the greater will be the negative effect of prior ties).

METHOD, ANALYSIS, AND FINDINGS

I tested the predictions of my theory on a longitudinal dataset consisting of the population of nearly 1,300 startups that received first round investments from syndicates of venture capital (VC) firms during the period 1997 to 2001. Table 1 summarizes the constructs and the operationalization of the variables in the study. I estimated the instantaneous hazard rate of an exit⁴ by a startup funded by a syndicate of VC firms using a continuous-time event history analysis (Allison, 1984) using a Cox Proportional Hazards model. As predicted, I find that the likelihood of a syndicate's success is related to the number of prior ties between syndicate members in an inverted U-shaped manner and that the costs associated with repeated ties are accentuated by partner homogeneity. I also find that the likelihood of the syndicate's success decreases with an increase in the level of cohesion in the syndicate. Finally, I find that the likelihood of success increases at a decreasing rate as syndicate members' prestige increases. Table 1 summarizes these and all other results.

CONTRIBUTION OF THE STUDY

The core contribution of this dissertation is to the literature on social networks, particularly to understanding of their detrimental effects, which until recently, have received little systematic consideration in social network theory. The negative effects of social networks have been especially under-appreciated in the literature on inter-organizational relationships (Salancik, 1995). Although there has been a growing recognition among researchers in recent years that this may not always be true, the focus of this stream of literature has largely been on identifying the contingencies under which social ties are more or less beneficial (e.g., Ahuja, 2000), and the types of ties and network structures that have the most detrimental effects (Uzzi, 1996; 1997). Moreover, barring a few exceptions (e.g., Ahuja, 2000), research on the contingent value of ties has largely focused on the interpersonal (e.g., Burt, 1992; Podolny and Baron, 1997), rather than the firm level.

⁴ Following prior research, I defined an "exit" as the funded startup going public or being acquired at a favorable price.

Similarly, the potential firm-level negative effects of networks have also not been explored (although, see Uzzi, 1996; 1997). While the cost, in terms of time and effort, of developing and maintaining social ties, in terms of time and effort, has been discussed occasionally (Nahapiet and Ghoshal, 1998), the negative effects of entering into repeated exchanges with the same partners have largely been neglected. The importance of obtaining a better understanding of the effects of social networks is underscored by the fact that many outcomes associated with them have been shown to ultimately affect firms' survival rates and financial performance (D' Aveni, 1990; Pfeffer, 1997; Stuart, Hoang and Hybels, 1999; Higgins and Gulati, 2003).

The primary finding of this study is that the number of prior ties between members of the focal syndicate has an inverted U-shaped relationship with the syndicate's likelihood of success. This finding demonstrates that while prior ties provide fast and relatively economical access to important information, enabling firms to form partnerships when required, they also impose considerable costs which increase at a greater rate than the benefits, eventually outweighing them completely. Thus, this study suggests that when selecting partners, firms should consider the potential costs of entering into repeated exchanges with prior partners along with the costs because failure to do so may lead to unexpected outcomes, some of which may become apparent only in the long term. The theoretical arguments developed in this study are especially relevant to other contexts such as investment banking syndicates characterized by high levels of reciprocity because of the importance of maintaining on-going relationships with other network members. Similarly, in contexts where the existence of prior ties between service or resource providers is generally viewed as an advantage, prior partners are considered highly desirable future partners. However, this study shows that such reliance on prior ties may also impose significant costs which need to be taken into account while selecting partners.

The next key finding of the study was the strong negative interaction between homogeneity between syndicate members in terms of their prior experience and prior ties. This homogeneity has a strong enough intensification effect to completely negate the initial positive main effects of prior ties. Consequently, in the presence of even low levels of homogeneity of prior experience, as shown in Figure 2, the effect of prior ties on the likelihood of the partnership's success is always negative. This finding is consistent with my argument that homogeneity between syndicate members will intensify the negative effects of prior ties by facilitating communication, trust building and cohesion between them, which in turn may speed up premature consensus formation and groupthink.

The third key contribution of this study is to suggest that rather than being universally beneficial as is generally believed (although recent studies such as Uzzi, 1996, have suggested otherwise), high degrees of network cohesion may impose certain constraints on the focal actors themselves, and discourage them from engaging in behaviors that would be beneficial to them as well as to the collective interests of network members. In general, network cohesion is thought to curb opportunism and other non-normative behaviors that may be detrimental to the individual or collective interests of network members by creating the threat of sanctions and disseminating reputational information about violators throughout the network. However, the theory developed in this study as well as its empirical findings suggest that because cohesion promotes two-way transparency in the network, the threat of sanctions or reputational consequences is equally applicable to all network members and not just the focal actors' potential partners. Thus, cohesion may constrain the behavior of not only potential partners, but also the focal firm itself. The fourth contribution of this study is to the literature on prestige and endorsements, which has largely focused on the beneficial consequences of association with prestigious actors (Podolny, 1994; Podolny, Stuart and Baron, 1996). This study suggests that in addition to these positive consequences, interaction with high status or prestigious actors also imposes significant costs. Not only are prestigious partners difficult to monitor, high status/prestige also intensifies actors' concerns about protecting their existing relationships with such partners, thereby making them more reluctant to challenge or monitor those partners.

Finally, this study also contributes to research on the venture capital industry in which syndication is a common practice. Prior strategy research on VC syndication has tended to assume that syndication has positive effects including increasing each individual firm's geographical and industry reach (Sorenson and Stuart, 2001). Finance-oriented research on VC syndication has also largely focused on its benefits such as risk reduction (see, for example, Coyle, 2000; Lerner, 1994). In reality however, as this study suggests, when a VC firm syndicates repeatedly with the same other firms, they may over-estimate the quality of such familiar firms while under-estimating the need for such firms. This bias resulting from the familiarity of syndication partners may reduce the likelihood of the funded startup being successful rather than increasing it, thereby increasing the risk faced by the syndicate. Similarly, syndicating with cohesive partners may increase VC firms' reluctance to monitor or challenge those partners. In addition, VC firm characteristics such as status/prestige, and similarity to the focal firm, all of which are generally considered beneficial, may also contribute to a reduction in the likelihood of the syndicate's success.

FIGURE 1: CONCEPTUAL MODEL OF THE EFFECTS OF REPEATED SYNDICATION TIES BETWEEN VC FIRMS

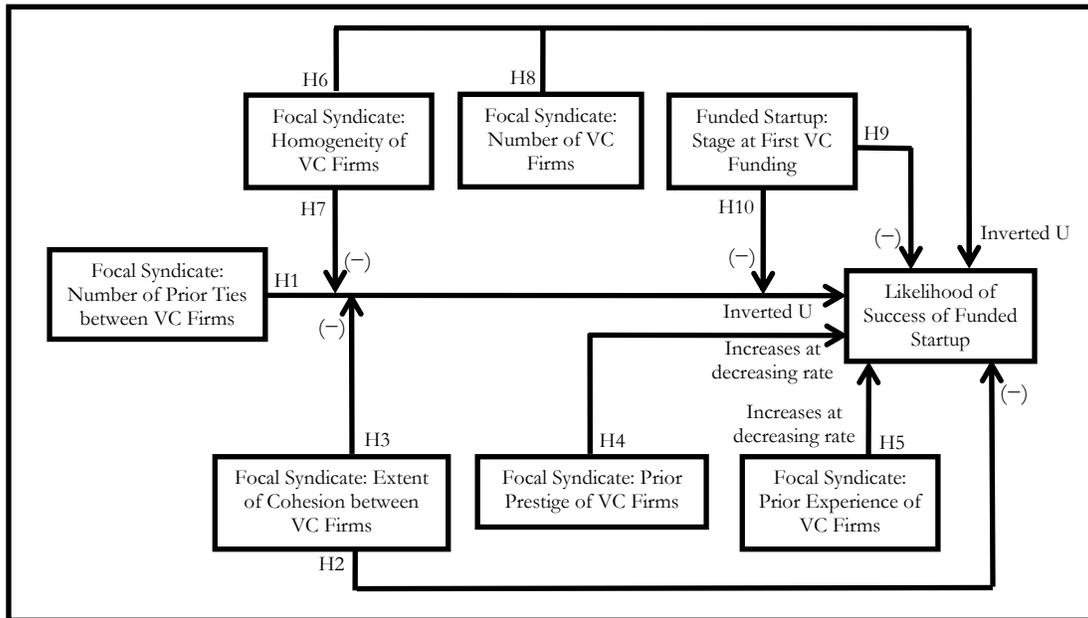


FIGURE 2: THE EFFECT OF PRIOR TIES AT DIFFERENT LEVELS OF HOMOGENEITY

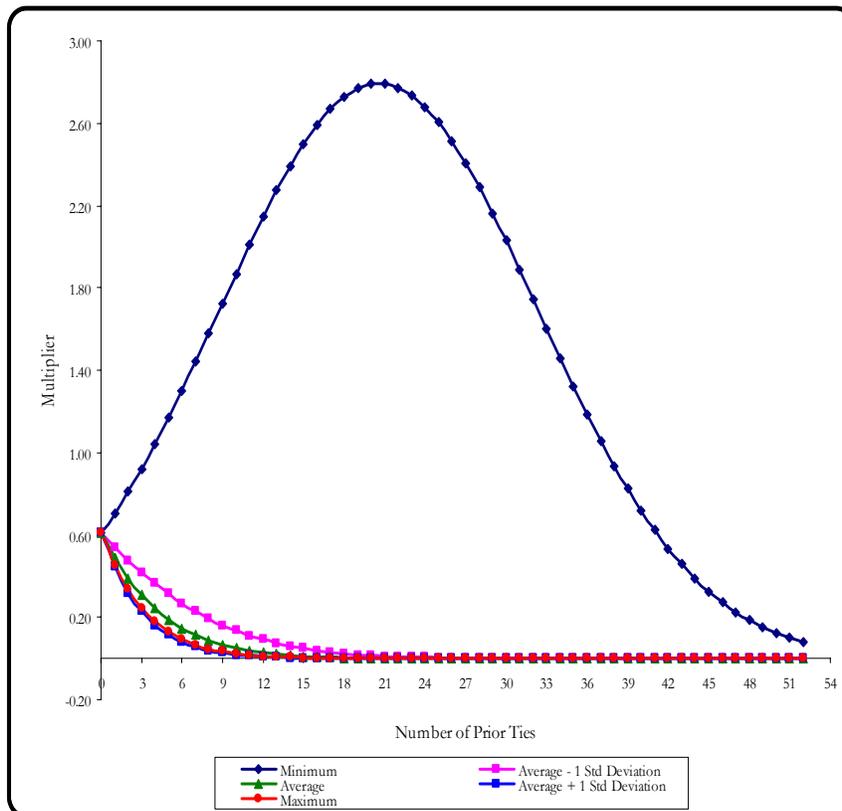


TABLE 1: SUMMARY OF HYPOTHESES AND FINDINGS

HYPOTHESIS	CONSTRUCT	OPERATIONALIZATION (WITH ALTERNATIVE MEASURES)	PREDICTED EFFECT	SUPPORTED?
H1	Prior ties	Average number of ties between syndicate members	Inverted U-shaped ⁵	Yes
H2	Cohesion	1) Dyadic constraint	Negative	No
		2) Dyadic Simmelian ties		Yes
		3) Ego network density		Yes
H3	Prior Ties X Cohesion	1) Prior ties X Dyadic constraint	Negative	No
		2) Prior ties X Dyadic Simmelian ties		No
		3) Prior ties X Ego network density		No
H4	Prestige	Prestige (Bonacich eigenvector centrality)	Increases at decreasing rate	Yes
H5	Experience	1) Total experience	Increases at decreasing rate	Yes
		2) Focal industry experience		Yes
		3) Focal stage experience		No
H6	Homogeneity	1) Coefficient of variation (inverted): age	Inverted U-shaped	No
		2) Coefficient of variation (inverted): prestige		No
		3) Coefficient of variation (inverted): total experience		No
		4) Coefficient of variation (inverted): entropy of industry experience		No
		5) Coefficient of variation (inverted): entropy of stage experience		No
H7	Prior ties X Homogeneity	1) Prior Ties X Coefficient of variation (inverted): age	Negative	No
		2) Prior Ties X Coefficient of variation (inverted): prestige		No
		3) Prior Ties X Coefficient of variation (inverted): total experience		No
		4) Prior Ties X Coefficient of variation (inverted): entropy of industry experience		Yes
		5) Prior Ties X Coefficient of variation (inverted): entropy of stage experience		No
H8	Syndicate size	Number of VCs in syndicate	Inverted U-shaped	No
H9	Stage	Stage dummy = 1 if startup stage at first funding was Seed/Early, 0 otherwise	Negative (i.e., startups at seed/early stage have lower success likelihood)	No
H10	Prior ties X Stage	Prior ties X Stage dummy	Negative	No

⁵ Base term positive and squared term negative.