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Brad Greenwood

University of Maryland - College Park, bgreenwood@rhsmith.umd.edu

Anandasivam Gopal

University of Maryland - College Park, agopal@rhsmith.umd.edu

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ENDING THE MENDING WALL: EXPLORING ENTREPRENEUR – VENTURE CAPITALIST CO-LOCATION IN NEW IT VENTURES

Completed Research Paper

Brad Greenwood

University of Maryland, College Park
Robert H Smith School of Business
Van Munching Hall
College Park, MD 20742
bgreenwood@rhsmith.umd.edu

Anandasivam Gopal

University of Maryland, College Park
Robert H Smith School of Business
Van Munching Hall
College Park, MD 20742
agopal@rhsmith.umd.edu

Abstract

Venture capitalists and the entrepreneurs they fund are observed to be co-located in order to enable both parties to extract value from their respective investments. This co-location may be relaxed in different conditions. In this paper, we explore conditions under which entrepreneurs not co-located with venture capitalists are still funded. Using the mechanisms of legitimacy and efficiency, we show that fashionability of the entrepreneurial venture's technology or product can lead to venture funding when the entrepreneur and the VC are not co-located. Similarly, entrepreneurs who are co-located with a highly visible business partner or who possess original intellectual property also have higher odds of funding when not co-located with the focal VC. Finally, we show that these effects are heightened during the Internet boom of 1995-2000, characterized by mimetic contagion. The analysis is conducted on a sample of 44,057 new IT-based ventures funded in North America between 1985 and 2006.

Key words: venture capital, entrepreneurship, information technology, co-location, fashionability, intellectual property, business partner co-location, rare events logistic regression

Introduction

The co-location of economic activity has been a topic of significant research in the economics literature where the focus has been on analyzing the extent to which entities extract rents and co-locate in order to do so. Conceptually, this research informs the decision-maker, or entrepreneur, about the implications of choosing the location of a firm. The location decision is an important one to the entrepreneur for several reasons, not the least of which is the possibility of acquiring early stage funding from a venture capitalist (VC). Extant research shows unequivocally that VCs tend to fund co-located entrepreneurs and that, as the geographic distance separating the venture capitalist from the entrepreneur increases, the probability of receiving funding falls exponentially (Sorenson et al. 2001; Sorenson et al. 2008). Recent evidence suggests that VCs will open offices where the success rate for entrepreneurs is highest (Chen et al. 2010), thereby allowing the entrepreneur some freedom in the location choice of his or her firm. In this paper, we start with the accepted notion that VCs tend to fund co-located entrepreneurs but we instead ask the question – what factors will increase the extent to which a VC may be willing to fund a non-co-located entrepreneur? Are there identifiable contingencies under which an entrepreneur will still procure early-stage funding from a non-co-located VC?

The literature on the observed preference of VCs to prefer funding co-located entrepreneurs, which we term the *co-location constraint*, is characterized by two broad themes. First, much of this research has, perforce, focused on the VC and his characteristics in understanding why certain entrepreneurs are funded and other are not. As the locus of decision making rests with the VC, it is reasonable to analyze the extent to which certain factors influence his propensity for funding certain firms. These studies have focused on factors such the presence of syndication networks amongst VC firms (Sorenson et al. 2001) and the extent to which the new entrepreneur matches the existing portfolio of the VC firm in both physical and industry space (Gupta et al. 1992). Second, much of the work on VC-entrepreneur co-location speaks to a viewpoint based on social network theory (Sorenson et al. 2001; Uzzi 1996). VCs tend to have deep linkages in their location-based social networks which allow them to better evaluate, manage, and monitor funded entrepreneurs (Gompers et al. 1999). Therefore, network characteristics of VC firms determine, on the margin, the extent to which the VC prefers to fund co-located firms. Both these streams of research tend to de-emphasize the specific features of the actual technology or service proffered by the entrepreneurial firm. Similarly, the literature also disregards aspects of the entrepreneurial firm itself in modeling the funding decisions of VCs. Our work in this paper addresses these gaps in the literature.

In order to incorporate aspects of the entrepreneurial technology into VC decision-making, we identify two broad causal mechanisms that influence the extent to which VC funding decisions are made *-legitimacy* and *efficiency*. We postulate that the funding decisions made by VCs tend to be driven by the extent to which various entrepreneurs appear *legitimate*, using a variety of signals, and the *efficiency* with which the VC -entrepreneurship relationship may be managed during pre-funding and post-funding stages. Prior research on the location decisions of entrepreneurs fits easily within this broader framework. Location provides both entrepreneurs and VCs the ability to signal legitimacy (DiMaggio et al. 1983). An entrepreneur located in a technological hub tends to signal greater legitimacy by conforming to *de facto* norms within that industry. In addition, the entrepreneur's location close to the VC provides a greater chance of their social networks mingling, providing greater legitimacy to the entrepreneur (Stuart et al. 1999). Conversely, co-location provides both the VC and the entrepreneur considerable efficiencies (Porter 2000). Significant amongst these are easier access to richer information about each other, access to informed personnel who find it easier to evaluate and judge intangible aspects of the entrepreneur's proposed technology or service, and access to valuable intermediate inputs (such as specialized technologies, partners, or resources) which may indicate greater probability of the entrepreneur's success (Gorman et al. 1989). Thus, broadly, being co-located provides both the entrepreneur and the VC greater efficiency benefits.

The crux of our argument, however, revolves around identifying three contingency factors that may provide the VC and the entrepreneur the benefits of efficiency and legitimacy *without being co-located*. First, we argue that the *fashionability* of the product or service proffered by the new venture will help reduce the need to co-locate. Prior work in managerial fashion has focused on managerial processes and techniques (Abrahamson 1996); we extend this work by evaluating the effect of fashionable new ventures on the co-location constraint. Second, we consider the amount of rent-providing intellectual property (IP) possessed by the entrepreneur in the form of patents. An increase in IP, through patents or patent applications from the non-co-located entrepreneur, increases the probability of VC payoff (Mann et al. 2006) and could lead to greater non-co-located investments. Third, we consider the entrepreneur's decision to locate the firm near a potential business partner. Part of the VC's evaluation of new

ventures involves the market for the entrepreneur's product / service and the VC's potential exit strategy from its investments in the firm (typically through acquisition or IPO) (Gompers et al. 1999). Both of these issues may be addressed by locating the entrepreneurial venture near a potential trading partner or buyer. Finally, we also explore the effect of these contingency factors in affecting the VC's propensity to fund non-co-located entrepreneurs during the Internet boom years of 1995-2001. Arguably, the effects of mimetic contagion (Lux 1995) as well as easy access to capital (Johansen et al. 1999) during these years will lead to a stronger effect of these contingency factors on the VC's funding strategies; we test for this effect in our context.

We empirically evaluate our model of co-location using data from several sources. The data for co-location and VC funding is taken from the VentureXpert dataset that provides detailed information on venture capital deals in the US over the last thirty years. This dataset has also been used extensively in the literature and also provides information on entrepreneurs, VC firms, and location. For fashionability, we use a "trajectory" measure of discourse based on article counts from the New York Times and the Wall Street Journal to capture the extent to which the focal industry, or product type, is considered fashionable at the time of first-round funding. Business partner co-location is measured by the extent to which the new venture is co-located with the most probable business partners in that industry at the time of funding. Finally, intellectual property is measured by the originality of patents (Hall et al. 2001) awarded to the entrepreneur prior to the time of funding. We use a matched sample methodology, similar to that used by Sorenson and Stuart (2001; 2008), to estimate the model wherein the specific VC-entrepreneur dyad is the unit of analysis. The process of matching, described later in the paper, provides us with a population of 44,057 funded VC-entrepreneur dyads and 233,061 non-funded VC-entrepreneur dyads, between 1985 and 2006. We use a rare events logistic regression to test our research hypotheses (King et al. 2001).

Our work here provides several contributions to the IS literature. First, detailed empirical analysis on VC activity in the IT area is virtually non-existent in the IS literature. Our paper is the first, to our knowledge, to empirically study IT-based new ventures from the perspective of the entrepreneur's technology offerings. This gap is particularly intriguing given the natural marriage between the IT and VC industries observed over the last few decades. 60% of all VC funding in the 1980s and 1990s have been in IT new ventures (Gompers et al. 2001) and the natural structuring of VC funds tend to be built around the observed clockspeed and maturity time-frames of IT ventures. For instance, most VC funds tend to be invested over a 10-year cycle (Gompers et al. 1999), wherein the fund invests in start-ups over the first 5 years while divestment and exit is planned over the second 5-year period. This investment structure works very well with IT-based ventures, given the natural clockspeed of three to four years for a new technology or service offering to hit the market and start showing some traction (Mendelson et al. 1998). Indeed, many VCs consider the IT and telecom markets to be "core" to the VC industry, though research on the technological aspects of VC funding decisions is rare.

The contingency factors that we identify in this paper are equally representative of the natural marriage between IT and the VC industry. The relatively quicker clockspeed observed in IT industries (Mendelson et al. 1998; Mendelson et al. 1999) is reflected in the fast-changing notion of fashionability in technology markets; technological domains tend to come into and recede from public discourse somewhat faster than in other contexts. This is not true in the pharmaceutical industry where drug discovery and time to market are far more drawn out (Gompers et al. 2001). Similarly, being "acquired" by a large firm is a desirable and legitimate exit strategy in IT ventures but not so in other domains such as biotechnology, where strategic alliances are more important and tend to be feasible given the structure of the biotechnology and pharmaceutical industry. Finally, the role of intellectual property, especially in IT markets where appropriation of new technologies can be relatively easy (Huang et al. 2009), is key in ensuring that VC investments in an entrepreneur are protected. High entry barriers and the need for extremely asset-specific personnel investments and equipment (scientists with extensive research experience) make this less of a problem in the case of other industries like pharmaceuticals or biotechnology (Kaplan et al. 2003). Thus, a central contribution of this paper is to highlight the IT-related aspects of VC funding decisions, thereby pushing the envelope on both the IS and VC literatures.

A second contribution of this paper is to highlight the importance of the "correct" location decision for IT entrepreneurs. IT entrepreneurs have more leeway in terms of their location decisions than entrepreneurs in a manufacturing context for several reasons. First, IT resources such as personnel and technologies tend to be available in a more disaggregated form, providing entrepreneurs with significant leeway in terms of their location decisions. Witness the number of universities and technology-oriented training establishments that are located in atypical locations such as Boulder CO, Albuquerque NM, and Austin TX. The impetus from globalization has provided even more choices for the IT entrepreneur in terms of location choices when contrasted with other sectors like manufacturing (Williamson 1976). In addition, greater standardization of technologies, services, and protocols provides greater ease of communication and coordination within IT ventures than non-IT ventures (Clemons et al. 1993). Finally, finding markets and customers in IT ventures is rarely limited by geography, as seen by the growth

of chip design capabilities in Israel or business systems outsourcing market in India. Thus, while IT entrepreneurs have reasons to disaggregate geographically, access to VC funding still tends to be driven by co-locating in a VC hub (Sorenson et al. 2001). In this paper, we show how even this constraint may be lifted in certain cases.

The third contribution we make to the IS literature is a novel methodology to model the VC's funding decision with respect to entrepreneurs. We use this methodology to gauge the extent to which certain non-co-located firms are funded. Fourth, we provide a new set of rigorous measures of the fashionability of IT services / products for the first time in the literature (Abrahamson 1996; Wang et al. 2009). Finally, we explicitly locate our analysis across the years of the Internet boom and show that VC decision-making in the economic "bubble" years deviates significantly from the norm in the non-boom years. This is the first paper in IS, to the best of our knowledge, that addresses this specific question. In the next section, we briefly review prior research on VCs and describe our hypotheses.

THEORY AND HYPOTHESES

The core of our work in this paper pertains to how VC firms make funding decisions amongst early-stage entrepreneurs, with a specific focus on co-location. As a precursor, we describe briefly the primary trends in VC-entrepreneur research in the literature, which can be categorized into three streams of work. The first stream of work pertains to understanding how VC-entrepreneurship ties are formed through funding decisions (Gompers et al. 1999). The VC's focus here is to fund new ventures that fit strategically with the long-term goal of the venture fund and firm (Kaplan et al. 2003) while the entrepreneur's goal is to acquire funding under the most beneficial terms (Gompers et al. 1999). The second stream of research concerns the management of the entrepreneur-VC relationship post-funding. This relationship relies on several mechanisms to reduce information asymmetry and enhance value; such as providing board membership (Lerner 1995), relational governance (De Clercq et al. 2006), and syndication (Wright et al. 2003). In this stage, the VC adds value to the venture through resources and support (Gorman et al. 1989) while the entrepreneur works towards revenues or profitability. The third stream of research addresses termination of the relationship, most significantly through IPOs (Dai 2005), liquidation (White 1990), or leveraged buyout (Birley et al. 1999). The VC's desired goal is either an IPO or an acquisition so that its investment in the venture is provided with robust returns, typically in the range of 20% (Gompers 1996). The first stream of work described above is the most relevant to our analysis and therefore we describe this research in more detail below.

This stream of work pertains to the process by which VCs and entrepreneurs form ties through the provision of funding under different contractual and relational mechanisms (Kaplan et al. 2003). Prior research has studied how VC-specific and entrepreneur-specific factors influence funding decisions and we briefly review this work with respect to the entrepreneur and VC in turn. Focusing on the *entrepreneur* first, we note that the entrepreneur has the option of acquiring funding from alternative sources such as banks (Ueda 2004) or bootstrapping the venture themselves (Liao et al. 2005). However, if VC funding is sought, entrepreneurs need to strategically prepare themselves through the preparation of financial documentation (MacMillan et al. 1987; Schoonhoven et al. 1990) and business plans (Delmar et al. 2003; Zott et al. 2007). In addition, entrepreneurs can use signals to differentiate themselves from other new ventures; these include leveraging social capital and social network memberships (Batjargal et al. 2004; Florin et al. 2003; Nahapiet et al. 1998) as well as demonstrating increased capability of the founding team (Eisenhardt et al. 1990; Zott et al. 2007). Capabilities of the venture team that carry weight with VCs include the presence of a skilled human resources department within the venture (Hellmann et al. 2002), the presence of IP and financial resources (Choonwoo et al. 2001; Mann et al. 2007), and the presence of serial entrepreneurs within the startup team (Baum et al. 2004). Thus, the focus of this research is to better understand which entrepreneur-level characteristics will enhance the probability of a VC choosing to fund the venture.

With respect to *VC-specific* factors, two themes are observed. The first theme relates to the role of social networks in VC decision-making; the presence of a funding syndicate and the strength of the network ties within the syndicate tend to strongly influence a focal VC's funding decisions (Florin et al. 2003; Shane et al. 2002). The presence of a network provides the VC firm with more accurate information about potential entrepreneurs as well as the means to evaluate this information better (Davidsson et al. 2003). Therefore, to the extent that the entrepreneur is located in the VC's network, the probability of funding is higher, even in cases where the entrepreneur has no other signal to differentiate herself (Stuart et al. 1999). This effect is particularly salient when the entrepreneur and VC are co-located; co-location provides greater value when combined with the social network perspective (Sorenson et al. 2001). The second stream of research addresses structural properties of the VC firm on its funding decisions. For instance, some VC firms choose ventures that can then be built into successful firms while other VCs identify well-

prepared entrepreneurs to fund (Baum et al. 2004). Similarly, Gupta and Sapienza (1992) show that some VCs tend to fund new ventures that are similar to the existing portfolios of investments in terms of geographical and industry diversification while others are more expansive in their funding strategies. Finally, VCs fund co-located entrepreneurs, all else being equal, since the costs of pre-investment information gathering, post-investment monitoring and advising is considerably lower (Sorenson et al. 2001). As Gorman and Sahlman (1989) state, VCs spend considerable time on-site with funded firms and participate in decisions made therein; this is simply easier and less costly when the entrepreneur is located closer to the VC than otherwise.

The above discussion provides several observations that are of interest. First, although the literature addresses some entrepreneur characteristics that drive funding, there is little by way of describing the actual product or service the entrepreneur offers. Second, the different factors that influence funding decisions can be simply characterized as instantiations of two higher-order constructs that drive VC decision-making – *legitimacy* and *efficiency*. *Legitimacy* can be obtained through many avenues (DiMaggio et al. 1983) such as innovative business plans, signals of quality and capabilities, presence in key social groups or networks, education and experience of the startup teams, and location choices. An entrepreneur who possesses a strong social network, for example, or possesses a prestigious graduate degree signals legitimacy to the VC, thereby enhancing her chances of acquiring funding. Thus, many of the factors studied in the literature thus far provide legitimacy to the entrepreneur as she seeks funding from VC firms. Similarly, *efficiency* in terms of acquiring accurate and relevant information about new ventures, processing that information to draw conclusions, and the cost of contracting and managing entrepreneurial ventures also drives VC decisions. In a risky environment like venture capital, we argue that *efficiency* is as important a dimension as *legitimacy* in driving VC decisions and that although these constructs are not mutually exclusive, many factors demonstrating both, they are fundamentally distinct.

In the specific case of *co-location*, we note that co-location provides significant benefits to efficiency and legitimacy in the context of VC decision-making. For example, an entrepreneur located closer to the VC's location has, on the margin, greater chances of being included within the VC's social network. Any information available to the VC through his network, by definition, appears more legitimate (Shane et al. 2002). Even if the entrepreneur is not on the VC's network, the chances of information about the entrepreneur being available on the network are higher and hence provide greater legitimacy benefits (Sorenson et al. 2001). Most VC firms tend to be located in clusters or "hotbeds" of economic activity relevant to innovation and entrepreneurship (Gompers et al. 1999). Therefore, the entrepreneur's location provides evidence of legitimacy by virtue of being situated in a cluster, compared to other locations. Finally, location determines the extent to which entrepreneurs may be members of social organizations that confer special status on its members (Batjargal et al. 2004; King 1991). This again provides greater legitimacy to the entrepreneur.

Similarly, there are considerable efficiency gains from co-location for both the VC and the entrepreneur. In seminal work on agglomeration, Porter (2000) and Bresnahan et al (2001) have described the benefits that accrue from location such as knowledge spillovers and access to specialized labor. These factors are particularly helpful to VCs when the entrepreneur is co-located. First, access to specific and intangible knowledge is higher when the entrepreneur is co-located. Access to the co-located entrepreneur provides the VC with deeper knowledge about the entrepreneur with a lower cost of communication and coordination. The presence of skilled managers is another asset that is available through co-location –often, the VC assigns senior management to funded ventures in order to enhance the probability of success (Gompers et al. 1999) and this is easier done when co-located. Intermediate inputs and resources assist in matching VCs and entrepreneurs through the use of incubators and technology transfer programs from universities (Nowak et al. 2000). An example of this is the assistance provided by MIT to start-ups in the Route 128 corridor in the 1990s. Finally, post-funding management of the relationship is easier and more effective when co-located. Agency problems are more easily resolved (Shane et al. 2002), advisory roles are more efficiently managed (Sorenson et al. 2001) and value added services are better provided when co-located (Gorman et al. 1989).

Despite the benefits of co-location enumerated above, we still observe many entrepreneurial IT ventures which are not located in VC "hotbeds" or co-located with their funding VCs. If efficiency and legitimacy are central to VC funding decisions, it is possible that non-co-located entrepreneurs may be able to generate *alternative* sources of efficiency and legitimacy that allow them to still be funded by VC firms. In theoretical terms, there may be other factors which will substitute for the legitimacy and efficiency offered through co-location, in the absence of the constraint of co-location. We identify three such factors and propose that they contribute towards reducing the co-location constraint. We also argue that these effects are moderated by the presence of the Internet boom between 1995 and 2000. We present our conceptual model of entrepreneur-VC co-location and propose specific hypotheses next.

Fashionability of IT

Abrahamson's seminal work on managerial fashion provides the groundwork for our investigation into IT product fashionability. A management fashion is a "relatively transitory collective belief, disseminated by management fashion setters, that a management technique leads rational management progress" (Abrahamson 1996). These fads are not simply trivial occurrences which appear casually over time (Czarniawska-Ioerges et al. 1990) but serve as important demonstrators of legitimacy within upper management of the organization. Simply put, managerial fashions tend to provide greater amounts of legitimacy to both the proponents of such fashions and the consumers of the fashions. Managerial fashions differ from aesthetic fashions, such as the garment industry, in that managerial fashions must not only be aesthetically pleasing but also provide answers to economic and technological problems (Abrahamson 1996). Organizational stakeholders also see a need, on the part of managers, to maintain a level of fashionability within their organizations (Meyer et al. 1977). This suggests that an entrepreneur who creates a "fashionable" product or service, in the sense that the specific technology receives greater visibility at a specific period of time despite no obvious technical superiority, stands to gain from the market. For a VC, the fashionability of the specific technology and/or product incorporated within the entrepreneur's venture could be an important demonstrator of legitimacy (Sorenson et al. 2008) and therefore, the impetus to fund such an entrepreneur will be higher, *ceteris paribus*. As a direct result of this increasing willingness to invest in such ventures, the propensity for the VC to fund non-co-located ventures will be, on the margin, higher if the venture's technology or service appears fashionable. In other words, the fashionability of a product or service can substitute for the loss of legitimacy the entrepreneur may suffer from non-co-location.

From the perspective of efficiency, fashionable IT also tends to provide its stakeholders a more efficient vehicle for information gathering and knowledge acquisition (Wang et al. 2009). As the public perception of the fashionability of a given technology increases, the inevitable result is an increase in discourse regarding said technology in the public and private domain (Abrahamson 1996; Abrahamson et al. 1999). This increase in discourse creates a more mature *organizing vision* (Ramiller et al. 2003; Swanson et al. 1997), the collective view of the IT applications use, within organizations. As a piece of technology becomes more fashionable, managers will discuss it more and increase their own understanding of it. This increased discourse will lead to increased knowledge dissemination, increased resource availability, and make it easier for managers to access market information. Prior research suggests that VCs gather information about their potential investments from a multitude of sources, both tangible and intangible (Gompers et al. 1999); as the level of discourse about fashionable technologies is higher, more knowledge is available for VCs. The access to knowledge, trained personnel and intermediate inputs is higher for fashionable technologies or products as well, which in turn leads to a greater propensity by the VC to fund new ventures with such products or services. To the extent that greater visibility provides efficiency gains through greater discourse, VCs will tend to fund non-co-located entrepreneurs.

We do not suggest that efficiency or legitimacy possess primacy over each other. Rather, we argue that fashionable IT confers legitimacy and efficiency and these effects will be particularly stronger in the case of non-co-located entrepreneurs since fashion may substitute for co-location. Therefore:

H1: The probability of funding a non-co-located entrepreneur by a VC in a given year increases, compared to co-located entrepreneurs, when the entrepreneur's proposed product or service is observed to be fashionable.

Business Partner Co-location

The notion of co-location with business partners is similar to the VC-related co-location constraint but is distinct in that it provides a potential benefit to the entrepreneur on two dimensions. First, locating near a prospective business partner provides a potential customer that will enhance the viability of the entrepreneur's product or service. This co-location also helps since, in many cases, the service or product may need to be customized to suit the customer's needs, which is easier when the customer is proximate. Second, large business partners often provide a viable exit strategy for the entrepreneur through the option of acquisition (Gompers et al. 1999). Anecdotal evidence in the technology sector supports this notion of localized acquisition. In 2009, Cisco Systems acquired two major IT firms (Tidal Software and Pure Digital Technologies for \$105M and \$600M respectively) both of which were co-located with Cisco Systems. Similarly, 44% of the firms acquired by Cisco between 1993 and 2001 were located in Northern California (Mayer et al. 2004). Thus, for an entrepreneur, electing to locate near a large and viable business partner provides significant value, both from legitimacy and efficiency perspectives.

We propose that co-locating with large potential business partners who may also be potential purchasers will serve as a substitutable demonstrator of legitimacy. Co-location with business partners increases the

entrepreneur's access to avenues of success by creating a more effective means for a merger or acquisition. Thus, the presence of a business partner signals intention and the capability to service the business partner as well as provides the VC with greater information about the legitimate aspirations of the entrepreneur to consider an acquisition as an exit strategy. Co-locating with business partners also provides the entrepreneur with considerable efficiency benefits. Co-location provides enhanced access to specialized knowledge, both explicit and tacit knowledge, regarding business conditions or internal strategies within the customer organization. This information is not easily accessible to other entrepreneurs because agglomerating technical assets between firms traditionally increases the knowledge base of both firms (Ahuja et al. 2001). Extant literature suggests that suppliers and customers are naturally driven to co-locate to increase their knowledge base through spillovers, as well as enhance access to specialized and trained labor, thereby reducing coordination and communication costs (Alcácer et al. 2007; Jaffe et al. 1993). Therefore, co-locating with potential business partners allows the exploitation of the joint knowledge base, increases the chances of acquiring a large customer and hence a viable exit strategy through acquisition. Each of these factors makes such an entrepreneur more attractive to a potential VC, particularly if the VC is not co-located. We again do not conjecture about the dominance of legitimacy or efficiency in proposing the following hypothesis:

H2: The probability of funding a non-co-located entrepreneur by a VC in a given year increases when the entrepreneur is co-located with a highly visible potential business partner, compared to entrepreneurs who are co-located with the VC.

Possession of Intellectual Property

One of the critical aspects of VC evaluation of entrepreneurs is the extent to which the technology or service offered by the entrepreneur can provide rents in the form of revenues or sales. These judgments are often based on relatively ill-formed technology or service descriptions at the time of finding (Gompers et al. 1999). However, the greater the extent to which the entrepreneur can indicate possession of valuable and new intellectual property (IP), the greater is the potential payoff for the VC from that venture and the lesser the chances of misappropriation by other entities (Huang et al. 2009). While many reasons for the importance of IP have been proposed, usually measured through the possession of patents (Hall et al. 2005), the effect of IP as it relates to co-location and VC funding has not been addressed in detail. There are several reasons why entrepreneurs may seek patents or file patent applications during the funding cycle. Possession of new or innovative IT solutions incentivizes patent applications as it precludes imitation by rival firms (Bigus 2006). Similarly, the possession of IP increases the profit margin of firms entering the market by creating effective monopolies (Tyebjee et al. 1984). This notion fits most effectively in our investigation as patent strategy can be critical to entrepreneurs during the initial stages of funding (Kaulio 2003; Mann et al. 2006). They are of particular importance in software and IT firms (Mann et al. 2006) because of the increased ability of firms to imitate competitors in industries with purely digital products.

From the perspective of efficiency, possession of IP provides several benefits. Most notable of these is the prevention of expropriation of the technology by competitors (Bigus 2006). Patent grants also reduce transaction costs for the entrepreneur (Gans et al. 2002), while simultaneously differentiating the product (Tyebjee et al. 1984), and increasing the profit margin by creating an effective temporal monopoly. Possession of IP also expedites the ability of the entrepreneur to bring her firm and product to market because the process of gaining legal protection for the idea has already been completed (Gans et al. 2002). Possession of patents also creates strong legitimizing signals to the VC. Beyond formalizing the information regarding the innovation, the possession of a patent sends a clarifying signal regarding the technology to the VC (Gans et al. 2002), increases the probability of the entrepreneur moving through the entire VC lifecycle (Mann et al. 2006), and increases the probability of repetitive patenting (Blundell et al. 1995; Blundell et al. 2002) with implications for the return on investments for VC. Consistent with the previous two hypotheses, we assert that increasing the presence of patent grants held by the entrepreneur at or before first funding will have a proportionally greater effect on the probability of funding non-co-located entrepreneurs.

H3: The probability of funding a non-co-located entrepreneur by a VC in a given year increases when the entrepreneur possesses highly original intellectual property in the form of patents, compared to co-located entrepreneurs.

Effect of the Internet Boom

At its simplest, the Internet boom of 1995-2000 can be described as an instantiation of mimetic contagion (Lux 1995), where organizational decisions reflect strong mimicking behavior (herding) across groups, whether based on a rational, boundedly rational, or faddish causal mechanisms (Greve 1998). In this sense, the Internet boom exhibits many of the characteristics of other economic bubbles of the 19th and 20th centuries (Johansen et al. 1999). These

periods have all been characterized by strong, and self reinforcing, imitative behaviors between participants (Gori et al. 2005). In this particular case, the Internet boom was accompanied by low interest rates (Bernanke 2010), leading to exceptionally low cost to acquire capital for VCs (Doms 2004). This combination of low capital cost and a mimetic push to invest in IT, resulted in an increased speed on the part of VCs to invest (Doms 2004). In effect, we see an overall acceleration of the process by which judgments of potential value from new IT ventures needed to be carried out, intense competition amongst VC firms, and a great increase in access to cash. Of course, as pointed out by several commentaries on the Internet boom, this process also led to many questionable ventures receiving funding (Porter 2001). However, it also enhanced the value that might accrue from an entrepreneur's ability to issue a clear signal to potential VCs. Clearly, co-location, with the VC, being one such signal, would have been highly desirable. However, in the absence of co-location, the moderators we study, as alternative indicators of quality, would have provided greater value to the entrepreneur by enhancing the probability of funding. We posit that the increased speed of investment, coupled with the need to "follow the herd" to avoid reputation loss (Scharfstein et al. 1990) would lead to an enhanced effect of our proposed moderators on the probability of receiving funding in the absence of co-location.

From a legitimacy viewpoint, the focal VC would observe a multitude of investments in IT firms by other VCs during the boom, of which many would be in non-co-located entrepreneurs. The presence of strong mimetic contagion in the industry would suggest that such non-co-located investments would appear systemically more legitimate during this time period. Indeed, VCs stood to be delegitimized, and suffer a reputational penalty, if they were observed to not invest in IT ventures simply because of non-co-location (Scharfstein et al. 1990). In such a situation, any signal that a non-co-located entrepreneur was able to issue that suggests increased legitimacy (such as the presence of a fashionable technology or an original patent) would receive greater valuation and hence, greater probability of funding. In effect, the herding behavior observed during the Internet boom magnifies the extent to which legitimizing signals would influence VC funding decisions to fund non-co-located entrepreneurs.

A similar argument can be made from the perspective of efficiency for the duration of the Internet boom. As discussed above, during this period, the time available for the VC to make funding decisions was significantly shortened (Doms 2004). In addition, the competition between VCs looking to fund new ventures during the Internet boom adds to the intensity of time pressure. Consequently, the VC becomes more dependent on unambiguous and non-tacit signals of quality (such as potential customers or patents) in his or her funding decisions. The effect of this decreased decision-making horizon is compounded for the non-co-located VC, who loses the modest ability to gather and quantify tacit quality signals about entrepreneurs (given the lack of networks, knowledge spillovers and infomediaries in the non-co-located context). The net effect of these dynamics is a significant increase in the VC's dependence on unambiguous signals as a source of efficiency. In summary, we argue that during the Internet boom, the VC's dependence upon our identified moderators will rise from both a legitimacy and an efficiency perspective. Therefore, we propose:

H4: The moderating effects proposed in Hypotheses 1 through 3 will be significantly stronger in effect size during the Internet boom years.

RESEARCH METHODOLOGY

Data Collection and Coding

To test our hypotheses concerning the co-location of the entrepreneur and VC, we draw on several resources for data. The specific empirical model we test is shown in Figure 1. Our dependent variable, funding provided to the entrepreneur from the VC, is derived from round level data contained within the VentureXpert dataset. We apply several restrictions in our sampling to facilitate the analysis. First, we only use entrepreneurs based in the United States as the notion of co-location is more clearly defined in the US. Second, we only include first-round funding in our analysis to mitigate the effects of confounding conditions established during continued VC-entrepreneur interactions over subsequent funding rounds. Although our arguments are possibly valid for multiple funding rounds, the most apparent effect of legitimacy and efficiency should occur when the entrepreneur is seeking first-round funding. Finally, we look at only IT entrepreneurs. While entrepreneurs can often be funded by groups of VCs or several VCs in each round, each VC firm in effect makes independent decisions regarding the form and amount of investments. Therefore, we use entrepreneur-funding VC dyads as our unit of analysis. Applying these filters provides us with 44,057 distinct entrepreneur-VC dyads for first-round funding between 1985 and 2006, consisting of 22,711 entrepreneurs funded by 3351 VCs. Note that a single VC can fund more than one entrepreneur and an entrepreneur is often funded by more than one VC in the dataset.

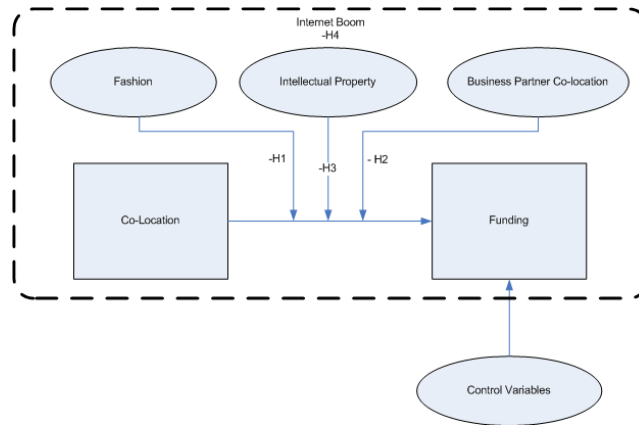


Figure 1: Research Model for Entrepreneur-VC Co-location

The data from VentureXpert, however, is incomplete in that it provides data only on realized ties between entrepreneurs and VCs. As we require ties that may have resulted, but did not, we need to create a matched sample of unrealized ties. Following Sorenson and Stuart’s (2001; 2008) methodology we create this matched sample which contains a series of funding relationships that could have occurred but were *not* realized. The creation of this matched sample is done as follows. In each year, we match VCs which have funded an entrepreneur with every other entrepreneur, in the same industry, who was not funded by that focal VC but were funded by another VC. We effectively assume that the focal VC chose to not fund those entrepreneurs who were funded by other VCs. As entrepreneurs tend to contact many potential financiers and are funded only by a few VCs (Kirsch et al. 2009) this assumption is not unreasonable (Sorenson et al. 2001). In effect, we match on year of funding, specific technology space and the existence of funding by that VC but, to another entrepreneur in that year. The specific technology space is denoted by matching on the industry subclass two (ISC2). ISCs are an annotation within VentureXpert that provides increasing levels of granularity regarding the specific industry or technological domain each entrepreneur is operating in. ISC2 is the second most granular and includes 69 different classifications. This methodology ensures that the prospective VC has both capital to fund entrepreneurs (as it has elected to fund *someone*) and that the VC is open to funding an entrepreneur in the specific technology space of the target entrepreneur. While it is possible to consider every possible dyad that could be created through matching in a year, Breslow and Day (1980) advocate the simplicity of a 1:1 match while Self and Prentice (1988) show little gains beyond a 1:5 ratio in simulations. Therefore, consistent with Sorenson and Stuart (2008) and Jensen (2003), we impose a maximum 1:10 ratio of possible unrealized ties to every realized tie. In some cases, there are less than 10 possible matches based on the matching criteria. The final dataset provides us with a total of 223,061 unrealized matches, with an effective ratio of 1:5 funded to unfunded ties. Funded ties are denoted by 1 while unfunded ties are 0.

Variable Descriptions

Co-location at the entrepreneur-VC dyadic level is derived using the zip code information for both parties provided in VentureXpert dataset. We match the entrepreneur and VC zip codes to the 176 economic areas (EA) in the US provided by the Bureau of Economic Analysis (Alcácer et al. 2007). Each EA encompasses several zip codes; the United States Postal Service provides the most central zip code for each EA. We match the zip code of the entrepreneur and the VC respectively to the most central zip code in each EA using a Haversine formula (Gellert et al. 1989). The Haversine method uses the latitude and longitude associated with each zip code and the central zip code for the EA. Once the corresponding EA for the entrepreneur and the VC in the dyad is established, we code the *colocation* variable as 1 if the two EAs match and 0 if the EAs do not match.

Our first independent variable, fashionability, is derived from news article counts based on the company industry sub class three (ISC3) variable in the VentureXpert dataset. Fashionability is typically described as a measure of the discourse that is prevalent in the public domain about a certain object, concept, or artifact (Abrahamson 1996; Sorenson et al. 2008). As a standard measure of fashionability is not yet available in the IS literature, we use a proxy which measures the extent of discourse on a specific technology or service at the time of decision-making. Using a web crawler, we retrieved information from the Wall Street Journal (WSJ) and the New York Times (NYT) to determine the number of articles, per year, which contained the ISC3 term associated with the new venture in each periodical. Our reasoning is that the extent to which a certain technology appears fashionable

should be directly correlated with the extent to which discourse for that technology appears in the popular press. There are two possible ways in which fashionability may be measured. One option is to gather the absolute count of the number of articles in the WSJ and the NYT that mention the ISC3 term representing the stock of usage in public discourse. However, this may not represent fashionability, as “social cognition research has shown that attending to an object reaches threshold levels above which the object becomes “taken-for-granted,”” in that further exposure at the same rate does not further increase attention (Pollock & Rindova, 2003, p. 633). It is important to note at this point that the discourse observed need not necessarily be positive for several reasons. First, much of the observed discourse in the technology domains tends to be “objective”, in that editorial ideologies are observed very rarely. This assumption of objectivity in the print media is traditionally violated only in political coverage (Mark 2006). Second, there is a significant amount of information conveyed by discourse even if the tone of the discourse is negative (Niven 2003). While the author may view the subject matter negatively, he or she still contributes to the organizing vision of the technology in her discussion. As fashions are transient there may be little effect from negative discussion in the popular press. Third, evidence from marketing in the context of movie reviews show that as reviews serve as a leading indicator for later purchasing (Eliashberg et al. 1997) there is little chance that the immediate discussion will have an effect on later purchasing as the fashion will no longer *be* fashionable. Thus, while tone of discourse may have some influence on VC decision-making, we argue that the quantity and relative increase of discourse will have the dominant effect. Therefore, we use a method which focuses on the extent to which discourse on the technology changes in the years leading up to the funding decision. We accordingly collect article counts for the new venture’s ISC3 in both publications (NYT and WSJ) three years prior to the funding decision. T1 is the article count for the year prior to funding, T2 is two years prior, and T3 is three years prior. We first calculate the expected level of discourse on the technology for T1 by extrapolating observed discourse levels in T2 and T3 using the following formula:

$$T1_{\text{predicted}} = [(T2/T3)] \times T2$$

$T1_{\text{predicted}}$, is the discourse level expected based on observed trends. We compare the actual discourse T1 to $T1_{\text{predicted}}$ and code the *fashion* variable as a ratio of T1 to $T1_{\text{predicted}}$. If the actual article count T1 is higher than the estimated count then the entrepreneur’s technology is more fashionable while if it is smaller, fashionability is less. Thus, technologies experiencing a surge in discourse have a value of (T2/T3) that is greater than 1 while those with a reduction in discourse have values strictly lesser than 1. The nature of this measure is therefore highly positively skewed, keeping with the theoretical notion of fashion. This operationalization is superior, when compared to a simple logarithm of counts, not only for the reasons cited by Pollock and Rindova (2003), but also because the observed fashion spikes emerge and retreat quickly as the extant literature dictates they should (Baskerville et al. 2009; Currie 1999). A moving window of three years is small enough to be meaningful but long enough for discourse on a specific service or technology to have measurable impact. This measure also allows us to evaluate the velocity of change in public discourse with respect to the focal technology or service. This methodology provides us with three measures of fashion, one each from WSJ and NYT and a third cumulative fashionability measure based on the average of the two publications (*fashion_cum*). The measures are appropriately lagged by one year to provide an estimate of fashionability when the funding decision was being considered by the VC. We note at this point that the measure does not imply that the New York Times and Wall Street Journal are actually *driving* VC investments in entrepreneurs. Rather, our assertion is that these media outlets will be reflective of the discourse occurring in the US and therefore, serve as a proxy for the fashionability of products and services observed amongst new IT ventures. Our second independent variable, co-location with a potential business partner, is derived from several datasets. The notion of a potential business partner that may either be a primary customer or a potential buyer requires us to identify large and successful firms in the entrepreneur’s technological domain. To start, we use the Fortune500 list published by Money Magazine between 1984 and 2005. The Fortune500 list was selected to ensure both visibility of the potential purchaser to the entrepreneur as well as sufficient financial resources for acquisition of the entrepreneur’s firm. The firms on the Fortune500 list are matched with the CompuStat dataset to extract relevant firm-level information. Using the NAICS classifications which identify IT firms, the relevant subset of Fortune500 firms are extracted. This process provides us with a list of leading IT firms that, in the year previous to the funding decision, may have had both the visibility and resources to act as a potential business partner. We then followed the procedure described above using the BEA’s EAs and the Haversine method to determine co-location between the entrepreneur and the business partner. The *bpcolocated* variable captures the number of businesses from the Fortune500 subset that the entrepreneur is co-located with, and 0 if none of these firms are co-located.

Our final independent variable, intellectual property, is derived using patent grants derived from the Google Patents application and the NBER Patent Database (Hall et al. 2001). For each entrepreneur in our dataset we

determine the number of patents to which the entrepreneur appears as the assignee prior to first-round funding. While it is possible to use patent counts as a measure of IP, Hall et al (2001) argue that in many cases, patent counts, by themselves, may not be informative enough to quantify innovative output. We therefore focus on the extent to which each patent is observed to be an original contribution to the field. Hall et al (2001) provide a measure of originality of each patent, which is measured by the extent to which each patent cites other patents belonging to different patent classes. The underlying logic is as follows: if a patent references previous patents in a wide variety of patent classes, it is reasonable to conclude that by bringing many different knowledge bases together, the focal patent represents more innovative and original work. In comparison, a patent that only cites a narrow set of patent classes may represent incremental but not necessarily original innovative activity. The originality metric is therefore operationalized as a Herfindahl index of the patent classes cited by each patent (see Hall et al (2001), p.21). This measure has also been used in subsequent research to ratify the extent to which certain patents contribute more to innovation and market value (Hall et al. 2005). Therefore, we use the originality of the patent granted to the entrepreneur prior to first-funding funding in our analysis. Hall et al (2001) indicate that the average originality of patents granted between 1975 and 1999 has increased and therefore, following their suggestions, we normalize the base originality measures by average originality per year accordingly. In addition, in cases where the entrepreneur has more than one patent grant prior to funding we average the normalized originality scores to account for the extent to which the entrepreneur possesses truly innovative IP. This variable is called *patent_originality*.

When comparing the effect of these proposed moderators inside and outside the Internet boom, we demarcate the boom subsample by extracting all entrepreneur-VC dyads formed during the years of 1996 to 2000 (inclusive). We define the beginning of the internet boom as the first full year after the Netscape IPO (August 9, 1995) and the conclusion is set at the first full year after the NASDAQ composite market index peak (March 10, 2000). Robustness checks to expand or contract this period were conducted and revealed little variation in the effect of the Internet boom on the results from the analysis.

Table 1: Summary Statistics and Correlations
N = 267118

		Mean	Std. Dev.	-1	-2	-3	-4	-5	-6	-7
-1	funded	0.164	0.370							
-2	firm_colocation	0.080	0.270	0.165						
-3	bpcolocated	0.337	0.470	0.017	0.199					
-4	firm size	1493.698	3685.000	0.077	0.003	0.004				
-5	firm age	11.290	13.210	0.163	0.000	-0.015	0.199			
-6	herf	0.701	0.280	-0.181	-0.034	-0.006	-0.070	-0.212		
-7	fashion_cum	8.949	192.550	-0.002	0.012	0.035	-0.003	-0.005	0.006	
-8	patent_originality	0.029	0.122	0.015	0.011	0.029	-0.001	0.011	-0.009	-0.009

We control for several other variables in our analysis, all of which may affect the extent to which a VC makes funding decisions. The first two variables, *firm size* and *firm age* inform us as to the number of years the VC has been operating and net financial investment of the VC over that duration. Our second set of control variables; *vc_concentration* and *entre_concentration* provide a measure of the concentration of entrepreneurial and VC activity in the respective economic activity areas of the entrepreneur-VC dyad. These concentrations are operationalized as the total number of distinct VCs or entrepreneurs either receiving or providing funding in the EA by year. Our final variable, *herf*, is a Herfindahl Index of the industries the VC has invested in over the previous five years of the funding decision to control for propensity for diversification by the VC. This measure is based on the ISC2 categories of the VC's investments over the previous five years. We also include a set of year dummies for years 1986-2006 with 1985 being the baseline category to account for varying economic conditions over the time-period of our study. Our final set of control variables are the individual ISC2s that exist in the VentureXpert dataset. The summary statistics and correlation table for the data are shown in Table 1.

Data Analysis

The primary regression analysis used in analysis is a rare events logistic (*relogit*) (King et al. 2001; Sorenson et al. 2001) specification as the dependent variable is binary. The standard logistic model yields biased estimates when the proportion of positive outcomes in the sample does not match the proportion of negative outcomes in the population or is extremely rare compared to the number of negative outcomes. The *relogit* is a weighted least squares estimation which corrects the bias in coefficients that arises in such cases. This methodology is used in social science research

where the outcome consists of rare events such as military coups or natural disasters (King et al. 2001). In our case, the 1:5 ratio of positive to negative outcomes provides a suitable context for using the rare events logit. However, we also use the logit and probit specifications to check the robustness of our results and the results are broadly consistent¹. The baseline relogit model we specify is as follows. The three independent variables *fashion_cum*, *bpcolocated* and *patent_originality* are introduced as determinants of the probability of funding for an entrepreneur-VC dyad along with control variables.

$$\text{Probability (funded=1)} = f(\text{colocation, fashion_cum, bpcolocated, patent_originality, firm size, firm age, vc_concentration, entre_concentration, herf, ISC2 controls, year controls}) \quad (1)$$

In equation (1), the fashion variable used is the cumulative data captured from the NYT and WSJ. The results of this baseline model are shown in column 1 of 4 in Table 2. In subsequent columns, we introduce interaction terms between the three moderators and the collocation term, one at a time to estimate the extent to which the co-location constraint is reduced by the three moderators. Note that our hypotheses pertain primarily to testing whether the effect of co-location on funding changes based on the three moderators, i.e. the relevant coefficients of interest are the interaction terms only. Because of the matched sample methodology, caution should be used in interpreting the direct effects of the VC-firm variables from equation (1) as the construction of the matched sample may induce spurious correlations between these variables and the probability of funding. Interpreting the entrepreneur-firm direct effects is less prone to bias but should be approached with care. Our focus is on interpreting the coefficients of the interactions which are estimated without bias (Sorenson et al. 2001). Our first interaction model is to illustrate the importance of business partner co-location as it is interacted with co-location and the results are provided in column 2 of 4 in Table 2. Along similar lines, interactions of cumulative fashionability and average patent originality are shown in columns 3 and 4 of Table 2.

In order to show the effects of the Internet boom, we extract the dyads formed during the boom years and run a similar model from above on this subsample. These results are shown in Table 3 and are structured along the same lines as Table 2. As in Table 2, the baseline model is shown in column 1 of Table 3 and the respective interactions with the moderators are shown in columns 2, 3, and 4 respectively in the table.

RESULTS AND DISCUSSION

We first consider the results from the baseline model shown in column 1 of Table 2. Consistent with prior work, we see that co-location is strongly associated with funding (Sorenson et al. 2001). The over-all model fit is significant with a pseudo-R² of 0.12, again consistent with prior work (Sorenson et al. 2008). As expected, the presence of a co-located business partner and the presence of intellectual property increases the probability of funding, all else being equal. The direct effect of fashion is negative, which is surprising, suggesting that an increase in the fashionability leads to lower probability of funding. It is possible that VCs tend to lead fashion in certain cases, where they act on technology ventures that are on the cusp of fashionability (thus showing a negative relationship between present fashion and the funding decision). However, given the construction of our sample, these results have to be interpreted with care. We focus on the extent to which the three variables moderate the effect of co-location on funding, our primary hypotheses, below.

¹ Results available from the authors upon request

Table 2: Relogit Model of Entrepreneur-VC Co-location
 Regression Coefficients with standard errors in parenthesis
 Dependent Variable = Funding (0 for not funded, 1 for funded) - Yearly and ISC2 Control Variables Omitted

	Base Model	BP – Co-location Interacted	Fashion Interacted	Intellectual Property Interacted
firm_colocation	1.7278 (0.0187) ***	1.8609 (0.0243) ***	1.7302 (0.0187) ***	1.7395 (0.0191) ***
bpcolocated	0.0188 (0.0095) *	0.0187 (0.0095) *	0.0188 (0.0095) *	0.0188 (0.0095) *
fashion_cum	-0.0001 (0.0000) ***	-0.0001 (0.0000) ***	0.0000 (0.0000) ***	-0.0001 (0.0000) ***
patent_originality	0.1321 (0.0255) ***	0.1324 (0.0255) ***	0.1321 (0.0255) ***	0.1617 (0.0272) ***
herf	-1.6278 (0.0203) ***	-1.6281 (0.0203) ***	-1.6277 (0.0203) ***	-1.6276 (0.0203) ***
ent_concentration	-0.0004 (0.0000) ***	-0.0004 (0.0000) ***	-0.0004 (0.0000) ***	-0.0004 (0.0000) ***
vc_concentration	-0.0046 (0.0001) ***	-0.0045 (0.0001) ***	-0.0046 (0.0001) ***	-0.0046 (0.0001) ***
firm age	0.0219 (0.0004) ***	0.0219 (0.0004) ***	0.0219 (0.0004) ***	0.0219 (0.0004) ***
firm size	0.0000 (0.0000) ***	0.0000 (0.0000) ***	0.0000 (0.0000) ***	0.0000 (0.0000) ***
bpcolocated x firm_colocation		-0.1706 (0.0205) ***		
fashion x firm_colocation			-0.0002 (0.0001) **	
patent_originality x firm_colocation				-0.1873 (0.0698) ***
constant	-0.9536 (0.0390) ***	-0.9704 (0.0393) ***	-0.9540 (0.0390) ***	-0.9556 (0.0390) ***
N	267118	267118	267118	267118
Pseudo R ²	0.1235	0.1238	0.1238	0.1238
Chi ²	29540.36	29611.67	29547.11	29548.2

Significance Levels – 0.001 ‘***’ 0.01 ‘**’ 0.05 ‘*’

We first consider the results with respect to fashionability from Table 2. The results for the cumulative fashionability variable (column 3) provide clear support for Hypothesis 1. The effect of fashionability tends to increase the probability that a non-co-located entrepreneur receives funding from a VC and the chi-square statistic shows a significant increase in value. This effect is higher for non-co-located entrepreneurs than for co-located entrepreneurs. We see similar results with respect to the potential business partner variable (column 2). If there are business partners located within reach of the entrepreneur, matched by industry type and available resources, the probability of acquiring funding even if non-co-located increases significantly, thereby supporting Hypothesis 2. Finally, the results with respect to patent originality also support Hypothesis 3 as we see a significant and negative association between the originality of patents granted to the entrepreneur, co-location, and first-round funding (column 4). The results show that an original and novel patent is of greater importance when the VC and the entrepreneur are not co-located in enhancing the entrepreneur’s probability of receiving funding.

Hypotheses 4 pertained to the effects of the moderating variables, which we argued would be greater in magnitude during the Internet boom. We therefore compare the coefficients on the interaction terms for each of the moderators shown in Table 2 to those in Table 3. We find that the effects, statistically verified by the Chow’s test, are clearly stronger during the boom years, as witnessed by the large increase in the coefficients of the interactions. The coefficient pertaining to the moderating effect of business partner co-location on the effect of co-location on funding increases from -0.17 in the full sample to -0.41 (p<0.01) in the boom years. Similarly, the interaction with respect to the presence of intellectual property increases from -0.18 in the full sample to -0.28 (p<0.01) in the boom time. The interaction effect for fashion does not change, however, and remains consistent with those observed across the sample. In summary the results indicate partial support for Hypothesis 4.

Table 3: Relogit Model of Entrepreneur-VC Co-location during Internet Boom

Regression Coefficients with standard errors in parenthesis

Dependent Variable = Funding (0 for not funded, 1 for funded) - Yearly and ISC2 Control Variables Omitted

	Base Model	BP – Co-location Interacted	Fashion Interacted	Intellectual Property Interacted
firm_colocation	1.9051 (0.0256) ***	2.3569 (0.0382) ***	1.9105 (0.0257) ***	1.9223 (0.0262) ***
bpcolocated	-0.0131 (0.0111)	0.0707 (0.0117) ***	-0.0132 (0.0111)	-0.0128 (0.0111)
fashion_cum	-0.0001 (0.0000) ***	-0.0001 (0.0000) ***	0.0000 (0.0000)	-0.0001 (0.0000) ***
patent_originality	0.1914 (0.0359) ***	0.1916 (0.0358) ***	0.1913 (0.0359) ***	0.2345 (0.0380) ***
herf	-1.7146 (0.0248) ***	-1.7195 (0.0249) ***	-1.7146 (0.0248) ***	-1.7144 (0.0248) ***
ent_concentration	-0.0004 (0.0000) ***	-0.0005 (0.0000) ***	-0.0004 (0.0000) ***	-0.0004 (0.0000) ***
vc_concentration	-0.0043 (0.0001) ***	-0.0041 (0.0001) ***	-0.0043 (0.0001) ***	-0.0043 (0.0001) ***
firm age	0.0259 (0.0006) ***	0.0259 (0.0006) ***	0.0259 (0.0006) ***	0.0259 (0.0006) ***
firm size	0.0000 (0.0000) ***	0.0000 (0.0000) ***	0.0000 (0.0000) ***	0.0000 (0.0000) ***
bpcolocated x firm_colocation		-0.4163 (0.0263) ***		
fashion x firm_colocation			-0.0002 (0.0001) ***	
patent_originality x firm_colocation				-0.2890 (0.0995) ***
constant	-0.9643 (0.0397) ***	-0.9865 (0.0398) ***	-0.9647 (0.0397) ***	-0.9678 (0.0398) ***
N	160210	160211	160212	160213
Pseudo R ²	0.1355	0.1373	0.1356	0.1356
Chi ²	20446.88	20716.29	20457.99	20456.54

Significance Levels – 0.001 ‘***’ 0.01 ‘**’ 0.05 ‘*’

The analysis we present here is subject to certain limitations. First, the structure of the VentureXpert database does not provide information about the entrepreneurs that were not funded by any VC. This is clearly a data limitation. We use a well-accepted methodology from extant work on venture capital funding decisions to identify a set of potential entrepreneurs who could have been funded but were not. However, it is still possible that the set of non-realized ties are not representative of non-realized ties in the real world; this remains a limitation of the methodology. Second, we choose to operationalize fashion using two mainstream periodicals in the US; however, this is still a proxy for how fashionability of technologies and products is established. A more detailed study of how technological fashions may be formed is warranted. Third, our measure of fashion only considers article counts and not the tone of the article, i.e. whether it was positive or negative. While literature from journalism suggests that this may not be a problem in this context, further research in the tone of discourse will be useful in examining this issue. In the context of archival data (such as our study), the ability to contextualize and measure tone is limited. Fourth, our measure of business partner co-location is coarse since as we are limited by the NAICS categories assigned by archival data to firms. A cleaner measure for these constructs is necessary to tease out these effects. Fifth, our analysis considers the co-location behavior at a fairly abstract level, given the data available. We do not account for other factors that may influence the co-location constraint, such as the VC firm having multiple offices, one of which may be near the entrepreneur’s location. Finally, we do not consider the effect of the degree of non-co-location as our analysis does not distinguish between entrepreneurs who are just outside the VC’s EA and entrepreneurs who are the other side of the country. We only account for the VC’s main office location. In most cases, this is not a problem since most VC firms tend to have few branch offices. However, our measure of co-location is relatively simplistic and the results have to be evaluated with these caveats in mind.

CONCLUSION

In this paper, we start with the well-established fact that location matters in the context of technology entrepreneurs searching for VC funding (Sorenson et al. 2001). However, there are many reasons for why entrepreneurs may choose to locate themselves away from VC hotbeds, such as the availability of local resources, access to markets, or favorable regulatory environments. In such situations, are there factors that may still allow her to gain early-stage funding from VCs who are not co-located? Using the causal mechanisms of legitimacy and efficiency, we identify three such factors – fashionability, access to a potential business partner, and possession of IP, and show that these

contribute towards reducing the co-location constraint. Post-hoc analyses provide more nuanced results that show the way for more work in this area but the underlying logic receives support – that an entrepreneur who is not co-located with her VC can still acquire funding under certain contingencies.

There are some policy implications that arise from this work. Consider, for instance, the developments within the state of New Mexico in creating entrepreneurship opportunities (Barrett 2008). New Mexico is unique in that it has Los Alamos National Research Laboratory as well as Sandia National Laboratories located within the state. However, the state is not known for its entrepreneurship activities nor is it known to be a VC “hotbed”. This has limited the extent to which new ventures start and thrive in the state. Despite this, the state has recently been working with VC firms to increase the level of investments in local entrepreneurship, specifically around the research labs. The program, dubbed Springboard, has been set in motion to increase the level of localized capital available to small businesses in New Mexico in the hope of creating a new high tech hub in the greater Santa Fe area. This is being carried out through the conventional avenues available to governments such as tax subsidies, state research grants, and support for research activities. Our results have direct implications for policy-makers within the state who desire increased participation from VC in new ventures located in New Mexico. First, the state should incentivize large and successful firms to consider opening offices in New Mexico; the fact that business partner co-location is significant suggests that for new ventures to flourish in New Mexico, it is important to incentivize established business to establish a local presence. Part of the incentive programs addressed to entrepreneurs should include benefits for large and established companies also, since they tend to attract new ventures and funding through second-order effects. These second-order effects, through reduction of the co-location constraint, may be considerable if the availability of local VCs does not increase radically in the near future. Given the presence of two internationally renowned research laboratories and the well known effects of knowledge spillovers (Alcácer et al. 2007), the interplay of access to local entrepreneurs and innovative IP that emerges from these labs should be used to incentivize *large technology firms* to invest in the state. Similarly, we note that the implications of this research take on greater importance given the increase in the disaggregation of IT services which has occurred over the last twenty years. This disaggregation, coupled with the rise of the Indian and Chinese venture capital industries will continue to cause the number of non-co-located entrepreneurs who are being funded to increase. As the entrepreneurs will not only suffer the traditional penalties to funding which we observe, but also increased penalties because of the strain international funding will put on VC social networks, we assert that the ability to transmit knowledge regarding the new venture (through patent possession or fashionability) will be of greater importance.

Second, our results on fashion imply that there might be greater value in focusing on emerging technologies and products for local entrepreneurs rather than existing technologies. Our analysis suggests that it is not the level of discourse but the growth in discourse that is important; therefore, entrepreneurs in New Mexico looking for VC funding will have greater success with VCs from other areas if they have investments in technologies or products that are experiencing a sudden spurt in fashionability. Entrepreneurs in more stable technological contexts are better off supported by the state as VC funding from out of state may be harder to come by, all else equal. Third, the presence of research labs implies that the production of truly novel intellectual property is important. While truly innovative patents are always beneficial, from a policy perspective, our work shows that more original patents stand a better chance of acquiring funding from VCs across the country. However, these patents also represent longer term payoff, since markets may not be readily available for these technologies (Hall et al. 2005). Therefore, the state’s incentive systems should be geared towards providing funding for IP that is more incremental but may result in immediate payoff and incentivize VCs to invest in more innovative areas with longer term payoffs. Given the cost and effort involved in patent applications, particularly for new ventures with limited funds, there is merit in considering how best patents may be leveraged in terms of acquiring venture funding. These are matters of direct importance to policy makers and we hope our results serve to better inform them.

We see five avenues of possible future research which emerge from this work. The first is the expansion of fashionability research using various different methods of identifying fashionability. This is an emerging area of empirical work in IS (Baskerville et al. 2009) and more work is needed in understanding this construct. A second possible avenue for work is to investigate how legitimacy and efficiency are demonstrated in subsequent rounds of funding beyond the first. Third, it may also be possible to cluster diversification predisposition for VCs into strategic archetypes by examining funding at the entrepreneurial level, as opposed to the dyadic level as we did here. It is possible that these strategic archetypes could give us powerful insight into how, and which, VCs entrepreneurs should pursue and why. Fourth, it would be interesting to see the effects of non-co-location in an international setting where foreign entrepreneurs are pursuing American Venture Capital or vice versa. Given the stresses on the social networks present in venture capital funding, as well as the cultural differences between firms of different nations, the effects of these factors may be much higher. Finally, all of our work pertains to funding decisions but the true contribution of the VC is in providing robust returns to the investors on their investments. Little work exists

that considers the impact of funding decisions on entrepreneurs of different types on how well the venture fund does over time. We believe this would be an interesting extension of this work and would inform both VCs and entrepreneurs about the relative merits of investing in different kinds of ventures with respect to ROI.

REFERENCES

- Abrahamson, E. "Management Fashion," *Academy of Management Review* (21:1) 1996, pp 254-285.
- Abrahamson, E., and Fairchild, G. "Management Fashion: Lifecycles, Triggers, and Collective Learning Processes," *Administrative Science Quarterly* (44:4) 1999, pp 708-740.
- Ahuja, G., and Katila, R. "Technological Acquisitions and the Innovation Performance of Acquiring Firms: A Longitudinal Study," *Strategic Management Journal* (22:3) 2001, p 197.
- Alcácer, J., and Chung, W. "Location Strategies and Knowledge Spillovers," *Management Science* (53:5) 2007, pp 760-776.
- Barrett, A. "New Mexico Pulls in Venture Capital: The state is a hotbed for venture investing," in: *BusinessWeek*, 2008.
- Baskerville, R.L., and Myers, M.D. "Fashion Waves in Information Systems Research and Practice," *MIS Quarterly* (33:4) 2009, pp 647-662.
- Batjargal, B., and Liu, M. "Entrepreneurs' Access to Private Equity in China: The Role of Social Capital," *Organization Science* (15:2) 2004, pp 159-172.
- Baum, J.A.C., and Silverman, B.S. "Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups," *Journal of Business Venturing* (19:3) 2004, p 411.
- Bernanke, B. "low interest rate policy after the dot.com bubble," in: *Financial Times*, London, 2010.
- Bigus, J. "Staging of Venture Financing, Investor Opportunism and Patent Law," *Journal of Business Finance & Accounting* (33:7/8) 2006, pp 939-960.
- Birley, S.U.E., Muzyka, D.A.N., and Hay, M. "Management Buyout: Perception of Opportunity A Research Note," *Journal of Management Studies* (36:1) 1999, pp 109-122.
- Blundell, R., and Griffith, R. "Dynamic Count Data Models of Technological Innovation," *Economic Journal* (105:429) 1995, pp 333-344.
- Blundell, R., Griffith, R., and Windmeijer, F. "Individual effects and dynamics in count data models," *Journal of Econometrics* (108:1) 2002, pp 113-131.
- Breslow, N.E., and Day, N.E. "Statistical Methods in Cancer Research," *The Analysis of Case-Control Studies*. Lyon: IARC Scientific Publications (1) 1980.
- Bresnahan, T., Gambardella, A., and Saxenian, A. "'Old Economy' Inputs for 'New Economy' Outcomes: Cluster Formation in the New Silicon Valleys," *Industrial & Corporate Change* (10:4) 2001, pp 835-860.
- Chen, H., Gompers, P., Kovner, A., and Lerner, J. "Buy local? The geography of venture capital," *Journal of Urban Economics* (67:1) 2010, pp 90-102.
- Choonwoo, L., Kyungmook, L., and Pennings, J.M. "Internal Capabilities, External Networks, and Performance: A Study on Technology-Based Ventures," *Strategic Management Journal* (22:6/7) 2001, p 615.
- Clemons, E.K., Reddi, S.P., and Row, M.C. "The Impact of Information Technology on the Organization of Economic Activity: The "Move to the Middle" Hypothesis," *Journal of Management Information Systems* (10:2), Fall93 1993, pp 9-35.
- Currie, W.L. "Revisiting management innovation and change programmes: strategic vision or tunnel vision?," *Omega* (27:6) 1999, p 647.
- Czarniawska-Ioerges, B., and Joerges, B. "Organizational Change as a Materialization of Ideas," *Stockholm School of Economics* (Unpublished Manuscript) 1990.
- Dai, N. "The Double Exit Puzzle: Venture Capitalists and Acquisitions Following IPO," *Unpublished Manuscript* 2005.
- Davidsson, P., and Honig, B. "The role of social and human capital among nascent entrepreneurs," *Journal of Business Venturing* (18:3) 2003, p 301.
- De Clercq, D., and Sapienza, H.J. "Effects of relational capital and commitment on venture capitalists' perception of portfolio company performance," *Journal of Business Venturing* (21:3) 2006, pp 326-347.
- Delmar, F., and Shane, S. "Does Business Planning Facilitate the Development of New Ventures?," *Strategic Management Journal* (24:12) 2003, pp 1165-1185.
- DiMaggio, P.J., and Powell, W.W. "The Iron Cage Revisited: Intitutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review* (48:2) 1983, pp 147-160.
- Doms, M. "The Boom and the Bust in Information Technology Investment," *FRBSF Economic Review* 2004.

- Eisenhardt, K.M., and Schoonhoven, C.B. "Organizational Growth: Linking Founding Team, Strategy, Environment, and Growth among U.S. Semiconductor Ventures, 1978-1988," *Administrative Science Quarterly* (35:3) 1990, pp 504-529.
- Eliashberg, J., and Shugan, S.M. "Film Critics: Influencers or Predictors?," *The Journal of Marketing* (61:2) 1997, pp 68-78.
- Florin, J., Lubatkin, M., and Schulze, W. "A Social Capital Model of High-Growth Ventures," *Academy of Management Journal* (46:3) 2003, pp 374-384.
- Gans, J.S., Hsu, D.H., and Stern, S. "When does start-up innovation spur the gale of creative destruction?," *RAND Journal of Economics (RAND Journal of Economics)* (33:4), Winter2002 2002, pp 571-586.
- Gellert, B., Gottwald, S., Hellwich, M., Kästner, H., and Küstner, H. *The VNR Concise Encyclopedia of Mathematics, 2nd ed* Van Nostrand Reinhold, New York, 1989.
- Gompers, P., and Lerner, J. "The Venture Capital Revolution," *The Journal of Economic Perspectives* (15:2) 2001, pp 145-168.
- Gompers, P.A. "Grandstanding in the venture capital industry," *Journal of Financial Economics* (42:1) 1996, pp 133-156.
- Gompers, P.A., and Lerner, J. *The Venture Capital Cycle* Cambridge Mass: MIT Press., 1999.
- Gori, M., and Witten, I. "The bubble of web visibility," *Commun. ACM* (48:3) 2005, pp 115-117.
- Gorman, M., and Sahlman, W.A. "What Do Venture Capitalists Do?," *Journal of Business Venturing* (4:4) 1989, p 231.
- Greve, H.R. "Performance, Aspirations, and Risky Organizational Change," *Administrative Science Quarterly* (43:1) 1998, pp 58-86.
- Gupta, A.K., and Sapienza, H.J. "Determinants of Venture Capital Firms' Preferences Regarding the Industry Diversity and Geographic Scope of Their Investments," *Journal of Business Venturing* (7:5) 1992, p 347.
- Hall, B.H., Jaffe, A., and Trajtenberg, M. "Market value and patent citations," *RAND Journal of Economics (RAND Journal of Economics)* (36:1), Spring2005 2005, pp 16-38.
- Hall, B.H., Jaffe, A.B., and Trajtenberg, M., "C.E.P.R. Discussion Papers, CEPR Discussion Papers: 3094, 2001.
- Hellmann, T., and Puri, M. "On the Fundamental Role of Venture Capital," *Economic Review (07321813)* (87:4), 2002 4th Quarter 2002, p 19.
- Huang, P., Ceccagnoli, M., Forman, C., and Wu, D.J. "When do ISVs join a platform ecosystem? Evidence from the enterprise software industry.," in: *ICIS*, Phoenix, AZ, 2009.
- Jaffe, A.B., and Trajtenberg, M. "Geographic localization of knowledge spillovers as evidenced by patent citations," *Quarterly Journal of Economics* (108:3) 1993, p 577.
- Jensen, M. "The Role of Network Resources in Market Entry: Commercial Banks' Entry into Investment Banking, 1991--1997," *Administrative Science Quarterly* (48:3) 2003, pp 466-497.
- Johansen, A., and Sornette, D. "Predicting Financial Crashes Using Discrete Scale Invariance," *Journal of Risk* (1) 1999.
- Kaplan, S., and Strömberg, P. "Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts," *Review of Economic Studies* (70:243) 2003, pp 281-315.
- Kaulio, M.A. "Initial conditions or process of development? Critical incidents in the early stages of new ventures," *R & D Management* (33:2) 2003, pp 165-175.
- King, A. "Kuan-hsi and Network Building: A Sociological Interpretation," *Daedalus* (120:2), Spring91 1991, p 63.
- King, G., and Zeng, L. "Explaining Rare Events in International Relations," *International Organization* (55:3), Summer2001 2001, p 693.
- Kirsch, D., Goldfarb, B., and Gera, A. "Form or substance: the role of business plans in venture capital decision making," *Strategic Management Journal* (30:5) 2009, pp 487-515.
- Lerner, J. "Venture Capitalists and the Oversight of Private Firms," *Journal of Finance* (50:1) 1995, pp 301-318.
- Liao, J., and Welsch, H. "Roles of Social Capital in Venture Creation: Key Dimensions and Research Implications," *Journal of Small Business Management* (43:4) 2005, pp 345-362.
- Lux, T. "Herd Behaviour, Bubbles and Crashes," *The Economic Journal* (105:431) 1995, pp 881-896.
- MacMillan, I.C., and Narasimha, P.N.S. "Research Notes and Communications: Characteristics Distinguishing Funded From Unfunded Business Plans Evaluated By Venture Capitalists," *Strategic Management Journal* (8:6) 1987, pp 579-585.
- Mann, R., and Sager, T. "Patents, Venture Capital, and Software Start-ups," *American Law & Economics Association Papers:39*) 2006, pp 1-59.

- Mann, R.J., and Sager, T.W. "Patents, venture capital, and software start-ups," *Research Policy* (36:2) 2007, pp 193-208.
- Mark, D. *Going Dirty: The Art of Negative Campaigning* Rowman & Littlefield Publishers, Inc, New York, NY, 2006.
- Mayer, D., and Kenney, M. "Economic Action Does Not Take Place in a Vacuum: Understanding CISCO's Acquisition and Development Strategy," *Industry & Innovation* (11:4) 2004, pp 299-325.
- Mendelson, H., and Pillai, R.R. "Clockspeed and Informational Response: Evidence From the Information Technology Industry," *Info. Sys. Research* (9:4) 1998, pp 415-433.
- Mendelson, H., and Pillai, R.R. "Industry Clockspeed: Measurement and Operational Implications," *Manufacturing & Service Operations Management* (1:1) 1999, pp 1-20.
- Meyer, J., and Rowan, B. "Institutional Organizations: Formal Structure as Myth and Ceremony," *American Journal of Sociology* (83:1) 1977, p 14.
- Nahapiet, J., and Ghoshal, S. "Social Capital, Intellectual Capital, and the Organizational Advantage," *Academy of Management Review* (23:2) 1998, pp 242-266.
- Niven, D. "Objective Evidence on Media Bias: Newspaper Coverage of Congressional Party Switchers," *J&MC Quarterly* (80:2) 2003, p 27.
- Nowak, M.J., and Grantham, C.E. "The virtual incubator: managing human capital in the software industry," *Research Policy* (29:2) 2000, pp 125-134.
- Pollock, T.G., and Rindova, V.P. "Media Legitimation Effects in the Market for Initial Public Offerings," *Academy of Management Journal* (46:5) 2003, pp 631-642.
- Porter, M. "Location, Competition, and Economic Development: Local Clusters in a Global Economy," *Economic Development Quarterly* (14:1) 2000, p 20.
- Porter, M. "Strategy and the Internet," *Harvard Business Review* (79:3) 2001, p 16.
- Ramiller, N.C., and Swanson, E.B. "Organizing Visions for Information Technology and the Information Systems Executive Response," *Journal of Management Information Systems* (20:1), Summer2003 2003, pp 13-50.
- Scharfstein, D.S., and Stein, J.C. "Herd Behavior and Investment," *The American Economic Review* (80:3) 1990, pp 465-479.
- Schoonhoven, C.B., Eisenhardt, K.M., and Lyman, K. "Speeding Products to Market: Waiting Time to First Product Introduction in New Firms," *Administrative Science Quarterly* (35:1) 1990, pp 177-207.
- Self, S.G., and L., P.R. "Asymptotic distribution theory and efficiency results for case-cohort studies," *Annals of Statistics* (16) 1988, p 18.
- Shane, S., and Cable, D. "Network Ties, Reputation, and the Financing of New Ventures," *Management Science* (48:3) 2002, pp 364-381.
- Sorenson, O., and Stuart, T.E. "Syndication Networks and the Spatial Distribution of Venture Capital Investments," *American Journal of Sociology* (106:6) 2001, pp 1546-1588.
- Sorenson, O., and Stuart, T.E. "Bringing the Context Back In: Settings and the Search for Syndicate Partners in Venture Capital Investment Networks," *Administrative Science Quarterly* (53:2) 2008, pp 266-294.
- Stuart, T.E., Ha, H., and Hybels, R.C. "Interorganizational Endorsements and the Performance of Entrepreneurial Ventures," *Administrative Science Quarterly* (44:2) 1999, pp 315-349.
- Swanson, B.E., and Ramiller, N.C. "The Organizing Vision in Information Systems Innovation," *Organization Science* (8:5) 1997, pp 458-474.
- Tyebjee, T.T., and Bruno, A.V. "A Model of Venture Capitalist Investment Activity," *Management Science* (30:9) 1984, pp 1051-1066.
- Ueda, M. "Banks versus Venture Capital: Project Evaluation, Screening, and Expropriation," *Journal of Finance* (59:2) 2004, pp 601-621.
- Uzzi, B. "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect," *American Sociological Review* (61:4) 1996, pp 674-698.
- Wang, P., and Ramiller, N.C. "Community Learning in Information Technology Innovation," *MIS Quarterly* (33:4) 2009, pp 709-734.
- White, M. *Bankruptcy Liquidation and Reorganization*. In D. Logue (Ed.), *Handbook of Modern Finance* (2nd ed.) Warren, Gorham, & Lamont, Boston, 1990.
- Williamson, O.E. "The Economics of Internal Organization: Exit and Voice in Relation to Markets and Hierarchies," *American Economic Review* (66:2) 1976, p 369.
- Wright, M., and Lockett, A. "The Structure and Management of Alliances: Syndication in the Venture Capital Industry," *Journal of Management Studies* (40:8) 2003, pp 2073-2102.

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Administrative Science Quarterly (52:1) 2007, pp 70-105.