THE INTERPLAY OF NEED AND OPPORTUNITY IN VENTURE CAPITAL INVESTMENT SYNDICATION

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ABSTRACT

This study examines the syndication of investments novel to a VC firm as a function of the firm's need and opportunity to do so. We distinguish two types of uncertainty that firms face when considering novel investments: *egocentric*, pertaining to making the right decisions, and *altercentric*, pertaining to being evaluated as a potential partner on the investment. Whereas the former increases the firm's need to syndicate the investment, the latter reduces the firm's opportunity to do so, making it contingent upon the firm's status and reputation for attracting potential partners. Using data on first-round venture capital investments, we find that novel investments are more likely to be syndicated. Moreover, this relationship is stronger for firms with higher status and weaker for firms with higher reputation. These results highlight a *relational* aspect of uncertainty, inherent in a particular VC firm – investment dyad, and suggest that status and reputation play different roles in aligning the need and opportunity to syndicate novel investments.

1. Executive Summary

For firms to form alliances, it is necessary for them to have both the need and opportunity to do so. This is equally valid in the context of venture capital syndications and we focus on how the need and opportunity for syndication align in the context of specific investments. While prior research has focused on the uncertainty characterizing a specific investment target (e.g. early stage or high technology) as a driver for syndication, we argue that such uncertainty need not be perceived uniformly among potential investors. Certain investments may be more or less uncertain *to different VC firms*, based on the extent of their prior experience in the specific industry of the investment. We thus focus on a hitherto unexplored, *relational* aspect of uncertainty, inherent in a particular VC firm – investment dyad and reflecting the VC firm's understanding of the particular company and its environment.

In view of this, the need and opportunity to syndicate a particular investment may not always be aligned: in certain situations – such as when the investment is novel to the VC firm – the factors that increase the firm's need to seek partners may also reduce the opportunity for the firm to find and attract needed partners. Such misalignment is related to the presence of two different types of uncertainty. On one hand, a VC firm faces (egocentric) uncertainty related to the proper decisions to be made in

selecting and managing these investments. In such cases, the firm can benefit from the participation of syndicate partners and is thus likely to seek such partners. Yet, on the other hand, for these very same investments, it is difficult for potential syndicate partners to evaluate the focal VC firm as a worthy partner (altercentric uncertainty). In such cases, the opportunity for syndication is contingent upon the VC firm's ability to signal its quality to potential partners, such as through its status and reputation.

To test these theoretical insights, we studied 35,757 first-round investments made by 2,498 US VC firms between 1980 and 2004. We considered an investment to be novel to the involved VC firm to the extent that it was in an industry in which the VC firm had limited or no prior experience. Consistent with our theoretical expectations, we found that novel investments were more likely to be syndicated. In addition, we found that the VC firm's status and reputation provided important nuances to this relationship. Status reinforced the relationship: VC firms with higher status are much more likely to form syndicates as the novelty of the investment increases. In contrast, and contrary to our expectations, VC firms with higher reputation exhibited a reduced likelihood for syndicating novel projects.

Our study suggests that need and opportunity, rather than being independent aspects of syndication and alliance formation, are in fact intertwined at the level of the projects for which firms may seek to form alliances. We provide an enriched understanding of the uncertainty residing in the relationship between a VC firm and the specific investments it undertakes. By their nature, novel investments involve domains in which the firm lacks sufficient knowledge and thus make the firm's need for alliance partners more salient. Yet, undertaking such investments can serve as a red flag for the firm's quality as a partner for these projects due to its uncertain ability to make project-specific contributions, which ultimately undermines its ability to attract partners for these investments. Potential partners, unable to assess the potential contribution of the focal firm, have to rely on their overall perceptions of the firm in deciding whether to join forces with it on such projects. While they both affect these overall perceptions, the firm's status and reputation exhibit different strengths and relevance as quality signals for novel projects. Reputation, anchored in the firm's prior activities and performance,

may not be easily carried over to a new domain. In contrast, status – dissociated from specific behavior and grounded in existing relationships and affiliations – provides more resilience to firms in such uncertain situations.

Related to practice, our work suggests that in considering investments into unfamiliar or less familiar industries, VC managers need to be aware that, to the extent that they look for potential syndicate partners, such partners are less likely to be swayed by the firm's prior track record and more by its prior associations. More broadly, our results suggest to managers that tradition and past successes can be discounted when looking to attract partners for novel projects and that, to the extent there is continuous pressure to look for new opportunities, careful attention needs to be paid to the cultivation of relationships that can make such opportunities more accessible.

2. Introduction

Inter-firm alliances represent an important topic for organizational research and significant research effort has been extended to understand why they occur. Put concisely, firms form alliances when they *need* additional resources or when they have the *opportunity* to know and attract potential partners (Eisenhardt and Schoonhoven, 1996). The former stems from a vulnerable strategic position (Eisenhardt and Schoonhoven, 1996), lack of adequate knowledge (De Clercq and Dimov, 2008) or quest for legitimacy (Baum and Oliver, 1992; Stuart, Hoang and Hybels, 1999). The latter is afforded by possession of network resources (Gulati, 1999) or a strong position in the market space (Stuart, 1998).

While prior literature has largely focused on the firms' overall tendencies to form alliances as explained by market conditions (Kogut, 1988), industry competition (Gimeno, 2004), firm attributes (Chung, Singh and Lee, 2000), or some combination of these (e.g. Eisenhardt and Schoonhoven, 1996; Koza and Lewin, 1998; Park, Chen and Gallagher, 2002), there has been limited consideration of the nature of specific projects for which alliances are formed. This is unfortunate, because it is at the project level that needs are assessed, partners' contributions to the alliance are evaluated (Doz and Hamel, 1998), alliance governance structure is determined (Casciaro, 2003), and the project's

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outcomes for partners are appraised. Moreover, it is at this level that the need and opportunity for alliance formation are intertwined in ways that cannot be anticipated by existing theory. On one hand, firms with plentiful opportunities to form alliances may not necessarily need such alliances for particular projects. On the other hand, firms in need of partners for particular projects may find it hard to find or attract partners for those projects. Hence, project considerations are important to the extent that they affect the firm's decision to seek partners and the prospective partners' decision to enter an alliance.

Individual-project considerations are particularly potent in the context of the venture capital (VC) industry, where a substantial proportion of investments are made by syndicate partnerships involving two or more VC firms (Bygrave, 1987; Lerner, 1994; Manigart et al., 2006). In addition to its benefits for the management of the VC firm's total portfolio – such as diversification, sharing financial risk, and increasing deal flow (Lockett and Wright, 2001; Manigart et al., 2006; Norton and Tennenbaum, 1993; Sorenson and Stuart, 2001) – syndication can also be instrumental for the selection and management of individual investments by affording the VC firm access to wider knowledge and skill sets (Brander, Amit, and Antweiler, 2002; Bygrave, 1987; De Clercq and Dimov, 2008; Lerner, 1994). Indeed, research has shown that when investing in companies that are highly innovative (Bygrave, 1988) or less established (Locket et al., 2002), VC firms tend to seek syndicate partners in order to deal with the uncertainty encompassing such projects. Yet, implicit in this work is the notion that the uncertainty residing *in* the specific investment targets is uniformly perceived among potential investors, regardless of their own characteristics or experiences. Questioning this premise reveals a hitherto unexplored *relational* aspect of uncertainty, inherent in a particular VC firm – company dyad, which accounts for the different understanding that various VC firms may have of the specific company and its environment. This raises the question of the considerations and factors that propel and enable particular VC firms to syndicate particular investment projects.

Accordingly, this study seeks to understand the syndication of individual investments as a function of the VC firm's need and opportunity to do so. We relate these factors to the degree of novelty

that the investment represents for the VC firm and distinguish between two types of uncertainty that emerge from such novelty: *egocentric*, pertaining to the focal firm's uncertainty about the decisions to be made for the investment to succeed, and *altercentric*, pertaining to uncertainty that external parties face in judging the quality of the focal firm as a potential partner on the project (Podolny, 2001). Whereas egocentric uncertainty increases the firm's need to syndicate the project, altercentric uncertainty reduces the opportunity to do so and renders the attraction of partners dependent on the firm's ability to signal its quality to external parties, such as through its status and reputation (Podolny, 1993; Jensen and Roy, 2008; Washington and Zajac, 2005). Therefore, we expect not only that VC firms facing novel projects will be more prone to syndicate them, but also that such syndication will be more opportune for firms with high status or reputation. Studying 35,757 first-round investments made by 2,498 VC firms over the 1980-2004 period, we find that the likelihood of syndication increases with the novelty of the investment and that this relationship is stronger for firms with high status and, contrary to our expectations, weaker for firms with high reputation.

We aim to make several contributions to the existing literature. First, we develop a hitherto lacking understanding of the nature and interplay between need and opportunity in alliance formation and VC syndication. Our focus on the level at which syndication decisions are made – the individual project – allows us to capture uncertainty that is specific to the firm-project dyad and that fuels two opposing forces on the likelihood of syndication. By emphasizing that seemingly similar projects in fact may not produce the same need for syndication to different VC firms, we extend current literature on VC syndication that primarily focused on the nature of the project *per se* without acknowledging the factors that make such a project more or less uncertain for an individual VC firm. Second, we show that the very projects that create a need for syndication may also keep prospective partners at bay unless the focal firm can signal its quality to them. This expands the conception of uncertainty under which status matters for the formation of partnerships. Finally, this study adds to our understanding of the distinct roles that organizations' status and reputation have in alliance formation (Jensen and Roy,

2008) and venture capital investing (Dimov, Shepherd, and Sutcliffe, 2007). Our results suggest that the social and economic components of quality signals differ in their transferability to novel domains and thus in their potency to mitigate the altercentric uncertainty associated with novel projects.

3. Syndication and Uncertainty

VC syndication arises when at least two VC firms invest in the same company in the same investment round (Bygrave 1987, Lerner 1994). As such, syndication represents a voluntary, long-term commitment by a VC firm to a cooperative relationship in which the participating firms share risks and exchange knowledge and resources (Wright and Lockett, 2003). Hence, a syndicate closely resonates to a traditional definition of strategic alliances, which are conceptualized as voluntarily initiated inter-firm cooperative agreements that involve contributions by partners reflected in exchange, sharing or co-development of capital, technology, knowledge or other firm-specific assets (Gulati, 1995b). Indeed, we know that alliances and syndicates carry similar benefits for firms seeking fast access to complementary assets (Bygrave, 1987; Brander et al., 2002; Deeds and Hill, 1996; Parkhe, 1993), financial resources (Eisenhardt and Schoonhoven, 1996; Lockett and Wright, 2001) or valuable external knowledge (De Clercq and Dimov, 2008; Grant and Baden-Fuller, 2004).

In this regard, alliances are more sought out -- and thus more likely to form -- when the firm has a vulnerable strategic position derived from operating in unpredictable markets or undertaking risky strategies (Eisenhardt and Schoonhoven, 1996). This is consistent with resource dependence theory (Pfeffer and Salancik, 1978), which considers alliances as mechanisms for coping with various types of uncertainty. Indeed, the use of alliances increases when firms face environmental (Dickson and Weaver, 1997) or, more specifically, market (Beckman et al., 2004) or industry (Gimeno, 2004) uncertainty. Similarly, a general propensity to syndicate has been related to the VC firms' intent to reduce uncertainties stemming from threats of potential new entrants (Hochberg, Ljungqvist, and Lu, 2007) or the intent to manage the uncertainty residing in their portfolios (Manigart et al., 2006).

At the portfolio level, consistent with arguments from financial theory, syndication enables the VC firm to diversify its portfolio and reduce financial risk (Lockett and Wright, 2001; Manigart et al., 2006; Norton and Tennenbaum, 1993). In addition, reciprocity in syndication often provides a mechanism for accessing promising deals in the future (Lerner, 1994; Manigart et al., 2006; Sorenson and Stuart, 2001) and thus reduces uncertainty about the quality of future portfolios. Similarly, to reduce uncertainties related to fundraising, VC firms are known to syndicate in order to "window dress" their portfolios by investing in later-stage deals that are more likely to succeed (Lerner, 1994).

Notwithstanding the importance of understanding how uncertainty influences the firms' *general* propensity to form alliances or syndicates, we argue that understanding the formation of *specific* syndicates requires a more granular consideration of the uncertainty inherent to the specific project for which syndication is sought. Specifically, although macro or portfolio considerations can dictate certain level of syndication across the VC firm's investments, they are generally not as useful in explaining whether a particular deal will be syndicated (Manigart et al., 2006), and cannot foretell whether the firm has the need or opportunity to syndicate the deal. Accordingly, to tease out the need/opportunity interplay in syndicate formation, we focus on uncertainty at the individual project level[1].

In the VC industry, and especially in the US context, managing the uncertainty surrounding specific investments is an important motive for syndication (Manigart et al., 2006). Syndication can help reduce uncertainty related to the investment selection decision, as having more VC firms to evaluate a potential deal and perform due diligence is likely to enhance the selection process (Lerner, 1994). Additionally, beyond investment selection, syndication can reduce the uncertainty related to managing and adding value to the particular company (Brander et al., 2002). It enables the VC firm to access complementary knowledge and skills from its syndicate partners (Bygrave, 1987; De Clercq and Dimov, 2008), which is especially important in early-stage projects and first-round investments when investors

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[1] Prior alliance literature taking the project level focus has examined in some detail how governance structures in alliances depend on the project's task uncertainty (Casciaro, 2003) or relationship-related uncertainty between partners (e.g. Gulati and Singh, 1998). However, this research takes as a starting point an already formed alliance, whereas we seek to explain how alliance formation may depend on the level of project uncertainty. Hence, in a theoretical sense, our research "precedes" the important mechanisms of governance structure that safeguard alliance relationships.

face higher uncertainty due to the venture's uncertified quality (Sapienza, Manigart, and Vermeir, 1996). Indeed, prior research confirms that early stage deals are more likely to be syndicated despite their lower financial requirements (Bygrave, 1987; Lockett et al., 2002).

To the extent that extant research has characterized uncertainty as residing *in* the specific investment target – as exemplified by the case of an early-stage or high-technology company – there is an implicit assumption that such uncertainty will be uniformly perceived by potential investors and will induce equal need for syndication. Relaxing this assumption and acknowledging that VC firms can vary in their need and opportunity to syndicate specific projects offers an opportunity to develop more precise arguments for VC syndication. To do so requires a more refined notion of uncertainty that captures its *relational* aspects, i.e. those residing in the specific VC firm – investment dyad and reflecting the VC firm's (lack of) knowledge relevant to the deal at hand.

3.1. Investment Novelty as a Source of Uncertainty

Most broadly, the uncertainty associated with a given project (investment) pertains to the difficulty that the potential investor faces in anticipating and managing the project payoffs. While some of that difficulty is truly exogenous (and thus common to all potential investors), part of it is investor specific, related to the investor's experience and understanding of the project at hand. Within VC firms, the investment decisions, monitoring and value adding activities are essentially performed by the firm's management team (Guler, 2007). Typically, that team changes only gradually over time, thereby creating relatively stable collective experience within the firm. Group experience and learning lead to distinct benefits such as shared knowledge and mindset, coordination routines, and collective memory (Zhao, Anand, and Mitchell, 2004). For example, based on their prior experience, the VC firm managers engage in group discussions, make joint interpretations and draw collective inferences about the type of strategies and managerial skills that work in various competitive situations, the effectiveness of different approaches in interacting with the portfolio company managers, and the roles that different stakeholders play in the development of the portfolio company. Therefore, although individual partners

bring prior personal experience to the management team, their collective experience within the firm carries substantial weight in investment decisions and it is this firm-level experience on which we focus. To the extent that a potential investment is novel to the VC firm, i.e. it is based in an industry in which the VC firm has made no or just few investments previously it represents a high degree of uncertainty that is specific to the VC firm and that, if not mitigated, can undermine the firm's success with that investment (De Clercq and Dimov, 2008; Dimov and De Clercq, 2006).

Conceptualized this way, a novel investment poses a double challenge for the VC firm. On one hand, it is difficult for the firm to identify and select the best strategy to follow in order to achieve the desired outcomes for the project. At the same time, it is difficult for a third party to appraise the VC firm as a potential partner for the project since its past experience and performance can offer little guidance given the novel nature of the project to the firm. These challenges invoke Podolny's (2001) distinction of two types of uncertainty that VC firms face in undertaking specific projects. *Egocentric* uncertainty pertains to the focal firm's (or ego's) lack of knowledge of the best or most appropriate approach to achieve the desired project goal. Accordingly, egocentric uncertainty prevails when firms engage in activities that are novel to them (e.g. March, 1991), as their own experience may provide insufficient guidance. In the VC context, egocentric uncertainty captures the VC firm's doubt about the proper or best operational, personnel, or strategic decisions to be made in order to spur company development and reach a stage where the investment can be exited on favorable terms.

Altercentric uncertainty pertains to the difficulty that external parties (or the firm's relevant "alters") have in appraising the quality of the focal firm. Although such actor-related uncertainty can be pertinent for any of the firm's stakeholders, in the context of strategic alliances and syndicates, the relevant alters are the firm's prospective alliance partners who need to evaluate the focal firm as an exchange partner (Doz and Hamel, 1998; Sorenson & Stuart, 2008). More specifically, prospective partners need to determine whether the inputs contributed to the partnership by the focal firm would be of desired quality (Stuart, 1998), whether the focal firm possesses the knowledge and resources that

the partner seeks (De Clercq and Dimov, 2008; Geringer, 1988), or whether it could be trusted in the subsequent interactions between firms (Ring and Van De Ven, 1992). Altercentric uncertainty is especially prominent when information about the focal firm is hard or costly to obtain as well as when the firm's performance is complex to evaluate (Podolny, 2005).

These arguments suggest that novel investments considered by VC firms are laden with both ego- and alter-centric uncertainty. On one hand, because such investments involve industries in which the VC firm has not invested before, the VC firm cannot rely on its past investment experience and thus faces uncertainty as to how to appraise and manage these investments. On the other hand, given the information opacity inherent in relating the firm's prior experience to a current, novel investment, it is hard for an external observer to appraise the ability of a VC firm to properly supervise and contribute to the development of the company. As we elaborate below, these two types of uncertainty affect respectively the VC firm's need and opportunity for syndicating the investment at hand.

3.2. Egocentric Uncertainty and the Need for Syndication

With novel projects, firms may lack an elaborate, rigorous understanding of the decisions to be made, the steps to be taken, or the resources to be deployed in pursuing these opportunities. Though VC firms can leverage their general experience when it comes to procedural issues and basic activities, such as structuring the deal, providing follow-on funding or planning an exit, the success of the investment is contingent on the VC firm's understanding and responding to the competitive dynamics and market development inherent in the specific industry as well as on its network of contacts in that industry. In this regard, to the extent that building relevant knowledge internally is a complex, time-consuming process (Nonaka, 1994) and acquiring it externally can be costly (Lane and Lubatkin, 1998), VC firms can resort to syndication in order to fulfill their knowledge needs related to the (novel) investment at hand. Indeed, partnerships are sought and particularly beneficial when there is an incongruence between what the firm knows and what it intends to do (De Clercq and Dimov, 2008; Grant and Baden-Fuller 2004).

External partners may provide not only a more diverse set of knowledge from which to devise a strategy for managing the novel project, but also a second opinion for opportunity evaluation (e.g. Lerner, 1994). In this regard, when a VC firm's own experience is not enough to allow for an accurate evaluation of the project, it is likely to seek external partners (Casamatta and Haritchabalet, 2007). Finally, sharing resources across partners may limit the focal VC firm's downside exposure in case events turn out to be unfavorable (Lockett and Wright, 1999) and allows the firm to maintain certain advantage when timing is of essence (Deeds and Hill, 1996). In summary, from a strategic need perspective, the egocentric uncertainty that arises from pursuing novel projects likely increases the focal firm's need for external partners and thus makes their syndication more likely.

Hypothesis 1. *The likelihood of syndication increases with the novelty of the VC investment.*

3.3. Altercentric Uncertainty and the Opportunity for Syndication

To the extent that a focal firm needs alliance partners for a specific project, it faces the challenge of being known to, evaluated by, and finally attractive to such partners (Beckman et al., 2004; Eisenhardt and Schoonhoven, 1996). If information about firms were readily available, easily accessible, and easy to interpret, firms would move and interact as if in vacuum, unrestrained by social friction (Dacin, Ventresca and Beal, 1999). Yet, firms are subject to altercentric uncertainty to the extent that much information about their behavior is private, costly to acquire, and causally ambiguous when attributing particular consequences to respective actions (Podolny, 1994), as is characteristic of the VC industry. While potential syndicate partners may obtain information about their peers from specialized press or personal contacts (Sorenson and Stuart, 2008), objective, rational processing of such information is difficult due to its inferential nature and high opportunity cost of obtaining it in a timely manner and keeping it up to date. Indeed, recent research suggests that VC decision making can be systematically biased and susceptible to interorganizational perceptions and politics (Guler, 2007). Such limitations are likely to intensify in the context of altercentric uncertainty (Podolny, 2001).

In this regard, because the success of a project is ultimately dependent on the quality of the partners' input relative to the project needs (Doz and Hamel, 1998), the attractiveness of the focal firm to others is based on whether they can directly evaluate the firm's ability to contribute to the specific project as well as on whether their more general perceptions of the focal firm can help them make positive attributions about its potential contribution to the project. While in new alliances the prospective value that each partner may ultimately bring to the alliance can be generally unclear from the outset (Doz and Hamel 1998), this issue is particularly potent when the focal firm has limited or no experience in the project domain. To the extent that the perceived value of the focal VC firm's contribution to the syndicate is too uncertain, the focal firm faces the challenge of attracting, assuring or assuaging prospective partner firms[2].

In the absence of mechanisms to alleviate altercentric uncertainty, prospective partner firms may be discouraged from participating in such projects due to perceived high effort costs (Tykvova, 2007), possibility of free riding as noted in alliances (Das and Teng, 2002) and VC syndicates (Dimov and De Clercq, 2006; Wright and Lockett, 2003), or suspicion that the ultimate success of the project is too dependent on their own investment (Larsson, Bengtsson, Henriksson, and Sparks, 1998). More generally, the perceived lack of competence of the focal firm may undermine the prospective partners' trust (Das and Teng, 2001), increase their doubts for the successful coordination and development of the project (Gulati, Lawrence, and Puranam, 2005) as well as shake their believes regarding the synergistic potential of the project (Chung et al., 2000), and thus discourage them from joining the syndicate. The long-term nature of VC syndicates makes the issue of partner coordination especially important (Das and Teng, 2002; Lockett and Wright, 1999) as potential disagreements between partners about the project's management and development may be costly, and ultimately harm the project's success. Indeed, illustrative evidence shows that any prospects of disagreements between

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[2] We note here that we do not assume that each (potential) syndicate partner necessarily contributes equally to the project. What matters at this point of our theoretical exposition is whether the focal firm can be deemed to make a valuable contribution to the project. In our empirical analysis, we verify that our results are not driven by whether the focal firm is a lead or non-lead investor.

potential syndicate partners may prevent formation of the syndicate, despite the financial attractiveness of the deal (Walske, 2008).

In summary, when undertaking novel projects, the very same factors that drive the need of the focal firm to seek partners may simultaneously reduce its opportunity to find and attract such partners, as they flesh out the focal firm's vulnerability with the project. Accordingly, mitigating altercentric uncertainty, and thus enhancing the focal firm's opportunity to form alliances, likely depends on the degree to which prospective partners can form positive expectations of the focal firm and its contribution to the project. This in turn depends on the focal firm's ability to signal its quality to prospective partners. Accordingly, we continue by discussing two quality signals relevant in the partner selection process: status and reputation (Jensen and Roy, 2008).

3.4. Status and Reputation as Mitigators of Altercentric Uncertainty

When there is uncertainty about the quality of a focal actor, external parties observe firm-level signals of the actor's underlying quality as a potential exchange partner (Podolny, 1993). The notion of perceived firm quality has been well developed in both sociology and economics (strategy) literatures through the concepts of status and reputation. Although the two terms have been often used interchangeably, status and reputation are distinct facets of organizational standing and have different consequences for organizational behavior and performance (Podolny, 2005; Jensen and Roy, 2008). Status is a sociological concept that captures a firm's social rank based on its *external* affiliations, while reputation is an economic concept that is closely coupled with the firm's past actions and track record (Washington and Zajac, 2005). By the same token, VC firms differ in regard to both their status (Podolny, 2001) and reputation (Gompers, 1996), with each of these tapping into a different facet of the VC firm's perceived quality (Dimov, Shepherd, and Sutcliffe, 2007).

3.4.1. Firm status. From a sociological perspective, firm behavior cannot be detached from the set of social relationships in which it is embedded (Granovetter, 1985). Social relations play a key role in identifying, evaluating, and attracting alliance partners (Chung et al., 2000; Podolny, 1994). Inter-firm

relational networks serve as both pipes and prisms in the market, conveying valuable information and segregating actors based on their perceived quality (Podolny, 2001). On one hand, a firm's network resources – through the information advantages they bestow or the alliance experience they reflect – facilitate the awareness and evaluation of external partners (Gulati, 1999). On the other hand, a firm's network positions and affiliations play important signaling function to potential partners when the firm's quality is hard to appraise (Podolny, 1993). The signaling function of this socially constructed network position is embodied in the notion of status.

Formally defined, status represents how centrally positioned an organization is relative to other organizations in the overall industry network (Jensen, 2003; Podolny, 1993, 2001; Shipilov, 2005). Hence, status is a positional element of the social structure which gives an "effective claim to social esteem in terms of positive or negative privileges" (Weber, 1978: 305). An organization's status is influenced less by the actor's behaviors than by its relations and affiliations that involve exchange or deference (Podolny, 1993). It serves as an important signal of quality when there is general uncertainty over the quality of organizations as well as prohibitive costs of carrying out evaluative search. Status creates an uneven distribution of rewards and cost burdens among the firms in the industry, highly skewed towards high-status organizations (Benjamin and Podolny, 1999; Podolny, 1993).

In the context of alliance formation, high status organizations enjoy many privileges, which can mitigate altercentric uncertainty and thus increase their alliance opportunities. For example, high status firms incur lower transaction costs in acquiring resources and are generally perceived as more desirable exchange partners (Podolny, 1993; 1994). In addition, status considerations delineate the set of actively considered potential partners (Jensen and Roy, 2008). For novel projects, high status organizations are likely to have an additional advantage due to their ability to leverage superior information and reach out to socially distant potential partners (Ahuja, Polidoro and Mitchell, 2004). Furthermore, status signals the firm's access to a pool of resources (Benjamin and Podolny, 1999), which may alleviate the prospective partners' concerns related to the resource demands of the project.

As discussed above, in the VC context, facing novel investments makes syndication more desirable but it also makes it difficult for external firms to evaluate the focal firm's quality as a potential partner. In this regard, high status can give the VC firm a greater chance of attracting syndication partners for such projects (Podolny, 2001), leveraging the benefits outlined above. Having high status can facilitate VC firms' access to external expertise or recruitment of managerial talent for the companies in their portfolio. In addition, high-status VC firms have important affiliations with investment banks (Gulati and Higgins, 2003), which facilitates the investment exits via IPOs or acquisitions and thus enhances their performance (Hochberg, Ljungqvist and Lu, 2007). These considerations suggest that when undertaking novel projects, higher-status VC firms can more easily soothe prospective partners' uncertainties and overcome the reduced opportunity for syndication.

> **Hypothesis 2.** *The positive relationship between the novelty of a VC investment and the likelihood of its syndication is stronger for VC firms with high status than for those with low status.*

3.4.2. Firm reputation. Reputation is a "perceptual representation of a company's past actions and future prospects that describe the firm's overall appeal to all its key constituents when compared to other leading rivals" (Fombrun, 1996: 72). Thus, from an economic perspective, firms generate expectations of future behavior based on their past demonstration of the same behavior. By the same token, reputation acts as a signal for the firm's future performance based on its past performance (Fombrun and Shanley, 1990; Milgram and Roberts, 1982) that shapes the external audience's perceptions and expectations of the firm (Rao, 1994).

In the VC context, the VC firm's reputation is instrumental for the evaluation and selection of syndicate partners (Lerner, 1994). As a reflection of firm's past performance, it has been shown at times to be even more important than the known characteristics of the prospective partners' resource base (Lockett and Wright, 1999). Moreover, a firm's reputation and a good track record may signal to the prospective partners the focal firm's expertise and possession of managerial abilities (Saxton, 1997). This can be especially relevant for novel projects, whereby concerns with the focal firm's

unfamiliarity with the project domain may be in part mitigated by prospective partners' positive perceptions of the focal firm's general ability to successfully manage projects. As such, reputation represents one of the firm's key intangible assets that increase the firm's desirability as an alliance partner (Dollinger, Golden and Saxton, 1997; Saxton, 1997). Similar to status, reputation is also known to facilitate access to and acquisition of resources (Gompers, 1996). For example, reputation enhances the VC firm's ability to raise and invest new funds (Gompers, 1996; Siri and Tufano, 1998) as well as attract high-quality entrepreneurial companies (Hsu, 2004). Consequently, reputation is likely to shape prospective partners' beliefs about future returns (Gompers, Lerner, Blair and Hellman, 1998) which, combined with the prospect for facilitated access to necessary resources, may mitigate the altercentric uncertainty associated with novel investments.

Finally, from a behavioral standpoint, reputation is important as a proxy for trustworthiness (Parkhe, 1993), which reduces potential partners' concerns regarding a potentially difficult working relationship in the syndicate (Lockett & Wright, 1999). Reputable firms are less likely to default on a deal because of their conscientiousness about the intangible value of their reputation (Rindova, Williamson, Petkova and Sever, 2005) and the resulting intent to preserve it by fair cooperative behavior. Hence, even in the light of the focal firm's inexperience with the novel project, the prospective partners' doubts regarding the potential success of the cooperation may be mitigated by their expectations that the reputable focal firm will extend a fair partnering effort to see the project succeed. In contrast, prospective partners are likely to be deflected by questionable reputation and less likely to enter exchange agreements with such firms (Hill, 1990). Therefore, when undertaking novel investments for which external investor participation is needed, reputable VC firms can signal trust and reliability that can help them overcome the arising altercentric uncertainty.

> **Hypothesis 3.** *The positive relationship between the novelty of a VC investment and the likelihood of its syndication is stronger for VC firms with high reputation than for those with low reputation.*

4. Data and Method

Several considerations of the VC industry informed the design of our study. First, venture capital investments are typically staged across different rounds, with the first round representing the initial infusion of capital by one or more VC firms and subsequent (follow-on) rounds occurring contingent upon the company's achievement of certain development milestones (Gompers, 1995). Second, follow-on rounds may include new investors, i.e. VC firms that have not participated in the previous investment rounds. This suggests that a given VC firm may invest in a given company several times (i.e. across several investment rounds) and that there may be other VC firms that have invested in that company prior to the focal firm's involvement. Because follow-on investment decisions are qualitatively different from *initial* investment decisions (Podolny, 2001) and the syndication of follow-on investments involves different motivation and strategies (Lerner, 1994; Sorenson and Stuart, 2008), we focused our study on first-round investments, i.e. those in which a given company receives venture capital for the first time. It is at these initial financing decisions that the competence sharing benefits of syndication are most evident (Lerner, 1994).

We used the *VentureXpert* database to construct a dataset of first-round investments made by US-based VC firms over the period from 1980 to 2004. The start of the period in consideration (1980) was selected to reflect a qualitative change in the US VC industry, mainly motivated by the passing of the Employee Retirement Income Security Act (ERISA) in 1979, which allowed pension funds and other institutional investors to invest in private equity and spurred significant growth in the venture capital industry. Our data included 35,757 such investments made by 2,498 VC firms. For each investment, we used the number of participating VC firms to create an indicator for whether the particular VC firm has formed a syndicate. Investments in which only the focal VC firm was involved were coded as non-syndicated (i.e. solo), and investments in which more than one investor was involved were coded as syndicated (i.e. syndicated)[3].

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[3] Because in certain cases not all the participating investors were disclosed, we performed robustness analysis based only on the fully disclosed rounds, i.e. by excluding the investments for which there were any undisclosed investors. In addition, we note that although we included the presence of undisclosed investors in our criterion for whether an investment was syndicated, we could not use undisclosed investors in our construction of syndication networks.

4.1. Independent Variables

To determine the novelty of each investment for the focal VC firm, we calculated the total number of investments made previously by the focal VC firm in the industry of the investment. We used the 9 main industry categories used by *VentureXpert* – (1) communications and media, (2) computer related, (3) semiconductors, (4) biotechnology, (5) medical/pharmaceutical, (6) energy related, (7) consumer related, (8) industrial products, and (9) other manufacturing and services. To the extent that a VC firm has made more investments previously in a given industry – and thus can draw from its experience to make new decisions – a new investment it considers in that industry would be more familiar. We used the logged value of the number of prior investments to reflect the fact that each additional investment has a diminishing effect on the familiarity and learning it brings to the VC firms. In addition, we reverse coded the derived values for this variable so that a higher value represents higher novelty for the focal VC firm.

To measure VC firm status, we constructed for each year a matrix of relationships between all VC firms included in the VentureXpert database. For a matrix constructed for year (t), each element (R_{ij}) represented the number of times firms (i) and (j) had co-invested together over the 5-year period preceding year (t)[4]. We considered two VC firms co-investing if they made investments in the same company in the same year. We measured a VC firm's network status in year (t) – reflecting the pattern of its relationships in the preceding five years – using Bonacich's (1987) centrality measure, which is commonly used in the literature (Podolny 2001; Sorenson and Stuart 2001). Based on this measure, the status of a VC firm is dependent on the number and status of its investment partners. The measure, $c_i(\alpha,\beta)$ takes the form $c_i(\alpha,\beta) = \sum_j (\alpha+\beta c_j)R_{ij}$, where R_{ij} is an element of a relational matrix R, representing the relationship between firms (i) and (j) as discussed above. The parameter α is an arbitrary scaling

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[4] In deriving industry networks we followed prior network literature (e.g. Baum, Shipilov and Rowley, 2003) and, specifically, prior studies of the VC industry (e.g. Hochberg et al., 2007; Sorensen and Stuart, 2001), and constructed each year's network as a 5-year moving window. This is a standard practice in the network literature, because it provides more accurate and reliable representations of the industry network. Specifically, in the VC industry, the syndicate ties represent only the visible manifestation of relationships: VCFs participating in syndicates together in any given year are also likely to interact with each other in other ways in subsequent years (Baum et al., 2003).

coefficient of the measure, while β represents the degree to which the centrality of firm (i) is a function of the centralities of other firms in the industry network. We set β equal to three quarters of the largest eigenvalue (see Borgatti, Everett and Freeman, 2002; Sorenson and Stuart, 2001). We calculated a centrality score for each VC firm and each year and normalized the scores, giving the highest status firm in any given year a score of one and the lowest status a score of zero (Podolny, 2001). Such operationalization allows us to rank each VC firm's social standing relative to all other firms in the industry network and accounts for the dynamic change of status across years.

We measured the VC firm's reputation relevant for its activity in year (t) as a composite of the firms' age (in years) in year (t-1), the total number of investments made by the end of year (t-1), and the total number of IPOs achieved by the end of year (t-1). The reliability (Cronbach's *alpha*) of this composite measure was above 0.80 for all years. Whereas the number of IPOs captured the most visible aspect of a VC firm's prior performance, the firm's age and extensity of prior investment activity also reflected the aspects of performance that were more subtle and harder to measure. Indeed, high longevity and extensive investment activity are indicators of successful, sustained fundraising by the VC firm, which in turn reflect positive performance appraisal by the institutional investor community (Podolny, 2001). The composite reputation scores were based on standardized values for each component. In addition, the standardization was made for each year, thereby ensuring that each reputation score was based only on information available by year (t). We normalized the scores for each year across VC firms so that the lowest reputation in each year had a value of zero and the highest a value of one[5].

4.2. Control Variables

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[5] We note that by including the measures of status and reputation – as inferred from the VC firm's prior investment and syndication history – our dataset by default excludes VC firms that have made no investments previously or have had no prior syndication experience. Predominantly, these excluded observations capture firms that are "brand new" or with little prior investment activity, for whom any new investment will be by definition "novel". Given our theoretical framework, these observations lie beyond its scope and represent a discontinuous range over which our theory does not reach. We note that syndication is less prevalent among these excluded observations (66.5% vs. 72.8%), possibly as a reflection of unmitigated altercentric uncertainty. Consistent with prior work, the only factors explaining variation in syndication among these observations were whether the company was based in a high-technology industry or located in California.

We included an extensive set of control variables in order to eliminate some alternative explanations for our findings and account for other drivers of syndication. In regard to the focal VC firms, we controlled for several time-varying characteristics that may affect their desire and ability to syndicate the current investment. First, to capture the baseline propensity of VC firms to syndicate their investments, we controlled for the proportion of previously syndicated first-round investments. Second, because a firm's prior experience with managing novel projects may reduce the need for prospective partners, we introduce a variable measuring the number of previous investments that were no later than a fifth investment by the VC firm in a particular industry, which was then divided by the total number of previous investments made by the VC firm. Third, to account for the fact that knowledge of the local geographical area may facilitate the VC firm's understanding of the investment at hand, we controlled for the VC firm's investment experience in the state of the particular company, measured as the number of previous investments made in the state of the focal investment divided by the total number of previous investments made by the VC firm. Fourth, we controlled for the alignment of the investment opportunities pursued by the VC firm with those pursued in the VC industry as a whole, to account for the possibility that attuned investment preferences may bestow legitimacy and facilitate syndication. We measured such alignment as Euclidean distance between the industry distributions of the VC firm's portfolio prior to the focal investment and the aggregate portfolio of all VC firms over the period in which the focal VC firm had been active[6]. Fifth, to distinguish between more "active" and "passive" modes of VC investing and account for focal VC firm's differing needs for financial risk sharing and syndication, we controlled for whether the VC firm had raised a new fund within the previous 2 years. Finally, we controlled for the structural holes (lagged) in the VC firm's network. Because structural holes afford access to valuable, non-redundant information (Burt, 1992), this accounted for the possibility that some VC firms may be more privy to such information and thus mitigate their egocentric uncertainty (Podolny,

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[6] Formally, this can be represented as $\sum(\mathbf{w}_{i,j} - \mathbf{W}_{i,j})^2$, $j = 1, 2, \ldots 9$; where $\mathbf{w}_{i,j}$ and $\mathbf{W}_{i,j}$ representing the relative proportion of industry (j) in the set of investments made respectively by VC firm (i) and by all VC firms over the period in which VC firm (i) had been active (i.e. from its first investment until its latest investment).

2001) or be considered attractive partners (Shipilov and Li, 2008). We measured structural holes using Burt's constraint measure (1992) which reflects the degree to which a firm is connected to firms that share the same partners.

We also controlled for several fixed characteristics of the VC firm and portfolio company. First, to account for the possibility that independent VC firms had more strategic freedom and discretion, while other types of VC firms could operate under additional strategic or liquidity constraints (Manigart et al., 2002; Mayer, Schoorsb and Yafeh, 2005), we controlled for whether the VC firm was private, a corporate subsidiary or an affiliate of a financial institution. Second, we controlled for whether the company receiving the VC investment was in a high-technology industry (indicators for Information and Communication Technology and Biotech/Medical) and at an early stage of development because such deals are generally more likely to be syndicated. Third, to account for the distinct nature of the California region in the emergence of the particular technologies (Saxenian, 1994) and in syndication practices (Bygrave, 1987), we controlled for whether the VC firm or the company receiving the investment were located in California.

Finally, to account for the endogenous nature of the choice of investing in a new or less familiar industry, we included a self-selection correction factor (Heckman, 1979; Shaver, 1998), estimated from the probability that a given VC firm will invest in an industry in which it had made no more than five previous investments, a cutoff based on the median value of the investment novelty variable[7].

4.3. Model

To estimate the likelihood of a VC firm's syndicating a particular investment, we organized the data in a panel format and estimated a random-effects Logit model. The relatively low value of the panel variance component in all estimations (.15 – .18) suggested that a random effects model was indeed more appropriate for the data at hand than a fixed effects model. In order to account for the fact

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[7] Formally, the self-selection correction factor represents the VC firm's hazard of making (or respectively not making) such investments. To derive this hazard, we first estimate a probit model of whether the VC firm makes such an unfamiliar investment and calculate the inverse Mills ratios for the probabilities predicted from this model: $\varphi(.)/\Phi(.)$ for those making such investments and $-\varphi(.)/[1-\Phi(.)]$ for those not making such investments, where $\varphi(.)$ is the normal density and $\Phi(.)$ the cumulative normal distribution.

that more than one investment was made by a VC firm in a given year – and thus for possible non-independence of observations within each year – we included year dummies as well as used a robust estimation of the standard errors adjusted for clustering on VC firm (Rogers, 1993).

5. Results

5.1. Main Analyses

In Table 1, we present the descriptive statistics and correlations. We present the results of the random-effects Logit estimation in Table 2. Model 1 contains only the control variables; Model 2 adds the main effects of status and reputation; Model 3 adds the main effect of investment novelty; Models 4 and 5 add individually the interaction effects of investment novelty with status and reputation, while Model 6 contains all variables and interaction effects. All models are significant and each subsequent model improves the fit of its preceding model, as suggested by the incremental Chi-square statistics. In all models, consistent with the knowledge-sharing rationale for syndication, syndication is more likely for companies in the high-technology industries and at earlier stages of development. In addition, in Model 2, status exhibits a positive and significant effect on syndication, while the effect of reputation is positive but not significant. Both effects are positive and significant once investment novelty is added to the model (Model 3).

Hypothesis 1 predicted that the likelihood of syndication would increase with the novelty of the investment to the VC firm. In Model 3, the addition of investment novelty significantly improved the fit of the model ($\Delta\chi^2$ = 9.42, p < .01). Its effect was positive and significant (β = 0.10, p < 0.001), suggesting that the syndication of more novel investments was more likely. This finding provides support for Hypothesis 1.

Hypothesis 2 predicted that the positive effect of investment novelty on syndication would be stronger for VC firms with higher status. The interaction effect of investment novelty and status was positive and significant in both Models 4 and 6 (β = 0.46, p < 0.01 and β = 0.48, p < 0.01). To understand and illustrate the nature of the interaction, we plotted the effect of investment novelty on the

likelihood of syndication for VC firms with high and low status, using the results from Model 6, as presented in Figure 1. As the plot shows, the likelihood of syndication increases with investment novelty and this increase is much stronger for high-status firms. This suggests that the altercentric uncertainty inherent to novel investments is more effectively mitigated by firms with higher status. This result provides support for Hypothesis 2.

Hypothesis 3 predicted that the positive effect of investment novelty on syndication would be stronger for VC firms with higher reputation. The interaction effect of investment novelty and reputation was negative and significant in both Models 5 and 6 (β = -0.23, $p < 0.01$ and β = -0.25, $p < 0.001$). In Figure 2 we present an illustration of this interaction, using the results from Model 6, and plot the effect of investment novelty on the likelihood of syndication for VC firms with high and low reputation. The plot shows that when investment novelty is low, VC firms with high reputation are more likely to syndicate their investments. However, as investment novelty increases, this effect gradually disappears and for the most novel investments, higher reputation of the VC firm is in fact associated with lower likelihood of syndication. This finding is opposite to the prediction of Hypothesis 3, and suggests that reputation does not effectively shield the VC firm from the altercentric uncertainty inherent in novel investments.

Insert Tables 1, 2 and Figures 1, 2 about here

5.2. Robustness Analyses

In Table 3 we present several additional analyses performed to corroborate the robustness of our results. First, because some of the syndicated investments had unidentified investors, we could not properly adjust the number of investors for the cases in which the same VC firm invested through different funds in the same round. To rule out that such omissions in the data were non-random and potentially distorting our results, we re-estimated the full model from Table 2 using only the cases in which all participating investors were properly identified in the data. This estimation is reported as Model 1 in Table 3. Its results are consistent with our main estimation. Notably the positive interaction

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effect between project novelty and status is of higher magnitude, while the negative interaction effect between project novelty and reputation is of lower magnitude and marginally significant.

Second, because we could not reliably infer whether the focal VC firm was indeed the one initiating the syndication relationship – i.e. whether it was the one seeking and being evaluated by prospective partners – it was plausible that some of the first-round investors in our dataset were non-lead. Therefore, in consideration of the fact that lead and non-lead investors syndicate for different reasons (Manigart et al. 2006) and use different criteria in evaluating partners (Lockett & Wright, 1999), we re-estimated our results on the subset of lead investors. We followed recent practice (Sorensen and Stuart, 2008) and, for each portfolio company, designated as lead investors those VC firms that have participated in the most rounds. Model 2 in Table 3 presents the results of this analysis, which are fully consistent with those presented in Table 2.

Third, to address the additional challenge of having multiple observations of particular investments (one for each VC firm participating in the syndicate), we randomly chose one VC firm from the cases in which there was more than one participating VC firm and re-estimated the main results using this reduced dataset. Model 3 in Table 3 shows the results of this analysis. Again, these are fully consistent with those reported in Table 2.

Insert Table 3 about here

5.3. Post-hoc Analyses

One additional consideration concerned a possible alternative explanation based on the idea that alliances between parties that have a history of partnering together were more likely to be formed (Gulati, 1995a; Podolny, 1994). In the VC industry, prior interactions are also an important factor in partner selection (Locket & Wright, 1999). Indeed, it is plausible that when faced with high need and reduced opportunity to form investment syndicates, VC firms could turn to familiar partners, thereby partially mitigating their altercentric uncertainty. While we could not observe the set of potential partners

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prior to the event of syndicate formation and only had data on the actual partners (if any), the "familiarity breeds trust" argument (Gulati, 1995a) in the context of this study would imply that among the formed syndication alliances those involving novel investments were more likely to involve familiar partners. To investigate this possibility, we derived all VC firm dyads from among the syndicated investments and obtained the number of times that the two VC firms in question had invested together prior to the current investment. We also determined whether the investment was novel to one or both VC firms, based on above-median investment novelty values. In addition, we also characterized the entire syndicate in terms of the number of VC firms for whom the investment was novel and the number of prior relationships among the members of the syndicate. In Table 4, we present descriptive statistics for partner familiarity – expressed both as the average number of prior co-investments and the proportion of unfamiliar partners – for the investor dyads and the entire syndicates, broken down based on the number of VC firms in the dyad or syndicate for whom the investment was novel. For both the dyad and the syndicate, novel investments tend to involve less familiar partners. This relationship is significant, as implied by the F-values from one-way ANOVA analyses for each column. In addition, these effects persist even if the status and reputation of the VC firms are taken into consideration. These results suggest that partner familiarity does not drive the syndication of novel investments. Rather, the partners attracted for novel investments are more likely to be unfamiliar.

Insert Table 4 about here

Finally, our theoretical predictions and findings are premised on the notion that status serves as a mitigator of altercentric uncertainty and differentiates firms in their ability to attract partners. The value of status is preserved by careful management of the firm's associations with other firms. In this regard, prior research suggests that high-status VC firms tend to syndicate their investments with other high-status firms (Piskorski and Anand, 2004). To the extent that such status homophily is evident in our data, and particularly in the syndication of novel investments, we could infer that novel investments

indeed pose a legitimacy hurdle to the focal VC firms and that status plays a differentiating role in the firm's ability to attract partners for such investments. In view of this, we examined further the composition of the formed syndicates in our data and, in Table 5, present a tabulation of the status match-ups between the focal VC firm and its syndicate partners. Specifically, we divide the VC firms into status quartiles and, based on the quartile of the focal VC firm, present the proportion of partners whose status falls into the same quartile. In Panel A, we include all syndicates and in Panel B we focus on the syndicates in which the investments is novel to the focal VC firm (i.e. the firm has made no investments previously in the particular industry). In both cases, we observe a tendency for the focal VC firm to associate with partners of similar status, and this tendency is the strongest for high-status firms. This suggests that status in our setting operates in a way consistent with prior theory and studies.

Insert Table 5 about here
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6. Discussion

For firms to form alliances, it is necessary for them to have both the need and opportunity to do so. But these two aspects of alliance formation are not always aligned: in certain situations, the factors that increase the firm's need to form alliances may also reduce the opportunity for the firm to find and attract alliance partners. In this study, we sought to understand this interplay between need and opportunity in the context of projects that are novel to the firm undertaking them, which allowed us to differentiate two types of uncertainty – egocentric and altercentric – inherent in such projects. Specifically, we examined the syndication of investments by VC firms. On one hand, when considering investments that are novel to them, VC firms face egocentric uncertainty, related to the proper decisions to be made in selecting and managing such investments, and thus have higher need for syndication. On the other hand, these very same investments enshrine the focal VC firms in altercentric uncertainty, rendering them difficult to appraise by potential partners. This in turn makes the focal firms' opportunity to syndicate novel investments contingent upon their ability to signal their quality to

potential partners. Consistent with these arguments, we found that projects novel to the VC firm are more likely to be syndicated. In addition, we found that this relationship was much stronger for VC firms with high status and, contrary to our expectations, weaker for VC firms with high reputation.

6.1. Research Contributions and Managerial Implications

Our study suggests that need and opportunity, rather than being independent aspects of alliance formation, are in fact intertwined at the level of the projects for which firms may seek to form alliances. We provide an enriched understanding of the uncertainty residing in the relationship between a firm and the specific projects it undertakes. In particular, when projects are novel to the firm, the firm's lack of knowledge of the project domain makes its need for alliances more salient. This is consistent with a resource dependence perspective according to which firms attempt to co-opt the resources in the environment when presented with uncertain situations (Pfeffer and Salancik 1978). Yet, the novel aspect of our study lies in highlighting that these same projects, to the extent that they are detached from the firm's prior actions and existing knowledge, also make the firm more *fuzzy* as a party in the social exchange. In other words, undertaking novel projects can serve as a red flag for the firm's quality as a partner for these projects due to its uncertain ability to make project-specific contributions, which ultimately undermines its ability to attract partners for such projects. Potential partners, unable to assess the potential contribution of the focal firm, have to rely on their overall perceptions of the firm in deciding whether to join forces with it on such projects.

We contribute to the literature on venture capital investing and syndication by highlighting an unexplored, *relational* aspect of uncertainty, inherent in a particular VC firm – investment dyad and reflecting the VC firm's understanding of the particular company and its environment. While prior research has focused on the uncertainty reflected in the characteristics of a specific investment target (e.g. early stage or high technology) as a driver for syndication (e.g. Bygrave, 1987), we have argued that such uncertainty need not be perceived uniformly among potential investors. Certain investments – no matter how uncertain themselves – may be more or less uncertain *to different VC firms*, based on

the extent of their prior experience in the specific industry of the investment. By differentiating the VC firm's experience and accounting for the relative lack of familiarity of the focal VC firm with the industry of the investment at hand (i.e. the novelty of the investment to the VC firm), we were able to explain variation in syndication beyond the one accounted by the independent, objective characteristics of the VC firm and the investment. In addition to the egocentric uncertainty faced by the focal VC firm in considering the (novel) investment at hand, we also highlighted the uncertainty (altercentric) that other VC firms face in considering the focal VC firm as a potential partner for that investment. Our results show that when the focal VC firm's experience cannot be used to make reliable inferences about its potential contribution to the investment at hand, firms that can project stronger signals of their quality – such as those with high status – are more likely to attract syndicate partners.

The importance of dealing with altercentric uncertainty when seeking partners for novel projects helps reveal differences between status and reputation as signals of quality at the project level. We provide evidence that reputation may be a less effective signal for attracting partners when alliances involve novel projects. While some of our results still speak to the value of reputation in alliance formation and corroborate prior findings – the direct effect of reputation on alliance formation was positive (cf. Dollinger et al., 1997; Saxton, 1997) – finding a negative interaction effect with project novelty challenges our thinking and provides opportunities for future research to refine current theorizing on the reputation construct. Although initially surprising, this finding invites a deeper examination of the content of the informational signal that reputation carries. We built our hypothesis on the premise that reputation is a performance-based signal, and as such should appease partners' concerns about actor uncertainty through the positive expectations of future outcomes. Several interesting insights emerge when this conceptualization is revisited in the context of our findings.

First, defined as a performance-based signal, it is possible that the content of the reputation signal is too closely coupled with the firm's specific prior actions, and represents a much narrower expectation of future behavior, as compared to status (Podolny, 2005). Based on the notion of

competency traps from the learning literature (Levitt and March, 1988), it is plausible that potential partners may fear that the reputable firm may insist on applying its previously successful practices to the novel project, when these need not be applicable and beneficial to the project's development. To that extent, our results suggest that beyond its direct positive association with alliance formation, reputation appears to help firms in finding partners to the extent that they stick to activities for which they are known (see left side of Figure 2). Hence, our results imply that the value of reputation may be bounded by the nature of the project in which the respective firm is involved. In a similar vein, to the extent that potential partners consider their own gain from the alliance, and particularly the possibility to learn from the focal firm (e.g. Lane and Lubatkin, 1998), it is plausible that the reputation of the focal firm and the knowledge it signifies may have limited appeal in the context of novel projects, as there might be limited opportunity to learn from the local firm in the context of such projects.

Second, while our results suggest that the positive reputation signal does not carry readily to novel domains, there may be specific aspects of reputation untapped in this research that help firms acquire partners when venturing into novel areas. In this regard, a firm's reputation can be conceptualized as a multifaceted construct (Rindova et al., 2005) depending on the diversity of relevant actions on which it is built (Dollinger et al., 1997). For example, a firm can have technological reputation (Zahra, Matherne and Carleton, 2003); reputation for consistency and good product quality (Rhee and Haunschild, 2006); reputation for business integrity (Jensen and Roy, 2008); or a reputation for successful cooperation (Baum, Calabrese and Silverman, 2000; Gulati, 1995b). This suggests that a more refined measure of firm's reputation may be necessary to tease out its role in mitigating altercentric uncertainty, based on the specific concerns of potential partners. In this regard, to the extent that a firm can be perceived by the same audience to have positive reputation for one activity but less positive reputation for another (Jensen and Roy, 2008), future research can focus on the content and relevant components of reputation as a signal of quality and assess their individual and joint effects in attracting potential partners.

In contrast, our results suggest that status is a more robust quality signal in the context of novel projects. Beyond its overall positive effect, which is consistent with the importance of social context in influencing firms' alliance formation (Gulati, 1995b) and partner selection (Jensen and Roy, 2008), we found that its effect was stronger for novel projects. Although this result is consistent with the general notion that status matters more for partnering when firms face market uncertainty, it also adds important nuance in the conception of uncertainty inherent in this relationship, based on a differentiation of a firm's experience across different projects. More specifically, whereas prior research has found status to be important in reducing uncertainty when the latter is equated with the characteristics of a project (e.g. underwriting a non-investment-grade bond; Podolny, 1994) or of the firm (e.g. its experience in a given market; Jensen, 2003), our account of uncertainty as residing in the firm-project combination suggests that status also matters in hitherto overlooked circumstances. While prior literature would lead us to suggest that investments that are generally perceived as less uncertain would reduce the value of status (Podolny, 1994), we point out that such investments may appear *more* uncertain when undertaken by firms with limited knowledge of their specifics. In these circumstances, status reemerges as an important signal of quality. Equally, firms that are overall more experienced can consider investments in less familiar areas and face the limits to extrapolation. Hence, by conceptualizing uncertainty as relative to the investor-project dyad, we are able to depict circumstances in which current theory may underestimate the value of status.

When compared to reputation, status is a signal of quality that is dissociated from behavior and more related to existing relations and affiliations (Podolny, 2005). As such, it appears to provide a more robust signal of quality, enhance the returns to demonstrations of quality by biasing evaluations in favor of higher-status actors (Benjamin and Podolny, 1999), and provide more resilience to firms in situations in which uncertainties about their reputation may arise (Podolny 2005). Hence, while prior research suggests that both status and reputation make the firm a more desirable partner, as has been observed in the VC industry (Lerner, 1994; Hochberg, Ljungquist and Lu, 2007; Podolny, 2001), observing

alliances at project levels has allowed us to highlight a range of firm behaviors over which these two constructs diverge. Venturing into unfamiliar domains helps differentiate social and economic signals in the opportunities they afford to find and attract partners.

Our results also carry a number of practical implications. In considering investments into unfamiliar or less familiar industries, VC managers need to be aware that, to the extent that they look for potential syndicate partners, such partners are less likely to be swayed by the firm's prior track record and more by its prior associations. In this regard, VC firms already enjoying high status can consider that, beyond facilitating IPOs, their network status may be leveraged to enter new domains and occupy competitive positions within new industries. In contrast, VC firms positioned on the margins of the network can focus on deepening their expertise within existing domains and look to leverage that expertise into relationships that can boost their status. Similarly, VC firms with successful track records should use their ability to attract partners in their "traditional" domains to select higher-status partners that can boost their social standing. More broadly, beyond the context of VC investing, our results suggest to managers that tradition and past successes can be discounted when looking to attract partners for novel projects and that, to the extent there is continuous pressure to look for new opportunities, careful attention needs to be paid to the cultivation of relationships that can make such opportunities more accessible.

6.2. Limitations and Future Research

There are some limitations to our study that also open up directions for future research. Although syndication is widespread in the VC industry (Lerner, 1994; Hochberg et al., 2007) and offers buffers against various uncertainties (Bygrave, 1987), implicit in our theoretical development and analysis is the premise that syndication is always a desirable strategy to cope with uncertainty. In other words, non-syndicated investments were regarded as cases in which the focal VC firm had sought investment partners but failed to find any. We acknowledge that in certain situations VC firms may explicitly prefer to keep the deal for themselves (e.g. Snellman and Piskorski, 2003) and suggest that

future research model this decision more explicitly. In addition, to the extent that the current investment is part of a more extensive syndication agreement that covers a series of investments, there may be unobserved interactions among the syndicate partners that offer additional considerations for syndication. Another issue to which we have not given explicit consideration concerns the degree to which VC firms are indeed aware of each other's status and reputation. While this is a commonly held assumption in economic sociology, future work can incorporate explicit perceptions of these signals.

Furthermore, seeking to understand the formation of syndicate relationships, we left beyond the scope of our work whether syndication indeed provided eventual benefits for the focal investment. While some may see this as a limitation of our study, we note that prior research has established that the effects of syndication can be positive (e.g. Brander et al., 2002; DeClercq and Dimov, 2008) as well as negative, when the cost of managing the syndicate become too burdensome (Dimov and De Clercq, 2006). In this regard, investigating how the management and benefits of syndicates operate in the context of novel investments and are affected by the status and reputation of the participating syndicate partners is a promising area of research. On this point, it is notable that the interference of status and reputation can create a spurious relationship between syndication and performance: they not only play instrumental roles in attracting investment partners and but also afford a higher potential for performance, based on easier access to resources or demonstrated superior performance in the past. In addition, the prior experience and social networks of VC firm's individual partners can be considered to differentiate the firms' responses to potential investments that are novel at the firm level but may leverage the knowledge or social capital of individual partners. These considerations open up new possibilities for more precise theorizing and empirical rigor in examining the relationship between syndication and performance.

Finally, although the US VC context represents a homogenous sample of syndicates, thus avoiding the empirical issue of variations among alliance types (c.f. Eisenhardt & Schoonhoven, 1996), we acknowledge that care should be taken in generalizing our results to other contexts. VC syndicates

resemble other forms of alliances (Gulati, 1995b) in that they represent long-term commitments to cooperative relationships in which the participating firms exchange knowledge and resources (Wright and Lockett, 2003), yet they are also distinct in that some of the partners (typically, the lead investors) may be doing more work than in a typical collaborative alliance. Such arrangements exist in more traditionally studied alliance contexts, such as in the biotechnology industry, where one partner (a biotechnology venture) may be providing most of the knowledge and innovation, while the other (a big pharmaceutical company) provides operational and financial resources and possibly managerial expertise (e.g. Powell, Koput, and Smith-Doerr, and Owen-Smith, 1999), but they involve partners from different areas of the value chain. In addition, compared to the relatively short-lived syndicates in investment banking that have offered insights into the dynamics of alliance networks (Chung et al, 2000; Jensen, 2003), VC syndicates last longer and involve stronger partner commitments that are more difficult to terminate. As such, their formation highlights the importance of the decision of whether and with whom to syndicate a particular project and thus facilitate generalization to other forms of strategic alliances.

6.3. Conclusion

In conclusion, this study reinforces the notion that firms seek and establish alliances when they undertake novel, uncertain projects. However, it also shows that these very projects can also reduce the firm's desirability as partner and make it differentially positioned to carry out such projects. Comparing firm reputation and status as quality signals enabled us not only to highlight their different effects in enticing partners for novel projects but also to reveal their different functions in the partner selection process. Since attaining status and reputation requires time and valuable resources, understanding the scope and boundary conditions of their leverage for satisfying alliance needs and building alliance opportunities for firms is an important area for future research with promising implications for managerial practice.

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TABLE 1
Descriptive Statistics and Correlations

	Variable	Mean	St.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Syndication	0.73	0.44	1.00																
2	Investment novelty	-2.13	1.32	-0.05	1.00															
3	VC firm status	0.07	0.11	0.14	-0.10	1.00														
4	VC firm reputation	0.08	0.16	0.04	-0.43	0.16	1.00													
5	Prior syndication	0.34	0.18	0.09	-0.31	0.09	0.09	1.00												
6	Prior novel investments	0.20	0.24	-0.08	0.60	-0.17	-0.27	-0.24	1.00											
7	Prior investments in state	0.29	0.31	0.06	0.02	0.05	-0.06	0.04	0.06	1.00										
8	Alignment of investment opportunities	-0.14	0.17	0.08	-0.31	0.16	0.26	0.27	-0.39	0.00	1.00									
9	Funds raised in last 2 years	0.74	0.44	0.00	-0.14	-0.05	0.08	0.05	-0.09	0.01	0.01	1.00								
10	VC firm structural holes	-0.13	0.22	0.09	-0.38	0.22	0.20	0.24	-0.42	-0.01	0.34	0.05	1.00							
11	Private VC firm	0.67	0.47	0.00	-0.06	-0.06	-0.11	0.20	-0.04	0.11	-0.03	0.16	0.04	1.00						
12	Corporate VC firm	0.05	0.23	0.04	0.01	0.00	-0.07	-0.15	-0.03	-0.04	-0.09	-0.05	-0.02	-0.34	1.00					
13	Financial VC firm	0.16	0.37	-0.01	-0.03	0.04	0.27	-0.09	-0.02	-0.13	0.08	-0.06	0.02	-0.62	-0.10	1.00				
14	VC firm located in California	0.28	0.45	0.09	-0.12	0.16	-0.02	0.07	-0.11	0.35	0.03	0.06	0.10	0.13	0.02	-0.14	1.00			
15	ICT industry	0.57	0.49	0.14	-0.31	0.03	0.02	0.05	-0.13	0.15	0.19	0.09	0.09	0.06	0.08	-0.09	0.17	1.00		
16	Biotech industry	0.15	0.36	0.05	0.08	0.03	0.00	0.01	-0.03	0.01	-0.13	-0.02	0.02	0.04	-0.01	-0.04	0.00	-0.49	1.00	
17	Early-stage investment	0.58	0.49	0.16	-0.10	0.10	0.02	0.09	-0.11	0.23	0.07	0.06	0.10	0.11	0.02	-0.13	0.18	0.23	0.12	1.00
18	Company located in California	0.30	0.46	0.12	-0.12	0.14	0.06	0.06	-0.11	0.55	0.04	0.04	0.09	0.10	0.00	-0.07	0.45	0.16	0.02	0.20

$N = 35,757$. All correlations with absolute value greater than 0.005 are significant at $p < .05$.

TABLE 2
Random-effects Logit Estimation of VC Firms' Likelihood to Syndicate Investments

Variables	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
Investment novelty							0.097	(0.02)	***	0.075	(0.02)	***	0.117	(0.02)	***	0.094	(0.02)	***
VC firm status				1.674	(0.23)	***	1.720	(0.23)	***	2.876	(0.44)	***	1.842	(0.23)	***	2.999	(0.44)	***
VC firm reputation				0.139	(0.11)		1.247	(0.14)	***	0.366	(0.12)	**	-0.619	(0.32)	+	-0.633	(0.32)	*
Project novelty X Status										0.456	(0.15)	**				0.480	(0.15)	**
Project novelty X Reputation													-0.234	(0.07)	**	-0.245	(0.07)	***
Prior syndication	0.055	(0.11)		0.085	(0.11)		0.030	(0.13)		0.032	(0.13)		0.010	(0.13)		0.001	(0.14)	
Prior novel investments	-0.423	(0.08)	***	-0.323	(0.08)	***	-0.384	(0.09)	***	-0.339	(0.09)	***	-0.408	(0.09)	***	-0.381	(0.09)	***
Prior investments in state	-0.388	(0.06)	***	-0.361	(0.06)	***	-0.334	(0.06)	***	-0.331	(0.06)	***	-0.334	(0.06)	***	-0.329	(0.06)	***
Alignment of investment opportunities	0.401	(0.12)	***	0.317	(0.12)	**	0.110	(0.13)		0.064	(0.13)		0.127	(0.13)		0.112	(0.13)	
Funds raised in last 2 years	-0.062	(0.04)	+	-0.067	(0.04)	+	-0.094	(0.04)	**	-0.105	(0.04)	**	-0.098	(0.04)	**	-0.096	(0.04)	**
VC firm structural holes	0.114	(0.07)		0.044	(0.07)		0.083	(0.07)		0.053	(0.07)		0.074	(0.07)		0.058	(0.07)	
Private VC firm	-0.011	(0.06)		-0.011	(0.06)		-0.157	(0.07)	*	-0.220	(0.07)	**	-0.151	(0.09)		-0.152	(0.10)	
Corporate VC firm	0.191	(0.10)	+	0.184	(0.10)	+	0.167	(0.12)		0.136	(0.11)		0.201	(0.13)		0.198	(0.13)	
Financial VC firm	-0.053	(0.08)		-0.067	(0.08)		-0.065	(0.09)		0.005	(0.09)		0.080	(0.11)		0.079	(0.12)	
VC firm located in California	0.135	(0.05)	*	0.118	(0.06)	*	0.159	(0.08)	*	0.267	(0.06)	***	0.271	(0.06)	***	0.280	(0.06)	***
ICT industry	0.533	(0.03)	***	0.530	(0.03)	***	0.580	(0.04)	***	0.593	(0.04)	***	0.578	(0.04)	***	0.587	(0.04)	***
Biotech industry	0.655	(0.05)	***	0.644	(0.05)	***	0.638	(0.05)	***	0.642	(0.05)	***	0.638	(0.05)	***	0.640	(0.05)	***
Early-stage investment	0.261	(0.03)	***	0.264	(0.03)	***	0.266	(0.03)	***	0.266	(0.03)	***	0.267	(0.03)	***	0.268	(0.03)	***
Company located in California	0.437	(0.04)	***	0.420	(0.04)	***	0.399	(0.04)	***	0.398	(0.04)	***	0.393	(0.04)	***	0.393	(0.04)	***
Endogeneity correction	0.021	(0.02)		0.025	(0.02)		-0.041	(0.03)		-0.048	(0.03)	+	-0.051	(0.03)	+	-0.054	(0.03)	+
Constant	1.504	(0.15)	***	1.169	(0.16)	***	1.160	(0.16)	***	1.005	(0.17)	***	1.159	(0.18)	***	1.044	(0.19)	***
Panel-level variance component (rho)	0.18	(0.01)	***	0.15	(0.01)	***	0.18	(0.01)	***	0.18	(0.01)	***	0.18	(0.01)	***	0.18	(0.01)	***
Log likelihood	-18,738.3			-18,707.8			-18,703.1			-18,692.5			-18,692.3			-18,687.3		
Chi-square	1,358.8	***		1,401.0	***		1,531.7	***		1,521.9	***		1,516.8	***		1,525.9	***	
Chi-square, Change in LL				60.96	***		9.42	**		21.21	***		21.76	***		9.86	**	
Number of VC firms	2,498			2,498			2,498			2,498			2,498			2,498		
Number of observations	35,757			35,757			35,757			35,757			35,757			35,757		

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .10$ (two-tailed); Coefficient standard errors shown in parentheses.
Note: Year dummies are included in all models but not reported in this table.

TABLE 3
Robustness Analyses Using Random-effects Logit Estimation of VC Firms' Likelihood to Syndicate Investments

Variables	Model 1			Model 2			Model 3			Model 4		
Project novelty	0.077	(0.03)	**	0.066	(0.02)	**	0.081	(0.02)	***	0.049	(0.02)	*
VC firm status	3.331	(0.52)	***	2.762	(0.46)	***	2.509	(0.47)	***	2.264	(0.32)	***
VC firm reputation	0.055	(0.40)		-0.502	(0.34)		-0.712	(0.38)	+	-0.502	(0.22)	*
Project novelty X Status	0.594	(0.17)	***	0.406	(0.16)	*	0.406	(0.17)	*	0.345	(0.17)	*
Project novelty X Reputation	-0.156	(0.09)	+	-0.221	(0.08)	**	-0.296	(0.08)	***	-0.309	(0.09)	***
Prior syndication	0.354	(0.15)	*	0.187	(0.13)		0.449	(0.14)	***	-0.062	(0.13)	
Prior novel projects	-0.479	(0.12)	***	-0.319	(0.10)	***	-0.325	(0.10)	***	-0.259	(0.08)	***
Prior investments in state	-0.422	(0.08)	***	-0.276	(0.07)	***	-0.189	(0.07)	**	-0.332	(0.06)	***
Alignment of investment opportunities	0.125	(0.16)		0.159	(0.13)		0.186	(0.13)		-0.102	(0.13)	
Funds raised in last 2 years	-0.114	(0.05)	*	-0.050	(0.04)		-0.086	(0.04)	*	-0.111	(0.04)	**
VC firm structural holes	-0.002	(0.10)		0.119	(0.08)		0.066	(0.08)		0.023	(0.07)	
Private VC firm	0.018	(0.09)		0.015	(0.09)		-0.067	(0.07)		-0.221	(0.08)	**
Corporate VC firm	0.231	(0.13)	+	0.249	(0.13)	*	0.060	(0.12)		0.130	(0.11)	
Financial VC firm	0.013	(0.11)		0.112	(0.10)		0.052	(0.10)		0.005	(0.09)	
VC firm located in California	0.190	(0.07)	**	0.190	(0.06)	**	0.155	(0.06)	*	0.263	(0.06)	***
ICT industry	0.739	(0.05)	***	0.495	(0.04)	***	0.468	(0.04)	***	0.536	(0.04)	***
Biotech industry	0.833	(0.06)	***	0.534	(0.05)	***	0.511	(0.05)	***	0.635	(0.05)	***
Early-stage investment	0.247	(0.04)	***	0.153	(0.03)	***	0.253	(0.03)	***	0.271	(0.03)	***
Company located in California	0.449	(0.05)	***	0.375	(0.04)	***	0.311	(0.05)	***	0.394	(0.04)	***
Endogeneity correction	-0.039	(0.04)		-0.044	(0.03)		-0.034	(0.03)		0.009	(0.02)	
Constant	-0.396	(0.21)	+	0.483	(0.18)	**	0.142	(0.19)		1.069	(0.17)	***
Panel-level variance component (rho)	0.19	(0.01)	***	0.16	(0.01)	***	0.12	(0.01)	***	0.18	(0.01)	***
Log likelihood	-11,159.6			-16,915.3			-14,419.7			-18,698.7		
Chi-square	998.8			1,208.5			900.6			1,505.0		
Number of VC firms	2,005			2,311			2,189			2,498		
Number of observations	18,282			29,499			23,036			35,757		

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .10$ (two-tailed); Coefficient standard errors shown in parentheses.
Note: Year dummies are included in all models but not reported in this table.

TABLE 4

Partner Familiarity by Different Prevalence of Investment Novelty within Investor Dyad and Total Syndicate

Number of VC firms for whom investment is novel	Investor Dyad		Total Syndicate	
	Number of prior relationships	Proportion of unfamiliar partners	Number of prior relationships	Proportion of unfamiliar partners
0	2.82	40.9%	3.53	38.8%
1	0.84	70.8%	1.12	68.1%
2	0.55	76.0%	0.78	71.5%
3+			0.70	72.5%
F-value	707.31	1259.5	164.83	316.22
p-value	<.001	<.001	<.001	<.001
N	22,457	22,457	7,382	7,382

TABLE 5
Status Match-Ups within the Formed Syndicates

		Status			
		Proportion of partners in quartile			
Panel A: All syndicates					
		1	2	3	4
	1	28.8%	30.4%	24.9%	15.9%
Quartile of focal VC firm	2	19.6%	32.0%	28.2%	20.2%
	3	14.2%	24.9%	31.3%	29.5%
	4	7.7%	15.1%	24.9%	52.3%
Panel B: Syndicates in which the investment is novel to the focal VC firm					
		1	2	3	4
	1	31.5%	27.3%	23.3%	17.8%
Quartile of focal VC firm	2	19.7%	28.9%	26.3%	25.1%
	3	16.1%	24.2%	28.3%	31.3%
	4	10.1%	16.2%	22.7%	51.0%

FIGURE 1
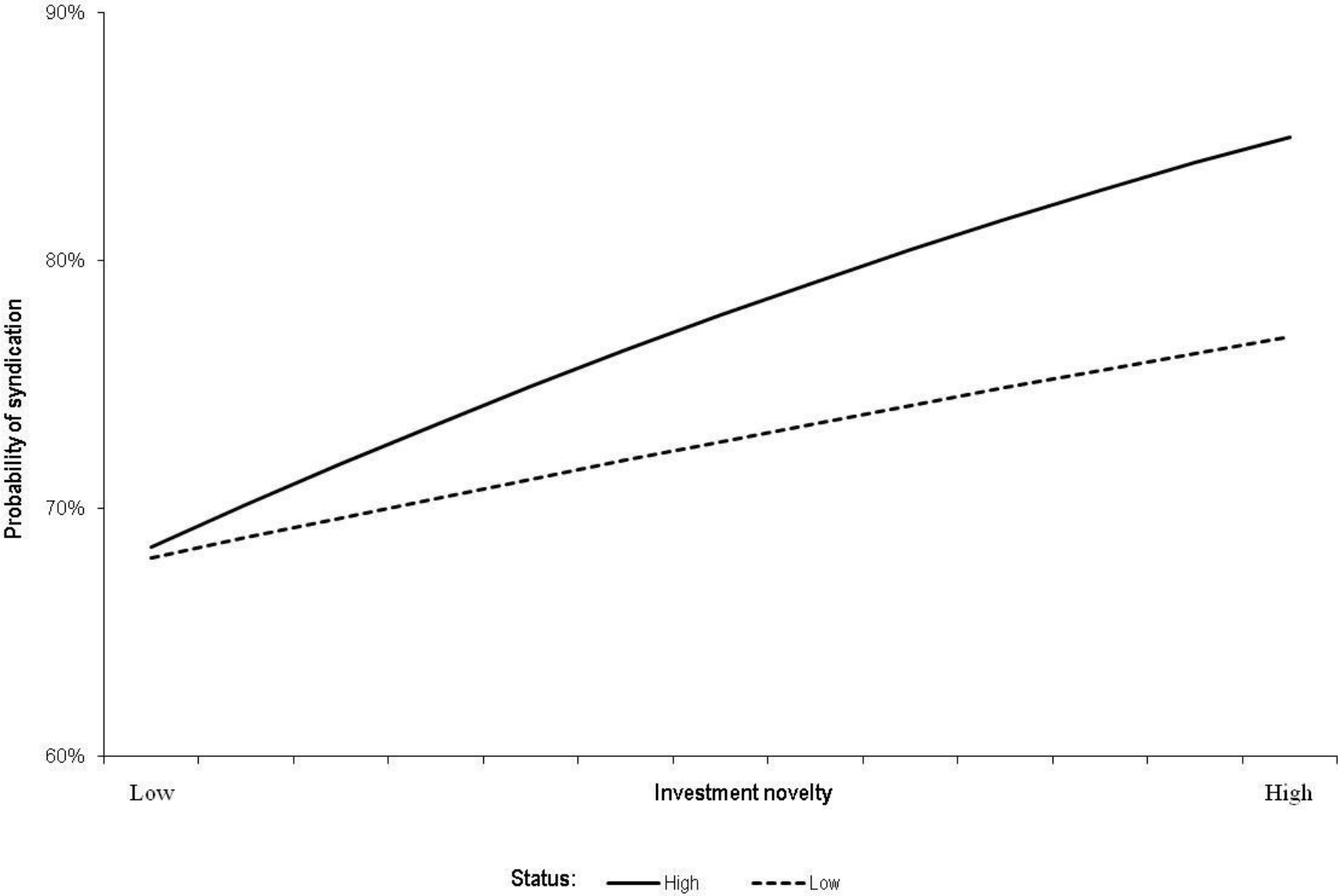**Interaction Effect of Project Novelty and Status on the Probability of Syndication**

FIGURE 2
Interaction Effect of Project Novelty and Reputation on the Probability of Syndication