TRANSFERABLE SKILLS? FOUNDERS AS VENTURE CAPITALISTS

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ABSTRACT

In this paper we explore whether or not the experience as a founder of a venture capital-backed startup influences the performance of founders who become venture capitalists (VCs). We find that nearly 7% of VCs were previously founders of a venture-backed startup. Having a successful exit and being male and white increase the probability that a founder transitions into a venture capital career. Successful founder-VCs have investment success rates that are 6.5 percentage points higher than professional VCs while unsuccessful founder-VCs have investment success rates that are 4 percentage points lower than professional VCs. While successful founder-VCs do get higher quality deal flow than professional or unsuccessful founder-VCs, observably higher deal quality does not explain the entire difference in performance. Using an instrumental variables approach to separate unobservable deal quality from value-add, we find that the outperformance of successful founder-VCs is consistent with them adding more value post-investment.

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1. Introduction

How venture capitalists make investment decisions and what value they provide to portfolio companies has been examined in a variety of approaches by Gompers, Gornall, Kaplan, and Strebalaev (2021), Sorenson (2007), Kaplan and Stromberg (2001, 2003)), Amornsiripanitch, Gompers, and Xuan (2019), and Hochberg, Ljungqvist, and Lu (2007). These papers explore whether superior returns are driven by the quality of deal flow/selection or value-add on the part of the venture capitalist. Similarly, performance persistence in entrepreneurship has been shown to exist. Gompers, Kovner, Lerner, and Scharfstein (2010) show that founders who started a company and successfully exited it have much higher success rates on subsequent startups than do founders who failed in their prior venture or founders in their first company. In fact, founders who have failed in the past have lower success rates than first time entrepreneurs. This would seem to indicate that skill, at least in part, contributes to the performance of founders.

In this paper we explore how experience as founders affects the success of venture capitalists (VCs). Roughly 7% of all venture capitalists founded a venture capital-backed startup prior to launching their career as a venture investor. While having successfully exited their company as a founder increases the probability that they become a VC (as does being male and white), the majority of founder-VCs actually failed as entrepreneurs given that failure rates for venture capital-backed startups are typically near 75%. We find that both successful and unsuccessful founder-VCs are likely to join one of the venture captial firms that invested in their startup (89.0% of successful founder-VCs and 85.4% of unsuccessful founder-VCs.) The average track record (prior success rates) are higher for the venture capital firms that successful founder-VCs join relative to the population of venture capital firms as well as relative to the venture capital firms that failed founder-VCs join. While successful founder-VCs tend to start their investing career later than both

unsuccessful founder-VCs and professional VCs (age 55.4 years vs. 54.1 years vs. 52.5 years), they also have longer careers and do more deals than other VCs.

By comparing successful and unsuccessful founder-VCs to professional VCs (defined as venture capitalists without an experience of launching a venture-backed startup before they became an investor), we are able to identify whether performance as a founder influences performance as a VC. Our results indicate that success in one area (as a founder) is indeed positively related to the likelihood of success as a VC. Successful founder-VCs have success rates for their investments (defined as the investment going public or exiting at a higher value than the total capital raised) higher than both unsuccessful founder-VCs and professional VCs (29.8% vs. 19.2% vs. 23.2%). Unsuccessful founder-VCs actually have lower success rates than professional VCs.

We find that successful founder-VCs tend to attract better deal flow based upon observable characteristics. The founders of their portfolio companies are more likely to be serial founders (who have higher success rates), graduates from a top graduate school program, and are more likely to come from the company founded by successful founder-VCs themselves. Controlling for deal and venture capital firm quality, however, still shows that investments by successful founder-VCs remain more likely to succeed. Concerns about unobservable deal quality lead us to develop a methodology calculating the probability—unrelated to quality—of a founder receiving financing from a successful founder-VC and to use this measure as an instrument in the IV approach. These results indicate that the outperformance of successful founder-VCs does not hinge on higher quality deal flow or selection. Instead, they appear to add value to portfolio companies and improve their investment outcomes.

A long literature indicates that venture capitalists appear to have repeatable skill in investing. Kaplan and Schoar (2005) were the first to show that VC firm performance was persistent. If a VC firm had superior performance in a prior fund, it was more likely that their subsequent fund would have superior performance. Harris, Jenkinson, and Kaplan (2014, 2016) look at the performance of various private equity asset classes and show that VC is the only one with continued outperformance relative to public markets as well as persistence in performance fund over fund. Ewens and Rhodes-Kropf (2015) look at the contribution of the firm versus individual venture capitalist to investment performance by looking at investors who switch venture capital firms. They find that both are critical to investment outcomes, i.e, there is both a strong firm and individual effect in performance. An important question, however, remains about what the source of outperformance and persistence is? Is the strong performance driven by higher quality deal flow or value that the VC brings to the deal?

Gompers, Gornall, Kaplan, and Strebulaev (2021) examine how venture captialists make decisions. They find that both on a prospective and retrospective basis, venture capitalists say that the most important factor for deal outcomes is the quality of the founding team. This is consistent with the view that the key driver of returns is deal flow quality. Gompers et al. (2021) find that venture capitalists rely on their networks to atract high quality deal flow and to select the best founding teams. Of the deals that VCs ultimately invest in, only 10% do not come through their network. Hochberg, Ljungqvist, and Lu (2007) show that well-connected venture capital firms appear to have superior performance. They argue that these connections (measured as the network centrality within co-invesment networks) proxy for access to quality deals. Sorenson (2007) estimates how much of the success of a venture capital-backed startup is due to its underlying quality vs. value-add from the venture capital investors using a two-sided matching model to

estimate the effects. He concludes that deal quality is the more important factor in determining returns.

At the same time, a long literature has examined the value-add of venture capitalists. Hsu (2007) shows that when founders get competing investment term sheets, they are willing to take lower valuations from more experienced venture capital firms. This would seem to indicate that founders value the quality of the value-add provided by better venture capitalists. Lerner (1995) shows the importance of VCs serving on portfolio companies' boards of directors for influencing the ultimate outcome of the company. Baker and Gompers (2003) look at how venture capitalists are able to improve companies through better boards, i.e, boards that are smaller and dominated by outsiders or investor directors. Amornsiripanitch, Gompers, and Xuan (2019) demonstrate that VCs add value through recruitment of outside directors and early hires and that this value is significantly higher when they serve on the board of directors. Hellman and Puri (2002) examine the influence of venture capitalists on the internal organization of startups and the role of early hires. They show that the quality of the senior management team is dramatically improved through venture capital investing.

In this context, the contribution of our paper is two-fold. First, we show that performance in founding companies as an entrepreneur carries over to venture capital investors who transition into a career as a VC after they leave their startup. Skill as a founder carries over to skill as a VC. Second, while deal quality does matter, we find that value-add contributes significantly to the outperformance of successful founder-VCs. The rest of our paper is organized as follows. Section 2 describes the data used in our analysis. Section 3 presents our empirical analysis. Section 4 concludes the paper.

2. Data

We begin by collecting data on founders and venture capitalists in VentureSource, a comprehensive dataset of all venture capital investments in the US. This database contains detailed information on venture capital investments including the identity of the founders and individual venture capital investors (identified through their service as a board member or board observer). Our data cover the period from 1990 through mid-2019. We start our analysis in 1990 because the data become reasonably comprehensive at that point in time. For each portfolio company, we have the identities of the individuals involved with the firm including founders, venture capital investors, angel investors, board members, and early hires. We focus on the venture capitalists on the boards of directors. Venture capitalists who never serve on a board will not be identified in our data. We believe this is reasonable because most venture capitalists serve on the board of directors for companies for which they are the lead investor. This criteria will omit the vast majority of junior professionals in the venture capital industry. Typically, it is only the senior professionals who lead deals and then ultimately sit on boards of portfolio companies. Similarly, most venture capitalists highlight their active involvement in their portfolio companies via board representation. A founder enters our data when they start a company. A venture capitalist enters the data in the year they make their first investment for which they sit on the board of directors. Additionally, we have information on the date of each investment, the amount invested in each round of financing, the company's industry and location, as well as the portfolio company's ultimate outcome.

For each individual founder and venture capitalist in the data, we hand-collect a broad range of biographic information including past work experience, educational history, ethnicity, and gender through web searches, SEC filings, and news articles. For prior employment histories, we record

companies at which an individual had worked in the past and their prior positions. The education background includes data on the academic institutions at which individuals obtained their academic degrees as well as the types of degrees: undergraduate, postgraduate non-business (Ph.D., M.S., J.D., and M.D.), or postgraduate business (MBA). To determine whether an individual holds a degree from a top academic institution, we classify top universities as the Ivy League schools (Brown University, Columbia University, Cornell University, Dartmouth College, Harvard University, Princeton University, University of Pennsylvania, and Yale University) as well as other top U.S. schools (Amherst College, California Institute of Technology, Duke University, MIT, Northwestern University, Stanford University, University of California, Berkeley, University of Chicago, and Williams College).

Venture capitalists' genders are determined based on their first names. In the cases of unisex names, we determine gender by reading news articles and web pages mentioning or containing pictures of the individual venture capitalists. To discern ethnic background, we use the name-matching algorithm developed by Kerr and Lincoln (2010) to determine the most likely ethnicities of venture capitalists based on their last names. To identify Black VCs and founders, we search for photos of all individuals classified as White to determine if the individual is Black. Individual venture capitalists are classified into seven non-overlapping ethnic groups: East Asian, Indian, Jewish, Middle Eastern, Black, Latino, and all others.

We are interested in identifying the prior career experience for venture capitalists in our sample. For each VC, we identify their entry date as the date on which they join the board of directors for their first investment. VCs are classified as either a professional VC or a founder-VC depending upon their prior career history. VCs who were identified as a founder of a venture capital-backed company prior to their first investment and board service are classified as founder-VCs, everyone

else is considered to be a professional VC.[1] Table 1 shows the time series of entry in the VC industry for both categories of investors. In our sample, we find 12,195 VCs are professional VCs and 825 founded a prior VC-backed startup. Not surprising, the pattern of entry of new VCs roughly matches the ebbs and flows of capital into the venture capital industry, increasing dramatically in the late 1990s and again in the late 2000s and late 2010s. Founder-VCs only increase dramatically in the early 2000s. The lag of entry by founder VCs is simply tied to the fact that we have to identify them as a founder of a VC-backed company prior to becoming an investor. As such, we can only pick them up after our VC data begins.

We determine investment outcomes using VentureSource and Thomson Financial's SDC database, supplemented by Thomson Financial's VentureXpert database. We supplement the data with information from Capital IQ. We consider an investment to be successful if it results in the IPO of the portfolio company or it gets acquired for an aggregate consideration that is greater than the total capital invested in the company. All of our results are robust to defining success as either an IPO alone or an IPO plus high value acquisitions defined either as some multiple of invested capital (e.g., two times invested capital) or some nominal high value (e.g., an acquisition greater than $200 million).

Figure 1 shows the industry breakdown for the startups founded by founder-VCs. Not surprising, founder-VCs' experience tends to be in industries that have active venture capital investing including Information Technology, Healthcare, Business and Financial Services, and Consumer Services. Similarly, Figure 2 shows that nearly half of the founder-VCs started their company in California with another 113 starting their company in Massachusetts and 58 in New York.

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[1] We tabulate prior career experience for professional VCs in Table 6.

3. Empirical Results

In this section we examine two sets of questions related to founder-VCs. First, we examine which founders become venture capitalists? Are there demographic characteristics or factors related to the startups they found that relate to becoming an investor? Second, we explore whether there are difference in investment performance between professional VCs and founder-VCs. We also segment founder-VCs into those whose startups were successful prior to becoming an investor and those whose startups failed. By comparing these two groups of founders (i.e., successful vs. unsuccessful founder-VCs), we can determine if there is persistence in performance from one profession (being a founder) to another (being a venture capitalist.) We also use an instrumental variables approach to examine if the outperformance of successful founder-VCs stems from higher quality deal flow or from them adding more value to their investments.

3.1. Entry into Venture Capital

In this section, the unit of observation is an individual founder. In our sample, we identify 53,139 unique founders of venture caital. Of those, 825 later become a venture capitalist. Table 2 compares the characteristics of those founders who become a venture capitalist versus those that are only founders. One important variable that we utilize throughout our analysis is whether a venture capital-backed company is successful. Because rates of return on individual portfolio companies are generally not available, we follow the prior literature and look at the type of exit to determine if a company is successful. The most lucrative type of exit has historically been an initial public offering (IPO). Because IPO rates have generally declined over time and the importance of high value acquisitions have increased, we classify an investment as succesful if it goes public via an IPO or is acquired for a value higher than the total amount of capital invested in the firm. Our results are robust to defining success as simply exiting via an IPO or defining a

successful acquisiton as one with total consideration above $100 million, $200 million, or $500 million.

In Table 2, we see that founders who become VCs are more likely to have been successful in their entrepreneurial ventures than other founders (i.e., those founders who never become a VC), having a success rate of 29.7% versus 11.8%. This is not very surprising given that venture capital firms are likely to recruit founders with a successful background to their investment teams. But it is also clear that many of the founders who become venture capitalists are not successful in their stint as a founder. This provides us the opportunity to explore whether the investment behavior and investment outcomes are different between successful and unsuccessful founder-VCs.

When we examine other demographic characteristics, we find that founder-VCs are substantially less likely to be female (4.9%) than the overall founder pool (11.8%). Similarly, founder-VCs are more likely to be White, 84.8%, vs. 78.8% of founders who do not become VCs who are White. Each of the race/ethnic minority groups has a smaller representation in the sample of founder-VCs than they do in the pool of founders. This is consistent with the work of Calder-Wang and Gompers (2017) who find that venture capitalists tend to be far less diverse than founders, i.e, they are far more male and far Whiter than the pool of founders in whom they invest. If there is homophily in hiring of former founders into roles as venture capitalists, we would expect the pool of founder VCs to look more like overall pool of venture capitalists.

In Table 3, we look at which founders become venture capitalists. In addition to the success or failure of their startup, we include various demographic characteristics including education. We classify their educational experience by the quality of their undergraduate or graduate institution. To determine whether an individual holds a degree from a top academic institution, we classify top universities as the Ivy League schools (Brown University, Columbia University, Cornell

University, Dartmouth College, Harvard University, Princeton University, University of Pennsylvania, and Yale University) as well as other top U.S. schools (Amherst College, California Institute of Technology, Duke University, MIT, Northwestern University, Stanford University, University of California, Berkeley, University of Chicago, and Williams College).[2] An individual founder is the unit of observation and the dependent variable is 1 if the founder becomes a venture capitalist and 0 otherwise. We find that bringing their startup to a successful outcome increases the probability of becoming a venture capitalist by a statistically significant 2.2%, which more than doubles the unconditional probability (1.6%) of a founder becoming a venture capitalist. Controling for demographic characteristics and school quality leaves the coefficient on success large and significant with relatively little decrease in magnitude. Interestingly, controlling for deal success, going to a top school increases the probability of becoming a venture capitalist in a statistically significant way. Given the prevelance of professional VCs who receive their degree from a top university and the presence of homophily in hiring (Calder-Wang and Gompers (2020)), it is not surprising that founders who went to a top school are more likely to become venture capitalists. We also find that women and non-White founders have a lower probability of becoming a venture capitalist, even controlling for whether their startup was successful or not.

3.2. Professional VCs vs. Successful and Unsuccessful Founder-VCs

In this section, we explore the characteristics of investments and outcomes for professional venture capitalists versus successful and unsuccessful founder-VCs. In particular, we explore whether there are differences in the types of entrepreneurs that each invests in and which venture capital firms they join. The difference in types of entrepreneurs may relate to observed and

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[2] The results presented in the paper are robust to classifying only the Ivy League universities as top schools as well as to adding top European universities (Cambridge University, INSEAD, London Business School, London School of Economics, and Oxford University) to the list of top schools.

unobserved deal quality. In this section, we look at whether observable difference in deal quality can explain difference in performance. In the next section, we implement an instrumental variables approach to account for unobservable deal quality.

Table 4 compares the career characteristics of professional venture capitalists versus successful and unsuccessful founder-VCs. Perhaps not surprising, founder-VCs are highly likely to work at one of the venture capital funds that financed their startup. 89% of successful founder-VCs and 85.4% of unsuccessful founder-VCs become an investor at one of the firms that had invested in their startup. The relationship between the financing venture firm and the entrepreneur likely provides information about the ability of the founder-VC. It is also likely that absent information about their quality as an investor, the relationship between VC firm and founder provide ties that have utility on their own. Slighly more of the founder-VCs (56.6% for successful founder-VCs and 53.9% for unsuccessful founder-VCs) went to a top school (as defined above) than did professional VCs (43.9%). Professional VCs also start their career at a slightly earlier age (52.5 years of age) vs. successful founder-VCs (55.4 years of age) and unsuccessful founder-VCs (54.1 years of age). Our age of entry into VC is clearly influenced by identifying entry as the first time that the individual joins a board of directors. It is almost certainly the case that all venture capitalists were working to source deals prior to joining the board. It is also likely the case that professional VCs may have started as junior professionals in the industry before being promoted. Typically, junior professionals within venture capital firms do not serve on a board of directors. Therefore, for professional VCs, we are likely identifying their rise to senior status within the firm as opposed to when they start their venture capital careers.

We also tabulate career outcomes in Table 4. We find substantial differences in success rates on investments by different types of VCs. Successful founder-VCs have the highest success rates

on their investments (29.8%) compared to professional VCs (23.2%) and unsuccessful founder-VCs (19.2%). The same pattern holds if we look at the successful outcomes defined by an IPO exit. 12.4% of successful founder-VC investments exit via an IPO versus 9.4% for professional VCs and 7.1% of investments by unsuccessful founder-VCs. In subsequent analysis we explore what accounts for the superior performance of successful founder-VCs: superior deal flow or greater value-add.

We also examine career statistics for each category of VC. We tabulate the number of board seats that the venture capitalist holds over their career as well as the length of the VC's career as measured by the time from one year before taking their first board seat to three years after taking last board seat in our data. On average, successful founder-VCs do more investments (6.7 on average) and have longer careers (12.2 years) relative to professional VCs (5.8 investments on average and 11.5 year careers) and unsuccessful founder-VCs (4.9 investments and 9.6 year careers). These numbers clearly underestimate the careers as senior investors of our VCs because we only capture investments in which they take a board seat and stop the length of career calculation three years after they take their last board seat. There is no reason, however, to believe that there is any selection bias that would affect the relative rankings of these career statistics.

We also look at the characteristics of the investments in which the VCs invest. We first look at whether the investment by a founder-VC is in the industry in which they started their company as a founder. Successful founder-VCs are slightly more likely to invest in companies in their startup industry, 63.9% of successful founder-VCs' investments are in the same industry whereas only 56.8% of unsuccessful founder-VCs' investments are in the same industry as the company that they founded. It is difficult to benchmark these levels. On the one hand, it is not surprising that the majority of investments are in the same industry given the networks and reputations of founder-

VCs. On the other hand, more than a third of their investments fall outside of their prior industry indicating that founder-VCs are willing to invest outside their prior experience.

In Figure 3, we provide a deeper breakdown of the industry composition of professional VCs versus founder-VCs. Founder VCs appear to be disproportionately active in the healthcare industry and less active in information technology investments than professional VCs. They are also slightly more active in consumer services and slightly less active in business and financial services than professional VCs. We provide the industry breakdown of successful founder-VCs and unsuccessful founder-VCs in Figure 4. Successful founder-VCs have portfolios that are more heavily invested in healthcare and information technology relative to unsuccessful founder-VCs who tend to invest more heavily in consumer services and business and financial services.

We also examine the education background of venture capitalists in Table 5. Panel A provides a detailed breakdown of the undergraduate and graduate institutions for professional VCs. We have education data for 10,017 professional venture capitalist. The top five undergraduate institutions are Harvard, Stanford, University of Pennsylvania, Princeton, and Yale Universities. Over half of professional venture capitalists (5,465) have an MBA and 21.3% of those MBA degrees are from Harvard, 11.6% are from Stanford, and 9.7% are from the University of Pennsylvania. For professional VCs, undergraduate majors are roughly evenly split between STEM and the social sciences. Among non-MBA graduate degrees, law and then medicine are the top two degree programs.

Panel B of Table 5 provides a summary of education for founder-VCs. We have data on education for 733 founder-VCs. The top five colleges are the same except that the University of California, Berkley replaces Princeton as the fourth most frequent undergraduate college. A lower fraction of founder-VCs have an MBA (38%) than do professional VCs (55%). A larger percentage

of those with MBAs hold MBAs from Harvard (28.0%) and Stanford (12.5%) than do professional VCs. Founder-VCs also are more likely to have concentrated in a STEM field or to have a STEM graduate degree. Among graduate degrees, 19% haver an MD vs. 10.6% for professional VCs. These results are not surprising given that founders tend to have more of a science background than VCs (Calder-Wang and Gompers (2017)), on average.

Finally, we also look at the employment history of professional VCs. Typically, even professional venture capitalists have prior experience before becoming a venture investor. Because many professional VCs list multiple prior positions, we have data on 21,251 prior employers. The top prior employers tend to be either consulting firms (McKinsey, Bain, and Boston Consulting Group), investment banks (Morgan Stanley, Goldman Sachs, Merrill Lynch), or other VC/private equity firms (Warburg Pincus, New Enterprise Associates, Summit Partners). It is perhaps somewhat surprising that many professional VCs do not have substantial early stage technology experience prior to starting their investment career. This provides a clear difference in background between professional VCs and founder VCs. The technology companies on the list of top twenty employers for professional VCs tend to be large successful venture capital-backed companies (Microsoft, Cisco, Google).

In Table 7 we compare characteristics of portfolio companies for professional VCs versus founder-VCs overall as well as comparing portfolio companies of successful founder-VCs and unsuccessful founder VCs. We look at measures of underlying deal quality by looking at attributes of the founders in which the various venture capitalists invest. On several measures, successful founder-VCs seem to have higher quality deal flow as compared to professional VCs and unsuccessful founder-VCs. Prior work by Gompers, Kovner, Lerner, and Scharfstein (2010) has shown that successful serial entreprenenurs perform better than first time or failed serial

entrepreneurs in their second or later startup. 14.1% of investments by successful founder-VCs are started by a serial entrepreneur versus 11.9% for unsuccessful founder-VCs and 8.4% for professional VCs. These differences are statistically significant. Similarly, successful founder-VCs have a greater proportion of their investments that are started by graduates from top schools (24.1%) versus 22.0% for unsuccessful founder-VCs and 20.5% for professional. We also tabulate the number of years of prior startup experience that the founders of portfolio companies for each type of VC have. We calculate the cumulative number of years that each founder worked in other venture capital-backed startups prior to founding their own company. Prior experience in venture capital-backed startups may provide critical insights into growing their own company. We find that successful founder-VCs invest in founders with slightly more startup experience (7.54 years), on average, versus professional VCs (7.48 years) and unsuccessful founder-VCs (6.71 years). The marked difference in the characteristics of portfolio company founders across different types of VCs indicates underlying deal quality may be a source of differential performance.

Finally, we look at any direct relation between the founder-VCs' prior experience as an entrepreneur and their role as a venture capitalist. We look at two measures. First, we look at the fraction of companies that have a founder who worked at the founder-VC's startup. Successful founder VCs have a higher fraction of companies (3.9%) that have a founder who worked at the founder-VC's prior startup than do unsuccessful founder-VCs (1.9%). Second, we look at the data on senior hires and board members for portfolio companies of founder-VCs and see whether any have prior employment at the startup founded by the founder-VC. We find that far more portfolio companies for successful founder-VCs (30.3%) have at least one senior hire or one board member that worked with the founder-VC as compared to unsuccessful founder-VCs (18.7%). This latter statistic would seem to indicate that successful founder-VCs may provide additional value to

portfolio companies by providing access to employees and board members for their portfolio companies. The subsequent analysis examines if the superior performance of successful founder-VCs' stems from higher quality deal flow/selection or greater value-add.

We now explore the determinants of investment outcome. In Table 8, the unit of observation is a VC-entrepreneur pair. Panel A of Table 8 runs our analysis without including venture capital firm fixed-effects. In column (1) we find that successful founder-VC are 11.6 percentage points more successful than unsuccessful founder-VCs and 8.5 percentage points (0.116-0.0305) than professional VCs. Unsuccessful founder-VCs are 3.1 percentage points less successful than professional VCs excluding any VC firm effects.

In column (3) we see that investments by founder-VCs that are in the same industry as their own startup are significantly more likely to be successful (5.01%) than are investments outside their startups industry. This would seem to suggest some industry specific factor aids founder VC portfolio companies or that these deals are of higher quality. This is consistent with Gompers, Kovner, Lerner, and Scharfstein (2009) who find that individual venture capitalists who specialize have better investment outcomes than do venture capitalists who invest across multiple industries. The net effect of successful founder-VCs on investment outcomes remains a positive and significant 4.82% (0.111-0.0629) after controlling for the deal quality measures in column (3). For unsuccessful founder-VCs, investments outside their startups' industry have success rates that are 6.29 percentage points lower than those of professional VCs. We explore later whether the better performance for founder-VCs for "in-industry" investments comes from higher quality deal flow (because of their reputation within the industry) or their ability to add value. We also show in column (3) that other measures of deal quality also are associated with higher probability of success. If the entrepreneur went to a top school (either undergraduate or graduate school), the

probability of a successful exit is 3.2% higher. On average, venture capitalists who hold a degree from a top school are more successful. If the VC investor went to a top school, success rates are 1.57% higher. Similarly, if the syndicate prominence, defined by the historical success rate of the VC co-investors, is higher, the probability of a successful exit goes up.

The importance of quality of deal flow is also highlighted in column (4) in which we include a dummy variable for whether the founder of the portfolio company worked at the startup founded by the founder-VC, whether the founder-VC is working at one of the venture capital funds that invested in their startup, and whether the investment is in a company founded by a serial enterpreneur. If the founder of the start-up worked for the founder-VCs company, success is 6.48% higher. Similarly, the coefficient on serial founder is statistically significant. We find that, on average, investments in serial entrepreneurs are 3.15% more successful consistent with Gompers, Kovner, Lerner, and Scharfstein (2010). Once all of these potential deal quality controls are included, we find that successful founder VCs have investments that are 9.3% more successful than professional VCs on investments within the industry of their own startup and 4.5% more successful than professional VCs in deals outside of their industry. Both types of investments by unsuccessful founder-VCs are less successful than professional VCs.

In Panel B of Table 8, we repeat the analysis, but include venture capital firm fixed effects. In this way, we can control for the average quality of the venture capital firm to understand if the founder-VCs are different from the partners at their firm. These fixed effects allow us to control for the quality of the venture capital firm, i.e., how much of the better performance of a successful founder-VC is potentially due to joining a higher quality venture firm. In column (1) we see that the coefficient on successful founder-VC is still positive and significant, but is smaller than in Panel (A), 8.35% versus 11.6%. Slightly more than 3% of the success differential of successful

founder-VCs is due to working at higher quality venture capital firms. On average, the underperformance of unsuccessful founder-VCs relative to professional VCs is a smaller 2.3%. Controlling for VC firm quality reduces the outperformance of successful founder-VCs relative to unsuccessful founder-VCs to 8.35% and relative to professional VCs to 6.05%. This is 25% lower (relative to professional VCs) than the resuts without VC firm fixed effects. This is consistent with Ewens and Rhodes-Kropf (2015) who show that while a portion of an individual VC's investment outcomes are dependent upon the quality of the firm to which they belong, a larger portion of the performance differential is dependent upon the individual. Most of the results from Panel A remain similar in magnitude. For example, investments by founder VCs are more successful in the industry in which they started their company (4.33%-4.54%). The net effect of controlling for VC firm fixed effects and all observable deal quality measure can be seen in column (4). Investments by successful founder-VCs that are in the industry of their startup remain 5.92% more successful than investments by professional VCs (0.797-0.638+0.433) and remain 1.59% more successful if the investment is outside of their startup industry.

3.3. Instrumental Variable Regression

In this section, we use an instrumental variables estimation to determine what drives superior investment performance of successful founder-VCs. On the one hand, pre-investment factors like deal quality could be at play. For example, successful founder-VCs may enjoy an exceptional deal flow (i.e., have access to deals that other VCs don't see) or they might excel at selecting good opportunities (i.e., better than other VCs at evaluating deals that come in their door). On the other hand, successful founder-VCs' higher performance may stem from their adding value after investment. This value-add could come from help with the recruitment of employees and board members, introductions to customers, or advice on strategy and growing a startup.

In the previous section, we showed that controlling for observable difference in deal quality, investments by successful founder-VCs remained significantly more likely to be successful than professional VCs or unsuccessful founder-VCs. In the absence of controls for unobservable deal quality, however, the point estimate of the effect of successful founder-VC in OLS regressions with success of the investment on the left-hand side conflates the pre-investment and post-investment sources of value. For an investor in a venture capital fund, teasing out the which factor is at play is less critical if their primary concern is about the size of the performance improvement and not its source. Entrepreneurs, however, would strongly prefer to partner with VCs who add more value after investing, other things being equal. Hsu (2007) demonstrates that early stage entrepreneurs believe there is a difference in value-add at the time of funding given that they accept investment offers at lower valuations from higher-tier VC firms. As such, identifying the driver— pre-investment or post-investment—of a successful founder-VCs outperformance is important in both theory and practice.

To this end, we construct an instrumental variable (IV) that captures the exogenous probability of an entrepreneur obtaining funding from a successful founder-VC. A higher IV value implies a higher likelihood of this entrepreneur being matched to a successful founder-VC for reasons unrelated to the underlying quality of the business at the time of investment. The instrument exploits two ideas: homophily[3] (i.e., the tendency of people to associate with those similar to themselves) and two-sided matching.[4] The following example illustrates our IV approach.

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[3] A sociological concept, homophily has been documented in diverse settings including in marriage (Kalmijn 1998, Fiore and Donath 2005), close friendships (Marsden, 1987, 1988, Currarini, Jackson and Pin 2009), professional networks (Kleinbaum et al. 2013; Ruef et al. 2003; Reagans 2011;Sorenson and Stuart 2001) and acquiescence (Hampton and Wellman 2000). VCs are not immune to homophily in their investment decisions. Gompers, Mukharlyamov, and Xuan (2016) examine its role in the formation of VC syndicates. Co-investments are more common between VCs with high levels of mutual affinity (e.g., same gender, ethnicity, schooling, and past employer).
[4] Unlike public investments, a VC investment is possible only upon the consent of both the investor and the company (Sorensen (2007)).

Imagine that a dozen entrepreneurs and a dozen VCs attended a fundraising conference with a quarter of the VCs being successful founder-VCs.[5] How can one estimate the probability that a specific entrepreneur receives funding from a particular VC? Or more generally, how would we estimate if the entrepreneur received funding from any of the three successful founder-VCs? Our IV methodology captures this intuition.

Each entrepreneur could have received funding from any of the dozen VCs. Different levels of mutual affinity, however, make some pairings more likely than others, i.e., homophily means that matching a particular VC and a particular entrepreneur is more likely when they share certain characteristics. The probability of a certain entrepreneur getting funding from a specific VC[6] is *increasing* in the affinity between the pair and *decreasing* in the affinity between that VC and the entire set of entrepreneurs excluding the entrepreneur in question. This is a standard two-sided matching process. In other words, it is not just the pairwise affinity between a particular VC and a particular entrepreneur that matters, but the position of this pair's affinity in the distribution of pairwise affinities faced by each entrepreneur and VC. The entrepreneur-level probability of being funded by a successful founder-VC (i.e., the IV value for this startup) is the sum of probabilities across potential pairings with investors of this type.

The entrepreneur-VC affinity plausibly plays a stronger role in investment decisions amid a paucity of information about underlying deal quality. As such, the IV approach in this section uses the sample limited to the first financing round of each portfolio company. Subsequent investment rounds will be based, at least in part, on the performance of the entrepreneur subsequent to

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[5] In our stylized example, each company gets backed by a distinct VC. The one-to-one mapping between VCs and entrepreneurs is for expositional simplicity only. The actual estimation exercise allows for a VC to fund multiple ventures.

[6] Since each company gets funding from one and only one VC, the probabilities for each entrepreneur across all VCs add up to one.

receiving the first round of invsestment. If more than two individual VCs participated in the first investment round, we keep only the lead investor.[7] Sorensen (2007) similarly focuses on the first investment by the lead investor for each company when using a structural model to estimate the relative roles of *influence* (i.e., post-investment value creation) and *sorting* (i.e., pre-investment deal quality) in VC performance.

To identify the pools of VCs and entrepreneurs that potentially match to each other, we follow Sorensen (2007) and partition investments into markets that group investments received by companies in the same state and industry and within the same half-year (January to June or July to December). Next, we compile all possible pairs of VCs and entrepreneurs within each market. Importantly, the information on which of the potential pairings actually match does not feed into future steps, nor does it affect the instrument. As such, the internal validity (as confirmed by the first-stage results discussed later) is not mechanical, but is rather an out-of-sample manifestation of well-established preferences for homophily.[8]

For each pair, we then quantify the level of similarity between a VC and an entrepreneur in terms of education, ethnicity, and gender. In congruence with Gompers et al. (2016), the affinity score for each pair is the average of pairwise affinity characteristics, i.e., dummy variables indicating whether members of a pair attended the same school, belong to the same ethnic minority group, or are the same gender.[9] We then convert these affinity scores into probabilities.

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[7] VentureSource labels a lead investor in each round.

[8] In fact, the English proverb "*Birds of a feather flock together*" traces its wording to a 1545 writing by William Turner: "*Byrdes of on kynde and color flok and flye allwayes together.*"

[9] Gompers et al. (2016) study coinvestments between VCs and include into the affinity score an indicator variable for when VCs have a common past employer. We do not account for this in our affinity score. Since VCs and entrepreneurs generally follow different careers paths, collecting the data on professional experiences of people in our sample and incorporating shared career background into our measures—while having the potential to sharpen our results—does not appear critical.

To be consistent with homophily and the two-sided nature of matching, the probability of an entrepreneur getting funding from a specific VC must be increasing in the affinity between this pair and decreasing in the average affinity between this VC and all entrepreneurs in this market. Capturing these comparative statics is a straightforward functional form with this pair's affinity in the numerator and the VC's average affinity in the denominator; this ratio is then normalized so that for each entrepreneur, probabilities across all VCs in the market add up to one.

Finally, to calculate the IV value for each startup, we add up probabilities across pairs when this entrepreneur is matched to a successful founder-VC. This gives us a number, plausibly unrelated to the underlying deal quality, that relates to the probability that this company receives funding from a successful founder-VC.

Importantly, we apply the above methodology to estimate the likelihood of a startup receiving financing from other categories of VCs as well. The VC type of interest does not enter the procedure until the last stage which is the within-entrepreneur aggregation of probabilities by a subset of VCs. In particular, we construct the same instrument for a group of other well-performing VCs and, to understand the nature of successful founder-VCs' outperformance, contrast the two sets of IV results. In order to compare how successful founder-VCs perform relative to other top VCs, we calculate the number of successful investments that every VC had invested in over the five years preceding this investment. Our group of other top VC takes the value of one for VCs who are in the top 5% of all VCs using this measure.[10]

Table 9 reports the results of OLS and 2SLS regressions for the success of entrepreneurial ventures. In columns (1) and (2), the explanatory variables include our endogenous variable, the status of a lead venture capitalist in the first financing round (i.e., whether the investor is a

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[10] The results are robust to using a different time window for calculating prior success.

successful founder-VC or not in the first specification and whether the investor is defined as an other top VC or not), the characteristics of the startups founder as well as year and industry fixed effects. Column (3) and (4) present our two first stage regressions of the 2SLS and columns (5) and (6) present the second stage. Since our instrument can handle only one endogenous variable at a time, our IV analysis does not use endogenous variables present in earlier tables, such as whether the investment is in the same industry as the founder-VCs startup, syndicate prominence, whether the founder came from the founder-VC's own startup, and or whether the founder-VC is an employee of on of the VC firms that invested in their startup

Columns (1) and (2) establish similar outperformance of successful founder-VCs and VCs with exceptional (i.e., top 5%) historical performance versus other VCs. In this setting, successful founder-VCs are 7.19% more successful than other VCs, on average, and our group of other top VCs are 6.4% more successful. Because of the inevitable selection on unobservables, these VC-type point estimates blend pre-investment deal quality and post-investment value-add. The instrument addresses this problem by quantifying a plausibly exogenous probability of an entrepreneur receiving funding from a VC of a specific type.

Columns (3) and (4) illustrate the instrument's internal validity. Our approach is to construct the probabilities without taking into account the actual matches among all VCs and entrepreneurs in a market. Nevertheless, the instrument does relate to real outcomes in the first stage; i.e., its predictions of which entrepreneur gets financing from which venture capitalist holds up in the data for both successful founder-VCs as well as other top VCs.

In spite of virtually identical OLS and first-stage results, columns (5) and (6) reveal strikingly different second-stage results for successful founder-VCs and other top VCs. If the exclusion restriction holds, then successful founder VCs maintain their value-add ability after being

randomly matched to a start-up, whereas other top VCs lose it. In other words, net of endogeneity, the other top VCs loss of statistical significance is consistent with the notion that VCs with impressive recent performance stay successful largely because of superior deal quality, whether due to exceptional deal flow or better deal selection. On the other hand, the strong second-stage significance of successful founder-VC is consistent with these VCs adding value post-investment.

Since the instruments for both groups of VCs are comparable, the untestable exclusion restriction holds either for both group or for neither. The first-stage results, essentially indistinguishable for two groups, indicate that for successful founder-VCs and other top VCs, affinity-based attraction with entrepreneurs is equally strong. The OLS results also indicate that the differential in success rates for deals by both types of VCs are similar. As such, if the exclusion restriction holds, the evidence presented here is consistent with successful founder-VCs adding more value post-deal (i.e., factors that are unrelated to deal quality) than other top performing VCs. The likely presence of heterogenous effects, as hinted by the quadrupling of the second-stage coefficient versus the OLS one, impedes the decomposition of the successful founder VCs' outperformance into the pre-deal and post-deal components. Even if the exclusion restriction holds for neither group, which we doubt is the case, the sharp contrast in second-stage results points to qualitative differences between the source of superior investment performance by successful founder-VCs and other top VCs.

4. Conclusion

Our results provide several important insights about the underlying factors that influence venture capital investment success and the persistence in performance. We document that a significant minority of venture capitalists have themselves been founders of venture capital-backed startups in the past. Being successful as a founder increases the likelihood of becoming a venture

capitalist, but the majority of founder-VCs were actually unsuccessful with their startup. Additionally, founder-VCs are highly likely to join one of the venture capital firms that invested in their startup and invest in the same industry as their own startup about two thirds of the time.

We then compare the investment careers and outcomes of successful founder-VCs, unsuccessful founder-VCs, and professional VCs. Successful founder-VCs appear to have longer and more successful investment careers than either professional VCs or unsuccessful founder-VCs. We also find that successful founder-VCs appear to invest in higher quality deals, i.e., their investments are more likely to be in companies founded by serial entrepreneurs, entrepreneurs who went to a top school, entrepreneurs with greater startup experience, or entrepreneurs who worked for that founder-VC's startup in the past. We find, however, that even controlling for these difference in deal quality, successful founder-VCs have more successful investments. We find that a portion of the greater success can be explained by joining better venture capital firms. A significant difference in performance, however, remains after controlling for observable deal quality and venture capital-firm fixed effects.

Finally, we explore in the IV framework what drives superior investment performance of successful founder-VCs. Using the exogenous probability of an entrepreneur obtaining funding from a successful founder-VC as an instrument, we find that succesful founder-VCs outperform, at least in part, due to post-investment value-add. This is in sharp contrast to other top performing VCs who appear to have higher returns that are largely driven by better ex ante deal quality.

Our results raise a number of important questions. First, what accounts for the higher quality deals that successful founder-VCs invest in? It is possible that founders understand the greater post-investment value add the successful founder-VCs provide. As such, higher quality

entrepreneurs may seek out investments from successful founder-VCs. A second possibility is that successful founder-VCs may just have better networks. Gompers, Gornall, Kaplan, and Strebulaev (2020) show that nearly 90% of deals come to a VC through their network. Successful founder-VCs may, through their prior success, have greater access to higher quality deals through their networks. The fact that a higher percentage of investments are in founders from their prior startup is consistent with this second explanation.

A second question that arises concerns the mechanism by which successssful founder-VCs add value. While our results clearly indicate that successful founder-VCs appear to be able to add value after their investment, we have not identified the specific ways in which that is manifested. It is possible that the value add is due to a halo effect. A halo effect may arise if others (e.g., potential future investors, customers, or employees) view a startup more favorably simply because it has investment from a successful founder-VC. Those future investors, customers, or employees may not be in the network of the successful founder-VC, but become engaged with the startup because of the successful founder-VC's reputation. It is also possible that successful founder-VCs actually add value through their actions. They may recruit board members or employees through their network. They may be able to introduce the company to potential customers through their network. Additionally, because they built a successful company, they may be able to provide advice and guidance to founders based upon that experience. We believe future research into the actual method by which value is added to portfolio companies is a fruitful area to explore.

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Figure 1 Industry of Founder-VCs Startup

This figure presents the industry in which founder-VCs started their company.
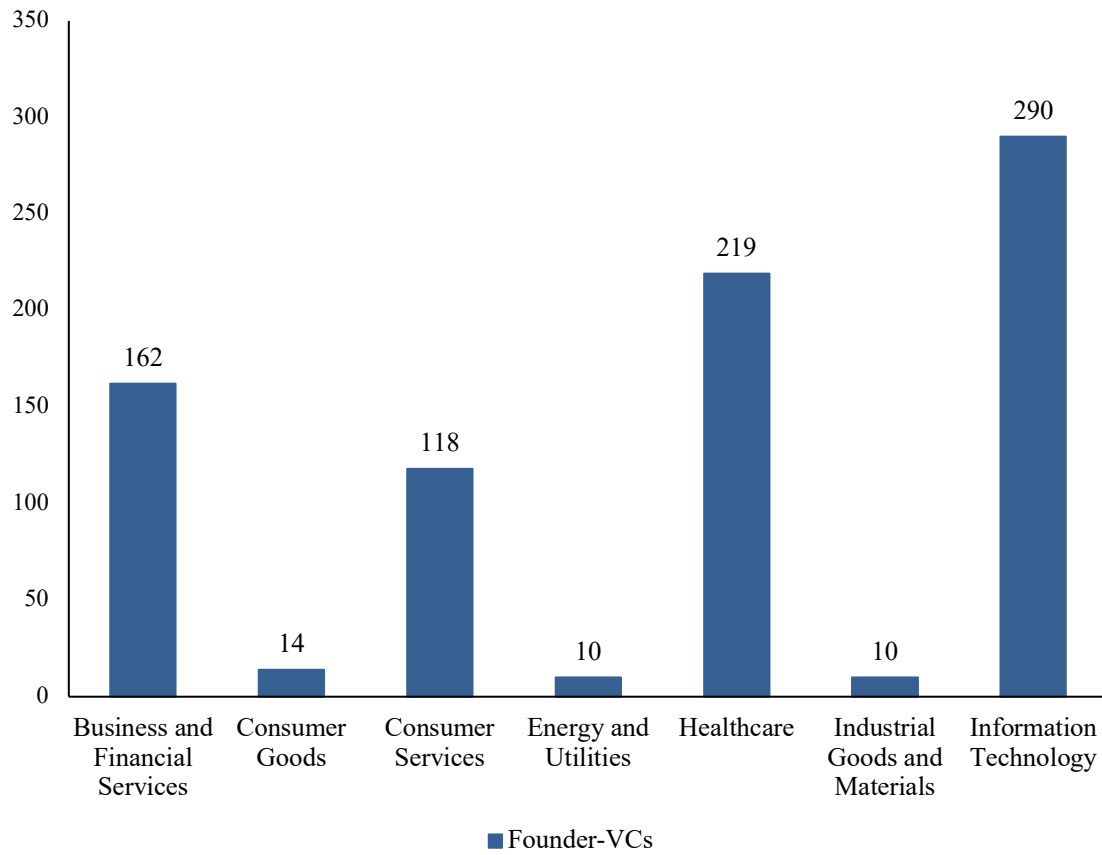
Figure 2 Location of Founder-VC Startup

This figure presents the state in which founder-VCs started their company.
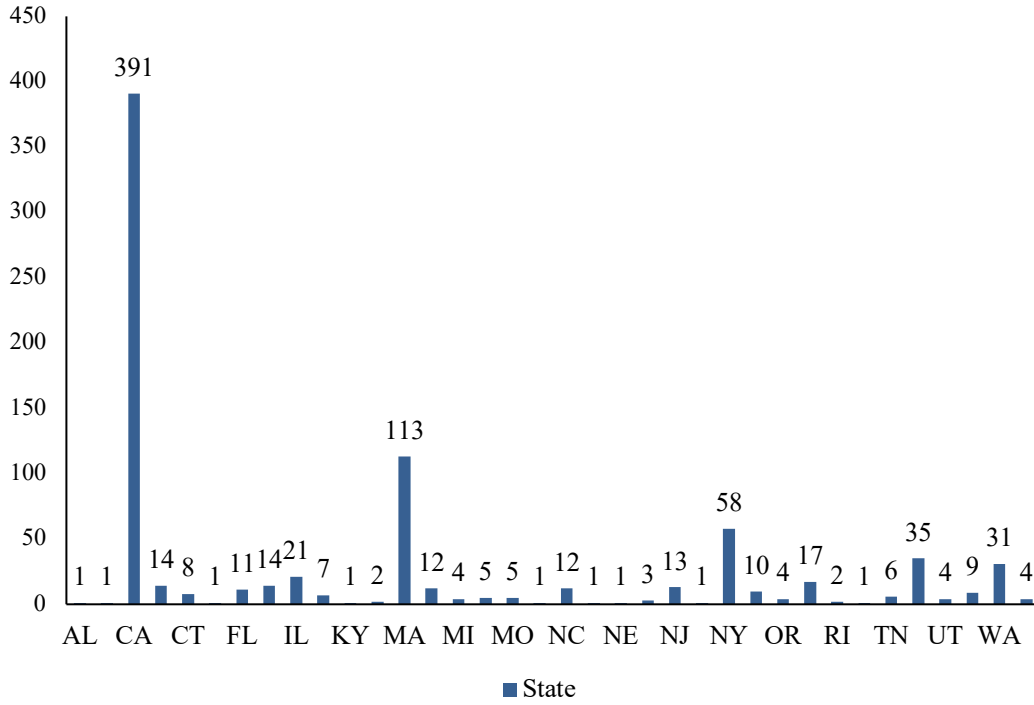
Figure 3: Industry Investment – Professional VC vs. Founder VC

This table presents industry breakdown of investments by founder-VCs and professional VCs within the VentureSource data.

Portfolio Investment by Industry

Founder-VC ▬   Professional VC
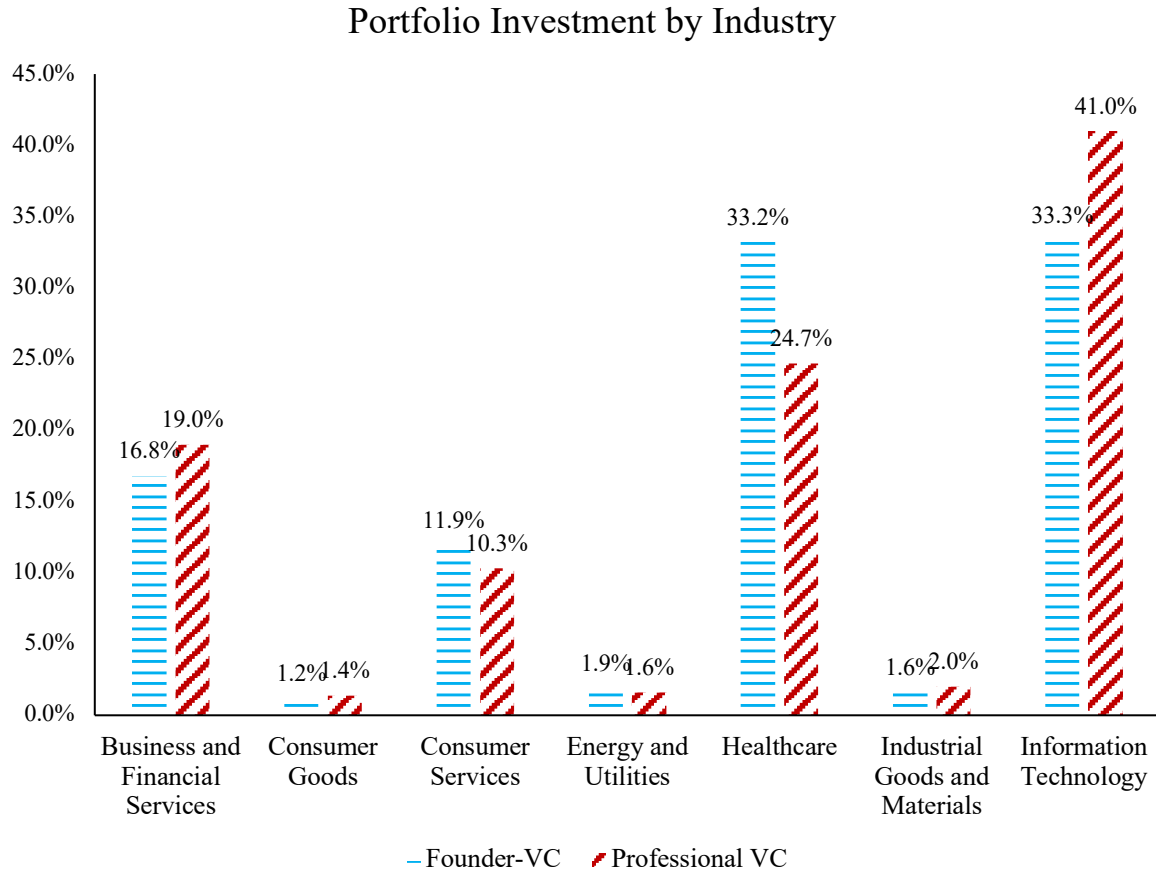
Figure 4 Industry Investment Successful Founder VC vs. Unsuccessful Foudner VC

This table presents industry of investments made by successful and unsuccessful founder-VCs within the VentureSource data.

Portfolio Investment by Industry
Founder-VCs only

Legend: Successful Founder-VC, Unsuccessful Founder-VC

Data values:
- Business and Financial Services: 15.4% / 18.0%
- Consumer Goods: 0.6% / 1.8%
- Consumer Services: 10.7% / 12.9%
- Energy and Utilities: 1.5% / 2.2%
- Healthcare: 35.8% / 31.0%
- Industrial Goods and Materials: 1.1% / 2.0%
- Information Technology: 34.7% / 32.1%
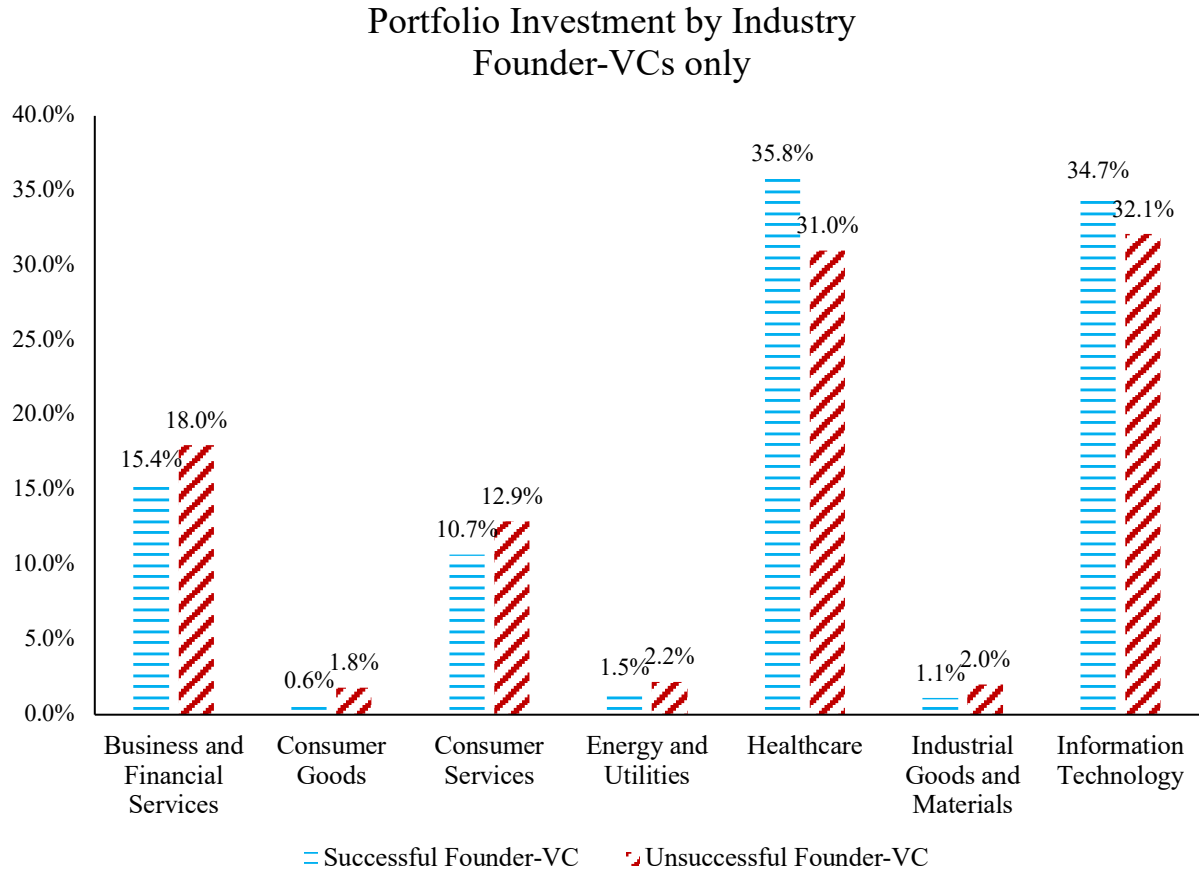
Table 1: Entry of Venture Capitalists over Time

This table reports the entry of professional venture capitalists and founder-venture capitalists into the industry. Entry into venture capital is determined by the year in which the VC first joins a board of directors for a portfolio company representing a venture capital firm.

Year	Professional VCs	Founder-VCs
1990	42	0
1991	31	2
1992	46	0
1993	64	1
1994	67	1
1995	95	4
1996	226	4
1997	263	9
1998	311	8
1999	665	41
2000	1516	64
2001	739	39
2002	481	26
2003	387	29
2004	454	34
2005	447	44
2006	503	38
2007	579	52
2008	544	40
2009	388	18
2010	454	45
2011	447	35
2012	433	40
2013	478	41
2014	497	48
2015	488	42
2016	566	43
2017	557	50
2018	362	22
2019	65	5
Total	12,195	825

Table 2: Characteristics of Founders to Founder-VCs

This table presents characteristics of founders within the VentureSource data. Comparisons are made between founders who never become a venture captialist and founders who become a VC.

	Founder Only	Founder-VC
Success Rate	11.82%	29.74%
Female	10.29%	4.86%
Asian	17.46%	11.73%
Black	0.39%	0.24%
Hispanic	6.22%	3.44%
White	78.78%	84.83%
Number	52,314	825

Table 3: Who becomes a founder-VC

This table presents regressions results for which founders within the VentureSource data become a venture capitalist. The dependent variable is one if the founder eventually becomes a VC. Controls for education background, gender, and race/ethncity are included.

	(1) Becomes a founder-VC	(2) Becomes a founder-VC
Success	0.0217***	0.0193***
	(0.00298)	(0.00292)
Top School		0.0709***
		(0.00353)
Female		-0.0156***
		(0.00251)
East Asian		-0.0136***
		(0.00292)
African		-0.000636
		(0.0137)
Indian		-0.00274
		(0.00289)
Hispanic		-0.00353
		(0.00381)
Constant	0.331**	0.305**
	(0.132)	(0.124)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	38627	38627

Standard errors in parentheses. * $p < 0.1$, ** $p < .05$, *** $p < .01$

Table 4: Career Characteristics for Professional Venture Capitalists, Successful, and Unsuccessful Founder-Venture Capitalists

This table presents characteristics of successful and unsuccessful founder-VCs to professional VCs within the VentureSource data.

	Professional VCs	Successful founder-VCs	Unsuccessful founder-VCs
VC characteristics			
Works at VC investing firm		89.0%	85.4%
Top school	43.9%	56.6%	53.9%
Average Age (years)	52.49	55.36	54.07
Career outcomes			
Investment Success	23.2%	29.8%	19.2%
IPO	9.4%	12.4%	7.1%
Number of deals	5.77	6.69	4.90
Career length (years)	11.53	12.15	9.58
Investment in same industry as startup		63.9%	56.8%

Table 5 Education History of Professional Venture Capitalists vs. Founder-Venture Capitalists:

This table presents education history for founder-VCs and professional VCs within the VentureSource data.

Panel A: Professional Venture Capitalists

Education (Professional Venture Capitalist)					
College			Business School		
	Freq.	Percent		Freq.	Percent
1 Harvard University	468	4.67%	1 Harvard University	1163	21.28%
2 Stanford University	408	4.07%	2 Stanford University	635	11.62%
3 University Of Pennsylvania	355	3.54%	3 University Of Pennsylvania	530	9.70%
4 Princeton University	273	2.73%	4 Columbia University	251	4.59%
5 Yale University	257	2.57%	5 University Of Chicago	234	4.28%
6 University Of California (Berkeley)	223	2.23%	6 Northwestern University	217	3.97%
7 Dartmouth College	211	2.11%	7 Dartmouth College	125	2.29%
8 Cornell University	200	2.00%	8 New York University	115	2.10%
9 Duke University	168	1.68%	9 University Of California (Los Angeles)	112	2.05%
10 University Of Virginia	158	1.58%	10 Massachusetts Institute Of Technology	97	1.77%
11 Massachusetts Institute Of Technology	154	1.54%	11 University Of California (Berkeley)	91	1.67%
12 University Of Michigan	152	1.52%	12 University Of Virginia	90	1.65%
13 Brown University	139	1.39%	13 University Of Michigan	82	1.50%
14 University Of California (Los Angeles)	102	1.02%	14 Duke University	72	1.32%
15 University Of Ilinois (Urbana Champai..	102	1.02%	15 Yale University	60	1.10%
16 Georgetown University	98	0.98%	16 Insead	59	1.08%
17 Northwestern University	90	0.90%	17 Cornell University	46	0.84%
18 Brigham Young University	83	0.83%	18 Indiana University (Bloomington)	42	0.77%
19 Boston College	81	0.81%	19 University Of North Carolina (Chapel ..	42	0.77%
20 Williams College	80	0.80%	20 University Of Southern California	37	0.68%
Top 20 Total	3,802	37.96%	Top 20 Total	4,100	75.02%
Sample Total	10,017		Sample Total	5,465	

Education Continued (Professional Venture Capitalist)

Graduate School

	Freq.	Percent
1 Stanford University	340	8.51%
2 Harvard University	250	6.26%
3 Massachusetts Institute Of Technology	175	4.38%
4 University Of Pennsylvania	114	2.85%
5 Columbia University	98	2.45%
6 University Of California (Berkeley)	97	2.43%
7 New York University	80	2.00%
8 Northwestern University	77	1.93%
9 Yale University	76	1.90%
10 Cornell University	68	1.70%
11 University Of Michigan	68	1.70%
12 University Of Virginia	58	1.45%
13 University Of Chicago	53	1.33%
14 Georgetown University	45	1.13%
15 Oxford University	45	1.13%
16 University Of California (Los Angeles)	45	1.13%
17 Cambridge University	40	1.00%
18 University Of London	38	0.95%
19 University Of Southern California	37	0.93%
20 Duke University	34	0.85%
Top 20 Total	1,838	46.02%
Sample Total	3,994	

College Majors (Professional Venture Capitalist)

Undergraduate Majors	Count	Percent	Graduate Majors	Count	Percent
1 Economics	744	11.93%	1 Law	470	30.05%
2 Business	406	6.51%	2 Medicine	166	10.61%
3 Engineering	359	5.76%	3 Science	135	8.63%
4 Electrical Engineering	262	4.20%	4 Electrical Engineering	103	6.59%
5 Finance	197	3.16%	5 Business	46	2.94%
6 Accounting	158	2.53%	6 Engineering	46	2.94%
7 History	139	2.23%	7 Computer Science	43	2.75%
8 Computer Science	136	2.18%	8 Chemistry	36	2.30%
9 Biology	120	1.92%	9 Physics	29	1.85%
10 Mechanical Engineering	120	1.92%	10 Biology	27	1.73%
11 Mathematics	113	1.81%	11 Economics	26	1.66%
12 Chemistry	105	1.68%	12 Mechanical Engineering	24	1.53%
13 Political Science	104	1.67%	13 Chemical Engineering	23	1.47%
14 Science	99	1.59%	14 Finance	22	1.41%
15 Physics	76	1.22%	15 Public Administration	19	1.21%
16 Chemical Engineering	61	0.98%	16 Accounting	14	0.90%
17 English	56	0.90%	17 Industrial Engineering	14	0.90%
18 Industrial Engineering	54	0.87%	18 Pharmacology	13	0.83%
19 Law	47	0.75%	19 International Relations	12	0.77%
20 Psychology	46	0.74%	20 Biochemistry	7	0.45%
Top 20 Total	3,402	54.57%	Top 20 Total	1,275	81.52%
Sample Total	6,234		Sample Total	1,564	

Panel B: Founder Venture Capitalists

Education (Entrepreneurs Who Become Venture Capitalist)

College	Freq.	Percent	Business School	Freq.	Percent
1 Harvard University	43	5.87%	1 Harvard University	78	27.96%
2 Stanford University	33	4.50%	2 Stanford University	35	12.54%
3 University Of California (Berkeley)	27	3.68%	3 University Of Pennsylvania	21	7.53%
4 University Of Pennsylvania	24	3.27%	4 Columbia University	10	3.58%
5 Yale University	24	3.27%	5 Northwestern University	9	3.23%
6 Massachusetts Institute Of Technology	15	2.05%	6 University Of California (Berkeley)	9	3.23%
7 University Of Michigan	15	2.05%	7 University Of Chicago	9	3.23%
8 Cornell University	14	1.91%	8 Massachusetts Institute Of Technology	7	2.51%
9 Princeton University	12	1.64%	9 Dartmouth College	5	1.79%
10 Brown University	11	1.50%	10 University Of California (Los Angeles)	5	1.79%
11 Duke University	11	1.50%	11 Boston University	4	1.43%
12 Dartmouth College	10	1.36%	12 University Of Michigan	4	1.43%
13 Boston University	9	1.23%	13 University Of Virginia	4	1.43%
14 Columbia University	8	1.09%	14 Carnegie Mellon University	3	1.08%
15 Purdue University	8	1.09%	15 Columbia Business School	3	1.08%
16 University Of Notre Dame	8	1.09%	16 Cornell University	3	1.08%
17 University Of Southern California	7	0.95%	17 Santa Clara University	3	1.08%
18 Amherst College	6	0.82%	18 University Of Washington	3	1.08%
19 Indiana University (Bloomington)	6	0.82%	19 Arizona State University	2	0.72%
20 New York University	6	0.82%	20 Baylor University	2	0.72%
Top 20 Total	297	40.52%	Top 20 Total	219	78.49%
733			279		

Education Continued (Entrepreneurs Who Become Venture Capitalist)

Graduate School	Freq.	Percent
1 Stanford University	38	8.44%
2 Harvard University	34	7.56%
3 Massachusetts Institute Of Technology	22	4.89%
4 University Of California (Berkeley)	18	4.00%
5 Oxford University	11	2.44%
6 Yale University	10	2.22%
7 New York University	9	2.00%
8 University Of Michigan	8	1.78%
9 University Of Pennsylvania	8	1.78%
10 Columbia University	7	1.56%
11 Cornell University	7	1.56%
12 Northwestern University	7	1.56%
13 Carnegie Mellon University	6	1.33%
14 University Of Ilinois (Urbana Champai..	6	1.33%
15 Princeton University	5	1.11%
16 University Of California (Los Angeles)	5	1.11%
17 University Of Southern California	5	1.11%
18 University Of Virginia	5	1.11%
19 University Of Wisconsin (Madison)	5	1.11%
20 Washington University (St. Louis)	5	1.11%
Top 20 Total	221	49.11%
450		

College Majors (Entrepreneurs Who Become Venture Capitalist)

Undergraduate Majors	Count	Percent		Graduate Majors	Count	Percent
1 Electrical Engineering	52	9.96%		1 Medicine	38	19.00%
2 Economics	50	9.58%		2 Law	31	15.50%
3 Computer Science	42	8.05%		3 Computer Science	22	11.00%
4 Engineering	27	5.17%		4 Electrical Engineering	15	7.50%
5 Business	25	4.79%		5 Science	12	6.00%
6 Chemistry	17	3.26%		6 Engineering	11	5.50%
7 Mathematics	17	3.26%		7 Chemistry	9	4.50%
8 Biology	16	3.07%		8 Business	6	3.00%
9 Physics	13	2.49%		9 Biology	5	2.50%
10 Mechanical Engineering	12	2.30%		10 Chemical Engineering	4	2.00%
11 Chemical Engineering	10	1.92%		11 Biochemistry	3	1.50%
12 History	9	1.72%		12 Computer Engineering	3	1.50%
13 Science	9	1.72%		13 Economics	3	1.50%
14 Accounting	7	1.34%		14 Material Science	3	1.50%
15 Political Science	7	1.34%		15 Education	2	1.00%
16 Psychology	7	1.34%		16 Electrical and Electronics Engineering	2	1.00%
17 Biochemistry	5	0.96%		17 Finance	2	1.00%
18 English	5	0.96%		18 Physics	2	1.00%
19 Government	5	0.96%		19 Astronomy	1	0.50%
20 Law	5	0.96%		20 Biological Engineering	1	0.50%
Top 20 Total	340	65.13%		Top 20 Total	175	87.50%
	522				200	

Table 6: Prior Employment for Professional Venture Capitalits

This table presents work history for professional VCs within the VentureSource data.

Professional Venture Capitalist Employment History		
Past Employer (1990 to 2019)		
Past Employer	**Freq.**	**Percent**
1 McKinsey & Company	149	0.70%
2 Morgan Stanley	125	0.59%
3 Goldman Sachs	114	0.54%
4 Microsoft	81	0.38%
5 Merrill Lynch	80	0.38%
6 Bain & Company	68	0.32%
7 Lehman Brothers	62	0.29%
8 IBM	60	0.28%
9 Deutsche Bank	56	0.26%
10 JP Morgan	56	0.26%
11 Credit Suisse	52	0.24%
12 Cisco Systems	49	0.23%
13 Google	42	0.20%
14 Warburg Pincus	38	0.18%
15 New Enterprise Associates	38	0.18%
16 Citigroup	37	0.17%
17 Summit Partners	32	0.15%
18 Ernst & Young	32	0.15%
19 Boston Consulting Group	31	0.15%
20 Apax Partners	28	0.13%
Top 20 Total	1,230	5.79%
Sample Total	21,251	

Table 7: Portfolio Founder Characteristics for Investments by Profession Venture Capitalists and Founder Venture Capitalists

This table presents characteristics of founders for portfolio companies in which professional VCs as well as successful and unsuccessful founder-VCs invest.

Professional VC vs Founder-VCs

	Professional VCs	Founder-VCs	Difference	p-Value
Serial Entrepreneur	0.0840	0.119	-0.0351***	0.000
Top School (Founders)	0.205	0.220	-0.0146*	0.023
Top Undergrad College (Founders)	0.114	0.131	-0.0178***	0.000
Top MBA (Founders)	0.0622	0.0706	-0.00839*	0.028
Top Gradschool (Founders)	0.103	0.111	-0.00807	0.093
VC Top School	0.439	0.531	-0.09236***	0.000

Professional VC vs Successful Founder-VCs

	Professional VCs	Successful Founder-VCs	Difference	p-Value
Serial Entrepreneur	0.0840	0.141	-0.0571***	0.000
Top School (Founders)	0.205	0.241	-0.0365***	0.000
Top Undergrad College (Founders)	0.114	0.139	-0.0257***	0.000
Top MBA (Founders)	0.0622	0.0678	-0.00555	0.180
Top Gradschool (Founders)	0.103	0.136	-0.0327***	0.000
VC Top School	0.439	0.566	-0.1273***	0.000
Immigrant Founders	0.222	0.254	-0.0323***	0.000

Unsuccessful Founder- VC vs Successful Founder-VCs

	Unsuccessful Founder-VCs	Successful Founder-VCs	Difference	p-Value
Serial Entrepreneur	0.119	0.141	-0.0220**	0.004
Top School (Founders)	0.220	0.241	-0.0219*	0.022
Top Undergrad College (Founders)	0.131	0.139	-0.00783	0.312
Top MBA (Founders)	0.0706	0.0678	0.00284	0.622
Top Gradschool (Founders)	0.111	0.136	-0.0247***	0.001
VC Top School	0.531	0.566	-0.0349	0.360
Same Industry as Startup	0.568	0.649	-0.0816***	0.000
Founder-VC Pipeline	0.0202	0.0340	-0.0138***	0.000
Employee of Investing VC Firm	0.8489	0.8896	-0.0407	0.120

Table 7: Portfolio Founder Characteristics for Investments by Profession Venture Capitalists and Founder Venture Capitalists (Continued)

	Characteristics of founders of portfolio firms		
	Professional VCs	Successful founder-VCs	Unsuccessful VC-founder
Founder was a startup coworker		3.9%	1.9%
Network hires		30.3%	18.7%
Startup experience	7.48	7.54	6.71

Table 8 Investment Outcomes Controlling for Founder VC

This table presents regressions for investment outcomes by VCs. The unit of observation is a VC-entrepreneur pair. Controls for type of VC (founder-VC, successful founder-VC) are included as well as deal quality controls. Panel A does not include VC firm fixed effects. Panel B includes them. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Panel A: Pairwise Regression Without VC Firm Fixed Effects

	(1)	(2)	(3)	(4)
	Success	Success	Success	Success
Founder VC	-0.0305***	-0.0334***	-0.0629***	-0.0650***
	(0.00604)	(0.00604)	(0.00771)	(0.0142)
Successful Founder VC	0.116***	0.115***	0.111***	0.110***
	(0.00935)	(0.00934)	(0.00929)	(0.00928)
VC Top School		0.0165***	0.0157***	0.0156***
		(0.00295)	(0.00295)	(0.00295)
Entrepreneur Top School		0.0335***	0.0322***	0.0302***
		(0.00383)	(0.00383)	(0.00385)
Same Industry as Startup			0.0501***	0.0480***
			(0.00914)	(0.00916)
Syndicate Prominence			0.0402***	0.0394***
			(0.00365)	(0.00365)
Founder-VC Pipeline				0.0648**
				(0.0299)
Employee of Investing VC Firm				0.00148
				(0.0138)
Serial Entrepreneur				0.0315***
				(0.00536)
Constant	0.552***	0.551***	0.469***	0.460***
	(0.0515)	(0.0579)	(0.0748)	(0.0784)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	78350	78350	78175	78175

Standard errors in parentheses
* $p < 0.1$, ** $p < .05$, *** $p < .01$

Panel B: Pairwise Regressions with VC Firm Fixed Effects

	(1)	(2)	(3)	(4)
	Success	Success	Success	Success
Founder VC	-0.0230***	-0.0235***	-0.0495***	-0.0638***
	(0.00733)	(0.00733)	(0.00911)	(0.0172)
Successful Founder VC	0.0835***	0.0834***	0.0812***	0.0797***
	(0.0110)	(0.0110)	(0.0110)	(0.0110)
VC Top School		0.000669	0.000561	0.000599
		(0.00367)	(0.00367)	(0.00367)
Entrepreneur Top School		0.0204***	0.0200***	0.0190***
		(0.00388)	(0.00388)	(0.00389)
Same Industry as Startup			0.0454***	0.0433***
			(0.00978)	(0.00981)
Syndicate Prominence			0.0195***	0.0192***
			(0.00397)	(0.00397)
Founder-VC Pipeline				0.0706**
				(0.0302)
Employee of Investing VC Firm				0.0159
				(0.0166)
Serial Entrepreneur				0.0160***
				(0.00546)
Constant	0.187***	0.169***	0.0915	0.0779
	(0.0593)	(0.0594)	(0.0760)	(0.0764)
Year FE	Yes	Yes	Yes	Yes
VC Firm FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	78350	78350	78175	78175

Table 9 Instrumental Variable Regression

This table presents two-stage least-squares estimation of deal success. Columns 3 and 5 are the first and second stages corresponding to the OLS result in Column 1; Columns 4 and 6 correspond similarly to Column 2. The instrument in Column 3 (4) is the probability of an entrepreneur receiving funding from a successful founder-VC (Other Top VC). Other top VCs are the top 5% by the total number of successful investments made over the preceding five years. The construction of these probabilities exploits two ideas: homophily and two-sided matching. The probability of an entrepreneur getting funding from a certain category of VCs is *increasing* in the affinity between that entrepreneur and all such VCs with potential for a match and *decreasing* in the affinity between these VCs and other entrepreneurs. Since affinity plays a stronger role amid a paucity of information, the sample in this analysis is limited to the first financing round of each portfolio company. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

	OLS		2SLS			
			1st stage		2nd stage	
Dependent Variable:	Success	Success	Successful Founder VC	Other Top VC	Success	Success
	(1)	(2)	(3)	(4)	(5)	(6)
Successful Founder VC	0.0719***				0.284***	
	[0.0160]				[0.0555]	
Other Top VC		0.0640***				0.0563
		[0.0114]				[0.0385]
Prob(Successful Founder VC)			0.444***			
			[0.0257]			
Prob(Other Top VC)				0.495***		
				[0.0218]		
Serial Founder	0.0412***	0.0408***	0.0239***	0.0364***	0.0337***	0.0412***
	[0.0111]	[0.0111]	[0.00707]	[0.00927]	[0.0114]	[0.0112]
Top-School Founder	0.0345***	0.0333***	0.00929***	0.0171***	0.0317***	0.0335***
	[0.00633]	[0.00633]	[0.00331]	[0.00475]	[0.00639]	[0.00647]
Constant	0.532***	0.530***	-0.0186*	0.0138	0.535***	0.530***
	[0.0721]	[0.0722]	[0.0103]	[0.0285]	[0.0719]	[0.0721]
Industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,498	15,498	15,498	15,498	15,498	15,498
R-squared	0.098	0.099	0.103	0.088	0.086	0.099