

Do Venture Capitalists Affect Investment Performance? Evidence from First-time Funds

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August 2006

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I thank seminar participants at Carnegie Mellon, Duke and the Western Finance Association Meetings for their comments and Michael Brandt, Simon Gervais, Laura Lindsey, Manju Puri, and Catherine Schrand for their suggestions. I thank Joseba Celaya, Adrian Cighi and Ling Luo for research assistance. All errors are mine.

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Abstract

The performance of venture capital funds is persistent across funds managed by the same venture capital firm. Is this empirical fact due, at least in part, to differing abilities of individual venture capitalists? This paper examines whether characteristics based on the educational and work histories of venture capitalists can predict the performance of first-time venture capital funds. Having a venture capitalist with venture investing experience is a positive predictor of success for first-time seed stage funds, but only when the fund also has a venture capitalist with experience founding and running a start-up. The strongest predictor of first-time later stage fund success is whether a founding venture capitalist attended an ivy league university. Moreover, the predictive power of venture capitalist characteristics persists in follow-on funds. The findings suggest that differences in skills across individual venture capitalists can explain some of the heterogeneity and persistence in venture capital fund performance.

I. Introduction

Venture capital (VC) is an important source of financing for start-up companies and has become an increasingly large part of institutional investors' portfolios, yet compared to other sources of financing we understand relatively little about what drives the performance of VC investments. Studies such as Cochrane (2005), Kaplan and Schoar (2005), Ljungqvist and Richardson (2003), and Quigley and Woodward (2003) have made progress towards an understanding of the drivers of VC investments by empirically characterizing the returns to both individual investments and to VC funds. However, many questions remain about the underlying reasons for the pattern in returns that have so far been documented. In a recent study Kaplan and Schoar (2005) document both heterogeneity and persistence in VC fund returns, even after controlling for observable risk characteristics of the funds.¹ These features of VC fund returns stand in marked contrast to those of mutual funds in the public equity markets. Kaplan and Schoar's evidence suggests that differences in non-risk factors, such as venture capitalist skill or venture firm resources, are driving part of the observed heterogeneity and persistence in VC fund returns.

In this paper, I examine whether measures of the human capital of venture capitalists can predict the performance of the VC funds they manage. This paper is the first, to my knowledge, to conduct such tests. Venture capitalists often take an active role in both monitoring and advising their funds' portfolio companies, for example, by serving as board members, helping locate executives or writing specific contracts (Hellmann and Puri (2000, 2002), Kaplan and Stromberg (2001) and Lerner (1995)). In addition, if certain venture capitalists are better at

¹ Kaplan and Schoar document persistence in both gross and net-of-fee returns. The reasons for heterogeneity and persistence in net-of-fee returns may differ from the reasons for heterogeneity and persistence in gross returns. In this paper, I focus on proxies for gross returns and do not discuss the division of returns between fund managers and limited partners.

providing value-added services to portfolio companies after investing, they may have an advantage in winning the best deals because high quality portfolio will want the benefit of these services (e.g. Sorenson (2004)). Moreover, venture capitalists must identify and evaluate prospective portfolio companies before investing in them. If some venture capitalists have more skill in these activities than others, or differ systematically on some dimensions, then their funds should exhibit differences in performance and may do so consistently over time.

To the extent that differences in ability or investing strategy differ by venture capitalists' backgrounds in work and education then we should expect these differences to predict VC investment performance. Using information on the educational and work histories of venture capitalists, I examine whether the characteristics of venture capitalists can predict the performance of first-time VC funds. I focus on first-time funds for several reasons. First, doing so enables me to better identify the impact of individuals' characteristics, as distinct from the impact of the funds' managing firms, on VC fund performance. Variation in the reputation or resources of VC funds' managing firms may lead to heterogeneity and persistence in fund returns. For example, a managing firm may be able to realize synergies between portfolio companies in its various funds (Lindsey (2003)) or may be able to draw on the resources of its syndication partners in past deals (Hochberg, Ljungqvist and Lu (2005)) in a manner that is distinct from the skill levels of the individual venture capitalists working for the managing firm at any point in time. This also suggests that the roles differences in skill among venture capitalists play in the performance of VC funds may evolve over time as managing firms build track records and connections. Rather than examining the average effect of venture capitalists' characteristics across all funds, controlling for managing firm characteristics, I focus on examining the effect of venture capitalists' characteristics on first-time funds, when managing

firms' resources and reputations are non-existent or insignificant compared to the characteristics of the individual venture capitalists comprising them.

Second, first-time funds are the most difficult to evaluate from the perspective of limited partners, since the managing firms of these funds do not have track records. Many smaller limited partners or those new to VC investing who do not have access to the funds of more established VC firms will be more likely to invest in first-time funds. Moreover, experienced limited partners may wish to invest in first-time funds in order to tap new markets and investment opportunities. Better understanding how the characteristics of the venture capitalists' starting first-time funds are related to the performance of the funds will help limited partners make these investment decisions. Third, understanding the determinants of the performance of the investments of first-time VC funds can help us understand how and when venture capital markets may become more active in regions of the U.S., or in other parts of the world, where VC markets are currently limited. To the extent that new entrants into VC markets are first-time funds, knowing which venture capitalist skills are most important for first-time fund success may help forecast when VC markets might become more active.

I find that certain characteristics of venture capitalists do predict the performance of first-time VC funds. In seed stage VC funds, having a venture capitalist with venture investing experience is the strongest positive predictor of success, but only when the fund also has a venture capitalist with experience founding and running a start-up. The higher performance of seed stage funds comes in equal amounts within the same fund from both successful first-round investments and from successful later round investments in companies first started by other VC funds. This suggests that the superior performance of these first-time seed stage funds comes from both being better able to identify good entrepreneurs and business ideas and in being

invited to invest in later rounds of already successful companies. This finding lends support to the notion that venture capitalists specialize in investments in which they can take roles that are specific to their own work backgrounds (e.g., Botazzi, da Rin and Hellmann (2004)) in order to achieve better returns.

In later stage VC funds, the strongest predictor of fund success is whether the fund is founded by a venture capitalist who attended an ivy league university. Interestingly, the better performance mostly stems from participating in the first round of investment in high performing companies. This suggests that in order to compete with other later stage funds, first-time later stage funds may try to “get their foot in the door” early by providing capital alongside early stage investors. It seems that ivy league university connections aid in this strategy. Finally, I find that the characteristics of venture capitalists that predict first-time funds also predict the performance of follow-on funds, consistent with the fund persistence findings by Kaplan and Schoar. Overall, the results indicate that individual venture capitalists do affect VC investment performance and offer an explanation for the heterogeneity and persistence in VC fund performance which stems from differences in venture capitalist ability.

The rest of this paper proceeds as follows. Section II describes the data and the estimation sample. Section III describes the characteristics of venture capitalists raising first-time funds. Section IV presents the results on which venture capitalists’ characteristics predict fund performance. Section V examines whether venture capitalists’ characteristics also predict follow-on fund performance. Section VI concludes.

II. Data

I use the Thomson Financial/Venture Economics VentureXpert database for information on VC funds, their management firms and the portfolio companies in which they invest. The basic unit of observation in VentureXpert is a financing deal, or round. VentureXpert records the identities of the participating VC firms and funds in the round as well as the portfolio company receiving the investment. The database also records outcomes of the portfolio companies receiving private equity capital, including whether they went public, were acquired, went bankrupt, were shut down, or are still active investments. Using this information it is possible to construct measures of the performance of private equity funds, which I describe in more detail below.

A. First-time Funds

I first restrict my sample of VC funds to include only funds whose managing firms are based in the United States and which are classified as “Private Equity Firms Investing Own Capital.” The impact of venture capitalists’ characteristics on the performance of first-time venture capital funds connected to banks, corporations or governments may not be the same as their impact on funds managed by independent investment firms due to differing incentives and resources of being connected to a larger organization. Second, I restrict the sample to funds that were raised between 1980 and 1998. The typical life span of a venture capital investment is around three to five years and the typical life span of a venture capital fund is around ten years. Funds make most of their investments within three years of the fund’s start. Therefore, funds that were started after 1998 may not have had enough time to exit their investments, making

comparisons between the performance of these younger funds and older funds, which have had time to exit all of their investments, difficult.

Third, I select only funds that are classified as “venture” funds in VentureXpert, and exclude those classified as “buyout” funds. Funds classified as venture funds include those with an investment stage focus of seed stage, development, early stage, balanced stage, expansion and later stage. The buyout funds that are excluded include those with an investment stage focus of mezzanine stage, buyouts, recaps, turnaround, distressed debt, generalist, and other private equity. I choose to focus only on venture funds, rather than both venture and buyout funds, since the skill sets that are likely required for fund success will likely vary a great deal depending on whether a fund is trying to help firms start and grow (venture) or restructure in some way (buyout). Finally, I restrict the sample to funds that invested in five or more portfolio companies and which have non-missing size information, i.e. the total amount of money that the fund has raised to invest in portfolio companies

Imposing these sample selection criteria leaves a sample of 1,184 venture capital funds representing 1,152 managing venture capital firms. Of these 318 are first-time funds. I define a first-time fund as being the first fund managed by a venture capital firm and having a vintage year of no more than two years after the founding date of the managing venture capital firms. Table I presents a longitudinal view of this sample of venture capital funds. Panel A presents a longitudinal view of the entire sample of funds, both first-time funds and follow-on funds. The sample average fund size is around 82 million dollars and the average number of portfolio companies in which a fund invests is around 23. The average percentage of funds’ portfolio companies that exit, via IPO or acquisition, is around 56 per cent. The average fund exit percentage decline towards the end of the sample period, in part because some of the funds

raised in these later years may still be waiting for an outcome for a few of their portfolio companies. About 45 per cent of the funds are seed or early stage funds. About 34 per cent of the funds are located in California, and about 14 per cent are located in New England.² There is variation in the number and size of funds over the sample period, with a falling off of funds raised in the late 1980s and early 1990s and then increasing towards the end of the sample period. Interestingly, although the average size of funds increased over the sample period, the average number of portfolio companies funds invest in has declined over the sample period, suggesting perhaps a shift toward larger deals, or deals with more follow-on investments required.

Panel B presents a longitudinal view of the sample of first-time funds raised between 1980 and 1998. The average size of a first-time fund is slightly smaller than the average fund size over the sample period. However, in a given year the average first-time fund size may in fact be larger than the average fund size in a year due to some firms raising small follow-on funds and some first-time funds raising quite large sums. The percentage of first-time funds raised in California and New England are very close to the sample averages. However, more first-time funds are early or seed stage funds, 50 per cent, compared to the sample average of 45 per cent. The pattern in the number of first-time funds raised over time mirrors the pattern we saw for all venture funds raised over the period. The average portfolio company exit percentage for the sample of first-time funds is slightly lower than the full sample average at around 54 per cent. I next turn to a description of how I collect biographical information on the venture capitalists who manage first-time funds.

² I define New England to include Massachusetts, New Hampshire, Vermont, Maine and Rhode Island. I exclude Connecticut funds because they are often very close to New York City.

B. Venture Capitalist Biographical Information

In addition to recording information on private equity financing rounds, VentureXpert records the names and job titles of subsets of people working for venture capital firms and portfolio companies. VentureXpert records each individual's name and current job title as well as any other positions the individual holds or previously held with other venture capital firms and portfolio companies, including board memberships, included in the VentureXpert database. Most of the information contained in VentureXpert is reported by venture capital firms in response to inquiries by Venture Economics. Venture capital firms vary in the types of people they report as working for them. Some identify a very broad set of individuals, including associates, analysts, and other support staff. Others report only the most senior members of the organization.³ Thus, VentureXpert will only record past positions an individual held with other venture capital firms to the extent that these firms reported the individual and his or her position to VentureXpert at the time the individual worked for the venture firm.

I use the names of the executives recorded in VentureXpert as the starting point for identifying the venture capitalists who raise and manage the first-time venture capital funds in my sample. I am interested in identifying fund managers, or the individuals responsible for making decisions about which portfolio companies the venture capital fund invests in, with whom to syndicate investments, and how much money to invest in each portfolio company, as well as monitoring these investments. There are two significant challenges to identifying fund managers from the set of individuals listed in VentureXpert as working for each venture capital firm. The first challenge is distinguishing individuals with the decision-making ability in the fund from individuals who are primarily engaged in support activities. Venture capital

³ The same is true for portfolio companies. For some portfolio companies a broad range of executives and employees are listed; for others only the CEO and a few other executives are listed.

organizations do not use standard job titles for their workers, which complicates this task. The second challenge is identifying the individuals who were fund managers during the period over which a first-time fund was invested and harvested. It is important to link each fund in the sample to the venture capitalists that managed those first-time funds, rather than the most current venture capitalists comprising the venture capital firm.

I take a two-step approach to classifying the individuals recorded in VentureXpert as working for or as having worked for the venture capital firms managing my sample of first-time venture funds as fund managers. First, I check to see if any of the individuals served as board members for any of the fund's portfolio companies. If they have, I also classify these individuals as fund managers, since serving as a board member and monitoring an advising portfolio companies is the role of a fund manager. The venture capitalist or fund manager who is the "lead," or responsible decision maker, for a deal often takes a board seat on the portfolio company. Second, I classify individuals with the same job title as the individuals holding board seats as fund managers as well.

This screening process identifies a set of individuals who at some point may have been fund managers for one of the funds managed by a venture capital firm. I further identify the individuals who were fund managers of the first fund raised and managed by the venture capital firm. To do this I need information on the dates an individual joined the venture capital firm. In some cases, founding partners of a venture capital firm are actually listed as "Founding Partners" or "Founders" in VentureXpert. For such individuals, I classify them as managers of the first-time funds in my sample, and double-check my classification when I hand-collect venture capitalists' biographical information. For each individual I classify as a fund manager for my sample of first-time venture funds, I hand-collect information on the schools the individual

attended, the degrees attained, including major field of study and year of degree, and the companies they worked for as well as the positions held with these firms. I also collect information on the dates during which the individuals held these positions.

To collect this information, I first visit the websites of the managing firms of the first-time venture capital funds in my sample, if they are still in existence. For individuals who are still working for the managing firms, I collect information from the bios listed on these websites. I then use a biographical search engine called ZoomInfo to collect additional information on my set of potential first-time fund managers. ZoomInfo collects information on individuals working for companies in the U.S. and Canada by crawling the websites of these companies and caches appearances in old webpages over the past several years of individuals included in its database of professionals. ZoomInfo records biographical information such as schooling and work history. Finally, I consult Marquis' Who's Who in Business for additional information.

I am able to collect biographical information for the founding management teams for 222 of my sample of 318 first-time venture capital funds. Panel C of Table I presents longitudinal information for my sub-sample of first-time funds for which I have venture capitalist biographical information. The averages and medians are very similar to those in Panel B, although there are a larger a number of first-time funds in the earlier part of the sample period with missing biographical information than in the later part of the sample period. One potential concern with the data sample is survivorship bias. First-time venture capital funds raised in the earlier part of my sample whose managing firms shut down and do not have websites make it harder to collect information on the individuals who started these firms. However, the funds for which I do have information in the earlier part of the sample period appear to be representative of the set of first-time funds raised in those years, at least along the dimensions of the variables

reported in Table I. As a further precaution to ensure that the results in the paper do not suffer from survivorship bias, I repeat the regression analysis detailed below on the sub-sample of first-time funds raised in the 1990s and find very similar results.

III. Characteristics of Venture Capitalists Who Start First-time Funds

I next describe the biographical variables collected and how these variables vary across individual venture capitalists and across first-time VC funds before turning to an examination of whether these characteristics predict first-time fund performance. Amongst the set of educational characteristics I consider are whether a venture capitalist has an MBA, PhD or law degree, whether a venture capitalist studied engineering or a science (either as an undergraduate or a graduate student) and whether the venture capitalist attended an ivy league university. Having studied science or engineering as a student may be a measure of how equipped a venture capitalist is to evaluate or understand a new technology in addition to a measure of a venture capitalist's "smarts" or problem solving ability. Likewise, having attended an ivy league university may matter for first-time fund performance if this indicates that the venture capitalist is better connected or if it indicates a higher ability, i.e. being "smart." Chevalier and Ellison (1999) find evidence that having attended a top university, as measured by average SAT score of admitted students, positively predicts the cross-sectional performance of mutual fund managers. Accordingly, I include measures of the quality of the university a venture capitalist has attended to see if we observe similar results for VC funds.

I also examine more specifically whether a venture capitalist attended Harvard University or Stanford University and also whether a venture capitalist received an MBA degree from either of these institutions. As we will see, there are a disproportionate number of venture capitalists

who have attended Harvard and Stanford and who also received an MBA from these universities. To the extent that attending these institutions teaches skills specific to being a successful venture capitalist or provides access to a network of entrepreneurs, investors or other venture capitalists, we might expect that knowing whether a venture capitalist has acquired these skills or network connections to help predict the performance of the funds they manage.

Amongst the set of work history characteristics I consider are whether a venture capitalist previously worked for another venture fund, whether a venture capitalist worked as a strategy consultant, whether a venture capitalist worked in non-venture finance, whether a venture capitalist worked as an engineer, whether a venture capitalist founded and managed a start-up company. The hypotheses these variables address are those to do with the skill sets and connections acquired at these past jobs, as well as the “types” of people who select into these jobs, matter for first-time fund performance. In particular, we might expect that a first-time fund with a venture capitalist who previously worked with another venture fund might do better than one that does not, since the experienced venture capitalist will have acquired knowledge of the investing process as well as a set of connections relevant to venture investing. A venture capitalist who has experience founding and running a start-up may be able to add operational expertise as a board member and have connections to the entrepreneurial community which may increase his fund’s proprietary deal flow. A venture capitalist having worked as an engineer may be better able to understand and identify good technologies. Similar hypotheses can be formulated based on the other work history variables. The empirical tests in Section IV will shed light on which, if any, of these hypotheses are born out in the data.

Table II summarizes the characteristics of the venture capitalists managing the sample of first-time venture funds. The sample includes 482 individual venture capitalists for an average

of 2.17 founding venture capitalists per first-time fund. The first column of Table II reports average statistics across all 482 venture capitalists. The second column of Table II reports statistics by first-time fund management team. Each of the variables beginning with “Has” in the second column identifies whether at least one venture capitalist has a particular characteristic. The Appendix contains detailed definitions for these management team variables. Focusing on the first column of averages across all venture capitalists managing first-time funds, we see that 58 per cent have MBAs, but only a small percentage have PhDs or law degrees, 7 and 8 per cent respectively. 33 percent studied engineering or science in college and 37 per cent attended an ivy league university. A large fraction of those who attended an ivy league university also got their MBAs from an ivy league university. 19 per cent of venture capitalists attended Harvard and almost all of them also got an MBA there, 16 per cent. 14 per cent of venture capitalists attended Stanford, but only a little over half, 9 per cent, also got their MBAs there.

Turning to the summary of venture capitalist work histories in the first column of Table II, we see that the largest fraction, about 44 per cent, of first-time fund venture capitalists have prior venture investing experience. About 15 per cent founded and managed start-up companies, but only a small percentage, 5 per cent, have both worked previously as venture capitalists and entrepreneurs. The next largest fraction, 29 per cent, of venture capitalists previously worked in non-venture finance. 16 per cent of venture capitalists worked as management or strategy consultants and only 9 per cent worked as professional engineers.

When we focus on the averages across first-time fund management teams in the second column of Table II, the percentages of first-time funds for which at least one venture capitalist possesses a particular trait increases vis-à-vis the full sample averages as different types of venture capitalists team up to form the funds. About 80 per cent of first-time funds have a

venture capitalist who has an MBA; 56 per cent of funds have a venture capitalist who attended an ivy league university. A little over a third of first-time fund management teams have at least one member who attended Harvard, and about one fifth of first-time fund management teams have a member who attended Stanford. About 57 per cent of first-time venture funds have a venture capitalist with past venture investing experience. About 25 per cent of funds also have a venture capitalist who founded and managed a start-up company. Interestingly, we see quite a large increase in the number of first-time funds with teams of venture capitalists that have both venture investing experience and experience running a start-up relative to the average across all individual venture capitalists. There is a high propensity for venture capitalists with past investing experience to team up with venture capitalists with past entrepreneurial experience.

Table III presents venture capitalist team characteristics by seed stage and later stage fund sub-samples.⁴ In the regression analysis in Sections IV and V, I analyze the sub-samples of first-time seed stage and later stage funds separately since the characteristics of venture capitalists that may matter for the performance of funds that focus on “ground floor” investing and company development, i.e. seed stage investing, may differ from the characteristics of venture capitalists that may matter for later rounds of financing and getting a company ready for an exit, i.e. later stage investing. Indeed, there are differences in the composition of founding venture capitalist teams between seed and later stage funds. In particular, a greater percentage of founding seed stage fund teams have science and engineering degrees but a smaller percentage attended ivy league universities or got their MBAs. Most striking, the percentage of first-time seed stage fund venture capitalist teams with entrepreneurial backgrounds is double the percentage for later stage first-time funds (32 per cent versus 16 per cent) and the percentage of

⁴ Seed stage funds are funds with stage focus in VentureXpert recorded "Seed Stage" or "Early Stage". Later stage funds are funds with stage focus in VentureXpert as "Later Stage," "Expansion" or "Balanced Stage".

first-time seed stage fund venture capitalist teams with both venture investing and entrepreneurial backgrounds is almost triple that for first-time later stage funds (21 per cent versus 8 per cent). In contrast, first-time later stage fund venture capitalist teams disproportionately worked in the non-venture finance industry and attended ivy league universities, where they also received their MBAs. While there are notable differences between the average founding venture capitalist teams of seed stage and later stage funds, it remains to be seen whether the team characteristics that predict fund performance between these two samples is different.

Finally, Table IV presents correlation matrices of the founding fund team characteristics for first-time seed and later stage funds. There are many different variables one can create to characterize first-time fund management teams. It is important not to include too many variables in regressions of founding venture capitalist team characteristics on fund performance given the sample sizes. Looking at the correlation matrices can give us a sense of which fund characteristics variables are strongly correlated with others, so we don't include them simultaneously in regression analysis. Looking at correlation matrices can also shed light on fund team formation and which types of venture capitalists tend to work with other types of venture capitalists. Focusing on the top panel of correlations for first-time seed stage fund teams, there are several interesting facts. First, venture capitalists who have worked in start-ups tend to not team up with venture capitalists with MBAs or who have attended ivy league universities. However, they are likely to team up with venture capitalists who have science or engineering degrees. Finally, venture capitalists with past venture investing experience either have or team up with others who have ivy league MBAs and past experience in the consulting and non-venture finance industries. Turning to the bottom panel of correlations for first-time

later stage funds, we see some similar patterns of teaming up behavior as for seed stage funds. Table IV suggests there are systematic patterns to how venture capitalists form teams to manage first-time funds. In the analysis below we will see which if any of these differences in venture capitalist team composition are associated with better first-time fund performance.

IV. Do Venture Capitalists' Characteristics Predict First-time Fund Performance?

I now turn to the central question of the paper, namely whether the venture capitalist team characteristics described in Section III can predict first-time fund performance. My fund performance metric is the percentage of a fund's portfolio companies that exited either via an initial public offering or an acquisition, which was summarized in Table I. Absent fund-level cashflow information with which to form fund-level internal rates of return (IRRs), the fraction of portfolio companies that are exited is the most common way of measuring VC fund performance. Past studies (e.g. Hochberg, Ljungqvist and Lu (2005)) have found that a fund's IRR and the fraction of companies that exit are positively correlated, with a correlation coefficient of around 0.6. Hence, while an imperfect measure of fund-level returns the percentage of portfolio company exits is a good proxy. Moreover, any imprecision in the my measure of fund performance will likely bias the analysis away from finding statistically significant prediction ability of venture capitalist characteristics.

A. Fund Performance Regressions

I regress the percentage of portfolio companies in which a fund invests that exit on the fund-level venture capitalist characteristics and other fund-level and market-level controls as in equation (1).

$$PercentExit_i = b_0 + b^j_1 HasVCChar^j_i + b_2 X_i + b_3 Z_i + e_i \quad (1)$$

The main variables of interest in testing the key hypotheses of the paper are the $HasVCChar^j_i$ variables that were summarized in Section III and defined in the Appendix. The matrix X_i contains fund-level controls, specifically the number of founding venture capitalists, the natural logarithm of the size of the fund (in constant year 2000 millions of dollars), a dummy variables for whether the fund is located in California or New England, and dummy variables for whether the fund focuses on biotech, software or telecommunications industry investments. The matrix Z_i contains time-varying market-level controls, specifically the lagged natural logarithm of VC fund inflows per year (in constant year 2000 millions of dollars) and dummy variables for whether a fund was raised between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998.

I also estimate regressions with the same independent variables as in equation (1) but with the log odds ratio, $LN(PercentExit_i / (1 - PercentExit_i))$, as the dependent variable. Doing so constrains the predicted values to range between zero and one. The results are very similar to the results from estimating equation (1) directly. Moreover, since the vast majority of values $PercentExit_i$ takes are well within the zero to one interval, the predicted values that are generated from estimating equation (1) are all between zero and one. I, therefore, choose to report estimates of equation (1), rather than using the log odds ratio, since interpretation of the coefficients is more intuitive.

A.1. Seed Stage Funds

I first estimate equation (1) on the sub-sample of seed stage first-time venture funds. The results for the first regression are reported in Table V. Columns 1 to 3 of Table V report regressions results with only educational variables, only work history variables, and the two combined, respectively, and in all cases only including controls for fund size, number of founders, and lagged log fund inflows. I exclude the HasPhD and HasLawDegree variables from the educational variables because they are consistently insignificant and including them does not alter the coefficients on other variables. There are several results that emerge from the estimates in Columns 1 to 3 of Table V. First, examining the coefficients on the educational variables in Columns 1 and 3, we see that having a venture capitalist with an MBA is associated with a reduced fund exit percentage of around 11 percentage points, which is highly statistically significant. Second, turning to the work history variables we see that both having a venture capitalist with prior venture investing experience and having a venture capitalist with prior experience running a start-up are positively, though weakly statistically, associated with better fund performance with roughly the same economic magnitudes of just below 10 percentage points. Third, the coefficient on lagged log fund inflows is large, negative and very statistically significant, i.e., when there has been a lot of fundraising future fund performance declines, consistent with past findings such as Gompers and Lerner (2000).

Columns 4 to 6 of Table V add extra fund-level and market-level controls to the specifications in Columns 1 to 3, in particular industry, geography and time dummies for the funds, and the main results remain unchanged. Having a team member with a science or engineering degree positively predicts fund performance, with a predicted fund exit ratio increase of between six and seven percentage points. Having either a team with past venture

investing experience or past experience running a startup increases the expected fund exit fraction by seven or eight percentage points. Perhaps most surprisingly, having at least one team member with an MBA degree significantly decreases fund performance by around 11 percentage points. None of the fund-level controls added in the specifications in Columns 4 to 6 enter significantly. The lagged log fund inflows more significantly predict time-varying first-time seed stage fund performance than the fund year categories.

I now turn to an interpretation of the main coefficients in Table V. Focusing first on the coefficient on HasMBA, we are left to wonder whether the skill sets that MBAs possess, or the types of people who get these degrees, in fact detract from first-time fund performance or whether there is another explanation. Controlling for average age of the venture capitalists in the fund on the sub-sample of funds for which I have this information does not alter the coefficient on HasMBA, suggesting that it is not the case that first-time fund venture capitalists with MBAs are on average younger than those without MBAs since they had to invest at least two years to obtain the degree. Another more generous explanation to MBA granting institutions is that in order for venture capitalists without the “stamp” or connections associated with an MBA to even be able to clear the hurdle of being able to raise money for a first-time fund, these non-MBA venture capitalists must be very skilled. About 76 per cent of the seed stage first-time funds in the sample have venture capitalists with MBAs, so this explanation is plausible.

The interpretation of the coefficient on HasPastVC is more straightforward. It suggests that the skills and connections gained by being a venture investor increase the performance of first-time funds. Perhaps the more surprising fact is that the coefficient on HasPastVC is not larger and more significant. A similar interpretation can be given to the coefficient on HasPastStartupExec. Venture capitalist who have managed start-up companies in the past

appear to be better able to identify and advise seed stage investments. Again, it is perhaps surprising that the coefficient is not larger and more significant. To explore the impact of past venture investing experience and past entrepreneurial experience more deeply, I re-estimate equation (1) with three new variables `HasVCandStartupExec`, `HasPastVCOnly`, and `HasPastStartupExecOnly`, which separate first-time fund management teams into those that have venture capitalists with both venture investing and start-up management experience, only past venture investing experience, and only past start-up management experience. The results of this estimation are reported in Table VI.

The first two columns of Table VI report estimates of specifications without fund-level industry, geography and time effects and the second two columns estimates of specifications with these effects. The striking result that emerges from Table VI is that the positive coefficients on `HasPastVC` and `HasPastStartupExec` in Table V were being driven completely by first-time venture capitalist teams that had members with both past venture investing experience and past experience managing a start-up company. Having such a management team increases a first-time fund's portfolio company exit percentage by around 18 percentage points. Even if the first-time fund venture capitalist team also has a member with an MBA, the net effect of the team possessing both venture investing and start-up company management experience is still positive and statistically significant. This finding is quite striking and indicates that it is the combination of skills and connections acquired through past venture investing experience and past entrepreneurial experience that enables first-time seed stage VC funds to outperform their peers. In subsection B below, I will further explore the mechanics of how these venture capitalist team characteristics lead to higher fund exit percentages. But before doing so, I next examine whether

the venture capitalist team characteristics that predict first-time seed stage fund performance also predict first-time later stage fund performance or whether a different set of characteristics matter.

A.2. Later Stage Funds

As for the sub-sample of seed stage funds, I estimate specifications of equation (1), but now on the sub-sample of later stage first-time funds. The estimated coefficients are reported in Table VII. Each of the six specifications are analogous in Table VII to the six specifications in Table V. There are several facts of note that emerge from Table VII. First, the strongest venture capitalist characteristic that predicts the performance of first-time later stage funds is whether a founding team has a venture capitalist who attended an ivy league university. Having at least one venture capitalist with an ivy league education increases the portfolio exit percentage of first-time later stage VC funds by around 10 percentage points. Second, none of the venture capitalist team characteristics that predicted first-time seed stage fund performance, i.e., HasMBA, HasPastVC and HasPastStartupExec, matter for first-time later stage fund performance.⁵ Third, larger first-time funds experience better performance as indicated by the positive and statistically significant coefficients on the log of fund size. Larger funds are likely better equipped to make substantive follow-on investments need to help a company transition to an exit.

The fact that having a venture capitalist with an ivy league education positively predicts later stage fund performance is intuitive. It suggests that the networks acquired by attending an ivy league university are useful for later stage VC investing, and perhaps also that these venture

⁵ To test whether the differences in magnitudes in coefficients for the sub-samples of seed stage and later stage funds are statistically significant, I interact all independent variables with a seed stage dummy and estimate equation (1) on the full sample of first-time funds. I find that the differences in coefficients on HasMBA, HasIvy and HasVCandStartupExec between the two sub-samples are statistically significant at the 5 per cent level.

capitalists may possess “smarts” that are useful in later stage investing. This result is consistent to what Chevalier and Ellison find in the public equity markets for mutual fund managers. However, it is a bit surprising that having past venture investing experience does not significantly predict better performance. It is possible that networks established by past venture investing are less important than the ivy league education networks, or perhaps past venture investing experience and skill matters less for later stage VC investing. Again, I will explore the mechanism behind the ivy league characteristic in subsection B, but before this I explore whether particular universities historically associated with producing venture capitalists and entrepreneurs, Harvard University and Stanford University, play a role in predicting first-time VC fund performance.

A.3. The Effect of Attending Harvard or Stanford on Fund Performance

We have seen that, for seed stage funds, having a venture capitalists with an MBA degree is negatively associated with first-time fund performance; for later stage funds having a venture capitalist with an ivy league education is positively associated with first-time fund performance. Are the negative effects of an MBA degree in seed stage funds mitigated by having an MBA from an institution such as Harvard, which has a tradition of producing venture capitalists, or from Stanford, which has a tradition of producing entrepreneurs? We saw in Tables V and VI that having an MBA from an ivy league university more generally did not significantly mitigate the negative impact of having an MBA on first-time seed stage fund performance. But perhaps Harvard with its vast network of venture investors or Stanford with its vast network of entrepreneurs may produce MBA students who are better equipped to manage successful seed stage VC funds. Likewise, is it the case that the positive impact of an ivy league education on

later stage VC fund performance is being driven primarily by a particular member, i.e. Harvard? Is it the case that alumni from Stanford also manage successful first-time later stage VC funds, in addition to alumni of ivy league universities?

Because of the prevalence of both Harvard and Stanford alumni in the venture capital and entrepreneurial spheres, I separately examine their impact on the performance of my sub-samples of first-time seed and later stage VC funds. Specifically, I replace the *HasIvy* and *HasIvyMBA* variables in equation (1) with *HasHarvard* and *HasHarvardMBA* and *HasStanford* and *HasStanfordMBA* variables. The regression results are reported in Tables VIII and IX for seed stage and later stage funds, respectively. Focusing first on the results for first-time seed stage funds in Table VIII, we see in Column 2 that having an MBA from Harvard eliminates the negative impact of having an MBA on fund performance. However, we see in Column 4 that having an MBA from Stanford does not mitigate the negative impact of having an MBA on fund performance since adding the coefficients on *HasStanford* and *HasStanfordMBA* net to around zero. The impact of attending either university, not conditioning on receiving an MBA, is statistically insignificant as can be seen in Columns 1 and 3. The estimates in Table VIII suggest that there are returns to getting a Harvard MBA for first-time seed stage VC funds, but the returns are just enough to offset the apparent average negative returns to getting an MBA in the first place. Once again, having a first-time fund management team with both venture investing and start-up management experience is the most powerful predictor of first-time seed stage VC fund success.

Turning to the estimates for later stage funds in Table IX, we see that in all specifications having attended either Harvard or Stanford or received an MBA from these universities has no predictive power on the performance of first-time later stage VC funds. Hence, the impact of

having an ivy league education is not driven only by Harvard graduates and the networks or skills acquired at Stanford are not equivalent to those acquired at the ivy league universities in impacting first-time later stage VC fund performance.

B. Decomposing Fund Exit Percentages

We have seen that certain venture capitalist team characteristics predict first-time VC fund performance, using the percentage of a fund's portfolio companies that are exited as the performance metric. I now take a closer look at what may be driving the observed correlations between these venture capitalist team characteristics and fund performance by decomposing fund exit percentages into two parts – the percentage of companies in which the fund invested in the first round that exit and the percentage of companies in which the fund first invested in a follow-on round that exit. I examine whether funds' better performance correlated to certain venture capitalist characteristics comes from superior investments in companies in the first round, when due diligence and identification of a good company or management team are important as well as perhaps the ability to advise on early stage firm issues such as helping to build an initial management team, or from superior investments in companies in later rounds, when networks that enable a VC fund to be invited into follow-on round syndicates or enable the fund to help the portfolio company establish customers and suppliers as well as acquirers may matter more. I also examine whether venture capital team characteristics are related to the average size of the syndicate in the round in which a fund first invests in a portfolio company. The larger the size of the syndicate of the round in which a fund first invests in a company the better connected the VC fund likely is. Thus, I also use this variable to get a sense of which venture capitalist team characteristics likely proxy for network connection in the VC industry.

Table X reports regression results from estimation equations similar to equation (1) but with three new dependent variables – the percentage of portfolio companies in which the fund invests in the first round of financing that exit, the percentage of portfolio companies in which the fund does not invest in the first round of financing that exit, and the average syndicate size of the rounds in which a fund first invests in its portfolio companies. The first three columns report estimates on the sub-sample of first-time seed stage VC funds; the last three columns report estimates on the sub-sample of first-time later stage VC funds. Focusing first on the seed stage funds in Columns 1 to 3 of Table X, there are several results of note. First, having a venture capitalist team with both venture investing experience and experience managing a start-up increases performance of both companies in which the fund is the first investor and companies in which the fund invests as a follow-on investor. Moreover, the improvement is similar in magnitude across the two types of portfolio companies. This suggests that the best management teams of first-time seed stage VC funds are able to identify good investments in the first round of financing, but also are invited to join in later rounds of companies started by other VC funds. Moreover, the only venture capitalist team characteristic which is correlated with both high first round company exits and later round company exits is having a venture capitalists with both venture investing experience and experience managing a start-up.

The second result of note for seed stage funds in Table X is that the large negative impact on fund performance from having a venture capitalist with an MBA on the founding team is driven by poor performance of companies in which the fund invests in the first round of financing. This suggests that MBAs are particularly bad, or non-MBAs are particularly good, at identifying good companies before other VC funds invest and in helping these companies grow. Third, first-time seed stage venture capitalist teams with a member who worked as a

management consultant make successful investments in companies when they invest as follow-on investors, suggesting that these teams are good at helping established companies grow and also perhaps are well-connected in the relevant industries. Fourth, first-time seed stage venture capitalist teams with a member who worked as a professional engineer make poor investments in companies when they invest in the first round of financing, suggesting that such teams are not good at identifying good commercializable technologies or in growing young companies. Finally, none of the seed stage venture capitalist team characteristics are significantly correlated with average syndicate size, with the exception of teams with a member with non-venture finance experience for whom average syndicate size is slightly larger.

In sum, the first-time seed stage VC funds that perform exceptionally well have venture capitalist teams with experience both in venture investing and in managing start-ups. Moreover, this exceptional performance is driven both by good investments in companies in which the fund is the first investor and good investments in companies in which the fund is a follow-on investor after other VC funds have already invested. This suggests that these venture capitalist teams excel so much because they are both well-connected and are able to identify and add value to new companies at the start of those companies' lives.

I now turn to the fund performance decomposition results for the sub-sample of first-time later stage funds reported in Columns 4 to 6 of Table X. Recall that the most significant predictor of later stage fund performance from Table VI is whether a venture capitalist attended an ivy league university. The results in Table X show that the success of these venture capitalists stems from successful investments in companies in the first round of financing, rather than in from investments in companies in which the fund is a follow-on investor. This result is somewhat counterintuitive since later stage funds mostly concentrate on follow-on investments

in companies in which other VC funds have already invested. The results suggests that later stage funds with venture capitalists who attended ivy league universities achieve their comparative advantage by being invited into first rounds or perhaps even identifying these companies, even though they also make later stage follow-on investments. None of the venture capitalist team characteristics I examine are positively correlated with good performance in investments in companies in later rounds. Moreover, none of the venture capitalist team characteristics are significantly correlated with larger syndicate size. The results on first-time later stage funds are a bit surprising in light of the investment strategy of these funds, i.e. investing primarily in follow-on financing rounds. However, they can be rationalized if the market for later stage investments is competitive and the main way of competing is also co-investing in early stage deals, perhaps with lead investors who have identified good investment opportunities but who need extra cash to close the deal.

V. Does the Predictive Power of Venture Capitalists' Characteristics Persist?

The preceding analysis has documented that characteristics of individual venture capitalists comprising first-time fund management teams significantly predict the performance of those first-time funds. The analysis lends support to the notion that there are differing abilities or skill levels amongst venture capitalists and that these differences in skill lead to heterogeneity in VC fund performance. Another key feature of VC funds is that their performance persists amongst funds managed by the same VC firm. The question then arises of whether the venture capitalist characteristics that matter for first-time VC fund performance also matter for the performance of follow-on funds managed by the same venture capitalists. In this section, I look

examine whether the venture capitalist characteristics that predict first-time fund performance also predict the performance of follow-on funds.

About 70 per cent of the first-time funds raise follow-on funds. I estimate the probability that a first-time VC fund raises a follow-on fund as a function of venture capitalist characteristics as well as fund performance regressions on the sample of follow-on funds raised by my sample of first-time fund venture capitalists. The estimation results for seed-stage funds are reported in Columns 1 and 2 Table XI and the estimation results for later stage funds are reported in Columns 3 and 4 of Table XII. Focusing first on seed stage funds, the only venture capitalist characteristics that significantly predict a follow-on fund is whether a venture capitalist worked for a management consulting firm. None of the venture capitalist characteristics significantly predict whether a later stage first-time fund management team will raise a follow-on fund. These findings suggest that the reasons why a first-time fund management team may or may not raise a follow-on fund are idiosyncratic, or at least not that closely connected to how well the first-time fund performed. This is reasonable in light of the recent flood of institutional money into the VC markets.

Turning to the fund performance regressions in Columns 3 and 4 of Tables XI and XII, we see that the primary predictors of first-time fund performance continue to predict follow-on fund performance. In particular, having a venture capitalist team with both experience in venture investing and in managing a start-up positively predicts the performance of seed stage follow-on funds. Likewise, having at least one venture capitalist with an ivy league degree positively predicts the performance of later stage follow-on funds. Hence, the characteristics of individual venture capitalists can explain both fund performance heterogeneity and persistence.

VI. Conclusion

Supplementing data on first-time venture capital funds and their portfolio companies with hand-collected data on the educational and work histories of the venture capitalists managing these funds, this paper investigates whether characteristics of venture capitalists can predict fund performance. Venture capitalists characteristics do predict fund performance, as measured by the fraction of the funds' portfolio companies that exit, even controlling for other fund and market characteristics. Moreover, what characteristics of venture capitalists matter for fund performance varies by fund investment strategy.

In seed stage VC funds, having a founding venture capitalist team with both venture investing experience and experience managing a start-up is the strongest predictor of fund performance. First-time seed stage funds with such founding teams strongly outperform their counterparts. The higher performance in these seed stage funds is generated from both successful first-round investments and from successful later round investments in companies first started by other VC funds. This suggests that the superior performance of these venture capitalists comes from both being better able to identify good entrepreneurs and business ideas and in being invited to invest in later rounds of already successful companies.

In later stage VC funds, the strongest predictor of fund performance is whether the fund is founded by a venture capitalist who attended an ivy league university. Such first-time later stage funds outperform their counterparts. Interestingly, the better performance mostly stems from participating in the first round of investment in high performing companies. This suggests that in order to compete with other later stage funds, first-time later stage funds may try to "get their foot in the door" early by providing capital alongside early stage investors. It seems that ivy league university connections aid in this strategy.

Finally, I find that the characteristics of venture capitalists that predict first-time funds also predict the performance of follow-on funds, consistent with the fund performance persistence findings by Kaplan and Schoar (2005). Overall, the results indicate that individual venture capitalists affect VC investment performance and offer an explanation for the heterogeneity and persistence in VC fund performance which stems from differences in venture capitalist skill.

The results also highlight the importance of human capital in the nature and boundaries of the firm (e.g., Zingales (2000) and Rajan and Zingales (2001)) and point to several future research questions. How do VC fund management teams evolve over time and do these changes predict VC fund performance, and if so, how? To what extent do VC firms acquire firm level capital or expertise, distinct from the human capital of the individual venture capitalists working for the firm at any point in time? How does the importance of individual venture capitalist ability affect how contracts and compensation are set in the VC industry?

Appendix: Variable Names and Descriptions

<i>Variable Name</i>	<i>Variable Description</i>
<i>Venture Capitalist Educational History Variables</i>	
HasPHD	Dummy = 1 if fund has at least one venture capitalist with an MBA
HasLawDegree	Dummy = 1 if fund has at least one venture capitalist with a law degree
HasSciEngDegree	Dummy = 1 if fund has at least one venture capitalist who studied science or engineering as an undergraduate or graduate student
HasIvy	Dummy = 1 if fund has at least one venture capitalist who attended an ivy league university, i.e. Harvard, Dartmouth, Yale, Brown, Cornell, Columbia, University of Pennsylvania, or Princeton
HasHarvard	Dummy = 1 if fund has at least one venture capitalist who attended Harvard University
HasStanford	Dummy = 1 if fund has at least one venture capitalist who attended Stanford University
HasIvyMBA	Dummy = 1 if fund has at least one venture capitalist who has an MBA from an ivy league university, i.e. Harvard, Dartmouth, Yale, Brown, Cornell, Columbia, University of Pennsylvania, or Princeton
HasHarvardMBA	Dummy = 1 if fund has at least one venture capitalist who has an MBA from Harvard
HasStanfordMBA	Dummy = 1 if fund has at least one venture capitalist who has an MBA from Stanford
<i>Venture Capitalist Work History Variables</i>	
HasPastVC	Dummy = 1 if fund has at least one venture capitalist who previously for another venture fund
HasPastVConly	Dummy = 1 if fund has at least one venture capitalist who previously for another venture fund organized as an independent partnership
HasPastStartupExec	Dummy = 1 if fund has at least one venture capitalist who previously founded a start-up
HasPastStartupExecOnly	Dummy = 1 if fund has at least one venture capitalist who previously founded a start-up
HasPastVCandExec	Dummy = 1 if fund has at least one venture capitalist who previously for another venture fund AND previously founded a start-up
HasPastConsultant	Dummy = 1 if fund has at least one venture capitalist who previously worked as a management or strategy consultant

HasPastFinance	Dummy = 1 if fund has at least one venture capitalist who previously worked in the finance industry (non-venture)
HasPastEngineer	Dummy = 1 if fund has at least one venture capitalist who previously worked as engineers
<i>Other Variables</i>	
Log(Fund size)	Natural logarithm of inflation adjusted (2000 dollars in millions) fund size
Number of founders	Number of founding venture capitalists in first-time fund
Biotech	Dummy = 1 if fund industry preference is listed as “Biotech Related Research”, “Biotechnology”, “Genetic Engineering”, “Human Biotechnology”, “Industrial Biotechnology”, “Life Science”, or “Pharmaceuticals”
Software	Dummy = 1 if fund industry preference is listed as “Applications Software”, “Computer Services”, “Data Communications”, “Information Technology”, “Internet” or “Software”
Telecomm	Dummy = 1 if fund industry preference is listed as “Telecommunications”, “Commercial Communications”, “Communications and Media” or “Wireless Communications”
Log(Fund Inflows Last Year)	Natural logarithm of inflation adjusted (200 dollars in millions) of lagged venture capital fund raising in the U.S.
California	Dummy = 1 if fund is located in California
New England	Dummy = 1 if fund is located in New England, i.e. Maine, New Hampshire, Vermont, Massachusetts or Rhode Island
Fund year 1985-1989	Dummy = 1 if fund is raised in years 1985 to 1989
Fund year 1990-1994	Dummy = 1 if fund is raised in years 1990 to 1994
Fund year 1995-1998	Dummy = 1 if fund is raised in years 1995 to 1998

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Table I. Venture Capital Fund Summary Statistics

Data source is VentureXpert. Sample includes venture capital funds based in the United States with at least five portfolio companies and non-missing fund size managed by independent venture firms. Means are reported. Medians are in parentheses. Standard deviations are in brackets.

Panel A - U.S. Venture Capital Funds Raised between 1980 and 1998																				
	1980 - 1998	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Fund Size (millions 2000 \$)	82.0 (43.2) [203.5]	57.2 (45.2)	32.9 (17.7)	32.8 (18.5)	44.9 (23.3)	46.5 (32.6)	32.1 (15.3)	76.1 (28.1)	54.2 (32.3)	64.0 (46.4)	98.7 (38.7)	88.1 (59.9)	91.2 (47.4)	80.7 (61.3)	77.5 (63.4)	117.3 (60.9)	78.5 (60.8)	90.4 (57.5)	111.4 (79.2)	180.4 (103.9)
Companies per Fund	22.8 (17) [19.2]	35.9 (31)	26.6 (20)	26.3 (22)	24.4 (20)	28.6 (25.5)	22.1 (14.5)	25.4 (20)	22.9 (14)	21.3 (19)	21.0 (17)	20.4 (15)	30.3 (22)	28.9 (24.5)	19.6 (15)	20.0 (18)	19.3 (17)	20.3 (15)	19.0 (16)	18.8 (15)
Fund Exit Percentage	56.6 (58.3) [18.6]	64.3 (64.0)	60.0 (62.5)	61.7 (62.5)	64.1 (66.7)	62.0 (61.5)	58.9 (60.0)	61.7 (64.6)	59.5 (60.6)	59.2 (63.6)	62.9 (65.0)	65.1 (61.7)	72.2 (69.0)	64.4 (66.4)	59.9 (61.5)	53.9 (55.1)	55.2 (58.1)	49.2 (52.6)	49.8 (50.0)	41.8 (42.9)
Early or Seed Stage Fund	0.45	0.39	0.29	0.33	0.32	0.36	0.37	0.43	0.40	0.57	0.49	0.29	0.47	0.44	0.40	0.61	0.59	0.49	0.46	0.59
California	0.34	0.49	0.31	0.35	0.29	0.32	0.23	0.32	0.27	0.33	0.41	0.17	0.53	0.36	0.42	0.31	0.41	0.33	0.36	0.37
New England	0.14	0.12	0.20	0.16	0.13	0.14	0.15	0.20	0.10	0.14	0.10	0.25	0.00	0.28	0.02	0.16	0.16	0.16	0.11	0.14
Number of Funds	1,184	33	59	69	82	90	60	56	62	51	49	24	15	36	43	49	73	81	124	128
Number of Firms	557																			
Panel B - First-time U.S. Venture Capital Funds Raised between 1980 and 1998																				
	1980 - 1998	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Fund Size (millions 2000 \$)	51.9 (31.6) [82.2]	51.8 (46.7)	38.4 (22.0)	39.3 (24.1)	32.5 (26.3)	40.0 (26.7)	35.6 (28.7)	28.2 (18.9)	32.2 (22.6)	41.5 (39.1)	17.5 (12.4)	32.6 (34.4)	5.9 ----	46.7 (60.2)	42.1 (39.3)	59.1 (49.4)	66.3 (82.1)	65.2 (56.4)	85.7 (43.4)	101.8 (51.7)
Companies per Fund	22.0 (17) [18.9]	44.2 (42)	34.6 (30)	31.3 (28)	26.5 (22)	25.3 (23)	24.6 (16)	17.9 (15.5)	13.9 (13)	18.1 (16.5)	14.7 (12)	10.5 (9)	5.0 ----	12.3 (7)	11.2 (9.5)	19.3 (21)	21.9 (19.5)	18.3 (14.5)	16.6 (15)	12.9 (10)
Fund Exit Percentage	54.2 (55.9) [19.0]	65.5 (65.7)	59.8 (60.0)	54.8 (53.6)	62.1 (65.0)	58.1 (57.1)	57.8 (62.5)	61.7 (64.0)	55.2 (57.1)	49.0 (54.7)	59.9 (56.4)	56.8 (58.6)	100.0 (100)	55.1 (65.2)	53.9 (62.0)	45.5 (48.4)	50.6 (55.3)	46.1 (46.7)	47.8 (44.7)	41.9 (42.9)
Early or Seed Stage Fund	0.50	0.50	0.28	0.43	0.50	0.35	0.47	0.50	0.53	0.63	0.60	0.75	0.00	0.00	0.17	0.43	0.55	0.69	0.66	0.56
California	0.33	0.50	0.32	0.09	0.29	0.19	0.35	0.35	0.32	0.25	0.50	0.00	0.00	0.00	0.50	0.29	0.65	0.35	0.43	0.26
New England	0.13	0.17	0.20	0.22	0.17	0.19	0.12	0.05	0.11	0.13	0.00	0.25	0.00	0.00	0.00	0.14	0.10	0.04	0.17	0.11
Number of Funds	318	12	25	23	24	31	17	20	19	8	10	4	1	3	6	7	20	26	35	27
Number of Firms	318																			

Panel C - First-time U.S. Venture Capital Funds Raised between 1980 and 1998 with collected venture capitalist histories

	1980 - 1998	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Fund Size (millions 2000 \$)	61.9 (43.4) [95.0]	83.9 (57.3)	66.9 (51.5)	54.6 (27.5)	40.6 (31.7)	36.5 (22.2)	55.3 (52.6)	28.7 (21.1)	40.4 (20.5)	49.5 (43.4)	17.4 (10.1)	35.3 (44.2)	5.9 ----	61.3 (61.3)	43.2 (41.9)	59.1 (49.8)	69.6 (82.8)	62.6 (56.4)	92.9 (53.4)	104.5 (46.5)
Companies per Fund	22.9 (19) [17.3]	78.3 (79.5)	43.7 (37)	35.5 (29)	32.8 (25)	30.2 (26)	26.7 (27)	20.9 (19)	13.9 (11)	20.0 (17)	15.7 (12)	11.3 (10)	5.0 ----	15.0 (15)	11.8 (11)	19.3 (21)	22.7 (20)	19.3 (15)	16.6 (15)	12.9 (10)
Fund Exit Percentage	53.2 (55.7) [19.4]	67.9 (69.2)	64.5 (64.9)	58.0 (67.6)	62.5 (65.3)	54.6 (55.2)	63.6 (64.3)	59.6 (64.0)	54.1 (57.1)	59.8 (60.5)	57.7 (54.2)	54.8 (57.1)	100.0 (100)	68.3 (68.3)	52.1 (61.5)	45.5 (48.4)	52.4 (55.6)	47.1 (50.0)	48.5 (45.4)	40.1 (40.2)
Early or Seed Stage Fund	0.53	0.50	0.44	0.46	0.43	0.42	0.67	0.40	0.45	0.40	0.57	1.00	0.00	0.00	0.00	0.43	0.53	0.71	0.68	0.58
California	0.33	0.75	0.22	0.08	0.29	0.11	0.33	0.33	0.27	0.20	0.43	0.00	0.00	0.00	0.40	0.29	0.68	0.38	0.45	0.29
New England	0.14	0.00	0.33	0.31	0.07	0.26	0.17	0.07	0.09	0.20	0.00	0.33	0.00	0.00	0.00	0.14	0.05	0.04	0.19	0.13
Number of Funds	222	3	8	11	14	19	7	16	13	6	7	3	1	2	5	7	19	25	32	24
Number of Firms	222																			

Table II. Characteristics of Venture Capitalists Managing First-time Funds Raised between 1980 and 1998

The sample includes first time U.S venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. Variables in the first column are dummy variables equal to one if a venture capitalist possesses a particular characteristic. Variables beginning with "Has" in the second column are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Please see the Appendix for more detailed variable definitions.

	All Venture Capitalists		All First-time Funds
	Mean		Mean
<i>Educational History Variables</i>		<i>Educational History Variables</i>	
MBA	58%	HasMBA	79%
PHD	7%	HasPHD	14%
LawDegree	8%	HasLawDegree	16%
SciEngDegree	33%	HasSciEngDegree	49%
Ivy	37%	HasIvy	56%
Harvard	19%	HasHarvard	34%
Stanford	14%	HasStanford	20%
IvyMBA	24%	HasIvyMBA	42%
Harvard MBA	16%	HasHarvardMBA	30%
Stanford MBA	9%	HasStanfordMBA	14%
<i>Work History Variables</i>		<i>Work History Variables</i>	
PastVC	44%	HasPastVC	57%
PastStartupExec	15%	HasPastStartupExec	25%
PastVCandStartupExec	5%	HasPastVCandExec	14%
PastConsultant	16%	HasPastConsultant	27%
PastFinance	29%	HasPastFinance	50%
PastEngineer	9%	HasPastEngineer	16%
		Number of VCs per Fund	2.17
Number of Venture Capitalists	482	Number of Funds	222

Table III. Characteristics of Venture Capitalists Managing First-time Funds Raised between 1980 and 1998
Seed and Later Stage Fund Sub-samples

The sample includes first time U.S venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Seed stage funds are funds with stage focus in VentureXpert recorded "Seed Stage" or "Early Stage". Later stage funds are funds with stage focus in VentureXpert as "Later Stage," "Expansion" or "Balanced Stage". Please see the Appendix for more detailed variable definitions.

	Seed Stage Funds Mean	Later Stage Funds Mean
<i>Educational History Variables</i>		
HasMBA	76%	83%
HasPHD	19%	8%
HasLawDegree	9%	23%
HasSciEngDegree	56%	40%
HasIvy	52%	61%
HasHarvard	32%	37%
HasStanford	21%	19%
HasIvyMBA	38%	47%
HasHarvardMBA	26%	34%
HasStanfordMBA	15%	12%
<i>Work History Variables</i>		
HasPastVC	60%	54%
HasPastStartupExec	32%	16%
HasPastVCandExec	21%	8%
HasPastConsultant	26%	30%
HasPastFinance	41%	61%
HasPastEngineer	20%	12%
Number of VCs per Fund	2.25	2.09
Number of Funds	118	104

Table IV. Correlation Matrices for First-time Venture Capital Fund Team Characteristics

The sample includes first time U.S venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Seed stage funds are funds with stage focus in VentureXpert recorded "Seed Stage" or "Early Stage". Later stage funds are funds with stage focus in VentureXpert as "Later Stage," "Expansion" or "Balanced Stage". Please see the Appendix for more detailed variable definitions.

Panel A - Seed stage funds

	Has MBA	Has PHD	Has LawDeg	Has SciEngDeg	Has Ivy	Has Harvard	Has Stanford	Has IvyMBA	Has HarvardMBA	Has StanfordMBA	Has PastVC	Has PastStartupExec	Has PastVCandExec	Has PastConsult	Has PastFinance	Has PastEngineer
HasMBA	1.000															
HasPHD	-0.038	1.000														
HasLawDegree	0.112	-0.155	1.000													
HasSciEngDegree	-0.008	0.158	-0.071	1.000												
HasIvy	0.345	0.155	0.074	0.227	1.000											
HasHarvard	0.295	0.002	0.096	-0.069	0.652	1.000										
HasStanford	0.136	0.189	-0.019	0.233	0.063	0.019	1.000									
HasIvyMBA	0.443	-0.021	-0.074	0.093	0.758	0.709	-0.054	1.000								
HasHarvardMBA	0.329	-0.032	0.012	-0.036	0.563	0.864	-0.008	0.743	1.000							
HasStanfordMBA	0.231	0.112	-0.050	0.118	0.055	-0.020	0.812	-0.077	-0.020	1.000						
HasPastVC	0.194	0.082	0.025	0.194	0.297	0.182	0.244	0.182	0.122	0.239	1.000					
HasPastStartupExec	-0.167	-0.100	0.089	0.131	-0.139	-0.040	0.190	-0.136	-0.031	0.077	0.047	1.000				
HasPastVCandExec	-0.062	-0.028	0.127	0.148	-0.064	-0.027	0.214	-0.141	-0.056	0.151	0.416	0.733	1.000			
HasPastConsultant	0.192	0.018	0.079	0.082	0.171	0.148	0.041	0.180	0.148	0.036	0.122	-0.115	-0.008	1.000		
HasPastFinance	0.061	0.088	0.148	-0.003	0.173	0.180	0.050	0.162	0.187	0.051	0.152	-0.059	-0.079	0.028	1.000	
HasPastEngineer	-0.126	0.202	-0.012	0.348	0.130	-0.013	0.281	0.007	-0.094	0.101	0.186	0.162	0.175	0.054	0.025	1.000

Panel B - Later stage funds

	Has MBA	Has PHD	Has LawDeg	Has SciEngDeg	Has Ivy	Has Harvard	Has Stanford	Has IvyMBA	Has HarvardMBA	Has StanfordMBA	Has PastVC	Has PastStartupExec	Has PastVCandExec	Has PastConsult	Has PastFinance	Has PastEngineer
HasMBA	1.000															
HasPHD	-0.060	1.000														
HasLawDegree	-0.234	0.015	1.000													
HasSciEngDegree	0.165	-0.015	0.019	1.000												
HasIvy	0.206	0.009	0.017	0.056	1.000											
HasHarvard	0.245	0.076	0.098	0.056	0.615	1.000										
HasStanford	0.156	-0.048	0.025	0.198	0.090	-0.022	1.000									
HasIvyMBA	0.426	0.019	-0.009	0.055	0.749	0.703	0.032	1.000								
HasHarvardMBA	0.329	0.095	-0.011	0.066	0.578	0.940	-0.044	0.772	1.000							
HasStanfordMBA	0.171	-0.108	-0.067	0.165	0.064	-0.109	0.775	-0.062	-0.150	1.000						
HasPastVC	0.191	0.119	-0.047	0.008	0.089	0.072	0.299	0.092	0.059	0.229	1.000					
HasPastStartupExec	-0.143	0.069	0.192	0.063	0.034	-0.124	0.050	0.004	-0.100	-0.008	-0.064	1.000				
HasPastVCandExec	0.131	0.188	0.100	0.205	0.009	-0.072	0.135	0.091	-0.056	0.001	0.264	0.653	1.000			
HasPastConsultant	-0.038	-0.029	0.046	0.111	0.133	0.021	-0.048	0.022	-0.028	0.074	-0.202	0.056	0.050	1.000		
HasPastFinance	0.154	0.156	-0.076	-0.064	-0.040	0.009	-0.010	-0.034	-0.039	0.064	-0.108	-0.231	0.009	0.047	1.000	
HasPastEngineer	0.018	0.110	0.002	0.342	-0.055	0.010	0.260	-0.004	-0.028	0.298	0.055	0.070	0.219	0.010	0.005	1.000

Table V. Seed Stage First-time Fund Performance Regressions

The sample includes first time U.S seed stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. Reported regression coefficients are estimated using OLS . Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>										
<i>% of Fund's Companies that Exit</i>	(1)	(2)	(3)	(4)	(5)	(6)				
<i>VC Characteristics</i>										
HasIvy	4.42 (0.78)		3.71 (0.60)	6.12 (1.07)		5.75 (0.93)				
HasSciEngDegree	6.45 * (1.69)		6.78 * (1.70)	6.87 (1.65)		7.01 (1.65)				
HasMBA	-10.97 *** (-2.60)		-11.83 *** (-2.94)	-11.12 *** (-2.52)		-11.49 ** (-2.58)				
HasIvyMBA	1.18 (0.21)		0.56 (0.09)	1.39 (0.23)		0.42 (0.07)				
HasPastVC		7.37 * (1.82)	8.20 * (1.95)		8.27 ** (2.01)	8.83 ** (2.01)				
HasPastStartupExec		9.11 ** (2.25)	6.82 * (1.66)		9.96 ** (2.42)	7.95 * (1.85)				
HasPastConsultant		5.57 (1.41)	5.81 (1.41)		4.78 (1.16)	4.85 (1.12)				
HasPastFinance		6.63 * (1.83)	6.27 * (1.68)		6.54 * (1.71)	6.08 (1.52)				
HasPastEngineer		-2.97 (-0.71)	-7.30 (-1.48)		-3.73 (-0.84)	-7.72 (-1.56)				
<i>Fund Characteristics</i>										
Log(Fund Size)	1.82 (1.00)	2.74 (1.59)	1.57 (0.87)	1.49 (0.77)	2.45 (1.36)	1.21 (0.64)				
Number of founders	-0.89 (-0.44)	-3.25 (-1.58)	-2.67 (-1.34)	-0.64 (-0.31)	-2.93 (-1.34)	-2.45 (-1.22)				
Biotech				2.19 (0.37)	5.62 (0.93)	4.02 (0.72)				
Software				2.97 (0.57)	5.63 (1.11)	4.87 (0.96)				
Telecomm				0.45 (0.10)	3.26 (0.70)	2.48 (0.58)				
<i>Market Characteristics</i>										
Log(Fund Inflows Last Year)	-8.07 *** (-4.74)	-9.83 *** (-5.84)	-9.01 *** (-5.66)	-9.19 *** (-2.46)	-9.59 *** (-2.55)	-8.36 *** (-2.28)				
California				0.19 (0.05)	-0.63 (-0.17)	-0.04 (-0.01)				
New England				-5.01 (-0.73)	-4.38 (-0.69)	-6.07 (-0.88)				
Fund year 1985-1989				4.38 (0.82)	-0.26 (-0.05)	2.93 (0.59)				
Fund year 1990-1994				5.83 (0.51)	-0.83 (-0.08)	3.78 (0.35)				
Fund year 1995-1998				4.51 (0.53)	-1.71 (-0.21)	-0.78 (-0.10)				
Constant	117.03 *** (7.77)	121.48 *** (8.44)	121.15 *** (8.64)	121.75 *** (3.93)	117.83 *** (3.95)	112.33 *** (3.81)				
N	118	118	118	118	118	118				
Adjusted R ²	0.206	0.225	0.275	0.157	0.179	0.232				

Table VI. Seed Stage First-time Fund Performance Regressions - Effect of Having Both VC and Entrepreneurial Experienced Teams

The sample includes first time U.S seed stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. Reported regression coefficients are estimated using OLS with a constant term. Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. HasPastVOnly is a dummy equal to one if a founding fund team only VC investing experience. HasPastStartupExecOnly is a dummy equal to one if founding fund team only has experience managing a startup. HasVCandStartupExec is a dummy equal to one if a founding team has both VC investing experience and experience managing a startup company. Also included in each regression are the fund's number of founders, the natural logarithm of fund size and the natural logarithm of total venture capital fund inflows in the year prior to the fund's closing. Fund industry dummies are dummies for whether a fund focuses on investments in the biotech, telecom or software industries. Fund geography dummies are dummies for whether a fund is located in California or New England. Fund year dummies are dummies for whether a fund closed between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>							
<i>% of Fund's Companies that Exit</i>	(1)	(2)	(3)	(4)			
<i>VC Characteristics</i>							
HasIvy		3.85 (0.63)		6.00 (0.98)			
HasSciEngDegree		6.87 * (1.74)		7.09 * (1.68)			
HasMBA		-11.93 *** (-2.98)		-11.61 *** (-2.64)			
HasIvyMBA		1.39 (0.23)		1.30 (0.21)			
HasPastVOnly	5.21 (1.11)	5.62 (1.18)	6.16 (1.27)	6.09 (1.19)			
HasPastStartupExecOnly	5.22 (0.80)	2.37 (0.38)	6.17 (0.90)	3.27 (0.51)			
HasVCandStartupExec	17.21 *** (2.98)	15.91 *** (2.89)	18.83 *** (3.29)	17.60 *** (3.12)			
HasPastConsultant	5.61 (1.41)	5.71 (0.14)	4.90 (1.18)	4.80 (1.10)			
HasPastFinance	7.33 ** (2.00)	7.00 * (1.84)	7.21 (1.85)	6.86 (1.66)			
HasPastEngineer	-2.87 (-0.68)	-7.19 (-1.45)	-3.68 (-0.83)	-7.64 (-1.53)			
Fund industry dummies?	No	No	Yes	Yes			
Fund geography dummies?	No	No	Yes	Yes			
Fund year dummies?	No	No	Yes	Yes			
N	118	118	118	118			
Adjusted R ²	0.223	0.276	0.176	0.233			

Table VII. Later Stage First-time Fund Performance Regressions

The sample includes first time U.S later stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. Reported regression coefficients are estimated using OLS . Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Please see Appendix for more detailed variable definitions.

Dependent Variable:												
% of Fund's Companies that Exit	(1)		(2)		(3)		(4)		(5)		(6)	
VC Characteristics												
HasIvy	10.77	**			12.00	**	9.31	*			10.63	**
	(2.09)				(2.37)		(1.80)				(2.00)	
HasSciEngDegree	6.20	*			5.90		3.98				4.05	
	(1.68)				(1.50)		(1.10)				(1.06)	
HasMBA	-4.25				-3.85		-4.93				-5.38	
	(-0.86)				(-0.83)		(-1.01)				(-1.17)	
HasIvyMBA	-5.95				-7.07		-3.82				-4.60	
	(-1.20)				(1.43)		(-0.74)				(-0.86)	
HasPastVC			3.65		4.60				4.10		4.98	
			(1.05)		(1.33)				(1.20)		(1.55)	
HasPastStartupExec			5.57		4.73				2.65		1.52	
			(1.09)		(0.99)				(0.53)		(0.30)	
HasPastConsultant			-0.90		-2.90				-1.75		-3.65	
			(-0.22)		(-0.72)				(-0.46)		(-0.95)	
HasPastFinance			-2.77		-1.31				-2.27		-0.91	
			(-0.86)		(-0.41)				(-0.67)		(-0.27)	
HasPastEngineer			4.48		3.34				3.86		3.30	
			(0.97)		(0.68)				(0.91)		(0.69)	
Fund Characteristics												
Log(Fund Size)	3.54	**	3.96	**	3.49	**	4.50	**	5.17	***	4.17	**
	(2.13)		(2.52)		(2.12)		(2.44)		(3.04)		(2.21)	
Number of founders	-0.09		0.52		-1.04		1.01		1.47		0.23	
	(-0.05)		(0.29)		(-0.53)		(0.47)		(0.75)		(0.10)	
Biotech							15.52	***	15.63	**	15.82	***
							(2.67)		(2.53)		(2.69)	
Software							-0.03		-0.84		-0.63	
							(-0.01)		(-0.17)		(-0.12)	
Telecomm							4.65		4.14		4.04	
							(1.25)		(1.10)		(1.09)	
Market Characteristics												
Log(Fund Inflows Last Year)	-6.53	***	-7.45	***	-6.50	***	-2.45		-1.82		-1.81	
	(-2.89)		(-3.34)		(-2.81)		(-0.66)		(-0.47)		(-0.48)	
California							8.20	**	7.78	**	7.71	**
							(2.07)		(2.04)		(2.00)	
New England							-3.03		-3.07		-3.70	
							(-0.62)		(-0.61)		(-0.74)	
Fund year 1985-1989							0.32		1.14		0.22	
							(0.07)		(0.25)		(0.05)	
Fund year 1990-1994							-10.99		-11.35		-10.61	
							(-1.42)		(-1.35)		(-1.36)	
Fund year 1995-1998							-14.28	*	-16.58		-14.66	*
							(-1.85)		(-2.12)		(-1.87)	
Constant	94.66	***	100.73	***	94.16	***	56.85	*	49.23		53.14	*
	(5.60)		(5.77)		(5.47)		(1.85)		(1.55)		(1.69)	
N	104		104		104		104		104		104	
Adjusted R ²	0.120		0.077		0.119		0.183		0.150		0.181	

Table VIII. The Effect of Harvard and Stanford on Seed Stage First-time Fund Performance

The sample includes first time U.S seed stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. Reported regression coefficients are estimated using OLS with a constant term. Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Also included in each regression are the fund's number of founders, the natural logarithm of fund size and the natural logarithm of total venture capital fund inflows in the year prior to the fund's closing. Fund industry dummies are dummies for whether a fund focuses on investments in the biotech, telecomm or software industries. Fund geography dummies are dummies for whether a fund is located in California or New England. Fund year dummies are dummies for whether a fund closed between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>							
<i>% of Fund's Companies that Exit</i>	(1)		(2)		(3)		(4)
<i>VC Characteristics</i>							
HasHarvard	5.58		-4.95				
	(1.15)		(-0.66)				
HasStanford					-4.96		-13.81 **
					(-1.13)		(-2.32)
HasSciEngDegree	8.84 **		8.47 *		8.41 *		8.66 *
	(1.97)		(1.94)		(1.94)		(2.01)
HasMBA			-12.76 ***				-10.57 **
			(-3.25)				(-2.34)
HasHarvardMBA			15.56 *				
			(1.81)				
HasStanfordMBA							14.76 **
							(2.36)
HasPastVOnly	4.96		7.35		6.71		8.11
	(1.10)		(1.53)		(1.36)		(1.57)
HasPastStartupExecOnly	4.16		0.87		5.39		4.72
	(0.61)		(0.13)		(0.78)		(0.71)
HasVCandStartupExec	17.85 ***		16.56 ***		18.72 ***		17.40 ***
	(3.18)		(3.09)		(3.33)		(3.16)
HasPastConsultant	3.28		3.90		4.21		5.73
	(0.76)		(0.88)		(1.03)		(1.36)
HasPastFinance	7.46 *		5.89		7.78 *		7.02 *
	(1.88)		(1.49)		(1.95)		(1.75)
HasPastEngineer	-5.40		-5.35		-5.12		-5.41
	(-1.16)		(-1.14)		(-1.06)		(-1.12)
Fund industry?	Yes		Yes		Yes		Yes
Fund geography?	Yes		Yes		Yes		Yes
Fund year?	Yes		Yes		Yes		Yes
N	118		118		118		118
Adjusted R ²	0.203		0.262		0.198		0.238

Table IX. The Effect of Harvard and Stanford on Later Stage First-time Fund Performance

The sample includes first time U.S later stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. Reported regression coefficients are estimated using OLS with a constant term. Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Also included in each regression are the fund's number of founders, the natural logarithm of fund size and the natural logarithm of total venture capital fund inflows in the year prior to the fund's closing. Fund industry dummies are dummies for whether a fund focuses on investments in the biotech, telecomm or software industries. Fund geography dummies are dummies for whether a fund is located in California or New England. Fund year dummies are dummies for whether a fund closed between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>				
<i>% of Fund's Companies that Exit</i>	(1)	(2)	(3)	(4)
<i>VC Characteristics</i>				
HasHarvard	0.14 (0.04)	1.83 (0.17)		
HasStanford			-3.27 (-0.65)	0.13 (0.02)
HasSciEngDegree	3.33 (0.88)	4.00 (1.05)	3.39 (0.91)	4.18 (1.10)
HasMBA		-6.04 (-1.23)		-5.44 (-1.23)
HasHarvardMBA		-0.64 (-0.06)		
HasStanfordMBA				-4.59 (-0.55)
HasPastVC	4.35 (1.29)	4.97 (1.46)	4.90 (1.37)	5.57 (1.59)
HasPastStartupExec	2.73 (0.55)	2.06 (0.41)	2.59 (0.50)	1.67 (0.33)
HasPastConsultant	-2.14 (-0.55)	-2.47 (-0.63)	-2.41 (-0.62)	-2.32 (-0.61)
HasPastFinance	-1.88 (-0.55)	-1.29 (-0.38)	-1.78 (-0.53)	-1.02 (-0.30)
HasPastEngineer	2.27 (0.52)	1.68 (0.39)	2.99 (0.64)	2.72 (0.63)
Fund industry?	Yes	Yes	Yes	Yes
Fund geography?	Yes	Yes	Yes	Yes
Fund year?	Yes	Yes	Yes	Yes
N	104	104	104	104
Adjusted R ²	0.119	0.115	0.122	0.122

Table X. What is Driving Differences in Exit Percentages?

The sample includes first time U.S venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variables are the percentage of portfolio companies in which the fund invests in the first round that are exited, the percentage of portfolio companies in which the fund does not invest in the first round that are exited and the average syndicate size of the round in which a fund first invests in a portfolio company. Reported regression coefficients are estimated using OLS with a constant term. Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Variables beginning with "Has" are dummy variables equal to one if at least one venture capitalist in a fund possesses a particular characteristic. Also included in each regression are the fund's number of founders, the natural logarithm of fund size and the natural logarithm of total venture capital fund inflows in the year prior to the fund's closing. Fund industry dummies are dummies for whether a fund focuses on investments in the biotech, telecom or software industries. Fund geography dummies are dummies for whether a fund is located in California or New England. Fund year dummies are dummies for whether a fund closed between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>	<i>Seed Stage Funds</i>				<i>Later Stage Funds</i>		
	% First Round Companies that Exit (1)	% of Non First Round Companies that Exit (2)	Avg Round Syndicate (3)		% First Round Companies that Exit (4)	% of Non First Round Companies that Exit (5)	Avg Round Syndicate (6)
<i>VC Characteristics</i>				<i>VC Characteristics</i>			
HasIvy	14.28 *	3.75	0.40		21.47 ***	7.66	0.20
	(1.71)	(0.53)	(0.63)		(3.33)	(1.04)	(0.30)
HasSciEngDegree	4.03	7.91	0.17		3.67	3.36	0.74
	(0.62)	(1.52)	(0.54)		(0.67)	(0.61)	(1.52)
HasMBA	-14.49 **	-0.74	0.04		-0.71	-3.69	-0.04
	(-2.04)	(-0.11)	(0.09)		(-0.11)	(-0.58)	(-0.06)
HasIvyMBA	-4.04	-2.58	-0.16		-14.58 **	-5.37	0.04
	(-0.48)	(-0.36)	(-0.24)		(-2.20)	(-0.71)	(0.06)
HasPastVCOnly	4.20	2.03	0.63		8.42	3.04	0.28
	(0.61)	(0.30)	(1.61)		(1.62)	(0.59)	(0.63)
HasPastStartupExecOnly	1.46	3.98	0.69		6.46	1.35	0.39
	(0.15)	(0.44)	(1.33)		(0.98)	(0.22)	(0.78)
HasVCandStartupExec	17.44 **	19.77 **	0.77				
	(2.19)	(2.52)	(1.59)				
HasPastConsultant	1.81	13.33 **	-0.14		-0.51	-4.68	-0.02
	(0.32)	(2.40)	(-0.39)		(-0.09)	(-0.88)	(-0.04)
HasPastFinance	2.96	6.56	0.68 **		-4.52	0.43	0.52
	(0.54)	(1.34)	(2.11)		(-1.00)	(0.09)	(1.25)
HasPastEngineer	-12.14 **	-9.96	-0.50		10.05	-1.55	-0.43
	(-2.12)	(-1.46)	(-1.14)		(1.31)	(-0.26)	(-0.69)
Fund industry?	Yes	Yes	Yes	Fund industry?	Yes	Yes	Yes
Fund geography?	Yes	Yes	Yes	Fund geography?	Yes	Yes	Yes
Fund year?	Yes	Yes	Yes	Fund year?	Yes	Yes	Yes
N	118	118	118		104	104	104
Adjusted R ²	0.207	0.132	0.125		0.152	0.090	0.138

Table XI. Probability of Raising a Follow-on Fund and Follow-on Fund Performance - Seed Stage Funds

The sample includes first time U.S seed stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable in the first two specifications is a dummy equal to one if a first-time fund raises a follow-on fund. The first two specifications are probit models estimated using maximum likelihood. Coefficients and robust (adjusted for heteroskedasticity) z-stats are reported. The dependent variable in the last two specifications is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. The last two specifications are regressions estimated using OLS with a constant term. Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Also included in each regression are the fund's number of founders, the natural logarithm of fund size and the natural logarithm of total venture capital fund inflows in the year prior to the fund's closing. Fund industry dummies are dummies for whether a fund focuses on investments in the biotech, telecomm or software industries. Fund geography dummies are dummies for whether a fund is located in California or New England. Fund year dummies are dummies for whether a fund closed between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>	Probability of Raising a Follow-On Fund (1)	Probability of Raising a Follow-On Fund (2)	% of Follow-On Fund's Companies that Exit (3)	% of Follow-On Fund's Companies that Exit (4)
<i>VC Characteristics</i>				
HasIvy	-0.03 (-0.06)	-0.25 (-0.47)	0.78 (0.13)	1.89 (0.28)
HasSciEngDegree	-0.01 (-0.04)	-0.19 (-0.55)	7.72 (1.52)	6.85 (1.13)
HasMBA	-0.30 (-0.85)	-0.55 (-1.42)	1.69 (0.33)	2.02 (0.38)
HasIvyMBA	0.32 (0.63)	0.40 (0.77)	1.39 (0.23)	0.22 (0.04)
HasPastVOnly	-0.30 (-0.83)	-0.33 (-0.91)	2.23 (0.36)	6.04 (0.76)
HasPastStartupExecOnly	0.42 (0.95)	0.51 (1.02)	3.87 (0.49)	2.50 (0.31)
HasVCandStartupExec	0.33 (0.65)	0.22 (0.42)	11.91 (1.72)	13.37 (1.66)
HasPastConsultant	1.11 (2.92)	1.45 (3.10)	5.02 (1.02)	5.89 (1.23)
HasPastFinance	-0.14 (-0.46)	-0.22 (-0.66)	5.18 (1.21)	5.58 (1.25)
HasPastEngineer	0.19 (0.50)	-0.03 (-0.06)	-0.42 (-0.08)	-0.78 (-0.12)
Fund industry?	No	Yes	No	Yes
Fund geography?	No	Yes	No	Yes
Fund year?	No	Yes	No	Yes
N	118	118	70	70
χ^2 statistic	21.44	36.28		
Pseudo R ²	0.195	0.297		
Adjusted R ²			0.322	0.321

Table XII. Probability of Raising a Follow-on Fund and Follow-on Fund Performance - Later Stage Funds

The sample includes first time U.S later stage venture capital funds managed by independent venture firms identified in VentureXpert and with collected venture capitalist histories. The dependent variable in the first two specifications is a dummy equal to one if a first-time fund raises a follow-on fund. The first two specifications are probit models estimated using maximum likelihood. Coefficients and robust (adjusted for heteroskedasticity) z-stats are reported. The dependent variable in the last two specifications is the percentage of a fund's portfolio companies that exit, either via an IPO or an acquisition. The last two specifications are regressions estimated using OLS with a constant term. Robust t-statistics (adjusted for heteroskedasticity) are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Also included in each regression are the fund's number of founders, the natural logarithm of fund size and the natural logarithm of total venture capital fund inflows in the year prior to the fund's closing. Fund industry dummies are dummies for whether a fund focuses on investments in the biotech, telecomm or software industries. Fund geography dummies are dummies for whether a fund is located in California or New England. Fund year dummies are dummies for whether a fund closed between 1985 and 1989, between 1990 and 1994 or between 1995 and 1998. Please see Appendix for more detailed variable definitions.

<u>Dependent Variable:</u>	Probability of Raising a Follow-On Fund (1)		Probability of Raising a Follow-On Fund (2)		% of Follow-On Fund's Companies that Exit (3)		% of Follow-On Fund's Companies that Exit (4)	
<i>VC Characteristics</i>								
HasIvy	-0.74	*	-0.87	*	13.29	*	12.43	*
	(-1.70)		(-1.92)		(1.84)		(1.72)	
HasSciEngDegree	-0.29		-0.26		1.88		3.07	
	(-0.99)		(-0.81)		(0.37)		(0.53)	
HasMBA	-0.50		-0.88		-0.55		-0.28	
	(-1.01)		(-1.55)		(-0.09)		(-0.05)	
HasIvyMBA	0.55		0.91	*	-1.58		-1.63	
	(1.17)		(1.75)		(-0.18)		(-0.18)	
HasPastVC	-0.03		-0.21		-7.63		-5.90	
	(-0.10)		(-0.65)		(-1.34)		(-0.99)	
HasPastStartupExec	0.53		0.56		-2.63		1.05	
	(1.35)		(1.18)		(-0.48)		(0.13)	
HasPastConsultant	0.21		-0.03		-3.13		0.19	
	(0.67)		(-0.08)		(-0.51)		(0.03)	
HasPastFinance	-0.10		-0.04		-1.60		4.89	
	(-0.37)		(-0.11)		(-0.29)		(0.91)	
HasPastEngineer	0.71		0.53		3.81		-0.45	
	(1.36)		(0.94)		(0.67)		(-0.07)	
Fund industry?	No		Yes		No		Yes	
Fund geography?	No		Yes		No		Yes	
Fund year?	No		Yes		No		Yes	
N	104		104		72		72	
χ^2 statistic	12.24		33.41					
Pseudo R ²	0.084		0.217					
Adjusted R ²					0.078		0.114	