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## Article

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# The Effects of Early Stage Venture Capitalist Actions on Eventual Venture Disposition

Lowell W. Busenitz  
James O. Fiet

This study examines the relationship between venture capitalist actions and the eventual disposition of a venture through an IPO, which is the most profitable exit strategy. The actions included in this study were (1) *altering the amount of their investment*; (2) *securing a concentrated equity position*; (3) *diversifying their syndicate investments*; and (4) *introducing their investees to other sources of financing*. After five years, this study found a positive relationship between IPO exit and (1) *the amount of their investment*; and (2) *the diversification of their VC syndicate*. However, it found only mixed results for (1) *venture capitalist concentrated equity position*; and (2) *introductions to other sources of funding*. Finally, implications for future research are discussed.

## I. INTRODUCTION

Most research on investing in new businesses has concluded that venture capitalists (VCs) serve a valuable intermediary function (Barry, Muscarella, Peavy, & Vetsuypens, 1990; Lam, 1991; Lerner, 1994; Mull, 1994; Norton, 1993) by creating more rewarding financial outcomes for their investee ventures and ultimately for themselves. Although there has been much discussion about how VCs should invest (Admati & Pfleiderer, 1994; Chan, 1983), how to implement various contracting technologies (Barney, Busenitz, Fiet, & Moesel, 1994; Barry, 1994;), and where they should attempt to add value (MacMillan, Kulow, & Khoylian 1989; Sapienza, 1992), many questions remain unanswered. This paper contributes to this discussion by asking: "Do early-stage venture capitalist actions impact a VC's prospects for profitably exiting a venture?"

VC value-added research can be divided into two tracks. One track has emphasized the value VCs can add by providing operational and strategic advice (MacMillan, Kulow, & Khoylian, 1989; Barney, Busenitz, Fiet & Moesel, 1996), assisting with the recruitment and dismissal of key managers (Fiet, Busenitz, Moesel & Barney, in press; Rosenstein, Bruno, Bygrave, & Taylor, 1993; Warne,

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1988), and helping entrepreneurs to make contacts with critical suppliers and customers (Sapienza, 1992). Furthermore, VC involvement with a venture's management can reduce the riskiness of cash flows by alerting them about possible sources of concern (Gompers, 1995). The majority of this work has tested hypotheses utilizing cross-sectional data collection. A second research track has compared VC-backed and non-VC-backed firms, specifically focusing on VC contributions to gains in performance (Admati & Pfleiderer, 1994; Barry et al., 1990; Chan, 1983; Lam, 1991; Megginson & Weiss, 1991; Mull, 1994). The central findings from this track have been that VC-backed firms outperform non-VC-backed firms (Mull, 1994); the retention of VC equity after the initial public stock offering (*IPO*) seems to be favorably perceived by financial markets (Admati & Pfleiderer, 1994); larger VC equity positions are also favorably perceived (Admati & Pfleiderer, 1994); and VCs provide an important link to other sources of financing (Lam, 1991).

Findings from this second stream are largely based on research from firms that have sold their shares in a public offering.<sup>1</sup> Researchers have selected these publicly traded firms because prior studies suggest that this type of disposition has been the most profitable for VCs and because it can serve as a proxy for a high level of performance (Gladstone, 1989; Lam, 1991).<sup>2</sup> The availability of data for these IPO firms is another reason for their frequent examination (Barry, 1994). Unfortunately, limiting inquiry to only IPO firms constrains the reliability of these findings because it tends to over-sample successful ventures, to bypass the investigation of causality by ignoring appropriate control variables, and to leave many unanswered questions about the impact of early stage VC activities on long-term venture performance.

VCs work closely with their investees during the early stages of their relationship because they believe that their input is vital (Gorman & Sahlman, 1989). Moreover, it may be that it is in this earlier period when VCs can make the most important impact on venture performance (Bygrave & Timmons, 1992). Despite their likely importance, no known studies have examined the effects of early stage VC actions on a VC's prospects for an IPO exit. Instead, they have sampled concomitant VC activities in the post-IPO era when less variance in performance from the effects of VC involvement would be expected.

The plan for this paper is as follows. Section II develops the theory and hypotheses for four different VC actions. Section III presents the research methodology. Section IV presents the data analysis showing the effects of VC actions on the probability of an IPO exit. The conclusions and research implications are presented in Section V.

## II. THE EFFECT OF EARLY STAGE VC ACTIONS ON IPO EXIT

The early stage VC actions examined by this paper include:<sup>3</sup> (1) the amount of the investment made by VCs in each syndicate (cf., Lam, 1991; Lerner, 1994); (2) the

impact of majority VC ownership (cf, Holderness & Sheehan, 1988); (3) the diversification of VC syndicates (cf., Barry et al., 1990); and (4) VC introductions to other sources of financing (cf., Lam, 1991). Although these VC actions have been examined by other researchers, no one else known to us has tracked their impact over time on the eventual profitable disposition of a venture. Because IPO disposition has been shown to be the most profitable way to exit a venture (Gladstone, 1989; Lam, 1991), the effects of these antecedents on IPO exits are central to this research.

### **The Amount of First Round Investment**

Investing in new ventures, particularly ones that are based on new technology, is inherently risky. These businesses have no track record, no established markets, and sometimes require substantial investment in order to survive. Moreover, they frequently face competitive uncertainties with no guarantee that they will be able to respond to the forays of rivals, nor anticipate market opportunities (Norton, 1993). One reason for the riskiness of new ventures is that it is very difficult to anticipate which technology will be selected by buyers and if a business guesses wrong, any investments in alternative technologies could have little or no eventual value (Chan, 1983).

One way to reduce the risk of investing in new businesses is to acquire risk-reducing information before making the investment. The most valuable type of risk-reducing information is specific information about people, places, special relationships, or timing—in other words—factors that are usually relevant to one particular investment opportunity (Fiet, in press; Hayek, 1945). Although there are a number of ways to acquire specific information, some of which are less costly than others, there are few other ways to reduce a venture's riskiness other than to be lucky.

This recognition of the risk-reducing role of specific information is somewhat different from the generally accepted view that the way to reduce a VC's risk is to stage investments in the business. With staged financing, if something goes wrong, a VC can abandon its investment and "stage" a hasty exit (Sahlman, 1990). Staging their investments is a way of hedging their bets on the venture. However, once a VC possesses specific, risk-reducing information about a venture, we suspect that they then place a larger bet on a particular business. Thus, we propose that the amount of first round investment would proxy for a venture's investments in specific risk-reducing information, which would ultimately serve as a much more effective avenue for IPO exit.

**H1A:** The amount of first round VC funding will be positively related to the occurrence of an IPO exit.

### VC Equity Concentration

VCs frequently prefer concentrated equity positions and play a key role in important venture decisions (Barry et al., 1990). *Concentrated equity positions* in this study refer to those with more than half of the venture equity owned by VCs. We argue here that VC equity concentration ought to be positively related to a successful IPO exit. We base our argument on findings from the literature on enterprise governance which suggest that high ownership concentration can increase the value of public firms (cf., Smith, 1986; Wruck, 1989). More recently, Fiet et al. (in press) argued in their study of the dismissal of venture team members that higher levels of ownership concentration could increase a VC's power to act unilaterally as a member of the board of directors.

If VCs improve their prospects of an IPO exit by sometimes acting unilaterally, they would either have to be luckier or better informed in order to make superior judgments about a venture's prospects than its managers. Because VCs are not known to be any luckier, to perform better they would have to be better informed. This is consistent with earlier research that has argued that VC participation in multiple ventures make them more informed decision makers on critical decisions (Barry, 1994). Thus we argue that a concentrated equity position may empower VCs to act unilaterally, which could result in more IPO exits, assuming that they were better informed.

**H1B:** VCs holding a majority of the equity of the venture after round one funding will be positively related to an IPO exit.

### VC Syndicate Diversification

Venture capitalists frequently diversify their investments through the use of limited-liability investor *syndicates* (Bygrave, 1987).<sup>4</sup> Diversification entails investing in multiple businesses as a way of hedging against losses in a single business. Although syndication is commonly seen as valuable for reducing venture specific risk (Norton, 1993), this study concerns itself with the impact VC syndications have on venture firms. We predict that increased VC syndication will be positively related to long-term venture outcome. Our arguments are based on two assumptions that we explain next.

First, a more diverse syndicate may reflect a superior selection process of investments. Building on decision making theory using polyarchies,<sup>5</sup> Lerner (1994) argued that upon discovering a venture potentially worthy of investment, the VC typically forwards a proposal to other investors for their review. The willingness of other VCs to invest in the firm may be an important factor in the lead VC's decision to invest. In other words, syndication provides VCs with an oppor-

tunity to compare their thinking with that from other respected sources of advice and information. Thus, larger VC syndicates may reflect a superior selection of investments based on them possessing superior information.

Second, participation in a syndicate may also provide long-term benefits because it can draw upon the expertise of multiple VCs. A larger number of investors in a specific syndicate are likely to jointly provide better resources and incentives to effectively monitor a venture's performance (Barry et al, 1990). Thus, larger syndicates are likely to do a better job monitoring a venture's management team (Bygrave & Timmons, 1992). Increased monitoring effectiveness can lower the uncertainty associated with a venture's managers acting in either a self-interested or incompetent manner (Norton, 1993). Multiple evaluators who have specialized in market risk may also forestall losses due to incorrect evaluations of competitive conditions (cf., Fiet, 1995a; 1995b). These arguments lead to the following hypothesis:

**H1C:** The investment diversification of the VC syndicate during round one funding will be positively related to long-term venture performance, as indicated by an IPO exit from the business.

### **Early Stage Introductions to Other Sources of Financing**

In order for a VC to benefit from a profitable IPO, it often must be willing to endure diminished periods of venture growth. During periods of slow growth VCs may help by introducing their investees to other sources of financing. In the post-IPO era, VC involvement has been shown to be particularly useful in increasing the market's valuation of a venture when VCs maintain a large equity stake (Lam, 1991). Barry et al. (1990) also argued that when VCs choose to invest (or stay invested), they send a clear signal regarding a venture's quality, which in turn influences external valuations. Because the evaluation of a venture's performance is complex, outside investors may substitute the presumed positive evaluations of the VC(s) for their own incomplete evaluations.<sup>6</sup> Clear signaling may reduce the risk of investing in new ventures by providing information about risk factors. The involvement of VCs may be an effective proxy for other outside assessments of venture stability and value.

Even if a VC chooses to minimize its financial support of developmental or operational expenses, it will generally be in its long-term interest to ensure that a venture's managers succeed in securing financing for these essential purposes. One way VCs can support their investees is to introduce them to third party sources of financing. Although we are unaware of any prior test of this hypothesis in the earlier stages of VC financing, we suspect that introductions to other investors would be positively related to the eventual IPO disposition of the venture.

- H2:** Introductions of their investees by venture capitalists to other sources of financing will be positively related to the long-term performance of the venture, as indicated by an IPO exit from the business.

### III. RESEARCH METHODOLOGY

#### Independent Variables

We collected data for the independent variables by surveying ventures that had received at least one round of venture capital funding. Eight hundred thirty-seven ventures were identified in the 1987-1989 editions of *Venture Capital Journal*. Using Dillman's (1978) Total Design Method, which is an approach that incorporates four rounds of subject contacts, we generated responses from 235 firms, for a response rate of twenty-eight percent.

Thirty of these firms indicated that their financing was used for either seed money or a leveraged buy-out.<sup>7</sup> After deleting firms receiving either seed money or financing for a leveraged buy out, we compiled a final sample of 205 firms.

We also compiled data on VC-funded ventures and their stage of financing. We obtained this information from the *Venture Capital Journal* to check for possible response biases, which were not found.<sup>8</sup>

We computed the *amount invested per VC investor* by dividing the total amount of first round funding by the number of VCs in the syndicate.

We computed *VC syndicate diversification* as follows:<sup>9</sup>

$$VC \text{ syndicate diversification} = 1 - \frac{\sum_j mij^2}{(\sum_j mij)^2}$$

where "*j*" equals the number of VCs in the syndicate and "*mij*" equals the percentage of total first round investment in venture firm "*i*" made by VC firm "*j*". The denominator was added as an adjustment to the original measure to accommodate the use of VC investment data not summing to one. By way of example, these calculations resulted in a score of "0" if only one VC contributed to round one funding, a score of "0.50" if two VCs invested equally, a score of "0.667" if three VCs invested equally, etc. The scores for our study ranged from 0.0 to 0.829.

We measured *VC equity ownership* using a survey question that asked the entrepreneur, "After first round financing, what percentage of [your venture's] outstanding shares were held by venture capital firms?" We then collapsed the VC equity ownership variable into a *majority VC equity ownership* variable by coding it as a "1" if a VC syndicate obtained more than fifty percent ownership during first round financing. All other observations were coded as "0." Upon completion of

first round financing, fifty-four percent of the VC syndicates held majority ownership positions.

We measured *new financing sources* using a single item, 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). The item asked if “Our VCs introduce us to other sources of financing”.

### Dependent Variable

Venture disposition data was collected during 1995. The status of each VC-backed venture was categorized as follows: (1) *no longer in business*; (2) “*living dead*” (private and/or marginally profitable); (3) merged or acquired; and (4) *IPOs* (publicly traded and/or initial public offerings).<sup>10</sup>

We located data on each of these four types of venture disposition by searching the following sources: *Compact Disclosure*, *Million Dollar Directory*, *Ward's Business Directory*, *CorpTech Directory*, *Mergers and Acquisitions Journal*, and *F&S Predicast*. If we could not determine a venture's disposition from these sources, we contacted its VC by fax or telephone to inquire. These procedures successfully classified 196 out of 205 firms that had received first round funding.<sup>11</sup>

### Control Variables

There are other factors that could influence how a VC exits from a venture in addition to those for which we have hypothesized effects. We controlled for the effects of the most prominent of these factors mentioned in the literature, which included (1) *year of first round funding*; (2) *industry competitiveness*; (3) *technological differentiation*; (4) *specific resource endowments*; and (5) *size of the venture*.

We included the year of *first round funding* because it takes time for a venture to mature and to develop a market for its products or services. Because the time since first round funding varied among the ventures in our sample, it was necessary to control for the potential impact of this age-related factor of going through an IPO.

If we accept the proposition that industry structure dictates the range of acceptable strategies available to a venture, which determines its performance or type of disposition (cf. Bain, 1968; Mason, 1939; Porter, 1980), it is crucial to assess the structural attractiveness of a venture's industry. An industry is structurally *attractive* when the actions of a single competitor do not affect the profits of other industry firms. We measured *industry attractiveness* on 5-point Likert scales (strongly agree as “1” to strongly disagree as “5”) using six items suggested by Porter (1980). These items were: (1) “Essential materials for our products are hard to obtain” [supplier power]; (2) “Our products/services meet important customer needs” [customer power]; (3) “Many products/services comparable to ours are available” [substitutability]; (4) “Demand for our product does not fluctuate”



[rivalry]; (5) "Other firms may start offering similar products" [threat of entry]; and (6) "Entry into our market by new firms is not difficult" [threat of entry]. We summed the responses to create a composite score of industry attractiveness.<sup>12</sup>

A venture that is vulnerable to competitive pressures often attempts to protect itself by pursuing unique strategies. One commonly used strategy is that of *technological differentiation* (Gomez-Mejia, Balkin, & Welbourne, 1990). A venture pursuing such a strategy attempts to attract customers by offering innovative features that are better than those of its competitors. The effect of this type of a barrier is that it raises the cost that potential entrants must incur to successfully pose a competitive threat. We measured *technological differentiation* using three 5-point Likert scales ranging from "strongly disagree" (1) to "strongly agree" (5). We utilized the following items to collect data on three scales: (1) "Our products/services have many unique features;" (2) "Our products/services are not protected by patents;" and (3) "We utilize R&D to differentiate our products." The Cronbach's alpha for this scale was acceptable ( $\alpha = 0.725$ ).

The most valuable resources upon which to base a strategy intended to create a sustainable competitive advantage are those for which there are no equivalent uses for them outside of the venture (cf., Hayek, 1945). If a resource were commonly available, others could inexpensively utilize it to duplicate a venture's strategy. Not only would duplication ruin a strategy's capacity to sustain a competitive advantage, but it would also result at best in normal economic returns. The most valuable types of resources are those which are specific to the venture.

*Specific venture resource endowments* are those related to particular people, places, timing, or special circumstances affecting the venture, which if shifted to another venture would be much less valuable in this alternative use (cf., Hayek, 1945). We attempted to tap this construct in three ways. First, we asked if any one on the venture's management team had any previous startup experience with a venture that was at least partially funded by VCs." This variable was coded as a "0" or as a "1" with "1" equaling previous startup experience with VC backing.

Second, we tapped the specificity of a venture's human capital by asking, "How easy would it be for key managers in your company to apply the same managerial skills in other organizations?" and "How easy would it be for key managers in your company to apply the same technical/engineering skills in other organizations?" Responses to these ranged from "easily transferable," "most could easily be transferred," "some could easily be transferred," to "none could be easily transferred (coded one to four respectively). These items were then summed and averaged with resulting scores ranging from 1.0 to 3.5.

Some researchers have found evidence that the "top" VC firms may add more value than others (Barry et al., 1990; Rosenstein et al., 1993). Bygrave (1987) noted that thirteen percent of the sixty-one VC firms in his sample managed fifty-seven percent of the total pool of venture capital. Because the "top" classification

used by other researchers was apparently a qualitative scheme, we were unable to utilize it directly.<sup>13</sup> We followed Bygrave’s pattern and categorized thirteen percent of VC firms identified by our sampled entrepreneurs as “top” VC firms, which we ranked according to the amount of their investments.<sup>14</sup> We determined the size of their investment portfolios by referring to the 1990 *Pratt’s Guide to Venture Capital Sources*. Those VC firms managing more than \$200 million (the top thirteen percent) were coded as “1” and the rest “0”.

IV. LONG-TERM EFFECTS OF EARLY-STAGE VC ACTIONS

Table 1 describes the impact of four early-stage VC actions on four types of venture disposition, one of which is an IPO exit. In regard to hypothesis 1A, the *still private* group received the lowest average funding amount (Column 2), whereas the *IPO* group (Column 4) received the highest. The mean of \$0.88 million

Table 1  
The Impact of Early-Stage VC Actions on  
Four Different Types of Venture Disposition

	Long-Term Venture Firm Status			
	1 Out of Business	2 Still Private	3 Merged or Acquired	4 <sup>a</sup> IPO
Hypothesis 1A:				
Mean Amount Invested per Investor (\$ mil)	0.88 (0.70)	0.77 (0.54)	0.91 (0.48)	0.98 (0.71) <sup>b</sup>
Hypothesis 1B:				
Mean VC Equity Percentage	0.57 (0.19)	0.49 (0.23)	0.55 (0.23)	0.52 (0.17)
Percentage of firms with VC Majority Ownership	0.71 (0.45)	0.45 (0.50)	0.61 (0.51)	0.55 (0.50)
Hypothesis 1C:				
Mean VC syndicate diversification index	0.53 (0.29)	0.42 (0.30)	0.53 (0.28)	0.63 (0.23)
Mean Number of First Round Investors <sup>c</sup>	2.96 (1.94)	2.76 (1.67)	2.83 (1.78)	3.65 (1.91)
Hypothesis 2:				
Mean VC Introductions to Other Funding Sources	3.06 (0.89)	3.66 (0.95)	5.50 (0.99)	4.00 (0.91)

Notes: <sup>a</sup>The number of observations in each category are as follows: Out of Business = 28; Still Private = 82; Merged or Acquired = 23; IPO = 56.  
<sup>b</sup>The standard deviations are in parentheses.  
<sup>c</sup>The concentration index was utilized in this study, but the mean number of first round investors is reported here for comparison with prior studies.

invested per investor (see Table 2) is also substantially higher than the \$0.5 million reported by Lerner (1994) in his study of biotechnology firms between the years of 1978 and 1989. Table 1 also reports data on the percent of equity held by VCs after their first round funding (hypothesis 1B). It is interesting to note that the highest percentage category of *majority VC equity* control was for the "out of business" group. Perhaps these were high risk ventures that ultimately failed.

These data further confirm that *syndication* (hypothesis 1C) is a common, and possibly, an increasing component of first round funding (2.96 VC investors per first round investment). Lerner (1994) reported a mean of 2.2 VC investors for first round funding. Only 20 percent of the venture firms in this sample had a single VC investor for first round financing. The data on *VC introductions to other funding sources* (hypothesis 2) shows some modest variation with the *merged or acquired* group receiving the lowest score and the *IPO* class receiving the highest.

Because the dependent variable, *long-term venture disposition* is a categorical variable with four reasonably distinct classifications (*out of business*, *still private*, *merged or acquired*, and *IPO*), a multinomial logit model was developed for further analysis. This statistical technique allows for the testing of a generalized logit along with multiple logits per subpopulation (Stokes, Davis & Koch 1995). The multinomial logistic regression model is an extension of the dichotomous logistic model (Menard, 1995). This statistical technique allows for the comparison of a reference class (IPOs) to the other dependent variable classifications.

The means, standard deviations, and correlations among all variables are presented in Table 2. As Table 2 indicates, multicollinearity does not appear to be a significant problem among our independent variables.

Table 3 utilizes two panels to report the results of the multinomial logistic analysis. Panel A contains the Wald chi-square analysis for the overall effect of each independent variable in our model. These test are analogous to those found in a conventional ANOVA table for a balanced ANOVA design after controlling for all other effects. Panel B contains an analysis of maximum-likelihood estimates, which gives the coefficient estimates for each variable in the model. The three individual logits reported in Panel B compare the reference class (firms that have been through an IPO in this study) with each of the other three categories (out of business, still private, and merged or acquired).

### First Round VC Investment

The Wald Chi-square statistics for the overall effects of the various independent variables are shown in Panel A of Table 3. After controlling for the factors specified in Section II above, it is apparent that the average *amount invested in first round financing* significantly impacts venture dispositions. For each type of venture exit the Chi-square statistic indicates that the amount of investment made as a

Table 2  
Spearman Correlation Results of all Variables used to Test the Effects of  
Early Stage VC Influence on the Long-term status of VC Backed Ventures

	1	2	3	4	5	6	7	8	9	10	11
1. Long-term Venture Status											
2. Round 1 VC Investment	0.16 <sup>c</sup>										
4. Majority VC Control	-0.03	0.15 <sup>b</sup>									
3. VC Syndicate Concentration	0.23 <sup>a</sup>	0.07	0.28 <sup>a</sup>								
5. New Financing Sources	-0.12	-0.04	-0.04	-0.12							
6. Year of First Round Funding	-0.14 <sup>c</sup>	0.01	0.25 <sup>a</sup>	0.16 <sup>b</sup>	-0.03						
7. Industry Competitiveness	0.19 <sup>b</sup>	0.08	0.03	0.21 <sup>a</sup>	-0.09	-0.03					
8. Technology Diff. Strategy	0.25 <sup>a</sup>	-0.10	-0.03	0.17 <sup>b</sup>	-0.29 <sup>a</sup>	0.12	10.22 <sup>a</sup>				
9. Previous Startup Experience	0.12	0.14 <sup>c</sup>	0.04	0.17 <sup>b</sup>	0.03	0.01	0.16 <sup>b</sup>	0.11			
10. Venture Specific Resources	-0.19 <sup>b</sup>	-0.05	0.09	-0.01	-0.02	0.03	0.10	-0.16 <sup>b</sup>	-0.04		
11. Top VC Firms	0.17 <sup>b</sup>	0.25 <sup>a</sup>	0.11	0.22 <sup>a</sup>	0.03	-0.04	0.07	0.01	0.06	-0.07	
Means	2.55	0.88M	0.52	0.51	2.25	87.14	19.8	3.94	0.49	1.81	0.25
Standard Deviations	1.05	0.83M	0.50	0.28	0.94	1.69	2.66	0.94	0.50	0.65	0.44

Notes: The "Long-term Venture Status" variable is coded as follows: 1 = the venture is now out of business; 2 = the venture is still private; 3 = the venture as been merged or acquired by another firm; and 4 = the venture has gone through an initial public offering.

<sup>a</sup> Different from zero at the one percent level of significance.

<sup>b</sup> Different from zero at the five percent level of significance.

<sup>c</sup> Different from zero at the ten percent level of significance.

**Table 3**  
**Multinomial Logit Model with VC Investment Behaviors**

*Panel A: Wald chi-square test on parameters across all venture outcomes*

<i>Parameter</i>	<i>DOF</i>	<i>Wald Chi-Square</i>
H1A: First round VC investment	3	7.62 <sup>b</sup>
H1B: VC equity concentration	3	7.24 <sup>c</sup>
H1C: VC syndicate concentration	3	11.32 <sup>a</sup>
H2: New financing sources	3	4.07
Control Variables		
Year of first round funding	3	9.70 <sup>b</sup>
Industry competitiveness	3	2.64
Technology differentiation strategy	3	9.40 <sup>b</sup>
Previous startup experience	3	3.91
Venture specific resources	3	5.58
Top VC firms	3	2.67
-2 log likelihood ratio for covariates	10	85.7 <sup>a</sup>

*Panel B: Logit Models with VC Investment Behaviors: IPOs as reference class*

<i>Parameter</i>	<i>Estimate</i>	<i>S.E.</i>	<i>Chi-Square</i>
<i>Choice group: Out of Business (22 Ventures)</i>			
H1A: First Round VC Investment	6.32e-7	4.89e-7	1.67
H1B: VC Equity Concentration	0.48	0.32	2.27
H1C: VC Syndicate Concentration	2.99	1.39	4.61 <sup>b</sup>
H2: New Financing Sources	0.24	0.33	0.53
Control Variables:			
Year of First Round Funding	-0.27	0.19	2.11
Industry Competitiveness	0.16	0.11	2.12
Technology Differentiation. Strategy	0.58	0.36	2.67 <sup>c</sup>
Previous Startup Experience	-0.19	0.29	0.46
Venture Specific Resources	-1.05	0.45	5.40 <sup>b</sup>
Top VC Firms	0.58	0.66	0.77
<i>Choice group: Still Private Businesses (74 Ventures)</i>			
H1A: First Round VC Investment	1.21e-7	4.39e-7	7.54 <sup>a</sup>
H1B: VC Equity Concentration	-0.12	0.24	0.26
H1C: VC Syndicate Concentration	3.91	1.2	10.66 <sup>a</sup>
H2: New Financing Sources	0.17	0.26	0.43
Control Variables:			
Year of First Round Funding	-0.31	0.15	4.35 <sup>b</sup>
Industry Competitiveness	0.11	0.09	1.46
Technology Differentiation. Strategy	0.89	0.29	9.29 <sup>a</sup>
Previous Startup Experience	-0.31	0.23	2.37
Venture Specific Resources	-0.44	0.37	1.41
Top VC Firms	0.43	0.51	0.71

(continued)

Table 3  
Continued

Parameter	Estimate	S.E.	Chi-Square
Choice group: Merged or Acquired (18 Ventures)			
H1A: First Round VC Investment	8.22e-7	6.22e-7	1.75
H1B: VC Equity Concentration	0.52	0.34	2.36
H1C: VC Syndicate Concentration	2.29	1.53	2.22
H2: New Financing Sources	0.63	0.32	3.87 <sup>b</sup>
Control Variables:			
Year of First Round Funding	0.16	0.17	0.88
Industry Competitiveness	0.03	0.12	0.08
Technology Differentiation. Strategy	0.53	0.38	1.91
Previous Startup Experience	-0.56	0.32	3.09 <sup>c</sup>
Venture Specific Resources	-0.62	0.48	1.69
Top VC Firms	1.25	0.81	2.41

Notes: The dependent variable is a qualitative variable with one equaling the venture is now out of business; two equaling the venture is still private; three equaling the venture has been merged or acquired; and four equaling the venture has gone through an IPO.

<sup>a</sup>Different from zero at the one percent level of significance.

<sup>b</sup>Different from zero at the five percent level of significance.

<sup>c</sup>Different from zero at the ten percent level of significance.

part of first round financing does vary significantly. An examination of Table 1 indicates that the average investment was lowest for ventures that are *still private* and it was highest for firms that have gone through an *IPO*.

Panel B of Table 3 contains specific logits comparing the *IPO* category (54 firms) as the reference class with each of the other three categories (*out of business*, *still private*, and *merged or acquired*). It also contains maximum-likelihood estimates of the model parameters, as well as the parameter estimates themselves. In addition, it reports that the average *amount invested per VC* is positively related to *IPO* disposition. The relationship is strongest and statistically significant in the specific logit comparing the ventures that are *still private* with those that have gone through an *IPO*.

VC Equity Concentration

The overall Wald Chi-square test for *majority VC equity ownership* (Table 3, Panel A) is marginally significant at the .10 level. The greatest contrast is between the *out-of-business* and *still private* groups. After controlling for the other effects, there are differences in venture status based on concentrated equity positions. Concentrated VC equity positions are most prevalent among those ventures that have

gone out of business (Table 1). None of the specific logits which use IPOs as a reference group (Table 3, Panel B) were statistically significant.

### VC Syndicate Diversification

The Wald Chi-square statistic for the overall effect of *VC syndicate diversification* is statistically significant at the .01 level (Table 3, Panel A). The more VCs co-invest in a syndicate, the greater is their impact on a venture's eventual disposition. The specific logits (Table 3, Panel B) indicate that VC syndicate diversification is positively related to IPO exit. Furthermore, this relationship is statistically significant in the *out-of-business/IPO* and *still private/IPO* logits. These data indicate that greater investment diversification within a VC syndicate increases the probability that a venture will go public.

There are at least two explanations for this finding. First, it may be that the more VCs involve themselves in the first round investment selection process, the greater is the likelihood that the ventures with the greatest potential will be selected. When VCs work together in a syndicate, their combined efforts enable them to evaluate more specific information about a venture's prospects, and thus more accurately predict its future. Second, before VCs invest in ventures via syndicates, they forward prospective deals to other investors for their evaluation. The acceptance of an invitation by other investors to join the syndicate is probably an important factor in the lead VC's final decision to invest (Lerner, 1994).

### VC Introductions to Other Sources of Financing

The VC literature has frequently noted that VC funding adds substantial credibility to entrepreneurial ventures when they attempt to obtain additional investors and other types of financing. Most testing of this hypothesis has occurred in the post-IPO era. This study examined early VC introductions to other sources of financing. The overall Wald Chi-square statistic was not significant although the specific logit for the *merged or acquired* versus *IPO* logit was significant at the .10 level and the variable is consistently positive as shown in Panel B of Table 3. VCs that introduce their investees to other sources of supplemental financing are somewhat more likely to go public versus being *merged or acquired* by another firm.

## V. CONCLUSION AND RESEARCH IMPLICATIONS

The relationship between VCs and their investees continues to capture the attention of researchers, practitioners, and outside observers. Prior research has generally examined their relationship either in the early stages of the venture with a cross-sectional design or it has compared VC-backed versus non-VC-backed ven-

tures in the post IPO era. In contrast, this study uses a longitudinal design to explore if VC investment behavior during the first round financing is significantly related to IPO exit after five years. This analysis provides evidence that these early-stage investment strategies are related to IPO exit after five years.

One of this study's most important findings is that greater VC investments in the first round tend to increase the probability that the venture will go public or be merged or acquired. We argued in Section II that when VCs possess greater amounts of specific information about an investee firm that they are more willing to commit themselves to higher levels of funding.

Much attention has been given to how VCs stage their investments in order incrementally to explore risk and to increase monitoring effectiveness. Although these may be benefits of a staged approach, staging may also limit a venture's growth by restricting the amount of specific, risk-reducing information available to the venture team to make strategic decisions (Fiet, 1995b). Future research should further examine this phenomenon and also explore the possible down-side to investing in specific information, which is that it may become a sunk cost with little or no value in future investments.

Another finding from this study is that when VCs diversify their investments, individual ventures in their portfolio have a significantly better probability of an IPO exit. This finding is consistent with Lerner's (1994) assertion that VCs prefer investing in syndicates as a way of comparing their own thinking with that of other potential VC investors. Other VCs' willingness to invest in a venture may be an important factor in a lead venture investor's decision to invest. Larger syndicates have access to more comprehensive investments in specific information about particular ventures, which could improve the venture selection process. Larger syndicates are also likely to bring together more expertise, support, and the availability of capital for current and follow-on cash needs. If one VC loses confidence in a venture's future or if it needs to cash out a fund to satisfy co-investors in another deal, then remaining VCs in the syndicate may be willing to provide additional capital. Future research should examine which of these two arguments make the largest contribution to an eventual IPO disposition.

This study examined the effect on IPO exit of a few different VC actions that could be initiated by VC syndicates. Future research could examine the effects on IPO exit of larger ventures versus smaller ventures and older ventures versus younger ventures within each syndicate, diversity of actual investments made by VC syndicates and their important impact on venture development. Lerner (1994) found that the more established VC firms tended to syndicate with one another in the first round and then include more diverse VCs in later rounds.

Finally, this study found little to support the value of VC introductions to additional sources of financing. One limitation of this test is that data were obtained for most firms soon after they received first round financing. Future



research should investigate this phenomenon after a venture has received a couple of rounds of VC funding.

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### NOTES

1. In 1989, Gladstone described six ways that a VC can exit from a venture: (1) sale of the company's stock in an IPO; (2) sale of the company's stock to another company; (3) repurchase of the VC's stock by the company itself; (4) sale of the stock to another investor; (5) reorganization of the company; and (6) liquidation of the company. Because an IPO overcomes the detrimental effect of small numbers bargaining (cf., Williamson, 1975), it is widely believed to be the most profitable of these exit strategies.
2. Lam (1991) found that even if a VC is required to maintain a stake in the venture after the IPO, "part of the risk premium will dissipate after a public offering as information about firm value increases. This is to say that for a given fundamental value of a firm, an investor can realize a higher return if he divests his investment after the firm has gone public" (p. 148).
3. Others have examined whether their advice has a positive impact on venture performance (Barney, Busenitz, Fiet & Moesel, 1994, Sapienza, 1992).
4. A syndicate often takes the form of a limited partnership. A lead VC assumes the role of the general partners with other co-investing VCs acting as limited partners.
5. Sah and Stiglitz (1986) defined polyarchies as project decisions that were made in the affirmative only if two reviewers agree that the project is worth pursuing.
6. This argument is similar to the one made by Williamson (1975) about economies of internal capital markets and the increased efficiency of risk evaluation that is available to inside investors compared with those on the outside.
7. Responses from these 30 firms were not analyzed for this research project because it examines VC advice that was provided after first round funding.
8. No significant differences were found between respondents and non-respondents with regard to the amount of funding reported by VCs [ $F(1, 688) = 1.53$ ;  $p = .22$ ] nor by the stage of funding ( $X^2(5, N = 779) = 7.672$ ;  $p = .17$ ).
9. This measure is similar to the Herfindahl measure of industry concentration and corporate diversification.
10. There were 30 *no longer in business* ventures, 84 *living dead* ventures, 24 merged or acquired ventures, and 58 *IPO* ventures in the sample.
11. Nine firms remained that could not be classified. We suspect that these firms are no longer in business. They were omitted from this study.
12. As expected, the Cronbach's alpha was low (0.32) because these indicators are tapping into five different aspects of industry attractiveness. Given that they can not be reliably scaled using a single composite scale, the appropriate thing to do would have been to include them in the multinomial logistic regression equation as separate aspects of industry attractiveness. Unfortu-

nately, the statistical model lacked sufficient degrees of freedom to accommodate their separate inclusion. We concluded that the popularity of these indicators in the literature justifies them being used as a scale. This would be a more serious limitation of this study if they were dependent variables instead of being used as control variables. We could have omitted them altogether, but in our view there is sufficient theoretical justification for including them.

13. Numerous inquiries to those who utilized this "top" terminology failed to uncover a quantitative basis for their classification scheme. Although a qualitative scheme was appropriate for their purposes, we needed to convert it into a quantitative classification system.
14. In those cases where two VCs invested the same amount, the first VC mentioned was designated as the "top" VC.

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