

6-9-2007

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### Recommended Citation

Walske, Jennifer M.; Zacharakis, Andrew; and Smith-Doerr, Laurel (2007) "EFFECTS OF VENTURE CAPITAL SYNDICATION NETWORKS ON ENTREPRENEURIAL SUCCESS," *Frontiers of Entrepreneurship Research*: Vol. 27: Iss. 3, Article 2.  
Available at: <http://digitalknowledge.babson.edu/fer/vol27/iss3/2>

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## EFFECTS OF VENTURE CAPITAL SYNDICATION NETWORKS ON ENTREPRENEURIAL SUCCESS

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### ABSTRACT

Social network research has shown that tie strength affects information dissemination, and that industry embeddedness aids firm performance. Strategy research has also considered how firm status can lead to superior operating results. Combining these two research streams, we ask how venture syndicate participants' status and tie strength influences entrepreneurial firm success. Exploratory interviews were conducted with thirteen venture capitalists (VCs), followed by network and regression analyses using VentureXpert data. Findings suggest that strong-tie venture syndicates increases the likelihood of entrepreneurial firm success. This is the first known study to test status and tie strength, within the domain of venture capital.

### INTRODUCTION

The recent attention given to organizational networks and tie strength can be traced back to Mark Granovetter's (1973) seminal study on the strength of weak ties. Weak ties to acquaintances rather than strong ties, he found, led to getting a job in a period of high unemployment. Because weak ties provide non-redundant information, they lead to more new opportunities than do strong ties (Granovetter, 1973). Although Granovetter developed his theory in a study of individual men's careers, the strength of ties has applicability to networks of all kinds, being cited widely by scholars worldwide. To assess the impact of growth and expansion on a highly embedded industry network, this research analyzes venture capital firms' syndications. Our focus is ties between venture capital firms, known as syndicates, which co-invest in higher risk entrepreneurial firms. This is the first study, to our knowledge, that systematically focuses on how the strength of ties matters for venture capital syndications, coupled with the implication of status, using a non-network measure of status.

In this paper we argue that tie strength is important to understanding venture syndication behavior and performance. On the one hand, it may be advantageous for venture firms to maintain an extensive network of weak ties. This could allow venture firms to access many information sources (Gladwell, 2002), and enable them to hold brokerage positions between several networks, increasing their negotiating leverage (Burt, 1992). On the other hand, a network composed of strong ties could also be advantageous, as many investments are fraught with information asymmetry, so that venture firms with a history of trust and collaboration may perform better than firms less acquainted (Uzzi, 1996). It is also important to note that investment syndications serve as credible commitments between co-investors (Williamson, 1999), which cannot be easily undone, making an investment with an unknown partner that much riskier. So while weak ties facilitate the spread of knowledge and increase negotiating leverage, strong ties facilitate deeper exchanges of information, and a more productive working relationship when information is less clear (Uzzi 1997; Podolny and Baron, 1997; Gulati, 1999).

As the organizational network literature has grown, criticisms have helped to extend the scope of network analysis. If networks matter, how and when they vary also matter (Nee, 2005). Beyond embeddedness itself, status provides a means by which connectivity is effective. Podolny's (2005) conception of status draws upon network connection (to whom the firm is tied), and Robert Merton's (1967) Matthew Effect (to those that have, more is given). High status firms in Podolny's various industry analyses avoid ties with lower status firms to prevent "leakage" of their status. Our reading of

the theoretical (Merton, 1967) and empirical (Zuckerman, 1977) bases of the “Matthew Effect” emphasizes somewhat different elements than Podolny’s; high status actors do not always suffer “contamination” from associations with lower status actors. In Zuckerman’s (1977) study of Nobel laureate scientists, she found that Nobel winners benefited from co-authorship with lower status scientists; higher status scientists received more recognition for the work, despite their lesser contributions.

Similarly, high status venture capital firms may also, at times, benefit from ties to lower status venture capitalists. For instance, higher status firms may co-invest with lower status firms, in exchange for a majority ownership position in the entrepreneurial firm and positional power by chairing the new venture’s board of directors. Thus, although prior theory would argue that syndicating with firms of lower status could result in prestige “leakage” (Podolny, 2005), some may co-invest with those of unequal status in order to impose their will on the syndicate.

## LITERATURE REVIEW

Prior research has shown that syndication has been the common vehicle for venture investing since the 1980’s (Tyebjee and Bruno, 1984). A syndicate represents a group of investors who jointly fund a new venture as an investor bloc. Since the investors are all participants in the syndicate, it is almost impossible to remove an investor from the syndicate *ex-ante*. Typically, a new venture seeks several “rounds” or series of financing, with each round funding a set of pre-defined milestones (Gompers, 1995). Prior studies have shown that VCs generally garner the best return when they continue to invest their *pro rata* share in each investment round (Stevenson, Muzyka et al, 1986). The only way to diminish a syndicate participant’s influence is if he elects to not participate in follow-on rounds, causing that firm’s ownership to diminish over time.

By jointly participating in investment opportunities, prior research has shown that VCs share expertise (Bygrave, 1987) and financial risk (Gompers, 1995). In some cases VCs conduct joint due diligence and decide on a funding decision collaboratively (Lerner, 1994). Syndicate participants often stipulate board seats, providing opportunities for future interaction (Gompers, 1995). Additionally, many venture capital firms reside within close geographic proximity (Lerner, 1995; Saxenian, 2000; Powell, Koput, Bowie and Smith-Doerr, 2002; Sorensen and Stuart, 2001), allowing frequent contact in formal and informal settings. This geographic clustering appears to be intensifying, with California and Massachusetts hosting sixty percent of all venture firms and venture-backed firms in 2004 (NVCA, 2005).

In addition to geographic clustering, there is evidence of industry concentration. The amount of capital under management grew from \$3.4 to \$260 billion from 1980 through 2005 (NVCA, 2006). The number of venture firms also increased dramatically, from 89 to 866 firms, during the same period of time (NVCA, 2006). However, the amount of capital managed per general partner (GP) did not scale proportionality; in 1980, on average, a GP invested under \$3 million. Now, a GP is expected to manage \$28 million, on average. Capital under management has also not scaled proportionately amongst all firms. The top five percent of firms (by size) increased their share of capital under management from 32.4% in 1988, to 42.5% in 1998 (Bendaniel, Reyes et al, 2000). NVCA (2004) also reported a trend towards industry concentration, with 82 venture capital firms (i.e., 9% of the NVCA reported firm population) each managing over \$1 billion in capital. These statistics suggests that although the industry is growing in aggregate, it is also bifurcating, so that the large venture firms are getting larger, and power is centralizing more to GPs within the various firms.

The most common use of network theory in venture research has been applied to the study of venture firm syndicates (Piskorski et al, 2005; Seppä, T., and Jääskeläinen, M., 2002). While the syndicate is not necessarily dyadic, tie strength and other attributes can be defined by studying dyadic pairs. Prior research has assessed the structure of the venture network, including the effect of firm performance on firm centrality (Jääskeläinen, Maula et al. 2002). In network terms, centrality is stronger for firms that are well-connected to well-connected others (Borgatti and Everett, 1999). Other structural elements studied

include the implied power of firms that hold “brokerage” positions between otherwise disconnected networks; as such prior research tested if brokers retained their “elite” status (i.e., network centrality) despite diminishing resources, by holding brokerage positions (Piskorski et al, 2005). However, research assessing the composition of the syndicate itself, identifying which characteristics of the syndicate predict entrepreneurial firm success, is less developed. We intend to explore this topic further by analyzing the affect of venture firm syndication history, or tie strength, and firm status using a non-network measure of status.

## METHODOLOGY & RESEARCH DESIGN

This research study took place in two phases. In the first phase, thirteen qualitative interviews were conducted with general partners (GPs) of venture firms residing on both the East and West Coasts during spring 2005. This exploratory phase allowed us to assess syndicate criteria across a sample of elite and non-elite venture firms, as defined by the third party research firm, Hamilton Lane (Hardymon, Lerner and Leamon, 2005). Six of the GPs were from elite firms, and seven were from non-elite firms. Six of the GPs were located the East Coast while seven were located on the West Coast. Each coast represented a mix of firms based on status, size, industry focus and year established. The interviewees were not chosen at random, but were sought based on held industry contacts. These interviews were semi-structured with each GP given a standard set of questions. Results showed that venture partners did prefer to syndicate with those in which they had successfully syndicated previously. The analogy of marriage was used more than once as partners expressed concern over entering into a syndicate with an unknown player. The following excerpts illustrate this point:

*“The fact is [that] you might have ten venture capitalists who are actively incompetent... that learning process has taught us to be extra careful about who your partner is because they’re ... like a bad marriage. Keeping a fellow bad venture capitalist is worse than the first-time [bad] entrepreneur that you experience.”*

*“...we end up syndicating with people who we trust... [we know] how they’re going to react in certain situations.”*

*“It’s a handful or two handfuls of people. Probably the best way to keep in touch with them is if you’re on the board with them and you see them and you say, ‘Hey, how is it going? What are you looking at?’”*

*“The term syndication sounds so formal. I was just investing with my friends”*

However, the importance of status was less clear. Participants that belonged to elite firms appeared hesitant to discuss status as a syndication criterion. Lower status firms discussed their desire to align with higher status firms, yet they did not want to imply a dependence on those firms. Only a few participants would speak openly to status and how a firm’s status tempered a VC’s syndication interest. For example, one elite VC stated a clear preference to work with lower status firms. This was done to re-assure the entrepreneurial team that a balance of powers existed in the syndicate, while knowing that the “good follower” would defer to the higher status venture capitalist (VC). Similarly, two non-elite VCs conceded that they would accept a lower percentage ownership in the syndicate, even if they had conducted most of the due diligence, in order to curry favor with an elite firm:

*“If Sequoia said, like we’re looking at a deal right now...I would hope that they would walk with us fifty-fifty, and then they would say, we want seventy-five and twenty-five, and we’d be happy with that.”*

The qualitative interviews yielded interesting results, and assisted us in formalizing our hypotheses. In the majority of the cases, relationship history did matter greatly to the VCs. However, the role of status as

a syndication criterion was less clear, with only some VCs speaking to its importance. Based on our qualitative interviews, it is our view that both tie strength and status matter, but perhaps not to the same extent. In a professional relationship, most people pay attention to status (am I ranked higher than you?) and tie strength (am I close to you?). Yet these network features operate differently, and we expect them to be related in particular ways in the venture capital industry. Figure 1 visually presents what might be predicted at different levels of tie strength and status.

Figure 1 makes sense in light of network and status-based market competition theory. Podolny would characterize lower status firms that are willing to accept lesser economics, for the same or higher levels of work, as seeking a “deferential status position” (Podolny, 2005). Podolny defines status as an expectation for future behavior based on past behavior (Podolny, 2005). This differs from brand or reputation, which is based on well reputed characteristics that a firm employs and reinforces, as a point of differentiation in the marketplace (e.g. customer service, quality, etc.). Elite theory further these notions by predicting that firms will actively protect their status by transacting with firms of equal status (Farazmand, 1999). As such, both Podolny’s and Farazmand’s research would predict that elite venture firms would be more likely to syndicate with firms of equal status. Similarly, social network theory has argued that the strongest ties are among homogenous groups, suggesting that firms of equal status are more likely to align (Granovetter, 1973; Blau, 1977; Uzzi, 1996). Network theory research has also shown that industries evidencing a clear core-periphery structure tend to bifurcate between the influential and the influenced (Borgatti and Everett, 1999). As such, low status firms lack strong ties among themselves, as they seek, but only occasionally secure, ties to elite firms. Based on our exploratory interviews, combined with existing theory, we propose the following hypotheses:

*H1: High status venture firms will have stronger ties with other high status venture firms than with low status venture firms.*

*H2: High status venture firms will have a greater number of weak ties with low status venture firms than with high status venture firms.*

Social network theory has demonstrated that firms with strong ties outperform those with weak ties when information is highly ambiguous (Powell, 1990; Uzzi, 1991). Given that some level of ambiguity exists in every venture investment, we add a performance variable to our initial hypotheses:

*H3: New ventures funded by elite firms are predicted to have the highest likelihood of success, in comparison to syndicates of non-elite firms.*

*H4: New ventures funded by venture firms with strong ties are predicted to have the highest likelihood of success, in comparison to other syndicate combinations (e.g., a syndicate of firms with weak ties).*

In order to test these hypotheses, the second part of our analysis employed network and regression analyses on a sample of venture firms using VentureXpert data. The sample consisted of entrepreneurial firms that closed their last financing in 1996, an average growth year in venture capital under management, yielding a 19% year-over-year growth. This sampling resulted in 116 entrepreneurial firms. An entrepreneurial firm was coded as a “success” if it achieved an initial public offering (IPO). In order to test tie strength amongst venture firms, a non-symmetric matrix was created with each syndicate representing a tie. From this data, a network analysis was generated, which also calculated tie strength amongst the VCs. A separate attribute data file was also created, delineating the status of each venture firm and the number of investments that each firm made in the sample. Venture firm status was determined by a third party research firm, Hamilton Lane, based on the venture firm’s size, age, and performance. In the network analysis, venture firms served as the “nodes” and each “tie” represented participation in a syndicate, with each “tie” treated as bidirectional. In network diagrams, firms were color coded by the number of deals in which they participated. A network diagram was then created for

each level of tie strength. The network analysis was used to test hypotheses 1 and 2 (see figures 4 through 7).

Following the network analysis, a logit regression was conducted. The dependent variable was the success of the entrepreneurial firm, with success measure as achieving an IPO. The independent variables used in our analysis included the percent of elite venture firms in the syndicate, which was derived by dividing the percent of elite firms by the total syndicate participants over the life of the firm. This variable was used to test hypothesis 3, if status in and of itself was the most important variable in determining entrepreneurial firm success. A second independent variable was derived to test hypothesis 4, which was the influence of strong-tie syndicates on the success of entrepreneurial firms. Syndicates were coded as strong-tie syndicates if there was a presence of strong tie firms over the life of the syndicate, which in our study, was determined to be venture firms that participated in 4 or more syndications. Other control variables were also included, such as the amount invested in the entrepreneurial firm, the average investment per round, the number of rounds invested in the firm, and the number of VCs that invested in the firm. Unfortunately, we did not include a control variable for industry, as much of the industry information (e.g., VEIC code) on the entrepreneurial firms was missing from the data.

## RESULTS

From the initial network diagram through the final diagram, some of the longest standing elite venture firms held the strongest ties, including: Mayfield Fund (est. 1969), Kleiner Perkins Caufield and Byers (est. 1972), and Sequoia Capital (est. 1972). Many elite venture capital firms actively syndicated with non-elite firms once, but this eroded as the number of syndications increased, in support of hypothesis 2 (see figures 4-7). As the strength of the ties increased, the number of non-elite firms decreased, until elite firms were in the majority, in support of hypothesis 1. Further facilitating frequency of contact, the most embedded elite firms, Mayfield Fund, Sequoia Capital, and Kleiner, Perkins, Caufield and Byers, remain located in very close geographic proximity on Sand Hill Road, Menlo Park, California. No information is available on J.P. Morgan Partners during this time period; however, it is felt that J.P. Morgan Partners is potentially a different type of entity, as it was a subsidiary of the larger investment bank, J. P. Morgan. It is likely that J.P. Morgan participated mostly in mezzanine rounds with the elite firms, as a precursor for IPO activity. Further analysis is needed to test this phenomenon.

In order to assess the impact of both tie strength and status on venture firm performance, a logit regression was run with the results shown in figure 2. In support of hypothesis 4, firms with strong ties were a predictor of entrepreneurial firm success at the .08 level. Hypothesis 3, that status matters most, was not supported, once tie strength was introduced. None of the capital control variables were significant predictors of firm success, despite evidenced significance in prior research (Gompers, 1995).

## LIMITATIONS

A potential limitation of the network analysis is that it did not control for the size of venture firm. It is believed that controlling for size would have caused larger firms to appear less central, and less embedded, in the overall industry network. Instead, by color coding each node by the number of deals in the network diagram, the more prolific investors are easily identified. It is also worth noting that while larger firms may have more capital to invest, the data showed that many chose not to syndicate their deals. Elite firms also held the majority of the strongest ties, making it difficult to test the importance of tie strength versus status. This is not a complete surprise based on elite theory, which predicts that high status firms are more likely to have closer relationships with each other, while low status firms have weaker relationships with everyone.

Our measure of “success” could have been more robust if we included acquisition data. However, most VCs consider an acquisition as success only if the value paid is above the capital invested. Since acquisition data is often not publicly available, we chose, in the essence of time, to code IPO’s as

evidence of venture firm success. However in our sample, the majority of the firms actually obtained IPO's. While the time period for the sample was carefully chosen as an average growth year, the years following were not, evidenced with many firms achieving IPO's in the late 1990's, followed by a dearth of IPO's in early 2000. Indeed, as figure 2 shows, we had a very high number of venture-backed firms that achieved an IPO (i.e., 74%), with a lesser number exiting through acquisitions (i.e., 20%). Using a full population of data over a larger time window will address this issue.

Another limitation of this study is that the "stage" of the investment is not reflected in the analysis. Late stage investments tend to have larger investor syndicates, as opposed to early stage investments, which tend to have smaller syndicates (Lerner 1994; De Clercq 2003). As a result, tie strength should be more strongly evidenced in early stage investments that typically have smaller syndicates. Research is being conducted by the authors to further determine how relationship history and status may impact the success of the syndicate, and how this may change based on the stage of the investment.

Last, we have been asked why our unit of analysis is at the firm level instead of at the individual level (i.e., VCs). Determining which VC was the primary agent in each investment would be difficult, as much of the investment information is proprietary to each venture firm. While some assumptions could be made based on board participation, we are not sure that it would yield differing results. Furthermore, prior research has shown that the impact of individual VC's activities become less significant when firm level factors are introduced (Gompers, Lerner, Kovner & Scharfstein, working paper). Hence, since venture funds are evaluated in aggregate, we view the collective actions of the team as being interesting and important in aggregate level

## IMPLICATIONS & SUMMARY

This study shows that the strong-tie syndicates result in most successful outcomes for entrepreneurial firms. While early venture research suggests that syndication, in general, has a positive effect on entrepreneurial firm success (Bygrave, 1987), we suggest that not all syndication partners are the same, and that some syndications may be ill advised. This study also shows that status alone is not enough (Hsu, 2004), as it is also important to consider the relationship history of the firms. Specifically, perhaps the ideal syndicate is not only composed of elite venture firms, but elite venture firms that work well together. In our semi-structured interviews, stories were told of elite venture firms that disliked each other, using an analogy of the "Hatfields and McCoys". While it would seem unlikely that elite venture firms with a poor relationship history would want to co-invest in an entrepreneurial firm, the savvy entrepreneur should avoid this investor bloc.

This paper also shows that elite firms invest broadly with many non-elite firms. In fact, although elite firms are often in the minority within the syndicate (see figure 3), their influence remains large, as they more consistently invest across rounds. Based on prior theory, we also suggest that elite VCs seek ties with many firms, in order to cull investment opportunities, and track developing industries. However at the end of the day, they still prefer to have their closest relationships with each other. This actually affirms Uzzi's findings (1996), that the most successful firms manage a mix of weak and strong ties. Our research also confirms that there is benefit to working with elite VCs (Hsu, 2004), but only when they work well together; by having a highly functioning, well-regarded team, the chances of obtaining IPO are much greater. If one had to choose between a syndicate that was prestigious or had a relationship history, our research indicates that the relationship history matters more.

In conclusion, we believe this research has added to the body of venture research, by providing initial discovery into the syndicate characteristics which lead to entrepreneurial firm success. Both our qualitative and quantitative analyses support that history matters, such that *good teams lead to good outcomes*. While the importance of "the team" has been studied with respect to entrepreneurial firms, this perspective has not been applied as thoroughly to the venture syndicate. This is curious, as it is much easier to change the entrepreneurial team composition than the venture team composition. Our findings

also show that unlike prior research in investment banking syndicates (Podolny, 2005), venture syndicates can last for a decade, longer than the average U.S. marriage (U. S. Census Bureau, 2006). As such, perhaps the quality of the relationship does matter most. We hope to share deeper insight into the ideal syndicate composition, in each stage of the entrepreneurial firm, in future research.

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**Figure 1: Predicted Relationship between Tie Strength and Status**

| Strength of tie | Status of elite firm's partner |                              |
|-----------------|--------------------------------|------------------------------|
|                 | High                           | Low                          |
| Strong          | Embedded elites (H1a)          | Status leakage               |
| Weak            | Trial relationship             | Dominance relationship (H1b) |

**Figure 2: Results of Logit Regression**

|       |                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------------|-----------|---------|---------------|--------------------|
| Valid | Acquisition             | 24        | 20.7    | 20.7          | 20.7               |
|       | Bankruptcy - Chapter 11 | 1         | .9      | .9            | 21.6               |
|       | Bankruptcy - Chapter 7  | 1         | .9      | .9            | 22.4               |
|       | In Registration         | 3         | 2.6     | 2.6           | 25.0               |
|       | Merger                  | 1         | .9      | .9            | 25.9               |
|       | Went Public             | 86        | 74.1    | 74.1          | 100.0              |
|       | Total                   | 116       | 100.0   | 100.0         |                    |

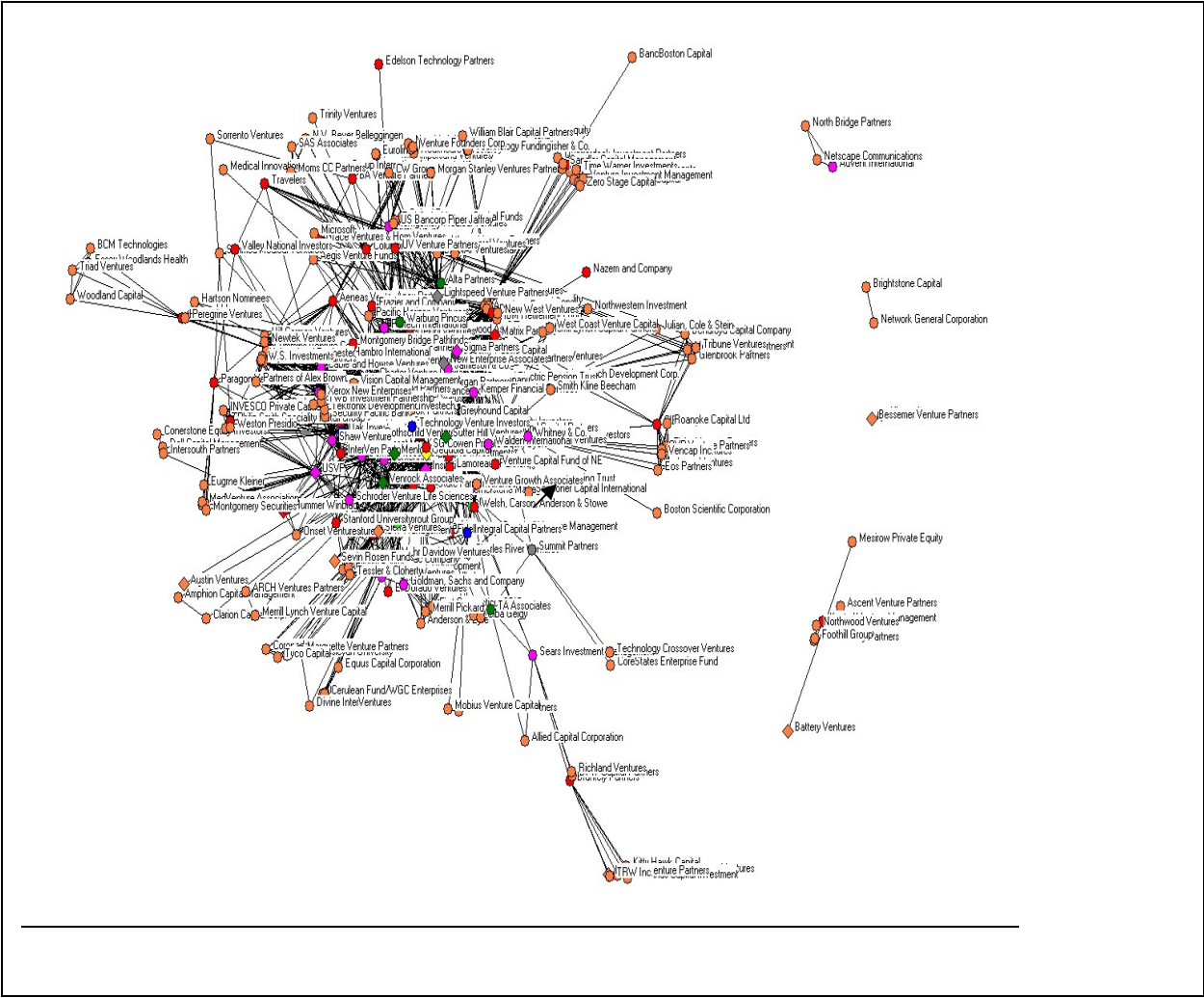
|           |                  | B      | S.E. | Wald  | df | Sig. | Exp(B) |
|-----------|------------------|--------|------|-------|----|------|--------|
| Step 1(a) | Elite Strong Tie | -1.478 | .860 | 2.950 | 1  | .086 | .228   |
|           | Amount Capital   | .000   | .000 | .555  | 1  | .456 | 1.000  |
|           | Average Round    | .000   | .000 | .355  | 1  | .551 | 1.000  |
|           | # of VCs         | .052   | .061 | .715  | 1  | .398 | 1.053  |
|           | # of Elite VCs   | .013   | .011 | 1.543 | 1  | .214 | 1.013  |
|           | # of Rounds      | -.022  | .099 | .051  | 1  | .821 | .978   |
|           | Constant         | .977   | .529 | 3.412 | 1  | .065 | 2.657  |

a Variable(s) entered on step 1: Elite\_Tie, Amt\_Invested, Avg\_Round, @#\_of\_VCs, @\_Elite, @#\_Rounds.

**Figure 3: Percent of Elite VCs per Investment**

|       |       | Frequency | Percent | Cumulative<br>Percent |
|-------|-------|-----------|---------|-----------------------|
| Valid | 0%    | 68        | 58.6    | 58.6                  |
|       | 6%    | 1         | .9      | 59.5                  |
|       | 8%    | 1         | .9      | 60.3                  |
|       | 10%   | 1         | .9      | 61.2                  |
|       | 11%   | 2         | 1.7     | 62.9                  |
|       | 14%   | 2         | 1.7     | 64.7                  |
|       | 15%   | 1         | .9      | 65.5                  |
|       | 15%   | 1         | .9      | 66.4                  |
|       | 17%   | 2         | 1.7     | 68.1                  |
|       | 20%   | 3         | 2.6     | 70.7                  |
|       | 22%   | 1         | .9      | 71.6                  |
|       | 25%   | 2         | 1.7     | 73.3                  |
|       | 27%   | 1         | .9      | 74.1                  |
|       | 29%   | 2         | 1.7     | 75.9                  |
|       | 30%   | 1         | .9      | 76.7                  |
|       | 33%   | 6         | 5.2     | 81.9                  |
|       | 39%   | 1         | .9      | 82.8                  |
|       | 40%   | 1         | .9      | 83.6                  |
|       | 42%   | 1         | .9      | 84.5                  |
|       | 43%   | 1         | .9      | 85.3                  |
|       | 50%   | 11        | 9.5     | 94.8                  |
|       | 67%   | 2         | 1.7     | 96.6                  |
|       | 100%  | 4         | 3.4     | 100.0                 |
|       | Total | 116       | 100.0   |                       |

Figure 4: Venture Firms with One or More Syndications



Source: Venture Economics

| Color      | # of Deals |
|------------|------------|
| Black      | 0          |
| Red        | 1          |
| Orange     | 2          |
| Yellow     | 3          |
| Green      | 4          |
| Blue       | 5          |
| Cyan       | 6          |
| Grey       | 7          |
| Light Blue | 13         |
| Dark Blue  | 14         |

**Figure 5: Venture Firms with Two or More Syndications**

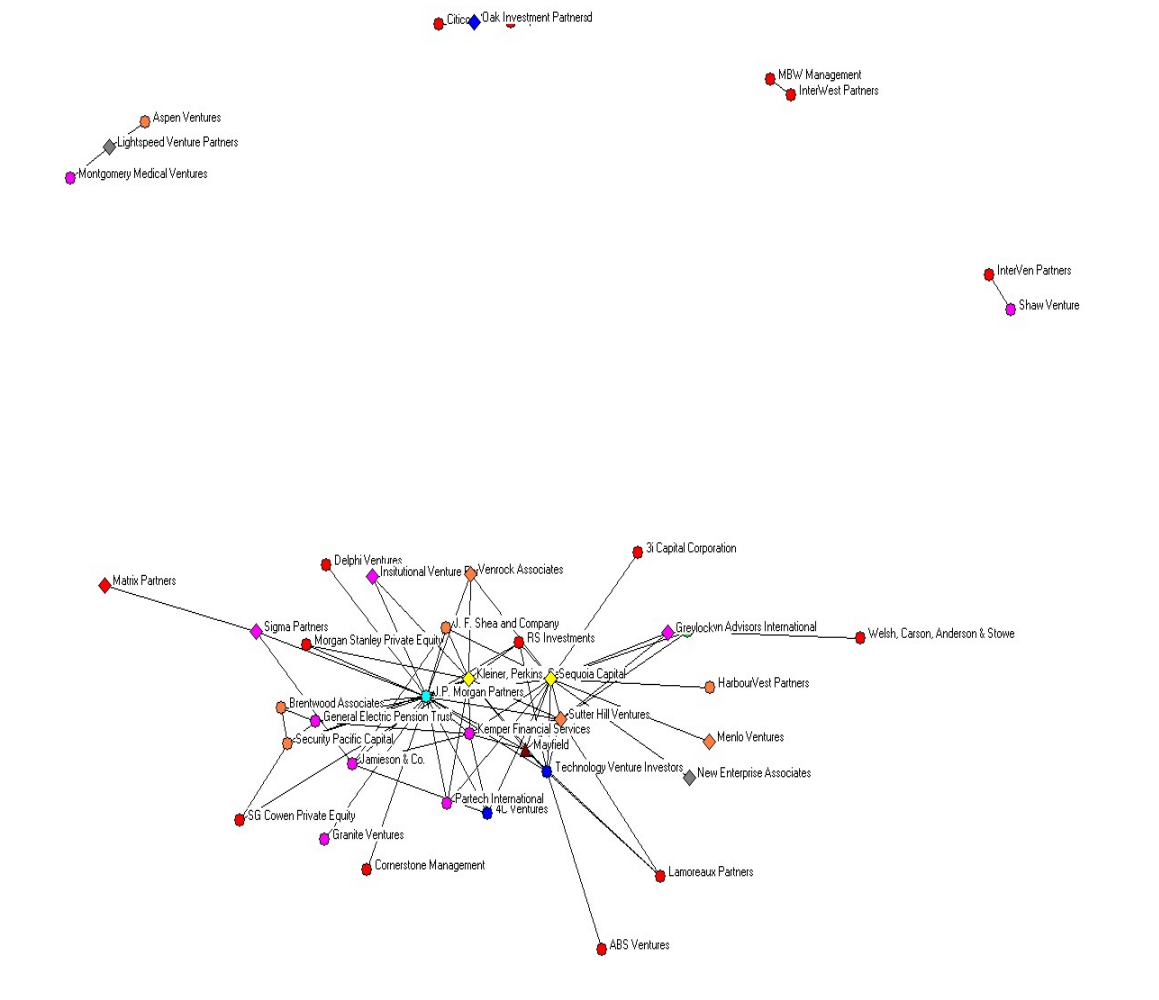
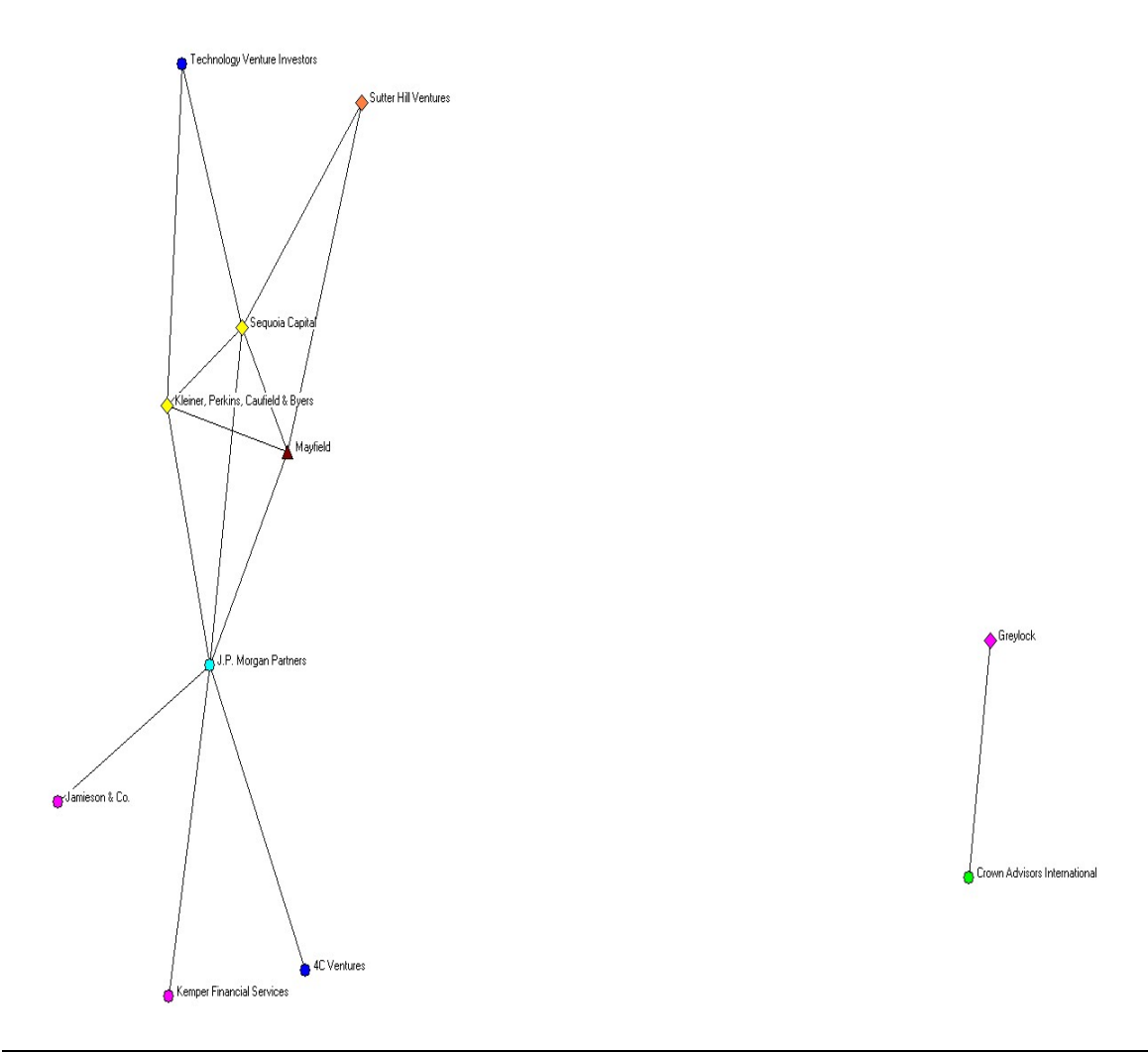
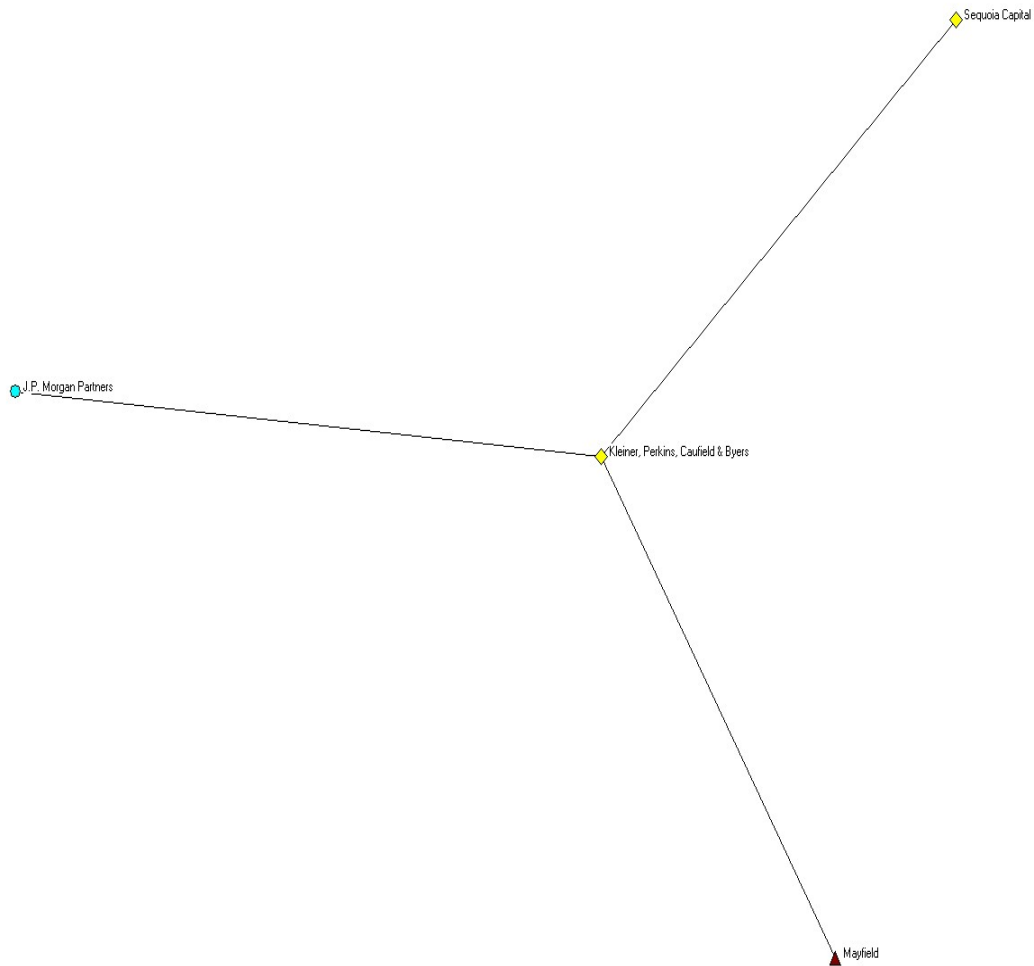


Figure 6: Venture Firms with Three or More Syndications



**Figure 7: Venture Firms with Four or More Syndications**



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Source: Venture Economics