

And the Children Shall Lead: Gender Diversity and Performance in Venture Capital

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And the Children Shall Lead:

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Abstract

With an overall lack of gender and ethnic diversity in the innovation sector documented in Gompers and Wang (2017), we ask the natural next question: Does increased diversity lead to better firm performances? In this paper, we attempt to answer this question using a unique dataset of the gender of venture capital partners' children. First, we find strong evidence that parenting more daughters leads to an increased propensity to hire female partners by venture capital firms. Second, using an instrumental variable set-up, we also show that improved gender diversity, induced by parenting more daughters, improves deal and fund performances. These effects concentrate overwhelmingly on the daughters of senior partners than junior partners. Taken together, our findings have profound implications on how the capital markets could function better with improved diversity.

JEL classification: [To be updated: G02, G24, G30, L14, L20.]

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Contents

1.	Introduction	3
2.	Data Collection.....	8
3.	Methodology	13
4.	Empirical Results.....	17
4.1.	Effects on Venture Capital Hiring	17
4.2.	Effects on Venture Capital Performance	21
4.3.	Instrumental Variable Regression.....	24
4.4.	Robustness and Alternative Specifications	26
4.5.	Discussions on the Economic Magnitude	27
5.	Conclusion.....	28
	References.....	31
	Appendix A: Tables and Figures.....	34
	Appendix B: Variable Definitions.....	54
	Online Appendix: Additional Table I.....	55

1. Introduction

Homophily-driven biases can be a powerful force that inhibits diversity in organizations. To overcome these barriers, policymakers have often attempted to actively promote diversity in the workplace. Whether politicians or senior executives, many of the measures that are adopted assume that greater diversity naturally leads to better performance. Others are skeptical that there is a measurable improvement in performance when diversity is mandated. Most of the research on whether or not greater diversity leads to improvements in the performance of organizations has been hampered by the inability to identify exogenous variation in diversity that is needed for causal inferences about the implications of diversity on performance. Still, other work has been done in artificial settings outside of a real business context in which true long-run profit motives would be present. Our paper makes two important contributions to the literature on diversity by using a novel experimental design. First, we show that subtle treatment effects (e.g., parenting daughters) can reduce hiring biases against women. Second, we show that exogenous shocks to gender diversity lead to economic and statistically significant increases in performance.

We look at venture capital firms and leverage the exogenously induced increases in gender diversity. Through unique data, we are able to identify hiring events for senior investment professionals at venture capital firms. Gompers and Wang (2017) show that only about 10% of new hires in the venture capital industry are women. Prior work by Gompers, Muhkarlyamov, Weisburst, and Xuan (2017) has shown that approximately 75% of venture capital firms have never had a senior investment professional who is a woman. Our experimental design is to gather data on the gender of venture capitalists' children. We show that when existing partners have more daughters, the probability of hiring a senior female investor is significantly increased. Because the gender of one's children is usually thought to be exogenous, the gender diversity induced by hiring a

senior female investor can be used to estimate the causal effect of gender diversity on performance. We examine both deal level outcomes as well as fund level excess returns and find that greater gender diversity increases performance by a meaningful amount. The results are robust to various measures of the relative ratio of daughters to total children. Importantly, the results for hiring women and its effect on performance only exist for information on senior partners' children. This makes sense if the senior partners are those who make the hiring decisions in the firm.

Our results highlight two important effects. The first is that subtle treatment effects can overcome the influence of homophily. The demographic patterns and trends surveyed in Gompers and Wang (2017) highlight the overall lack of gender diversity in venture capital. Women have entered into venture capital at rates much lower than their entry rates into other highly compensated professional fields such as medicine or law. The representation of women in science and technology advanced degrees and MBAs (as a precursor to entry into venture capital) are much higher than the representation of women in the innovation sector. Also, the relative percentage of venture capitalists who are female has not increased measurably over the past twenty-five years. Gompers and Wang point out that the most likely explanation for this persistently low representation of female investors is related to the notion of homophily, which is the tendency of individuals to associate with similar others.

As surveyed in McPherson, Smith-Lovin, and Cook (2001), the notion that “similarity breeds connection” has robust and profound effects in network structures of every type, including “marriage, friendship, work, advice, support, information transfer, exchange, co-membership, and other types of relationship.” Positive assortative mating along observable inheritable traits (e.g., intelligence, race, and height) discussed by Becker (1973) in the context of a marriage market can be viewed as the micro foundation of homophily in which choosing a partner with similar

characteristics increases the certainty about the quality of one's offspring. Currarini et al. (2009) provide theoretical foundations for the pattern of homophily in social networks using a search-based model of friendship formation and conclude that biases towards same types in both individual preferences and the matching processes affect pairing outcomes.

A direct implication of this “birds of a feather” phenomenon is that venture capitalists prefer to hire, invest in, or coinvest with those that are similar to themselves in characteristics such as gender and ethnicity. Indeed, Gompers, Mukharlyamov, and Xuan (2016) show that coinvestment patterns in venture capital are driven by social similarities, where venture capitalists who are more similar in terms of gender, ethnicity, school background, and work history are more likely to collaborate. Further, they also show that this homophily driven collaboration reduces performance.¹

Moreover, the typical venture capital firm is small in size, with a median of three partners in our dataset. Hiring decisions are made infrequently. Most venture capital firms only make infrequent senior hires, e.g., perhaps once every three to five years. Thus, aggregate new hiring in this industry is driven by the (aggregated) decisions of small teams. From social psychology, small groups are both more likely to be homophilous, and more likely to have biases aggregated into expressed decision-making (Klocke (2007)). Thus, a slight – even *subconscious* - preference over certain demographic characteristics, like gender, could aggregate into a sustained overall lack of gender diversity at an *industry* level. A very slight gender preference due to homophily may result in the hiring of a man over a woman. Even though the gender preference can be thought of as a continuous variable and any slight bias could be small, the hiring outcome is binary. In this setting, even a very small bias towards hiring someone of the same gender could lead to persistent low

¹ Cohen, Frazzini, and Malloy (2008) show that homophily also works at the school ties level in the investment management arena between buy side analysts and CEOs.

representation from those groups not already in the venture capital industry. The aggregation of such binary outcomes across firms can result in the overall lack of diversity across an entire industry.

One question is whether subtle treatment effects can dislodge the inherent homophilic preferences that venture capitalists have when hiring a new senior partner. Recent work has found that parenting can influence social preferences. For example, Warner (1991) showed in surveys that parents of daughter tended to show greater support for feminist causes. Similarly, Warner and Steel (1999) show that fathers of daughters show greater support for gender equity than do fathers of sons. Recent works have also shown that decision making of fathers can be influenced by the gender of their children. Washington (2008) has shown that US Congressmen vote more liberally, especially on issues affecting women, if they have more daughters. Cronquist (2015) shows that CEOs who have more daughters are more likely to adopt socially responsible corporate policies. Glynn and Sen (2015) show that Federal Court judges with more daughters tend to decide cases on women's issues more liberally and that the effect is largely driven by Republican judges.

Our results show that these types of subtle treatment effects have real consequences for business decisions. We find that the proportion of female hires increases by 1.93% if you replace a son with a daughter for the existing partners in a firm. Given that about 8.03% of the new hires are female, this suggests a 24% increase in the probability of hiring a senior female investor when a son is replaced with a daughter for the existing partners.

Our second important result concerns the effect of diversity on firm performance. Despite growing evidence that people do indeed tend to partner with similar individuals, the success implications of this bias remain unclear. To put it another way, conclusive causal evidence that increases in gender diversity lead to better performance in a business setting is lacking. Sociology-based research has tended to look at ex post data and measure correlations with performance.

Results on gender diversity have, by and large, been equivocal. Furthermore, the setting does not allow for causal interpretations of results. Still, other papers have looked at experimental settings and assigned members based on gender to various “team-based” projects. This work, however, tells us little about whether or not the kinds of complex problems in business are affected by diversity.

Theory also does not help when trying to understand whether firm diversity increases or decreases performance. One conjecture is that the more characteristics a pair of individuals has in common, the better the performance of the team is likely to demonstrate. This better performance may result from easier communication, the ability to better convey tacit information, or the ability to make joint decisions in a timely and productive manner (e.g., Ingram and Roberts, 2000; McPherson et al., 2001; Cohen et al., 2008; Gompers and Xuan, 2010).

On the other hand, however, homophily may induce social conformity and groupthink that may lead to inefficient decision making (e.g., Asch, 1951; Janis, 1982; Ishii and Xuan, 2010). Individuals in homophilic relationships often have an enhanced desire for unanimity and ignore, or insufficiently consider, the disadvantages of the favored decision as well as the advice from experts outside the group. Consequently, under an alternative hypothesis, more diverse firms might perform better because decision-making under uncertainty is improved.

Our empirical setting allows us to estimate the causal implications of diversity on investment performance in venture capital. Because the gender of a venture capitalists’ children is exogenous, we can utilize the relative fraction of daughters (to all children) as an instrument for changes in the gender diversity of the firm (caused by hiring a senior female investor.) This setting allows us to look at the exogenous component of gender diversity in venture capital and its effect on investment performance. Our results are robust to a number of ways to characterize the gender make-up of children as well as to measuring individual deal level performance (success) or fund level excess

returns (relative to similar strategy venture capital funds raised in the same year.) The results are both statistically significant and economically meaningful.

The rest of the paper is organized as follows: Section 2 discusses our data. Our methodological approach is outlined in section 3. Section 4 presents a discussion of our results, both the hiring level regressions as well as the performance results. Section 5 concludes.

2. Data Collection

The core data used in this paper is comprised of several parts. The first element of our data involves collecting a comprehensive dataset all venture capital partners as well as their demographic and family information. The second element involves a panel dataset of venture capital firm hiring events. The final element part is on collecting the deal and fund performances.

We start with VentureSource, a database that contains detailed information on venture capital investments. Our data cover the period from 1990 through mid-2016. We start our analysis in 1990 because the data become reasonably comprehensive at that point in time. The unit of observation in the data is venture capital-backed companies. 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 board 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. Similarly, most venture capitalists highlight their active involvement in their portfolio companies via board representation. In addition to information about the people involved in the company, we also have information on the portfolio company's location and

industry. A venture capitalist enters the data in the year they make their first investment for which they sit on the board of directors.

For each individual venture capitalist in the dataset, we collect a broad range of biographical information such as gender, ethnicity, education, and prior job experience. We collect this information from a variety of sources, including a leading online resume website, web searches, SEC filings and news articles. In particular, venture capitalist genders are primarily determined based on 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. Our overall match rates for gender exceeds 99%. A full detailed summary of the data are presented in Gompers and Wang (2017).

Our empirical approach is to focus on the effects of children's gender on the hiring choices of venture capital firms and how exogenous changes in gender diversity associated with children's gender affects venture capital investment outcomes. We therefore set out to collect a novel dataset on the family information of venture capital partners, including the number of children as well as the gender and age of each child. Summarized in Table I Panel B, we obtain information from a total of 1,403 individuals from various sources including college and business school directories and reunion books (61.7%), direct email solicitation (33.9%), and Marquis Who's Who database (3.5%). For email solicitation, we sent out over 3000 emails and obtained 476 responses. If we do not obtain a child's gender explicitly but have the child's name, we assign a best-guess gender based on the first name. Overall, we are able to identify gender for over 98% of venture capital partners' children in our data.

Panel A of Table 1 provides descriptive statistics for our data on children. Venture capital partners in our data set have on average 2.39 children and 1.15 daughters as of 2015. For 71.6% of the children we obtain their exact ages as well, which is used to approximate the children measures

for prior years. In the firm panel data, Table VI shows that the average number of daughters for existing partners is 1.033, while the average number of sons is 1.084 in the sample. Senior partners, defined as those who have a tenure of 5 years or more at the venture capital firm, have on average 1.086 daughters and 1.143 sons. In comparison, junior partners, defined as those whose tenure is less than 5 years, have fewer children than the senior partners as expected, averaging 0.809 daughters and 0.850 sons.²

Also shown in Table I, 10.19% of our sample are women (slightly higher than the population average in Gompers and Wang (2017)) and have made 5.29 investments on whose boards they have served.³ To ensure that our analysis is based on people who are professional venture capitalists, our main analysis focuses on those who have made at least three investments on whose boards they have served.

In constructing our sample, as long as we have children information on at least one partner from a given firm, we include that firm in our sample. We do not believe that this creates issues for our results because the partners that we obtained information are typically those who are more senior and have an important role in making hiring decisions. Similarly, there should be no bias from using all firms for which we have children's gender for at least one partner. Table II compares the characteristics of the firms in our sample with those for whom we have no data on children. In particular, our sample includes firms that have more partners (5.03 vs. 1.95), larger in the total amount raised (\$3.66 billion vs. \$0.88 billion), and more likely to be US-based (85% vs. 65%). Although this sample is not representative by any means, they do hire similar proportions of women (0.08 vs. 0.09). Economically, we believe that this is a relevant sample because these firms make

² It should be noted that the ratio of male births to total births of 51.2% is close to the average for North American and Europe, 51.5%, found in Grech, Savona-Ventura, Vassallo-Agius (2002).

³ Our venture capitalists have almost certainly done more deals than we observe in the sample. Venture capitalists do not always obtain a board seat. As such, this is a lower bound on the investment experience of our venture capital partners.

disproportionately more deals (76.5 vs. 8.9) and hire more people (12.8 vs. 3.3). The empirical results from this group of firms are of great economic importance given they represent a large fraction of all deals done. Additionally, this selection is unlikely affected by the gender break-down of the children, which is also what we need for a meaningful interpretation of the empirical results.

Next, we construct a panel of gender breakdowns for each firm's new hires, which allows us to test whether the gender of an existing partner's children can have an effect on the hiring of women. While we do not directly observe exactly when a particular VC partner is hired by a firm, we estimate the "hiring" event by recording the year in which the person first sat on the board of a venture capital-backed company and represented the particular venture capital firm. Overall, we can see from Table VI that VC firms in our sample make 4.58 new hires on average in any 5-year window and only 8.03% of the new hires are women.

Table III shows that 72.1% of firms have never had a female investor. 19.2% have hired exactly one female investor. We also see that there is a general relationship between firm size and the number of female investors hired. In Table IV we examine the ratio of female hiring based upon firm size. We find that small firms with fewer than 5 partners have an average female hiring ratio of 5.29%, whereas large firms with greater than 11 partners have a much higher female hiring ratio of 10.18%. The general pattern of very low female hiring ratios is consistent with the results of Gompers and Wang (2017) who show that homophily may be particularly strong in influencing hiring decisions at small organizations.

Table V tabulates the ratio of new hires who are women by industry and over various time periods. Hiring by industry is defined by the industry of the first company on whose board the venture investor sits. We see that there is little relative variation across different industries. Healthcare has the highest percentage of female hires at 11.6%. Most of the other industries are

between 7.7% and 9.0%. In the bottom of Table V we look at the ratio of female hires across five-year cohorts. The lowest percentage of female hires is for 1991-1995. A period of time during which only 3.54% of new hires were female investors. From 1996 through 2016, the fraction of new hires who are women has not shown any secular trend. It has varied between 7.6% and 9.4%.

Lastly, we also compile a comprehensive dataset of venture firm performances, which allows us to estimate the impact of both parenting daughters and improved gender diversity on economic outcomes. At the deal level, in Table VI, we see that out of 11,832 deals, 14.17% of them resulted in an IPO. Alternatively, if we complement the definition of “success” with deals whose acquisition values are greater than the total amount of capital invested, the overall success rate is 28.7%. We obtain acquisition values from Capital IQ when available. If we are unable to identify an acquisition value, we do not consider the investment a success.

Because both “IPO” and “success” are binary outcome measures that may fail to capture the economic magnitude of the outcome, we also compile fund-level internal rates of return (IRR) by matching each of the venture capital funds in our data to the Preqin database. Over the relevant time period of our analysis, our venture capital firms raised 1,270 venture capital funds with an average amount of capital raised of \$515.1 million. We are able to identify fund level IRR information for 395 funds with Preqin data. The average net IRR of funds in our sample is 14.1%. We also compare our fund returns to benchmarks that are matched by investment stage and year. Excess returns above these benchmarks average 3.9% for funds in our sample. Similar to the summary results for firm size and age, our sample skews towards more successful firms.

3. Methodology

The work of Gompers, Mukharlyamov, and Xuan (2016) and Gompers and Wang (2017) show that homophily is a strong force that affects collaboration and hiring decisions in the venture capital industry. Our empirical approach is to examine whether subtle treatment effects may “de-bias” venture capital hiring decisions. From the work of Warner and Steel (1999) and Washington (2008), we know that the gender of one’s children affects parental behavior in the political arena. Politicians with more daughters are more likely to support feminist policies and women’s issues relative to other issues. In this paper, we examine whether the same type of debiasing affects hiring decisions in venture capital. Also, because the gender of one’s children is exogenous, we can use children’s gender as an instrument for exogenous changes to venture capital firm gender diversity and, hence, can identify the causal effects of exogenous shocks to diversity on firm performance.

The thought experiment is as follows: A venture capital partner decides to have a child; nature randomly assigns the gender of the child. Importantly, our empirical set-up conditions on the total number of children, while estimating the *relative* effect of having a daughter vs. a son, which we will refer to as the “daughter effect” in this paper.

$$Y_{i,t} = \beta_1 \#Daughters_{i,t} + \beta_2 \#Children_{i,t} + Controls_{i,t} + \epsilon_{i,t} \quad (1)$$

Here, the Y variable is the “female hired ratio”, which is defined as the proportion of female partner hires by firm i within the five-year window ending in year t . Whether a particular firm-year observation is included in our sample is determined by whether the venture capital firm raised a fund that year. This sample construction method attempts to capture the more active years while also reducing over-lapping time windows, since an average firm launches 3.3 funds in our sample.

Overall, we have 988 fund observations where we include 301 VC firms with funds raised through 2010.⁴

On the right-hand side of equation (1), “number of daughters” and “number of children” refer to the average number of daughters or children among the existing partners of the firm. For a given observation at the fund level, we define “existing partners” as those who are present in the firm when the fund was raised. This measure of existing partner is constructed to capture the likely decision makers in the hiring process.

In alternative specifications, we also consider other measures of children’s gender breakdown, including the average ratio of daughters, the proportion of partners who have more daughters than sons, as well as the proportion of partners who have at least one daughter. All results are robust to these alternative specifications for the gender make-up of the existing partners’ children. Additionally, we include control variables for firm size (approximated by partner count), the VC firm age, the average existing partners’ age, a dummy for whether the firm has hired a female investor before, and year fixed effect.

There are a number of issues in interpreting the identification here. First, β_1 identifies the *relative* effect of having an additional daughter as compared to an additional son. It is important that we condition on the total number of children because we know that people who choose to have more children are more likely to have conservative beliefs (Washington, 2008). However, once we condition on the total number of children, the gender distribution can be more reliably thought of as a random variable uncorrelated with the error. Additionally, since the total number of children, the number of daughters, and the number of sons are linearly dependent, we cannot differentiate

⁴ We also run robustness tests by specifying the gender diversity of new hires in a number of ways to make sure our results are not an artifact of how we specify the exogenous shock to diversity. All our results are robust to these alternative specifications.

whether the VC behavior is related to parenting a daughter, not parenting a son, or a combination of both.

The important identifying assumption is that conditioning on the total number of children, the number of daughters is exogenously assigned by nature. This requires that parents are not giving birth to children using a gender-based stopping rule, or practicing any type of direct sex-selection. It is this natural experiment setting that allows us to identify a causal relationship between the relative number of daughters and the female hired ratio as well as the effects of this exogenously induced gender diversity on venture capital performance.

We first rule out sex-selection that may skew the sex ratio. Given that direct sex selection through abortions is uncommon in the US, it is not surprising that we find that male-to-female ratio in our sample of children is not statistically different from the natural male-to-female birth ratio in the overall population. This is true if we condition on the total number of children, or if we examine various subgroups, namely the senior partners, the junior partners, the male partners, and the female partners. In fact, being able to recover the natural sex birth ratio in all subsamples gives us confidence in the integrity of our data. As such, we do not find evidence of sex selection in our data.

Next, we want to rule out gender-based stopping rules. If parents employ a gender-based stopping rule which stipulates that they keep having children until they have at least one son, then conditioning on the total number of children, those who have more daughters would be more likely to be using such a stopping rule.

To provide support for this identifying assumption, we run a number of tests. In particular, we find that having a first-born daughter does not predict the total number of children, consistent with the findings in Washington (2008). We tabulate these results in Online Appendix Table I. Further, we also do not find statistical evidence of gender-stopping rules by testing whether the gender

distribution is different from that of a binomial distribution with the natural sex birth rates conditioning on the total number of children. As such, the gender of the partners' children in our sample is considered truly random, and hence uncorrelated with the error. Our estimation of the form in Equation (1) can then identify the impact of the children's gender on female hiring.

In addition to examining the effects of children's gender on hiring decisions, we use the exogenous effect of children's gender on the hiring decision to examine the causal effect of diversity on venture capital investment performance. We examine the performance effects in two ways. First, we simply look at the reduced form regression results, i.e., we examine a simple performance regression where deal or fund level performance is on the left-hand side and a variety of controls are on the right-hand side including data on the gender of existing partners' children. Since we measure firm outcomes both at the deal level and the fund level, we simply need to adjust Equation (1) so that the deal-level or fund-level characteristics are correctly matched to firm-level characteristics or controls.

Our second set of performance results exploits the exogenous nature of a venture capitalist partners' children's genders and use the "number of daughters" as an instrument for the "female hired ratio." In this instrumental variables framework, we look at the performance effect of the exogenous component of gender diversity for a venture capital firm that is associated with the gender of existing partners' children. Our measure of a shock to the firm's gender diversity is the female hired ratio.

$$Female\ Hired\ Ratio_{i,t} = \beta_1 \#Daughters_{i,t} + \beta_2 \#Children_{i,t} + Controls_{i,t} + \epsilon_{i,t}$$

$$Firm\ Performance_{i,t} = \theta_1 Predicted\ Female\ Hired\ Ratio_{i,t} + \theta_2 \#Children_{i,t} + Controls_{i,t} + \omega_{i,t}$$

In this set-up, we can causally infer the effect of gender diversity on performance in venture capital. As discussed above, we run a variety of robustness checks throughout the results to ensure that our findings are not sensitive to the measure of the prevalence of daughters or measuring the gender diversity of the venture capital firms. Many of these robustness tests are included in an online appendix.

4. Empirical Results

In this section, we present our empirical findings. We first analyze the causal relationship between the gender of existing partners' children and the hiring of female investment partners. Then, we analyze the reduced-form relationship between the gender of existing partners' children and investment performances. Finally, we analyze an instrumental variable framework to estimate the impact of the female hires on venture capital firm performance.

4.1. Effects on Venture Capital Hiring

In Table VII, we show the effects of daughters on the proportion of female partners hired. As discussed earlier, our dependent variable is the ratio of females hired to the total number of hires in a new fund (the five-year period commencing from raising a new fund). We express data on children by averaging across all the partners of the firm for whom we have children's gender. We include the average number of daughters that partners have as well as the average number of children.⁵ We also include a variety of firm-level controls including firm size (number of existing partners), firm age, whether the firm has a female investment professional prior to this fund, and the average partner age. In column (1), we observe a positive coefficient on the average number of daughters, implying a positive relationship between parenting more daughters (holding the number

⁵ As previously discussed, our results are robust to expressing gender ratios in a variety of ways.

of children constant) and the ratio of female hires in a new fund. It is also important to note that holding the number of daughters constant, increasing the average number of children reduces the probability of hiring a female investor. Adding additional firm-level controls does not change the magnitude of the effect that daughters have on the hiring decisions with coefficients remaining statistically significant at 5%. As such, we use column (3) as our main specification and always include these controls when applicable throughout the paper. In this specification, conditioning on the total number of children, the relative effect of existing partners having one more daughter increases the ratio of female hires by an amount of 1.93%. Given that, on average, firms have a female hired ratio of 8.03%, this is a substantial increase of 25%.

To further put this in context, we also notice that the binary variable “having female before hiring” has a large and statistically significant coefficient of 5.24%, consistent with the presence of gender-based homophily in hiring. Notice that the inclusion of this variable also renders the coefficient on firm size statistically insignificant. It also means the relative effect of having one more daughter on average is about 40% of the magnitude of having an existing female partner in the firm. Here, we are cautious about the fact that “having female before hiring” is not exogenous, but this coefficient is more likely to be upward biased given the plausible correlation between the existence of female partners and unobservable gender attitudes. Our exogenous daughter effect, therefore, remains sizable (and its magnitude plausible) relative to the organizational feature of a pre-existing female partner.

We also observe that the results for the daughter effect hold strongly for senior partners, but not as much for junior partners. The size of the coefficient on the average number of daughters for senior partners is roughly three times as large as the coefficient on the average number of partners for junior partners. Here, senior partners are those that have been with the firm for more than 5

years and likely wield stronger influences in the hiring decisions. This suggests that the main effects are driven by the senior partners' daughters in the venture capital firms. This is intuitively consistent with the view that the hiring decisions are mainly driven by the members of the firm who have a longer tenure and thus more "senior".

We can see our main result from these regressions in Figure 1. In the first panel, we divide firms into those in which the existing partners have more daughters, have an equal number of daughters and sons, and firms with more sons. Firms with more daughters and an equal number of daughters and sons have significantly higher ratios of females that are hired (10.59% and 10.57%) than firms with more sons (8.93%). The pattern is even stronger when we look only at the gender of senior partners. For firms in which the existing senior partners have more daughters, the ratio of female hires is 11.87%. Firms in which existing senior partners have an equal number of sons and daughters have a female hired ratio of 9.78%. Finally, in firms in which existing senior partners have more sons, the female hired ratio is 8.68%.

We also run the first stage regression with several alternative measures of gender composition of existing partners' children shown in Table VIII. This is motivated by the concern that the potential effect may not be linear in the number of daughters relative to the total number of children. As such, we look at variables such as the average of the proportion of daughters, the excess number of daughters over sons, the proportion of partners with more daughters, the proportion of partners whose first child is a daughter, and the proportion of partners with at least one daughter. With the same controls including holding constant the number of children, we observe that the first four variables are all positive but with varying degrees of statistical significance. Therefore, we are confident that when existing partners have relatively more daughters, there is a positive relationship with hiring more female investors. What is also worth pointing out is that the variable on "having

female before hiring” also remains positive and statistically significant across all these alternative specifications.

Furthermore, we provide a simple placebo test in Table IX that sheds some light on the findings. In particular, with the same controls, we find that the “number of daughters” has a positive relationship with the count of female hires, but a negative relationship with the number of male hires. The average number of daughters has no effect on the total number of hires. This suggests the potential mechanism that having relatively more daughters raises the female hired ratio by hiring more partners overall is not true. Have more daughters leads to a substitution in the hiring of males for the hiring of females without an effect on the total number of new hires. This suggests that the daughter effect is more likely a removal of bias towards hiring females.

Before turning to the investment performance results, we also test whether or not the gender of existing partners’ children affects the gender of founders in the portfolio companies of the venture capital firm. One might hypothesize that the daughter effect not only affects the hiring of female partners, but also investment in portfolio companies founded by a female entrepreneur. However, Table X shows that there is no statistically significant relationship between the average number of daughters (holding the number of children constant) and the fraction of portfolio company founders who are women. What does turn out to be significant is that the presence of female VC investor. Having a female partner is strongly correlated with the investment into companies with a female entrepreneur, as shown in column (4). Therefore, even though there is a strong gender-based homophily between the venture capital partner and the portfolio founder, in this reduced form, we do not find statistical evidence that the children’s gender of the existing partners directly affects the investment in female entrepreneurs, unlike the employment of female partners.

4.2. Effects on Venture Capital Performance

In the prior section, we established a strong causal link between having a greater fraction of children who are daughters and hiring more female investors. In this section, we explore the performance implications of this effect. We regress the deal or fund level performance on children's gender. Since multiple deals or funds can be associated with a given venture capital firm, we make sure the firm identity, the fund identity, and the deal are all appropriately matched for the purpose of our reduced form regression:

$$Y_j = \beta_1 \#Daughters_{i(j),t(j)} + \beta_2 \#Children_{i(j),t(j)} + Controls_j + \epsilon_j$$

At the deal level, Y_j is an indicator for deal success, while $\#Daughters_{i(j),t(j)}$ refers to the average number of daughters by partners of firm i which made the deal j in year t .⁶ Besides the firm-level controls, we also add deal level controls including the industry, the country, the funding round, and whether the firm had a female VC partner on the deal. Analogously, for the fund level regressions, Y_j is the net IRR achieved by the fund, while $\#Daughters_{i(j),t(j)}$ refers to the number of daughters by partners of firm i who finished raising for fund j in year t . In this case, we add fund level controls including the log fund size and the fund region. Therefore, these are reduced-form attempts to directly estimate the economic gains (losses) that are due to having relatively more daughters by the venture capital partners.

In Table XI, the dependent variable is a binary “success” indicator based on whether the deal has resulted in an IPO or a successful acquisition where the acquisition value is greater than the amount of capital invested. In column (1)-(3), we see a positive and significant coefficient on the number of daughters across all specifications. In the main specification column (3), the point estimate suggests

⁶ In the case where a deal is funded by a number of venture capital firms, it will be counted as separate observations.

that a relative increase of one daughter on average leads to an increased probability of success by 2.88%. Compared with the overall success rate of 28.7%, this is a meaningful magnitude. Therefore, in a reduced form, we find strong evidence of a relationship between the gender of a venture capitalists' children and performance.

We also find a positive significant coefficient for the firm size. Similarly, venture capital age is positively related to success rates. This is consistent with the survival of better performing firms. Surprisingly, we find that venture capital partner age is negatively related to success.

In Table XI Panel A column (4) and (5), we also evaluate the reduced form regression for senior partners and junior partners separately. Similar to the regression on female hires, we find that the deal-level successes are entirely driven by the relationship with senior partners' daughters, with a larger point estimate as well as a larger t-statistics than column (3). The coefficient for junior partners' daughters is not statistically significant, shown in column (5). As before, this is consistent with an interpretation where the senior partners are the main decision-makers, as opposed to the junior partners.

We also present the reduced form result if we focus just on IPO. Although IPO alone may not be a good measure of success because IPO rates have generally declined over the past decade and the importance of high value acquisitions has increased, it is more accurately measured because not all acquisition values are publicly available. In Table XI Panel B, we find moderately statistically significant results for the number of daughters of existing partners. Similar to Panel A, we find that the t-statistics increases if we focus only on the senior partners' children characteristics, and the relationship completely vanishes for junior partners. Other results are also similar to Panel A.

So far, our main analysis is based on a binary measure of success for each venture capital deals. However, there may be a meaningful difference between two "successful" exits in terms of the

actual rate of return that is achieved. However, in order to take this into account, it is challenging to obtain comprehensive deal-level returns. Fortunately, we are able to match a meaningful portion of the venture capital funds in our sample to the Preqin database in which we can access the fund level internal rates of returns (IRR). We match 395 of 1270 funds in our sample and perform the same reduced form regression as before, controlling for log fund size.

Despite the limited sample size, consistent with the findings in the deal-level sample, Table XII column (1) to (3) shows strong positive and statistically significant coefficients for the number of daughters, i.e., our reduced form regression indicates a positive relationship between the fund return and the number of daughters, controlling for the total number of children. We use “excess return” of the fund as the independent variable, which is defined as a fund’s net IRR minus the median fund return raised in the same region and year provided by the Preqin database. In column (3), we find that the relative effect of having a daughter over a son is a 3.2% increase in excess return for the fund. In comparison, the average net IRR is 14.1% and the average excess return is 3.9% for the funds in our sample. As expected, we also find that the estimate holds for measures of children’s gender for senior partners only, not for junior partners.

Our two main results establish that the parenting of a daughter relative to a son by venture capital partners, especially by senior partners, leads to a significant increase in the proportion of female partner hired. We also saw in the reduced form regression, that there is significant improvement in the firm’s performance, where performance is measured in a variety of ways at both the deal and the fund level. Not only does the statistical significance remain robust across different specifications, the economic magnitude of the estimated coefficients is also substantial: The relative effect of having on average a daughter rather than a son by existing partners increases the female hired ratio by 1.93%, compared with a base rate of 8.03%. It lifts deal success by about 2.88%, given the overall success

rate at 28.7%. It also translates to an increase of 3.20% in net IRR compared to average fund returns of 14.1%. Moreover, these are causally identified.

4.3. Instrumental Variable Regression

Having established a strong, positive relationship between having more daughters and hiring female investors and fund performance, we next explore an instrumental variables specification in which we identify exogenous increases in fund gender diversity and its effect on investment performance. In particular, we use the average number of daughters of the existing partners as an instrument for the variations in the female hire ratio.

For the causal interpretation of the female hired ratio to apply here, the relevant exclusion restriction is that the effect of parenting daughters affects venture capital investment performance only through the proportion of female partners hired. We find this exclusion restriction plausible. One concern might be that parenting more daughters leads the partner to invest in more companies with female founders and that perhaps the average quality of those entrepreneurs are higher than the male entrepreneurs because they are often overlooked by other firms. However, as shown in Table X, this is not the case because the proportion of female founders does not increase with the number of daughters that an existing partner has. Nonetheless, we acknowledge that the coefficient would be biased if the number of daughters was still correlated with other unobservables that affects deal outcomes. In other words, one could contend that the effects may not only come from the extensive margin on hiring, but could also come from the intensive margin such as assigning existing female employees more responsibilities as well as other unobservables. Therefore, we believe the causal

relationship demonstrated in the reduced form between the number of daughters and the performance is our strongest evidence of an effect.

We employ a linear IV regression framework for estimation.⁷ In Table XIII Panel A, we see that that the IV regression coefficient for “female hired ratio” is large, positive, and statistically significant. We present OLS as well as the IV estimates. We find that the IV estimator loads significantly only on senior partners, not the junior ones, consistent with previous findings. The coefficient of 0.965 in column 4 implies that if the female hired ratio increases by 10% due to the daughter effect, the deal success rate would increase by 9.65%. Recall that the overall success rate is 28.8% in our deal-level sample. By comparison the OLS estimate is 0.079. Together, this suggests when more female partners are hired because of changes brought about by more daughters, its effect on the deal performance is much larger than what OLS implies.

In terms of robustness, when we narrow the definition of deal success to IPO only, Table XIII Panel B shows that we obtain similar results, but as before with slightly weak statistical significance. The female hired a ratio has a coefficient of 0.361 in column (4), suggesting a 10% increase in the proportion of female hired leads to a 3.61% increase in IPO rate. This compares with an overall IPO rate of 14.2% in our overall sample. Similarly, we find the effects are attributable mainly to the senior partners.

Furthermore, when we change the outcome variable from the deal level to the fund level in Table XIV, we find noisier, but directionally similar results. While not all the results are statistically significant, they all go in the same direction as the deal level results. The lower significance level is driven primarily by the smaller sample size. Deals are collapsed into fund returns, reducing the

⁷ Note that since the outcome variable is at the deal-level, but the endogenous variable and the instrument are at the firm level, the IV estimation will not be identical to two-stage least square. The IV estimation framework provides the consistent estimate as well as the correct standard errors when clustered appropriately.

number of observations by a factor of 10. Similarly, we only have fund return data on approximately one fourth of our funds. This means we have roughly 2.5% of the number of observations for fund returns as we do for deals.

4.4. Robustness and Alternative Specifications

In this section, we describe a few robustness checks, as well as several additional specifications that could shed more light on the results.

One of the concerns regarding the sample is that about 34% of the children information is obtained from email solicitations. If the respondents are self-selected in terms of their parental involvement, this will likely bias the results. In Table XVI, we run the same analysis excluding the email respondents while including only those whom we obtain information from public sources. We find that the daughter effects on female hiring and deal performance remain robust, and so is the instrumental variable regression. However, the statistical significance is weaker likely due to the reduced sample size. Another robustness check we run is to cover every venture capitalist in the dataset, including those who have made fewer than 3 deals. This accounts for about 41% of the venture capitalists. Table XVII shows that all of our results continue to hold with similar magnitude and statistical significance. Additionally, we also break the results down by the number of daughters for male and female partners of the firm. The results remain robust for the male partners, as shown in Online Appendix Table IV, while the results for female partners become less significant likely due to the severe drop in sample size.

Moreover, we also investigate whether the age of the children matters for hiring and performance. In Online Appendix Table III, we include both the number of daughters over the age

of 12 and the number of daughters under 12. Interestingly and perhaps unsurprisingly, these regressions tend to load significant coefficients on the number of teenage daughters, rather than the number of pre-teen daughters. This might suggest that older daughters may have more of an effect on the attitudes of their fathers. This is consistent with fathers observing potential gender biases that their daughters face as they get older.

4.5. Discussions on the Economic Magnitude

In our paper, we established a causal relationship that having more daughters relative to sons for venture capital partners leads to a higher proportion of female partners being hired. This increase in the hiring of female investors is exogenous to the firm and, through the IV specifications, we find that the exogenous increase in gender diversity leads to an improvement in the performance of the venture capital firm. Although we have seen in the literature how children can affect parental behavior and attitudes, one important contribution of the paper is to provide an estimate of the potential economic magnitude on the benefits of gender diversity in a business setting. In Table XV, we documented the historical IPO amount by all the VC-backed companies. From 1990 to 2010, the total amount of capital raised through IPOs is \$91.6 billion by over 800 companies.

We can now combine the first stage and the IV coefficient to provide an estimate of the economic impact. Recall that the first stage regression coefficient from Table VII implies that the relative effect of having a daughter instead of a son raises the female hired ratio by 1.93% from a base rate of 8.03%. Combining this with the IV coefficient from Table XIII, this translates into an increase of 0.70% in the probability of an IPO (compared with a base rate of 14.2%). Together, this implies the relative effect of having a daughter versus a son is that an additional \$4.5bn could have

been raised.⁸ Moreover, if we think that the base rate of female hired ratio 8.03% could be increased by 10%, namely from the current level of 8.03% to 18.03%, this would translate into an additional \$23.2bn being raised.⁹

This back-of-the-envelope calculation is an extrapolation from the partial equilibrium, without the constraint that there may only be a fixed number of listable companies. However, it is also not obvious that this is necessarily an upper-bound because an improvement in the venture capital firm's ability to differentiate and finance better deals could generate dynamic responses from the entrepreneurial side as well. Nonetheless, to our knowledge, this paper is a first attempt in the literature to link the value of diversity with the better performance in an investment setting.

5. Conclusion

While diversity has been lauded as an important cornerstone of modern civil society and contemporary workplace, there have been few rigorous studies, to our knowledge, that estimate the causal economic impact of a diverse workforce in a real business setting. In this paper, we address the effect of gender diversity by collecting a unique dataset of venture capitalists' children's gender and taking advantage of a research design where this gender is exogenous to the individual partner. Combined with the time series of the hiring of senior investment professionals and deal performance, we establish that a relative increase in the number of daughters relative to the number of sons leads to a significant and economically meaningful increase in the proportion of females hired. In reduced form regressions, this higher relative fraction of daughters is related to improved deal and fund level performance. In instrumental variables regressions, we demonstrate that the

⁸ Calculated as $1.93\% \times 0.360 / 14.2\% \times \91.6bn . Note that is different from using the deal-level reduced form coefficients because here 2SLS and IV estimation are not identical, although both consistent.

⁹ Calculated as $10\% \times 0.360 / 14.2\% \times \91.6bn .

exogenously induced increases in firm gender diversity lead to improvements in performance. These results provide convincing evidence in a real business setting that performance is improved with greater gender diversity. One important caveat is that this result does not necessarily imply that implementing a blunt gender quota would bring about the same positive outcomes, whereas improved diversity through a genuine removal of biases is likely more beneficial.

We would like to emphasize the importance of understanding the role that this subtle removal of gender bias has for increasing diversity. The subtle treatment effects that prior research has shown to influence US Congressmen's votes (Washington, 2008) and Federal judge rulings (Glynn and Sen, 2015) also plays a role here in causing fathers to increase the likelihood that they hire a female investor. Our results suggest that diversity achieved through genuine removal of a bias or change in belief can lead to better economic outcomes. We believe that further research efforts into uncovering how exactly the parenting of a daughter and improved gender diversity improves outcomes could be fruitful.

There are several potential explanations we feel are important to explore. First, parenting daughters reduces the bias that one has towards women, which leads to more female hires. Given that the pool of potential female investors is relatively untapped, these female investors are of higher quality than the counterfactual male hires. The higher quality hires then generate higher returns. A second potential explanation is that having a diverse set of backgrounds around the table to make decisions about investments may reduce correlated errors in judgment. Since homophily in hiring in venture capital is strong, most venture capital firms are populated by men of the same ethnicity with similar schooling and work histories. Different perspectives may reduce groupthink and allow venture capital firms to avoid costly investment mistakes. Third, because so much of venture capital investment success is driven by having access to the best deals (Gompers,

Gornall, Kaplan, and Strebulaev, 2017), having more diverse backgrounds may attract a much wider deal flow and, hence, average deal quality may increase. We believe that future research on these potential mechanisms will be very fruitful for understanding the source of performance improvement that greater gender diversity engenders.

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Tables and Figures

Figure 1. Probability of Hiring a Female

This figure plots the probability of hiring a female by existing partner's children. VC firms are categorized into firms with more daughters/ equal number of daughters and sons/ more sons. Y Axis is the probability of hiring a female.

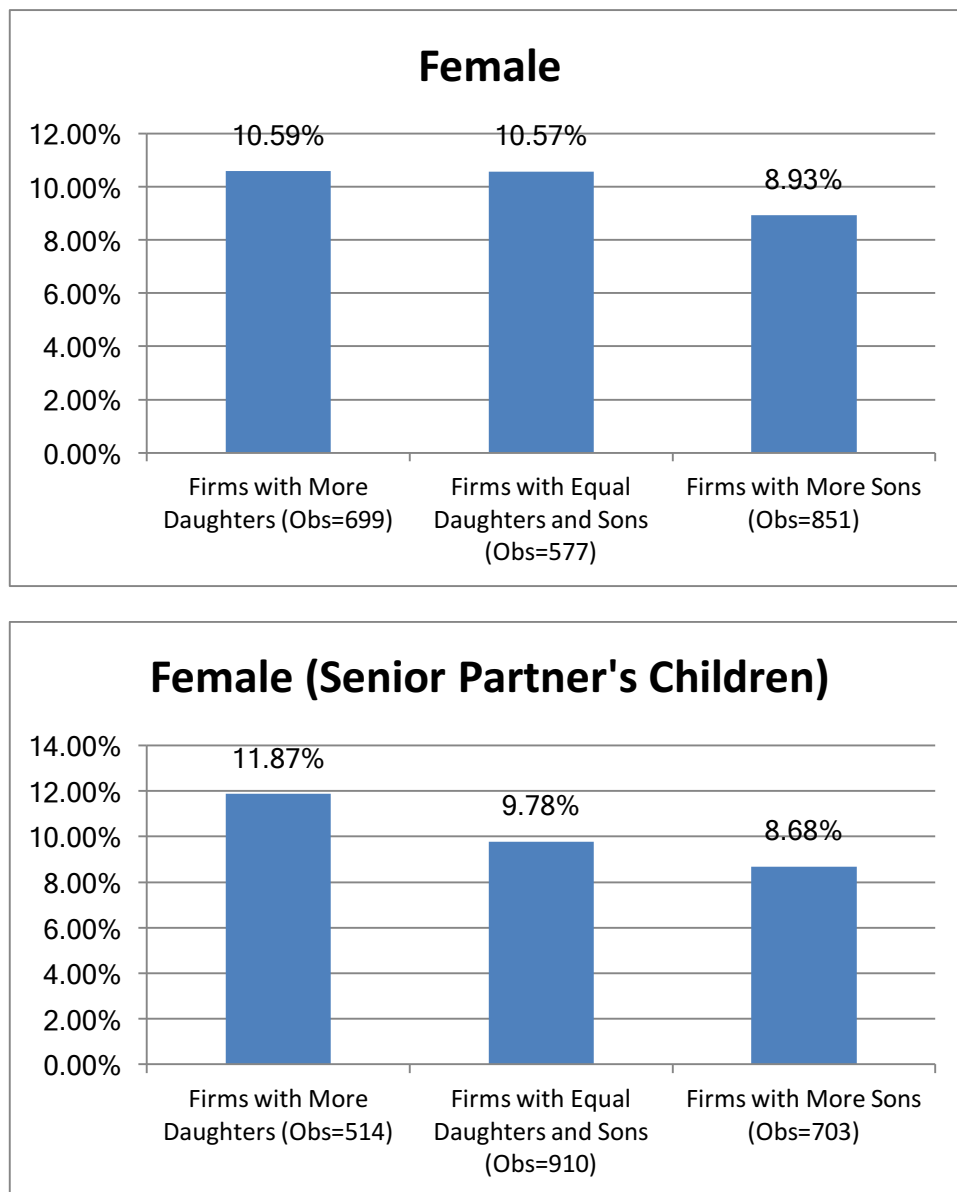


Table I. Data Collection and VC Characteristics

This table reports the characteristics of the partners with children information and the source of the data.

Panel A. Variables	Obs	Mean	SD	Min	Max
# of Children	1403	2.39	1.07	0	7
# of Daughters	1379 ¹⁰	1.15	0.90	0	5
# of Sons	1380	1.23	0.97	0	5
Age	1327	55.52	11.86	27	96
Deal Count	1403	5.29	6.35	1	45
Male	1403	89.74%	0.30	0	1
Female	1403	10.19%	0.30	0	1
White	1403	69.28%	0.46	0	1
Jewish	1403	17.32%	0.38	0	1
Indian	1403	4.70%	0.21	0	1
East Asian	1403	5.35%	0.23	0	1
Hispanic	1403	2.92%	0.17	0	1
African American	1403	0.36%	0.06	0	1
% of Partners who we have data on children's age		71.56%			

Panel B. Source of Children's data	Obs	Percent
Email	476	33.93%
Harvard Reunion Book	322	22.95%
HBS Alum Directory	319	22.74%
Stanford Reunion Book	100	7.13%
Princeton Reunion Book	77	5.49%
Yale Reunion Book	48	3.42%
Marquis	49	3.49%
Others ¹¹	12	0.86%
Total	1403 ¹²	100%

Panel C. Deal Count	Obs	Percent
1	376	26.80%
2	203	14.47%
3	177	12.62%
4	140	9.98%
5 or More Deals	507	36.14%

¹⁰ Partners list the names of their children in alumni directory, and we then infer the gender of their children from names. A few partners reported the total number of children in the reunion book but did not report the names (or age) their children. In these cases, the number of sons or daughters is missing.

¹¹ Other sources include Wikipedia, New York Times, UPenn Alumni Directory, and Qualtrics.

¹² In the main analysis, we excluded the partners who made less than 3 deals. In the robustness test Table XXII, we reported the results including partners who made less than 3 deals.

Table II. Sample Selection

This table reports VC firms' characteristics in our sample compared to the VC firms that are not in our sample. Each observation is a VC Firm.

VC Firms in Sample	Obs	Mean	SD	SE	25%	50%	75%
Average Partner Count	301	5.03	2.91	0.2	2.9	4.3	6.1
Firm Deal Count	301	76.52	88.17	5.1	23.0	45.0	91.0
Firm IPO Count	301	10.21	16.90	1.0	1.0	4.0	13.0
Total Amount Raised	301	3655.22	12390.16	714.2	268.0	813.0	2247.7
VC Founding Year	301	1995.26	7.35	0.4	1989.0	1997.0	2000.0
Total Hires	301	12.77	10.86	0.6	6.0	9.0	16.0
Female Hired	301	1.12	1.68	0.1	0.0	1.0	2.0
Female Hired Ratio	301	0.08	0.11	0.0	0.0	0.0	0.1
% US Based VC Firms	301	85.05%		0.0			
VC Firms Not in Sample	Obs	Mean	SD	SE	25%	50%	75%
Average Partner Count	3,329	1.95	1.28	0.0	1.0	1.5	2.4
Firm Deal Count	3,329	8.90	15.04	0.3	2.0	4.0	10.0
Firm IPO Count	3,329	0.81	2.35	0.0	0.0	0.0	1.0
Total Amount Raised	3,329	875.08	5122.61	88.8	22.5	100.0	329.0
VC Founding Year	3,329	2003.05	6.87	0.1	1999.0	2001.0	2009.0
Total Hires	3,329	3.25	3.57	0.1	1.0	2.0	4.0
Female Hired	3,329	0.29	0.69	0.0	0.0	0.0	0.0
Female Hired Ratio	3,329	0.09	0.22	0.0	0.0	0.0	0.0
% US Based VC Firms	3,329	65.21%					
Sample Representativeness							
% VC Firms in Sample	8.29%						
% Deal in Sample	43.74%						
% IPO in Sample	53.11%						
% Raised Amount in Sample	27.41%						

Table III. Number of Female New Hires

This table breaks down the sample by the number of female hired in the past 5 years.

Total Female Hires	Freq.	Percent	Firm Size (partner Count)
Never Hire Female	712	72.06%	6.85
Hired One Female	190	19.23%	10.32
Hired Two Females	61	6.17%	13.13
Hired Three Females	16	1.62%	18.13
Greater than 3	9	0.90%	26.00
Total	988	100%	8.26

Table IV. Female Hired Ratio by Firm Size

# of Partners	Female Hired					
	Obs	Ratio	SD	SE	Min	Max
Less than 5 Partners	272	5.29%	0.18	0.011	0	1
5 Partners to 7 Partners	283	8.48%	0.20	0.012	0	1
8 Partners to 11 Partners	235	8.84%	0.15	0.010	0	1
Greater than 11 Partners	198	10.18%	0.12	0.009	0	0.5

Table V. Female Ratio by Industry, Year

This table summarizes Female Hired Ratio by industry and by year.

Industry	Female Hired			
	Obs	Ratio	SD	SE
Business and Financial Service	1,951	7.73%	0.140	0.003
Consumer Goods	80	8.42%	0.128	0.014
Consumer Services	1,250	8.24%	0.142	0.004
Energy and Utilities	208	9.02%	0.143	0.010
Healthcare	2,769	11.63%	0.197	0.004
Industrial Goods and Materials	159	8.57%	0.135	0.011
Information Technology	5,364	7.66%	0.140	0.002
Not Identified	51	8.20%	0.126	0.018
Total	11,832	8.70%	0.156	0.001

Year	Female Hired Ratio			
	Obs	Ratio	SD	SE
Before 1990	33	1.70%	0.056	0.010
1991 to 1995	48	3.54%	0.125	0.018
1996 to 2000	180	9.40%	0.184	0.014
2001 to 2005	206	7.68%	0.153	0.011
2006 to 2010	270	7.62%	0.165	0.010
After 2010	251	9.44%	0.187	0.012
Total	988	8.03%	0.169	0.005

Table VI. Summary Statistics

	Obs	Mean	SD	SE	25%	50%	75%
VC Firm Characteristics (Firm - Year Level Observation)							
Female Hired Ratio	988	8.03%	0.169	0.005	0.00	0.00	0.11
Total Female Hires	988	0.415	0.843	0.027	0.00	0.00	1.00
Total New Hires	988	4.582	3.933	0.125	2.00	4.00	6.00
Partner Count	988	8.263	6.200	0.197	4.00	7.00	10.00
Firm Age	988	5.887	6.740	0.214	0.00	4.00	9.00
Having Female Before Hiring	988	0.264	0.441	0.014	0.00	0.00	1.00
Average Partner Age	942	43.36	7.65	0.249	38.00	42.50	48.00
Children Measure (Firm - Year Level Observation)							
Average Girl	988	1.033	0.768	0.024	0.50	1.00	1.50
Average Boy	988	1.084	0.814	0.026	0.50	1.00	1.77
Average Girl (Senior Partner)	808	1.086	0.802	0.028	0.50	1.00	1.50
Average Boy (Senior Partner)	808	1.143	0.835	0.029	0.50	1.00	2.00
Average Girl (Junior Partner)	386	0.809	0.761	0.039	0.00	1.00	1.00
Average Boy (Junior Partner)	386	0.850	0.835	0.042	0.00	1.00	1.50
Average Girl (Female Partner)	103	0.995	0.892	0.088	0.00	1.00	2.00
Average Boy (Female Partner)	103	1.053	0.792	0.078	0.50	1.00	2.00
Average Girl (Male Partner)	966	1.050	0.779	0.025	0.50	1.00	1.50
Average Boy (Male Partner)	966	1.099	0.862	0.028	0.50	1.00	2.00
Average Daughter Ratio	988	0.499	0.286	0.009	0.33	0.50	0.67
Average Excess Daughter	988	-0.049	1.193	0.038	-1.00	0.00	0.50
Daughter-Heavy Partner Ratio	988	-0.078	1.205	0.038	-1.00	0.00	1.00
First Daughter Partner Ratio	861	0.481	0.459	0.016	0.00	0.50	1.00
At Least One Daughter Partner Ratio	988	0.692	0.398	0.013	0.50	1.00	1.00
Deal Level Performance (Deal Level Observation)							
IPO	11832	14.17%	0.349	0.003	0	0	0
Success	11832	28.71%	0.452	0.004	0	0	1
VC Fund Characteristics (Fund Level Observation)							
Excess Return	395	0.039	0.18	0.009	-0.04	0.00	0.07
NetIRR	395	0.141	0.22	0.011	0.02	0.09	0.18
MedianFund Benchmark	434	0.102	0.08	0.004	0.03	0.10	0.15
Quartile	431	2.299	1.00	0.048	1.00	2.00	3.00
Total Closing Amount	1270	515.082	1189.91	33.390	90.00	230.00	500.00

Note: There are 1270 VC funds in the sample, and some VC firms opened two or more fund in a given year.

Table VII. Daughter Effect First Stage

This table reports first stage regression results of hiring female. The observation level is firm-year. The dependent variable (*Female Hired Ratio*) is the number of female hired by the firm in the past 5 years divided by the total number of new hires in the past 5 years. Independent variables are measures of existing partners children aggregated at VC firm level. Children's ages are adjusted to the year of hiring. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Female Hired Ratio				
Average Number of Daughters	0.0180** (0.00833)	0.0205** (0.00827)	0.0193** (0.00858)		
Average Number of Children	-0.0217*** (0.00622)	-0.0227*** (0.00617)	-0.0228*** (0.00702)		
Average Number of Daughters (Senior Partner)				0.0221** (0.00948)	
Average Number of Children (Senior Partner)				-0.0181** (0.00792)	
Average Number of Daughters (Junior Partner)					0.00758 (0.0125)
Average Number of Children (Junior Partner)					-0.0139* (0.00837)
Firm Size (Partner Count)		0.00267*** (0.000763)	0.000411 (0.00113)	0.00124 (0.00113)	-0.000542 (0.00170)
VC Firm Age			0.00187 (0.00123)	0.000836 (0.00122)	0.00165 (0.00182)
Have Female Before Hiring			0.0524*** (0.0155)	0.0467*** (0.0174)	0.0595*** (0.0190)
Average Partner Age			-0.000332 (0.000865)	0.000171 (0.000942)	-0.00184 (0.00127)
Control	Year	Year	Year	Year	Year
Observations	988	988	942	775	373
R-squared	0.034	0.043	0.061	0.056	0.134

Table VIII. Daughter Effect Robustness Test (Alternative Measures)

This table reports first stage regression results of hiring female using different daughter measures. The observation level is firm-year. The dependent variable (*Female Hired Ratio*) is the number of female hired by the firm in the past 5 years divided by the total number of new hires in the past 5 years. Independent variables are measures of existing partners children aggregated at VC firm level. Children's ages are adjusted to the year of hiring. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Female Hired Ratio				
Average Daughter Ratio	0.0270 (0.0183)				
Average Excess Daughter		0.00970** (0.00435)			
Daughter-Heavy Partner Ratio			0.0147* (0.00761)		
First Daughter Partner Ratio				0.00911 (0.0135)	
At Least One Daughter Ratio					0.0121 (0.0161)
Average Number of Children	-0.0134** (0.00582)	-0.0132** (0.00580)	-0.0127** (0.00587)	-0.0146** (0.00735)	-0.0165*** (0.00633)
Firm Size (Partner Count)	0.000357 (0.00114)	0.000401 (0.00113)	0.000433 (0.00114)	-0.000478 (0.00125)	0.000236 (0.00113)
VC Firm Age	0.0529*** (0.0156)	0.0525*** (0.0155)	0.0522*** (0.0155)	0.0586*** (0.0166)	0.0546*** (0.0159)
Have Female Before Hiring	0.00179 (0.00124)	0.00187 (0.00123)	0.00181 (0.00124)	0.00245* (0.00141)	0.00184 (0.00123)
Average Partner Age	-0.000366 (0.000861)	-0.000331 (0.000865)	-0.000391 (0.000859)	-0.000721 (0.00103)	-0.000371 (0.000858)
Control	Year	Year	Year	Year	Year
Observations	942	942	942	816	942
R-squared	0.058	0.061	0.060	0.067	0.057

Table IX. Daughter Effect Placebo Test: Daughter Effect on Total Hires

This table reports regression results of daughter on the number of new hires (total/female/male). Dependent variables are the number of total (female, male) new hires. Independent variables are firm-level measure of partner's children. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Total Hires		Female Hires		Male Hires	
Average Number of Daughters	-0.0918 (0.0944)	-0.0733 (0.0940)	0.129*** (0.0484)	0.122** (0.0476)	-0.221** (0.0972)	-0.196** (0.0961)
Average Number of Children	-0.0150 (0.0765)	-0.0334 (0.0763)	-0.132*** (0.0314)	-0.125*** (0.0309)	0.117 (0.0766)	0.0913 (0.0762)
Firm Size (Partner Count)	0.622*** (0.0229)	0.629*** (0.0231)	0.0649*** (0.00895)	0.0621*** (0.00876)	0.557*** (0.0232)	0.567*** (0.0233)
Have Female Before Hiring		-0.520*** (0.167)		0.197*** (0.0622)		-0.717*** (0.163)
VC Firm Age	-0.135*** (0.0164)	-0.133*** (0.0165)	-0.000149 (0.00477)	-0.000954 (0.00469)	-0.135*** (0.0158)	-0.132*** (0.0158)
Average Partner Age	-0.0213** (0.00897)	-0.0190** (0.00906)	-0.000700 (0.00321)	-0.00158 (0.00314)	-0.0206** (0.00895)	-0.0174* (0.00903)
Control						
Year	Y	Y	Y	Y	Y	Y
Observations	942	942	942	942	942	942
R-squared	0.787	0.790	0.247	0.256	0.745	0.751

Table X. Daughter Effect on Entrepreneurs

This table reports regression results of daughter on female entrepreneurs. The dependent variable *female entrepreneur ratio* is the number of female founders divided by the total number of founders in the start-up. Independent variables are Partner's children. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1)	(2)	(3)	(4)
	Female Founder Ratio			
Number of Daughters	-0.00272 (0.00400)	-0.00258 (0.00400)	-0.00454 (0.00417)	-0.00416 (0.00413)
Number of Children	-0.000975 (0.00299)	-0.000930 (0.00300)	-4.85e-05 (0.00308)	0.000575 (0.00310)
Founder Count		0.00441* (0.00252)	0.00488* (0.00260)	0.00502* (0.00258)
Firm Size (Partner Count)			-4.20e-05 (0.000617)	-9.30e-05 (0.000622)
Have Female Before Hiring			0.0101 (0.00622)	0.00739 (0.00620)
VC Firm Age			-0.000934* (0.000490)	-0.000889* (0.000487)
Female Partner				0.0438*** (0.0144)
Partner Age				0.000384 (0.000365)
Control		Round, Country, Year, Industry		
Observations	4,927	4,927	4,634	4,634
R-squared	0.025	0.026	0.029	0.032

Table XI. Deal Level Sample Reduced Form

This table reports reduced form results of deal level sample. The dependent variable (“Success”) equals to 1 if the portfolio company went public or was acquired with acquisition value greater than invested amount. Independent variables are measures of existing partners’ children aggregated at VC firm level. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1) Success	(2) Success	(3) Success	(4) Success	(5) Success
Average Number of Daughter	0.0286*** (0.00859)	0.0287*** (0.00876)	0.0288*** (0.00876)		
Average Number of Children	-0.0160** (0.00644)	-0.0149** (0.00683)	-0.0149** (0.00683)		
Average Number of Daughter (Senior Partner)				0.0306*** (0.00893)	
Average Number of Children (Senior Partner)				-0.0142** (0.00694)	
Average Number of Daughter (Junior Partner)					0.00540 (0.0139)
Average Number of Children (Junior Partner)					-0.0110 (0.00978)
Firm Size (Partner Count)	0.00333*** (0.000828)	0.00249** (0.00106)	0.00248** (0.00106)	0.00270** (0.00112)	0.000916 (0.00133)
VC Firm Age		0.00219* (0.00117)	0.00221* (0.00117)	0.00178 (0.00129)	0.00226 (0.00175)
Have Female Before Hiring		-0.0137 (0.0118)	-0.0123 (0.0119)	-0.0107 (0.0128)	-0.0115 (0.0176)
Female VC			-0.0137 (0.0174)	-0.0109 (0.0187)	-0.0170 (0.0272)
Average Partner Age		-0.00139* (0.000742)	-0.00140* (0.000742)	-0.00163** (0.000787)	-0.00157 (0.00147)
Control		Industry, Country, Year, Round			
Observations	11,832	11,478	11,478	9,746	4,885
R-squared	0.089	0.091	0.091	0.092	0.096

The dependent variable (“IPO”) equals to 1 if the portfolio company went public.

VARIABLES	(1) IPO	(2) IPO	(3) IPO	(4) IPO	(5) IPO
Average Number of Daughter	0.0126* (0.00668)	0.0108 (0.00677)	0.0108 (0.00676)		
Average Number of Children	-0.0104** (0.00470)	-0.0107** (0.00498)	-0.0107** (0.00498)		
Average Number of Daughter (Senior Partner)				0.0125* (0.00707)	
Average Number of Children (Senior Partner)				-0.0110** (0.00513)	
Average Number of Daughter (Junior Partner)					0.0101 (0.00956)
Average Number of Children (Junior Partner)					-0.0106 (0.00695)
Firm Size (Partner Count)	0.00261*** (0.000702)	0.00145 (0.000884)	0.00144 (0.000882)	0.00149 (0.000942)	0.00111 (0.00111)
VC Firm Age		0.00221** (0.000864)	0.00222** (0.000861)	0.00206** (0.000940)	0.00279** (0.00136)
Have Female Before Hiring		-0.00475 (0.00951)	-0.00433 (0.00957)	0.00115 (0.0104)	-0.0209 (0.0135)
Female VC			-0.00422 (0.0139)	-0.00350 (0.0147)	-0.00438 (0.0214)
Average Partner Age		-0.000500 (0.000546)	-0.000505 (0.000545)	-0.000999* (0.000570)	-0.000493 (0.00117)
Control		Industry, Country, Year, Round			
Observations	11,832	11,478	11,478	9,746	4,885
R-squared	0.089	0.091	0.091	0.092	0.096

Table XII. Fund Level Reduced Form

This table reports reduced form results of fund level sample. The dependent variable is the excess return of the fund, which is defined as fund net IRR minus median fund return in the same year, region. Independent variables are measures of existing partners' children aggregated at VC firm level. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	[1]	[2]	[3] Excess Return	[4]	[5]
Average Number of Daughters	0.0352** (0.0154)	0.0366** (0.0156)	0.0320** (0.0162)		
Average Number of Children	-0.0235** (0.0103)	-0.0221** (0.0105)	-0.0141 (0.0118)		
Average Number of Daughters (Senior Partner)				0.0346* (0.0209)	
Average Number of Children (Senior Partner)				-0.00487 (0.0115)	
Average Number of Daughters (Junior Partner)					0.00291 (0.0284)
Average Number of Children (Junior Partner)					0.00142 (0.0217)
Firm Size (Partner Count)		0.00202 (0.00126)	0.000573 (0.00160)	0.000854 (0.00165)	-4.80e-05 (0.00167)
Have Female Before Hiring		0.0116 (0.0260)	0.0164 (0.0270)	0.0204 (0.0264)	0.0194 (0.0254)
Log Fund Size			-0.0121 (0.00737)	-0.0129* (0.00753)	-0.0104 (0.00732)
VC Firm Age			0.00393** (0.00171)	0.00320* (0.00188)	0.00406** (0.00172)
Average Partner Age			-0.00381*** (0.00147)	-0.00438*** (0.00139)	-0.00417*** (0.00128)
Control (Fund Region, Year)	Y	Y	Y	Y	Y
Observations	395	395	378	378	378
R-squared	0.23	0.235	0.378	0.263	0.248

Table XIII. Deal Level Sample IV

This table reports regression result of deal success in deal level sample using the number of daughters as the instrument. The dependent variable Success equals to 1 if the deal went public or was acquired with acquisition value greater than invested amount. Independent Variable (*Female Hired Ratio*) is the number of female partners hired in past 5 years divided by the total number of new hires in past 5 years. Instrumental Variables are measures of existing partners' children. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1) Success	(2) Success	(3) Success	(4) Success	(5) Success	(6) Success	(7) Success	(8) Success
Estimation Method	OLS	OLS	GMM	GMM	GMM	GMM	GMM	GMM
Instruments For Hiring Female	N/A	N/A						
Average Number of Daughters			X	X				
Average Number of Daughters (Senior)					X	X		
Average Number of Daughters (Junior)							X	X
Female Hired Ratio	0.0948*** (0.0326)	0.0791** (0.0332)	0.942** (0.380)	0.965** (0.381)	0.994*** (0.383)	1.046** (0.408)	2.275 (4.636)	2.901 (5.610)
Average Number of Children			0.00404 (0.00767)	0.00430 (0.00761)				
Average Number of Children (Senior)					0.00525 (0.00587)	0.00289 (0.00598)		
Average Number of Children (Junior)							0.0265 (0.0583)	0.0414 (0.0877)
Firm Size (Partner Count)		0.00224** (0.00103)	0.00277** (0.00123)	0.00379*** (0.00142)	0.00281** (0.00122)	0.00388*** (0.00145)	0.00283 (0.00240)	0.00608 (0.00819)
VC Firm Age		0.00205* (0.00118)	-0.00228 (0.00227)	-0.00208 (0.00249)	-0.00271 (0.00234)	-0.00251 (0.00264)	-0.00729 (0.0185)	-0.0105 (0.0253)
Have Female Before Hiring		-0.0135 (0.0121)		-0.0451** (0.0202)		-0.0477** (0.0215)		-0.112 (0.199)
Female VC		-0.0212 (0.0175)		-0.115** (0.0446)		-0.123*** (0.0473)		-0.312 (0.576)
Average Partner Age		-0.00136* (0.000725)		-3.05e-05 (0.00117)		0.000159 (0.00127)		0.00377 (0.0105)
Control								
Industry, Country, Year, Round	Y	Y	Y	Y	Y	Y	Y	Y
Observations	11,832	11,478	11,832	11,478	11,832	11,478	11,832	11,478
R-squared	0.087	0.090	0.006	0.008				

The dependent variable (“IPO”) equals to 1 if the portfolio company went public.

VARIABLES	(1) IPO	(2) IPO	(3) IPO	(4) IPO	(5) IPO	(6) IPO	(7) IPO	(8) IPO
Estimation Method	OLS	OLS	GMM	GMM	GMM	GMM	GMM	GMM
Instruments For Hiring Female	N/A	N/A						
Average Number of Daughters			X	X				
Average Number of Daughters (Senior)					X	X		
Average Number of Daughters (Junior)							X	X
Female Hired Ratio	0.0385 (0.0260)	0.0248 (0.0270)	0.387 (0.245)	0.361 (0.242)	0.444* (0.251)	0.448* (0.264)	2.474 (4.954)	2.582 (5.056)
Average Number of Children			-0.00303 (0.00497)	-0.00347 (0.00495)				
Average Number of Children (Senior)					0.00140 (0.00371)	-0.000369 (0.00377)		
Average Number of Children (Junior)							0.0266 (0.0620)	0.0354 (0.0788)
Firm Size (Partner Count)		0.00148* (0.000862)	0.00162* (0.000947)	0.00195* (0.00104)	0.00178* (0.000949)	0.00218** (0.00107)	0.00228 (0.00266)	0.00502 (0.00742)
VC Firm Age		0.00204** (0.000867)	0.000442 (0.00141)	0.000579 (0.00152)	-1.21e-05 (0.00147)	0.000114 (0.00163)	-0.00794 (0.0197)	-0.00941 (0.0227)
Have Female Before Hiring		-0.00495 (0.00964)		-0.0167 (0.0130)		-0.0199 (0.0138)		-0.0940 (0.180)
Female VC		-0.00647 (0.0139)		-0.0421 (0.0284)		-0.0512* (0.0308)		-0.271 (0.520)
Average Partner Age		-0.000650 (0.000535)		6.97e-06 (0.000718)		5.99e-05 (0.000798)		0.00399 (0.00943)
Control								
Industry, Country, Year, Round	Y	Y	Y	Y	Y	Y	Y	Y
Observations	11,832	11,478	11,832	11,478	11,832	11,478	11,832	11,478
R-squared	0.123	0.126	0.101	0.105	0.092	0.094		

Table XIV. Fund Level IV

This table reports regression result of deal success in fund level sample. The dependent variable is the excess return of the fund. Independent Variable (*Female Hired Ratio*) is the number of female partners hired in past 5 years divided by the total number of new hires in past 5 years. Instrumental Variables are measures of existing partners' children. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Excess Return							
Estimation Method	OLS	OLS	GMM	GMM	GMM	GMM	GMM	GMM
Instruments For Hiring Female	N/A	N/A						
Average # of Daughters			X	X				
Average # of Daughters (Senior Partner)					X	X		
Average # of Daughters (Junior Partner)							X	X
Female Hired Ratio	0.151*	0.139*	1.008*	0.863*	0.884	0.806	1.066	0.396
	(0.0868)	(0.0804)	(0.523)	(0.519)	(0.543)	(0.562)	(4.601)	(6.514)
Average Number of Children			0.0118	0.0192				
			(0.0129)	(0.0130)				
Average Number of Children (Senior Partner)					0.0173*	0.0233**		
					(0.00976)	(0.0116)		
Average Number of Children (Junior Partner)							0.00530	0.00420
							(0.0108)	(0.0132)
Firm Size (Partner Count)	0.00172	0.000239	0.000314	0.00240	0.000111	0.00221	-0.000118	0.000655
	(0.00118)	(0.00154)	(0.00201)	(0.00250)	(0.00211)	(0.00240)	(0.00914)	(0.0134)
Have Female Before Hiring		0.00877		-0.0379		-0.0341		-0.00889
		(0.0226)		(0.0444)		(0.0474)		(0.478)
Log Fund Size (M)		-0.0106		-0.0124		-0.0136		-0.0111
		(0.00743)		(0.0105)		(0.0105)		(0.00849)
VC Firm Age		0.00350**		3.14e-05		-0.000603		0.00268
		(0.00153)		(0.00342)		(0.00375)		(0.0265)
Average Partner Age		-0.00414***		-0.00493***		-0.00496***		-0.00420
		(0.00131)		(0.00171)		(0.00160)		(0.00284)
Control (Fund Region, Year)	Y	Y	Y	Y	Y	Y	Y	Y
Observations	395	392	395	392	395	392	395	392
R-squared	0.239	0.264						0.199

Table XV. Economic Impact of Gender Diversity

This table reports VC-backed US IPOs by year.

IPO Year	#IPO	Average IPO Size (M)	Total IPO Amount (M)	Effect of Gender Diversity from Replacing a Son with a Daughter (M) ¹³	Benefit of 10% Increase in Female Hired Ratio (M) ¹⁴
1990	6	65.38	392.3	19.20	99.46
1991	5	48.42	242.1	11.85	61.38
1992	17	67.92	1,154.69	56.50	292.74
1993	16	145.9	2,334.33	114.22	591.80
1994	14	131.84	1,845.80	90.31	467.95
1995	9	61.7	555.3	27.17	140.78
1996	36	84.61	3,046.00	149.04	772.23
1997	61	42.34	2,582.71	126.37	654.77
1998	51	65.15	3,322.56	162.57	842.34
1999	190	161.79	30,740.66	1504.13	7,793.41
2000	164	96.41	15,812.01	773.67	4,008.68
2001	17	67.01	1,139.20	55.74	288.81
2002	12	117.45	1,409.41	68.96	357.32
2003	16	71.38	1,142.08	55.88	289.54
2004	61	96.78	5,903.57	288.86	1,496.68
2005	37	67.17	2,485.11	121.60	630.03
2006	47	83	3,900.97	190.87	988.98
2007	65	110.2	7,163.13	350.49	1,816.00
2008	5	105.01	525.04	25.69	133.11
2009	6	144.29	865.75	42.36	219.49
2010	49	102.86	5,040.25	246.62	1,277.81
Total	884	103.62	91,602.97	4482.09	23,223.29

Source: summarized from Venture Source. Only includes IPOs listed on Nasdaq and NYSE from 1990-2010.

¹³ Estimated based on Table VII, column 3 and Table XIII, Panel B, column 4 (eg. $91602.97 \times 0.36 / 0.142 \times 1.93\%$)

¹⁴ Estimated based on Table XIII, Panel B, column 4 (eg. $91602.97 \times 0.36 / 0.142 \times 10\%$)

Table XVI. Robustness Test – Excluding Email Responses

This table reports first stage, reduced form and IV results excluding responses from the email. Panel A corresponds to Table VII. Panel B corresponds to Table XI. Panel C corresponds to Table XII.

Panel A	(1)	(2)	(3)	(4)	(5)
VARIABLES	Female Hired Ratio				
Average Number of Daughters	0.0137 (0.00902)	0.0166* (0.00905)	0.0135 (0.00885)		
Average Number of Children	-0.0129* (0.00731)	-0.0126* (0.00739)	-0.0126 (0.00776)		
Average Number of Daughters (Senior Partner)				0.0147 (0.01000)	
Average Number of Children (Senior Partner)				-0.00567 (0.00812)	
Average Number of Daughters (Junior Partner)					-0.000331 (0.0162)
Average Number of Children (Junior Partner)					-0.000482 (0.0114)
Control					
Firm Size (Partner Count)	N	Y	Y	Y	Y
VC Firm Age, Partner Age	N	N	Y	Y	Y
Have Female Before Hiring	N	N	Y	Y	Y
Year	Y	Y	Y	Y	Y
Observations	657	657	657	547	283

Panel B	[1]	[2]	[3]	[4]	[5]
VARIABLES	Success	Success	Success	Success	Success
Average Number of Daughters	0.0280*** (0.00871)	0.0281*** (0.00873)	0.0281*** (0.00873)		
Average Number of Children	-0.0127* (0.00699)	-0.0120* (0.00713)	-0.0119* (0.00713)		
Average Number of Daughters (Senior Partner)				0.0305*** (0.00905)	
Average Number of Children (Senior Partner)				-0.0162** (0.00711)	
Average Number of Daughters (Junior Partner)					-0.0101 (0.0140)
Average Number of Children (Junior Partner)					-0.00116 (0.00950)
Control					
Firm Size (Partner Count)	Y	Y	Y	Y	Y
VC Firm Age, Partner Age	N	Y	Y	Y	Y
Have Female Before Hiring	N	Y	Y	Y	Y
Female VC	N	N	Y	Y	Y
Country, Year, Round, Industry	Y	Y	Y	Y	Y
Observations	9,226	9,226	9,226	8,008	3,991

Panel C	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Success	Success	Success	Success	Success	Success	Success	Success
Estimation Method	OLS	OLS	GMM	GMM	GMM	GMM	GMM	GMM
Instruments For Hiring Female	N/A	N/A						
Average # of Daughters, Children			X	X				
Average # of Daughters, Children (Senior)					X	X		
Average # of Daughters, Children (Junior)							X	X
Female Hired Ratio	0.0597 (0.0382)	0.0503 (0.0393)	1.382** (0.705)	1.591* (0.833)	1.563** (0.795)	1.887* (1.024)	1.659 (1.329)	1.750 (1.499)
Control								
Firm Size (Partner Count)	N	Y	Y	Y	Y	Y	Y	Y
VC Firm Age, Partner Age	N	Y	Y	Y	Y	Y	Y	Y
Have Female Before Hiring	N	Y	N	Y	N	Y	N	Y
Female VC	N	Y	N	Y	N	Y	N	Y
Industry, Country, Year, Round	Y	Y	Y	Y	Y	Y	Y	Y
Observations	9,226	9,226	9,226	9,226	8,008	8,008	3,991	3,991

Table XVII. Robustness Test – Including Partners with Less Than 3 Deals

This table reports first stage, reduced form and IV results including VCs who made less than 3 deals.
Panel A corresponds to Table VII. Panel B corresponds to Table XI. Panel C corresponds to Table XII.

Panel A	(1)	(2)	(3)	(4)	(5)
VARIABLES	Female Hired Ratio				
Average Number of Daughters	0.0169** (0.00792)	0.0202** (0.00786)	0.0200** (0.00882)		
Average Number of Children	-0.0175*** (0.00588)	-0.0189*** (0.00583)	-0.0210*** (0.00718)		
Average Number of Daughters (Senior Partner)				0.0220** (0.00970)	
Average Number of Children (Senior Partner)				-0.0151* (0.00780)	
Average Number of Daughters (Junior Partner)					0.00977 (0.0136)
Average Number of Children (Junior Partner)					-0.0216** (0.00873)
Control					
Firm Size (Partner Count)	N	Y	Y	Y	Y
VC Firm Age, Partner Age	N	N	Y	Y	Y
Have Female Before Hiring	N	N	Y	Y	Y
Year	Y	Y	Y	Y	Y
Observations	1,065	1,065	942	775	354

Panel B	[1]	[2]	[3]	[4]	[5]
VARIABLES	Success	Success	Success	Success	Success
Average Number of Daughters	0.0324*** (0.00864)	0.0287*** (0.00903)	0.0288*** (0.00903)		
Average Number of Children	-0.0181*** (0.00620)	-0.0133* (0.00686)	-0.0133* (0.00686)		
Average Number of Daughters (Senior Partner)				0.0269*** (0.00899)	
Average Number of Children (Senior Partner)				-0.00988 (0.00687)	
Average Number of Daughters (Junior Partner)					0.00279 (0.0142)
Average Number of Children (Junior Partner)					-0.0103 (0.00998)
Control					
Firm Size (Partner Count)	Y	Y	Y	Y	Y
VC Firm Age, Partner Age	N	Y	Y	Y	Y
Have Female Before Hiring	N	Y	Y	Y	Y
Female VC	N	N	Y	Y	Y
Country, Year, Round, Industry	Y	Y	Y	Y	Y
Observations	12,347	11,478	11,478	9,746	4,712

Panel C VARIABLES	(1) Success	(2) Success	(3) Success	(4) Success	(5) Success	(6) Success	(7) Success	(8) Success
Estimation Method	OLS	OLS	GMM	GMM	GMM	GMM	GMM	GMM
Instruments For Hiring Female	N/A	N/A						
Average # of Daughters, Children			X	X				
Average # of Daughters, Children (Senior)					X	X		
Average # of Daughters, Children (Junior)							X	X
Female Hired Ratio	0.0940*** (0.0321)	0.0797** (0.0332)	1.117** (0.452)	0.934** (0.374)	0.973*** (0.314)	0.817*** (0.275)	0.186 (0.676)	0.826 (0.856)
Control								
Firm Size (Partner Count)	N	Y	Y	Y	Y	Y	Y	Y
VC Firm Age, Partner Age	N	Y	Y	Y	Y	Y	Y	Y
Have Female Before Hiring	N	Y	N	Y	N	Y	N	Y
Female VC	N	Y	N	Y	N	Y	N	Y
Industry, Country, Year, Round	Y	Y	Y	Y	Y	Y	Y	Y
Observations	12,347	11,478	12,347	11,478	10,501	9,746	5,341	4,712

Appendix: Variable Definitions

Table XVIII. Variable Description

Variable	Description
VC Firm Characteristics	
Female Hired Ratio	The number of female partners hired divided by the total number of new hires in the 5 years prior to the fund closing year
Total Female Hires	The number of female partners hired in the 5 years prior to the fund closing year
Total New Hires	The number of new hires made in the 5 years prior to the fund closing year
Partner Count	The number of partners in the firm at fund closing year, proxy for the firm size
Firm Age	Current year minus firm's first fund year in the sample, proxy for the firm age
Having Female Before Hiring	Equals to 1 if there was a female in the VC firm within the 5-year hiring window
Average Partner Age	Average age of existing partners in the firm
Firm Level Children Measure	
Average Number of Daughters	Average number of daughters by all existing partners in the VC firm before hiring a female
Average Number of Daughters (Senior Partner)	Average number of daughters by senior partners in the VC firm before hiring a female. Senior partner is defined as partners whose tenure is greater or equals to 5 years
Average Number of Daughters (Junior Partner)	Average number of daughters by junior partners in the VC firm before hiring a female. Junior partner is defined as partners whose tenure is less than 5 years
Average Number of Daughters (Female Partner)	Average number of daughters by female partners in the VC firm before hiring a female
Average Number of Daughters (Male Partner)	Average number of daughters by male partners in the VC firm before hiring a female
Average Daughter Ratio	The average of all partners' daughter ratio. If a partner has no children, daughter ratio equals to 0.5
Average Excess Daughter	(Total number of daughters by existing partners – total son) / # of partners
Daughter-Heavy Partner	(# of partners with more daughters - # of partners with more sons or equal daughter, son) / # Partners
First Daughter Partner Ratio	The percentage of partners whose first child is a daughter
At Least One Daughter Partner Ratio	The percentage of partners who have daughters
VC Firm Performance Measure	
IPO	Equals to 1 if a deal went IPO
Success	Equals to 1 if a deal went IPO or was acquired with an acquisition value greater than the invested amount
VC Fund Characteristics	
Excess Return	Fund net IRR minus median fund return in the same year, same region. Provided by Preqin
Net IRR	Fund's net IRR. Provided by Preqin
MedianFund Benchmark	Median fund return in the same year, same region. Provided by Preqin
Quartile	Performance Quartile of fund's net IRR. Provided by Preqin
Total Closing Amount	Fund Size

Online Appendix: Additional Table I.

This table tests the independence of the number of daughters by each partner.

Panel A reports son/daughter ratio by senior partners, junior partners, female partners and male partners.

Panel B reports son/daughter ratio conditional on the total number of children.

Panel C reports Chi-Square test of son/daughter mix conditional on the total number of children.

Panel A. t-Test

	# Partners	# of Children	# of Son/Daughter	P Value ¹⁵
Number of Son / Daughter	1,379	3284	1.080	0.423
Number of Son / Daughter (Senior Partner)	972	2388	1.057	0.874
Number of Son / Daughter (Junior Partner)	407	896	1.144	0.202
Number of Son / Daughter (Female Partner)	140	273	1.133	0.531
Number of Son / Daughter (Male Partner)	1,239	3008	1.076	0.504

Panel B. t-Test

Number of Children	# Partners	# of Children	# of Son/Daughter	P Value
1	183	183	0.848	0.151
2	584	1168	0.997	0.373
3	393	1179	1.163	0.079
4	130	520	1.039	0.906

Panel C. Chi Square Test

Number of Children	P Value ¹⁶
Condition on Number of Children=1	0.177
Condition on Number of Children=2	0.310
Condition on Number of Children=3	0.084
Condition on Number of Children=4	0.312

¹⁵ Panel A and Panel B test the null hypothesis $P(\text{Child}=\text{girl})=0.4878$. Each observation is a child. It equals to 1 if the child is a girl and 0 if the child is a boy.

¹⁶ Panel C is a Chi Square test on the binominal distribution of # of daughters each partner has conditional on total # children. Each observation is a partner.

Online Appendix Table II.

This table reports results regressing the number of children on first child's gender. The observation is individual partner. The dependent variable is the number of children a partner has. The independent variable *First Daughter* equals to 1 if the first child is a daughter. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1)	(2)	(3)
	Number of Children		
First Daughter	0.0488 (0.0575)	0.0398 (0.0579)	0.0355 (0.0578)
Partner Age		0.0171*** (0.00261)	0.0161*** (0.00262)
Female Partner			-0.347*** (0.0972)
Constant	2.370*** (0.0367)	1.421*** (0.147)	1.509*** (0.148)
Observations	1,403	1,327	1,327
R-squared	0.000	0.037	0.047

Online Appendix Table III. The Effect of Children's Age

Panel A. First Stage: Children's Age and Hiring

VARIABLES	(1)	(2)	(4)
	Female Hired Ratio		
Average Number of Daughters (less than 12 Yrs)	0.0118 (0.0145)		-0.0208 (0.0178)
Average Number of Children (less than 12 Yrs)	-0.0121 (0.00927)		0.00771 (0.0123)
Average Number of Daughters (Greater than 12 Yrs)		0.0236 (0.0283)	0.0245 (0.0287)
Average Number of Children (Greater than 12 Yrs)		0.00688 (0.0170)	0.00479 (0.0191)
Firm Size (Partner Count)	0.000189 (0.00118)	-0.000926 (0.00194)	-0.00108 (0.00200)
VC Firm Age	0.00123 (0.00130)	0.00314 (0.00204)	0.00315 (0.00201)
Have Female Before Hiring	0.0577*** (0.0184)	0.0534*** (0.0201)	0.0532*** (0.0205)
Average Partner Age	-0.00116 (0.00114)	-0.00383** (0.00164)	-0.00387** (0.00164)
Control	Year	Year	Year
Observations	675	335	335
R-squared	0.060	0.144	0.149

Panel B. Children's Age and VC Performance

VARIABLES	(1)	(2)	(3)
	Success	Success	Success
Average Number of Daughters (less than 12 Yrs)	0.00273 (0.0127)		-0.0111 (0.0167)
Average Number of Children (less than 12 Yrs)	0.00284 (0.00914)		0.0182 (0.0130)
Average Number of Daughters (Greater than 12 Yrs)		0.0636** (0.0311)	0.0606* (0.0312)
Average Number of Children (Greater than 12 Yrs)		-0.0293 (0.0210)	-0.0161 (0.0236)
Firm Size (Partner Count)	0.00184* (0.00111)	0.00159 (0.00145)	0.00139 (0.00145)
VC Firm Age	0.00269** (0.00135)	0.00205 (0.00185)	0.00210 (0.00185)
Have Female Before Hiring	-0.0170 (0.0138)	-0.0181 (0.0181)	-0.0157 (0.0179)
Female VC	-0.00131 (0.0201)	-0.00434 (0.0280)	-0.00341 (0.0280)
Average Partner Age	-0.00123 (0.00111)	-0.00207 (0.00190)	-0.00194 (0.00189)
Control	Industry, Country, Year, Round		
Observations	8,250	4,471	4,471
R-squared	0.095	0.096	0.096

Panel C. Children's Age and VC Performance (IV)

VARIABLES	(3) Success	(4) Success
Instrument		
Average Number of Daughters (Less than 12 Yrs)	Y	
Average Number of Daughters (More than 12 Yrs)		Y
Female Hired Ratio	0.143 (0.663)	0.818* (0.468)
Firm Size (Partner Count)	0.00203 (0.00153)	0.00207 (0.00177)
Average Number of Children (Less than 12 Yrs)	0.00429 (0.00679)	
Average Number of Children (More than 12 Yrs)		-0.0101 (0.0177)
VC Firm Age	0.00225 (0.00270)	-0.00235 (0.00355)
Have Female Before Hiring	-0.0254 (0.0402)	-0.0264 (0.0215)
Female VC	-0.0153 (0.0682)	-0.0474 (0.0386)
Average Partner Age	-0.000948 (0.00174)	-0.000918 (0.00239)
Control	Industry, Country, Year, Round	
Observations	8,250	4,471
R-squared	0.095	0.070

Online Appendix Table IV. Daughter Effect on Male/Female Partners

Panel A. First Stage	(1)	(2)
VARIABLES	Female Hired Ratio	
Average Number of Daughters (Male Partners)	0.0141* (0.00796)	
Average Number of Children (Male Partners)	-0.0204*** (0.00655)	
Average Number of Daughters (Female Partners)		0.0235 (0.0437)
Average Number of Children (Female Partners)		-0.0243 (0.0377)
Firm Size (Partner Count)	0.000536 (0.00113)	-0.00746 (0.00573)
Have Female Before Hiring	0.0505*** (0.0155)	-0.0133 (0.217)
VC Firm Age	0.00218* (0.00123)	0.00342 (0.00716)
Average Partner Age	-0.000594 (0.000849)	0.00692 (0.00581)
Control	Year	Year
Observations	924	99
R-squared	0.064	0.371

Panel B. Reduced Form	(1)	(2)
VARIABLES	Success	Success
Average Number of Daughter (Male Partners)	0.0255*** (0.00835)	
Average Number of Children (Male Partners)	-0.0124** (0.00627)	
Average Number of Daughter (Female Partners)		0.0406 (0.0246)
Average Number of Children (Female Partners)		-0.0511** (0.0216)
Firm Size (Partner Count)	0.00232** (0.00107)	0.00322 (0.00228)
VC Firm Age	0.00197* (0.00119)	-0.00197 (0.00334)
Have Female Before Hiring	-0.00459 (0.0124)	-0.0717 (0.0634)
Female VC	-0.0132 (0.0179)	-0.0460 (0.0333)
Average Partner Age	-0.00149** (0.000745)	-0.00388 (0.00261)
Control	Industry, Country, Year, Round	
Observations	11,292	1,435
R-squared	0.090	0.105

Panel C. IV	(1)	(2)
VARIABLES	Success	Success
Estimation Method	GMM	GMM
Instruments For Hiring Female		
Average Number of Daughters (Male Partners)	X	
Average Number of Daughters (Female Partners)		X
Female Hired Ratio	1.008** (0.430)	0.795 (0.560)
Average Number of Children (Male Partners)	0.00185 (0.00715)	
Average Number of Children (Female Partners)		-0.00363 (0.0257)
Firm Size (Partner Count)	0.00379** (0.00150)	0.00227 (0.00231)
Have Female Before Hiring	-0.0426* (0.0236)	-0.109 (0.105)
VC Firm Age	-0.00261 (0.00271)	-0.00172 (0.00381)
Female VC	-0.122** (0.0510)	-0.0720* (0.0382)
Average Partner Age	0.000301 (0.00130)	-0.00308 (0.00285)
Control	Industry, Country, Year, Round	
Observations	11,292	1,435
R-squared		0.050

Online Appendix Table V. Deal Level Reduced Form Alternative Measures

This table reports reduced form results of deal level sample. The dependent variable (“Success”) equals to 1 if the portfolio company went public or was acquired with acquisition value greater than invested amount. Independent variables are alternative measures of existing partners’ children aggregated at VC firm level. Robust standard error is clustered at VC firm, Year level. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

VARIABLES	(1) Success	(2) Success	(3) Success	(4) Success	(5) Success
Average Daughter Ratio	0.0506*** (0.0189)				
Average Excess Daughter		0.0150*** (0.00444)			
Daughter-Heavy Partner Ratio			0.0186** (0.00822)		
First Daughter Partner Ratio				0.0218* (0.0130)	
At Least One Daughter Ratio					0.0399*** (0.0153)
Average Number of Children	-0.00113 (0.00562)	-0.000564 (0.00559)	-0.000326 (0.00562)	-0.00515 (0.00650)	-0.0112* (0.00622)
Firm Size (Partner Count)	0.00243** (0.00106)	0.00250** (0.00105)	0.00245** (0.00107)	0.00228** (0.00114)	0.00220** (0.00105)
VC Firm Age	-0.0143 (0.0119)	-0.0136 (0.0118)	-0.0148 (0.0119)	-0.0221* (0.0126)	-0.0101 (0.0120)
Have Female Before Hiring	0.00224* (0.00118)	0.00219* (0.00117)	0.00224* (0.00118)	0.00272** (0.00128)	0.00246** (0.00117)
Average Partner Age	-0.00151** (0.000743)	-0.00138* (0.000742)	-0.00153** (0.000742)	-0.00110 (0.000899)	-0.00147** (0.000747)
Control	Industry, Country, Year, Round				
Observations	11,478	11,478	11,478	9,751	11,478
R-squared	0.090	0.091	0.090	0.092	0.090