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And the children shall lead: Gender diversity and performance in venture capital☆

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ABSTRACT

Given overall lack of gender diversity in the venture capital and entrepreneurship industry shown in Calder-Wang and Gompers (2017) we ask: What promotes greater gender diversity in hiring? Does diversity lead to better firm performance and higher investment returns? In this paper, using a unique dataset of the gender of venture capital partners' children, we find strong evidence that when partners have more daughters, the propensity to hire female partners increases. Moreover, our instrumental variable results suggest that increased gender diversity improves deal and fund performance. Lastly, the effects are primarily driven by the gender of senior partners' children.

1. Introduction

Homophily-driven biases can be a powerful force that inhibits diversity in organizations. Gender hiring bias has been shown to persist over time in many highly compensated professions. To overcome these barriers, policymakers often attempt to actively promote diversity in the workplace. Most recently, California passed a law that mandates gender diversity on boards of incorporated in the state. Whether enacted by politicians or senior executives, it is assumed that many of the measures that are adopted to promote greater diversity will naturally lead 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 improvement in organizational performance has been hampered by the inability to identify exogenous variation in diversity, which is needed for causal inferences. 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.

We make two important contributions to the literature on diversity by using a novel experimental design. First, we show that when partners in a venture capital firm have a higher proportion of daughters relative to all children, hiring biases against women are reduced. Second, our reduced-form regressions show a strong relationship between the relative number of daughters that senior part-

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ners have and deal/fund-level performance. Lastly, we instrument a firm's gender diversity induced by hiring a female investor with our children data, providing suggestive evidence that greater exogenous gender diversity leads to improvement in performance.

Our institutional setting, venture capital (VC), has a number of important attributes that make it an ideal setting to explore the performance implications of diversity. VC firms tend to be small with typically less than a dozen investment professionals. The decision-makers are easy to identify (partners), and performance (fund-level returns and deal-level outcomes) can be precisely estimated. Through unique data, we are able to identify hiring events for senior investment professionals at venture capital firms. Calder-Wang and Gompers (2017) show that only about 8.5% of new hires in the venture capital industry are women. Prior work by Gompers et al. (2020b) show 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. Our results show that when existing partners have a higher number of daughters relative to the total number of children, hiring biases against women are reduced. In addition, when existing partners have more daughters, the probability of hiring a female investor is increased substantially. The relative effect of having a daughter rather than a son for all senior partners at a firm translates into a 4.4% increase in the probability of hiring a woman.[1] Compared to a baseline level of 9.9% of hiring a woman in our sample, the relative effect represents a 45% increase in the probability of hiring a female investor. Additionally, our results for hiring more women only exist for senior partners children. This makes sense given that senior partners typically retain decision rights over new hires.

Because the gender of ones children is usually thought to be exogenous, the gender diversity induced by having more daughters, controlling for the total number of children, can be used to estimate the impact of gender diversity on firm performance in venture capital. We examine both deal-level outcomes and fund-level excess returns. In reduced-form regressions, the gender of partners children has strong and significant effects on both. In instrumental variable regressions, our results suggest that greater gender diversity has economically and statistically significant effects on deal-level outcomes and fund-level excess returns. Success rates on individual deals improve by 4.7% for a 5% increase in gender diversity (namely increasing the fraction of women hired from a baseline level of approximately 10% to 15%). This represents a 17% increase compared to the baseline success rate of 27.3%. Our results are robust to various measures of the relative ratio of daughters to total children, as well as alternative measures of venture capital performance. The relevant exclusion restriction here is that the impact of having daughters affects venture capital performance only through the proportion of female partners hired. We test and rule out a number of alternative explanations, ranging from whether having more daughters alters the gender composition of the entrepreneurs invested, to whether raising daughters measurably improves the productivities at an individual level. Taken together, we think this framework provides suggestive evidence that gender diversity improves venture capital performance, although we acknowledge that there may be other alternative channels through which childrens gender can affect investment performance that we cannot rule out.

Related research has explored the gender bias in hiring as well as various treatments that can reduce the gender bias in hiring. In their seminal paper, Goldin and Rouse (2000) find that introducing blind auditions dramatically increased female representation in the major orchestras in the United States. Bohnet et al. (2016) find in an experimental setting that joint evaluation of job candidates can reduce gender bias in hiring versus separate candidate assessment. However, besides direct interventions at the hiring stage, subtle debiasing effects related to an increase in exposure have been considered as an alternative, albeit outside of the labor market. In the political arena, Beaman et al. (2009) show that when voters were exposed to female chief councilors, the likelihood of a woman winning an unreserved councilor or Pradhan seat in India increased. In the more recent theory and experimental literature, Bordalo et al. (2016) show that stereotypes are developed by overweighting representative members of a group. Under this framework, gender stereotypes could lead to persistently homogeneous organizations if they are small and make infrequent hiring decisions, like our venture capital setting. Thus, the first part of our paper contributes to this literature by providing real-world, empirical evidence of the relevance of gender exposure effect on hiring decisions in the labor market.

Our choice of exogenous variation is motivated by research that has explored the effect of parenting on social preferences. For example, Warner (1991) surveys parents and finds that fathers of daughters tend to show greater support for feminist causes. Similarly, Warner and Steel (1999) show that fathers of daughters have greater support for gender equity than do fathers of sons. More recent works have also demonstrated that decision-making of fathers can be influenced by the gender of their children. Washington (2008) finds that US Congressmen vote more liberally, especially on issues affecting women, if they have more daughters. Cronqvist and Yu (2017) show that CEOs who have more daughters are more likely to adopt socially responsible corporate policies. Glynn and Sen (2015) demonstrate 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-appointed judges. Finally, Bennedsen et al. (2007) explore the effects of gender birth order and the fraction of children that are female on the likelihood that a family firm appoints a non-family CEO. Like our work here, they use the gender of a family CEO's children as an instrument for the appointment of a non-family CEO successor. In instrumental variable regressions, they find that family CEO succession reduces performance relative to a non-family CEO.

[1] The standard deviation of the number of daughters for a senior partner is 0.90.

Our results on hiring decisions suggest that having daughters has a dramatic debiasing effect on hiring even in an industry in which gender diversity is severely lacking. The demographic patterns and trends surveyed in Calder-Wang and Gompers (2017) highlight the overall lack of gender diversity in the venture capital industry. Women have entered into VC at a rate much lower than their entry rates into other highly compensated professional fields, such as medicine or law, both of which are approaching equity at the junior levels. The representation of women in advanced degrees in science and technology and MBAs (as a precursor to entry into venture capital) are much higher than the representation of women in the innovation sector. The percentage of venture capital partners who are female has not increased measurably over the past twenty-five years, persistently hovering around 10% as shown in Calder-Wang and Gompers (2017).

There is certainly a multitude of factors that might explain the persistent low fraction of women in the venture capital industry. We do not attempt to disentangle the factors here, but we want to highlight the role of homophily, especially in small teams. As surveyed in McPherson et al. (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." Moreover, the typical venture capital firm is small in size, with a median of three partners in our data set. Hiring decisions are made infrequently. Most venture capital firms only make infrequent senior hires (e.g., perhaps once every three to five years). Aggregate new hiring in this industry is driven by the (aggregated) decisions of small teams. From social psychology, Klocke (2007) show small groups are more likely to be homophilous and to have biases aggregated into expressed decision-making. Thus, a slight preference over certain demographic characteristics, like gender, could aggregate into a sustained overall lack of gender diversity at the industry level.

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. Cohen et al. (2008) show that homophily also works at the school ties level in the investment management arena between buy-side analysts and CEOs. Moreover, Gompers et al. (2016) show that coinvestment patterns in venture capital are driven by social similarities, which means venture capitalists who are more similar in gender, ethnicity, school background, and work history are more likely to collaborate. Solal (2019) looks at televised entrepreneurial pitch competitions and finds strong gender matching between investors and entrepreneurs. Similarly, Ewens and Townsend (2020) find gender segregation on AngelList in which male investors show more interest in male-founded companies and female investors show more interest in female-founded companies.

Our next contribution is to use a more credible empirical strategy to estimate the impact of diversity on firm performance in a real business setting. Even though we are by no means the first to use the gender of one's children as a randomization device, the venture capital setting, with our rich person and investment-level data, gives us the unique ability to tightly link the family characteristics of the key decision-makers with every hiring decision and investment outcome. To our knowledge, we are the first to map such exogenous variations to actual firm outcomes and use it to deduce the performance effects of diversity.

Sociology-based research has tended to look at ex post data and measure correlations with performance. Results on gender diversity have been by and large equivocal. Furthermore, the setting does not allow for causal interpretations of results. Still, other experimental settings assign members based on gender to various "team-based" projects. These works, however, tell us little about whether or not the kinds of complex problems in business are affected by diversity. Bernile et al. (2018) use the local availability of diverse directors as an instrument and find that greater board diversity leads to lower volatility and better performance. Several recent studies have looked at mandated board diversity. Schwartz-Ziv (2017) looks at mandated board diversity in Israel for firms with any government ownership and finds that boards with equal numbers of men and women are more active, but she does not find a performance effect. Others find more mixed results. Our study differs from those that look at mandated diversity, because forced diversity could have different results on performance from diversity resulting from debiasing hiring.

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 have in common, the better the pair is likely to perform. This better performance can 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., McPherson et al. (2001); Cohen et al. (2010); Ingram and Zou (2008); Gompers and Xuan (2010)].

On the other hand, however, homophily could induce social conformity and groupthink that can lead to inefficient decision-making [e.g., Asch (1951); Janis (1982); Ishii and Xuan (2014)]. 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. Nonetheless, other research suggests that salient demographic differences legitimizes divergent perspectives and thus improves decision-making [Phillips and Loyd (2006); Sommers (2006), Phillips et al. (2009)]. Consequently, under an alternative hypothesis, more diverse firms might perform better because decision-making under uncertainty is improved. Therefore, estimating the performance impact of diversity in a non-laboratory setting using a credible strategy is an important step to guide any subsequent attempts to enact sensible diversity-related policies.

The rest of the paper is organized as follows: In Section 2, we discuss our data. Our methodological approach is outlined in Section 3. In Section 4 we present a discussion of our results, both the hiring level regressions and the performance results. We conclude in Section 5.

2. Data collection

The core data is comprised of several parts. The first element of our data involves collecting a comprehensive data set of all venture capital partners in the United States, as well as their demographic and family information. The second element consists of a panel data set of venture capital firm hiring events. The final data entail the deal-level and fund-level performance for each of our venture capital firms.

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 boards of directors. Venture capitalists who never serve on a board will not be identified in our data. We believe this is reasonable because most venture capitalists serve on the board of directors for companies for which they are the lead investor. 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 data set, we collect a broad range of biographical information, including 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, we determine venture capitalist gender 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 is presented in Calder-Wang and Gompers (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 data set on the family information of venture capital partners including the number of children, as well as the gender and age of each child, which we summarize in Table 1. We obtain information from a total of 1310 individuals from various sources including college and business school directories and reunion books (61.6%), direct email solicitation (34.7%), and the Marquis Who's Who database (2.9%). For email solicitation, we sent out over 3000 emails and obtained 454 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.

Table 1
Children Data Collection.
This table reports the characteristics of the venture capital partners from whom we collect information on children.

(a) Characteristics of Venture Capital Partners

	N	Mean	SD
Number of Children	1310	2.389	1.07
Number of Daughters	1310	1.143	0.90
Number of Sons	1310	1.237	0.98
Female	1310	0.099	0.30
Whites	1310	0.869	0.34
South Asian	1310	0.044	0.21
East Asian	1310	0.053	0.22
Hispanic	1310	0.030	0.17
African American	1310	0.003	0.06
Children Age Available	1310	0.705	0.46

(b) Source of Children's Information

	N	Percent (%)
Email	454	34.7
Harvard Reunion Book	301	23.0
HBS Alumni Directory	299	22.8
Stanford Reunion Book	85	6.5
Princeton Reunion Book	74	5.6
Yale Reunion Book	48	3.7
Marquis	38	2.9
Other	11	0.8
Total	1310	100.0

Other includes *Wikipedia, New York Times, Penn Alum Directory*, and *Qualtrics*

(c) Career Deal Count

	N	Percent (%)
1	292	22.3
2	169	12.9
3	161	12.3
4	113	8.6
5 or More	575	43.9
Total	1310	100.0

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 1.14 daughters as of 2016. For 70.5% of the children we obtain their ages as well. Panel A also provides the gender and ethnic breakdown of our sample. Our sample mirrors the industry results in Calder-Wang and Gompers (2017). 9.9% of the venture partners for whom we have children information are female, 87% are white, 4.4% are South Asian, 5.3% are East Asian, and 3% are Hispanic. Panel C shows the distribution of boards for the venture partners in our sample: 35.2% have served on two or fewer boards. 43.9% have served on five or more company boards.

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 from whom we obtained information are typically more senior and have an important role in making hiring decisions. Similarly, there should be no bias from us-

Table 2
Firm Sample Selection.

(a) In this table, we provide the characteristics of the venture capital firms in our sample. Each observation is a venture capital firm.

	N	Mean	SD	Median
VC Firms with Children Data				
Average Partner Count	301	6.96	4.77	5.92
VC Founding Year	301	1995.2	7.33	1997
Firm Deal Count	301	64.5	75.3	38
Fraction of US Based Deals	301	0.82	0.30	0.97
Firm IPO Count	301	8.83	15.0	3
Firm IPO Rate	301	0.11	0.11	0.080
Firm Success Rate	301	0.23	0.13	0.22
Total Number of Hires	301	12.8	10.9	9
Total Number of Female Hires	301	1.12	1.68	1
Average Female Hired Ratio	301	0.081	0.11	0.029
VC Firms without Children Data				
Average Partner Count	5757	2.07	1.92	1.33
VC Founding Year	5748	2003.4	6.88	2002
Firm Deal Count	5757	5.42	10.3	2
Fraction of US Based Deals	5757	0.61	0.46	1
Firm IPO Count	5757	0.51	1.61	0
Firm IPO Rate	5757	0.092	0.23	0
Firm Success Rate	5757	0.16	0.29	0
Total Number of Hires	5757	2.66	3.10	2
Total Number of Female Hires	5757	0.24	0.61	0
Average Female Hired Ratio	5757	0.092	0.24	0

(b) Sample Representativeness

	Percent (%)	Total N
% VC Firms in Sample	4.97	6058
% Deal in Sample	38.34	50543
% IPO in Sample	47.66	5579

ing all firms for which we have children's gender for at least one partner. In Table 2, we compare the characteristics of the firms in our sample (i.e., for whom we have data on the gender of partners children) with those for whom we have no data on children. In particular, our sample includes firms that have more partners (6.96 vs. 2.07), were founded earlier (1995 vs. 2003), and are more likely to be US-based (82% vs. 61%). Although the venture capital firms for which we have children information differs from those not for whom we do not have such information, both groups hire similar proportions of women (e.g., 8.1% of the new hires are female in firms for which we have information on the children's gender versus 9.2% of the new hires being female in firms for which we do not have such information).

We define two measures of deal success. Our most conservative measure of success is whether the company in which the venture capitalist invested goes public in an IPO. Because many successful companies are acquired by larger companies for a profit, we define successful deals as those that either go public in an IPO or get acquired for a higher value than the total investment in the company. We obtain acquisition values from Capital IQ. If we are unable to identify an acquisition value, we do not consider the investment a success. The IPO and success rates are modestly higher in our sample of venture capital firms: 11% of the deals for our sample firms go public and 23% go public or are acquired for more than the invested capital versus 9.2% and 16.0% for firms not in our sample, averaging over firms. Economically, we believe that this is a relevant sample because these firms make disproportionately more deals (64.5 vs. 5.42) and hire more people (12.8 vs. 2.6). The empirical results from these firms are of great economic importance given they represent a large fraction of all deals (38.3%). Additionally, this selection is unlikely affected by the gender breakdown of the children, which is also what we need for the internal validity 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 venture capital partner is hired by a firm, we estimate the "hiring" event as the year before the person first sits on the board of a venture capital-backed company and represented the particular venture capital firm. Moreover, we approximate the "active" period of a partner's career as the year before the first board seat and three years after the last observed board seat.

We have data on 1645 venture capital partners in 301 venture capital firms who were hired during our sample period by the firms for which we have children information. We find that 9.9% of the hires are female. The general pattern of low female hiring rates is consistent with the results of Calder-Wang and Gompers (2017). Our firms are larger than theirs with the average firm employing 12.8

Table 3
Summary Statistics.

(a) Deal Performance: Deal-Level Observations			
	N	Percent (%)	SD
IPO	10987	13.4	0.34
Success	10987	27.3	0.45
(b) Fund Performance: Fund-Level Observations			
	N	Mean	SD
Excess Return	395	0.039	0.18
Net IRR	395	0.14	0.22
Median Fund Benchmark	434	0.10	0.082
Quartile	431	2.30	1.00
Amount Raised (USDmm)	1263	517.5	1192.8

Table 4
Number of Female Hires.
This table shows the firm sample by the number of women hired during a firm's entire history.

	N	Percent (%)	Firm Size
Never Hired Women	176	58.5	5.9
Hired One Women	68	22.6	9.1
Hired Two Women	27	9.0	11.4
Hired Three Women	17	5.6	12.7
Greater Than Three	13	4.3	27.9
Total	301	100.0	8.4

partners over the entire sample period. At the time of the hiring events, the average number of daughters at the firm is 0.98 per partner and the average number of sons is 1.10. The average daughter ratio is 0.48 and approximates the birth rates by gender in the general US population.

Table 3 Panel A shows that our firms account for 10,987 deals of which 13.4% go public and 27.3% are successful. We match venture capital firms to the Preqin fund database. Preqin is relatively comprehensive on amounts raised but has data on only a fraction of fund returns. We identify fund-raising information on 1263 funds for the firms in our sample. The average fund raised $517.5 million while the median fund raised $230 million. We are able to obtain fund return information for 395 funds. The average fund internal rate of return (IRR) is 14.3% and the median fund IRR is 9.3%. Because investment outcomes and fund returns are highly dependent upon market conditions, we match our funds to median benchmark fund IRRs for funds raised in the same year, the same geographic region, and having the same investment strategy. We compute fund excess IRRs by subtracting the median fund benchmark IRR from the funds' IRR. The average fund excess IRR is 3.9%.

Table 4 provides the distribution of female hires by firms. We have gender information on partners' children for 301 venture capital firms: 58.5% of our firms have never hired a female investor; 22.6% have hired exactly one female investor; and 18.9% have hired more than one female investor.

Even though venture capital firms are very small in size, we still examine the fraction of females hired as a percentage of all hires at firms of various sizes. This controls for any correlation between the number of hires and the female hired ratio. We find that the average female hired ratio for firms with fewer than five partners is 10.9%. As firms grow, there is no significant trend in the fraction of total hires that are females. For firms with 15 or more partners, the female hired ratio is 11.1%. The standard deviation of the female hired ratio is also similar across venture capital firm size. This gives us confidence that there is significant heterogeneity of the propensity to hire a female within firm size groups.

We also find that the female hired ratio does not vary substantially over time. Before 1994, the female hired ratio was 10.3%. The female hired ratio increased to 12.3% between 2005 to 2009, but declined to 8.1% between 2010 and 2016. These results are consistent with the industry-wide summaries in Calder-Wang and Gompers (2017), which show no meaningful trend in the hiring of female venture capital investors.

Table 5 shows the ratio of deals done by the woman in our sample by industry. Across the 10,937 deals, only 7.0% of the deals are led by female venture capital partners. Health-care has the highest percentage of female-led deals at 13.5%. The consumer goods industries and consumer services industries have female lead investors serving on the board 9.3% and 7.63% of the time, respectively. Information technology has the lowest rate of female-led deals at 4.1%.

Finally, in Table 6 we examine the demographics and career statistics for male and female hires. We include data on all partners who are hired, not just those from

Table 5
Industry Patterns.
This table shows the fraction of deals made by women across industries.

	N	Female (%)
Business and Financial Services	1975	5.6
Consumer Goods	86	9.3
Consumer Services	1335	7.6
Energy and Utilities	180	4.6
Healthcare	2409	13.5
Industrial Goods and Materials	148	10.1
Information Technology	4804	4.1
Total	10937	7.0

Table 6
Partner Characteristics by Gender.
This table includes information from all partners in the firm sample. Top 10 colleges are defined as the ten most frequent undergraduate institutions, namely Harvard, Stanford, University of Pennsylvania, Princeton, Yale, Dartmouth, UC Berkeley, Cornell, MIT and Duke. Top 5 MBA are defined as the five most frequent business schools, namely Harvard, Stanford, University of Pennsylvania, Columbia, and University of Chicago. Graduate degree includes masters' degree, PhD, JD, and MD.

	Men	Women	Difference	*p*-Value
Top 10 Colleges	0.30	0.25	0.048	0.065
MBA	0.53	0.48	0.053	0.063
MBA (Top 5)	0.34	0.31	0.024	0.373
Graduate Degree	0.38	0.43	−0.047	0.090
Success	0.22	0.22	−0.0043	0.794
IPO	0.11	0.13	−0.020	0.115
Deal Count	6.37	5.10	1.27**	0.003
N	3463	333	3130	.

firms for which we have information on the gender of partners' children. First, we look at schooling. We tabulate the fraction of hires that have undergraduate degrees from a top ten college. The top ten colleges are defined as the ten most frequent undergraduate institutions in our sample, namely Harvard, Stanford, University of Pennsylvania, Princeton, Yale, Dartmouth, University of California, Berkeley, Cornell, MIT, and Duke. A slightly higher fraction of male hires (30%) went to a top-ten college than did the female hires (25%). Next, we look at the fraction of hires with an MBA and the fraction with an MBA from a top-five program. Top five MBA programs are defined as the five most frequent business schools within our sample, including Harvard, Stanford, University of Pennsylvania, Columbia, and the University of Chicago. Nearly half of all new venture capital partners have an MBA degree. Among the male hires, 53% have an MBA, while 48% of female hires have an MBA. Among the male hires, 34% have an MBA from a top-five program, while 31% of women have a top five degree. Finally, we look at the fraction of venture capitalists with a graduate degree, such as amasters' degree, PhD, JD, or MD, excluding MBAs; 38% of men and 43% of women who are hired as venture capitalists have a graduate degree other than an MBA.

Table 6 also shows the career statistics for these hires. On average, male venture capital hires do more deals on which they serve on the board (6.37) than their female counterparts (5.10) over the course of our sample.[2] Interestingly, success rates are virtually identical for both men and women. Male venture capital hires have a 22% success rate on their investments and 11% go public. For female venture capital hires, 22% are successfully exited while 13% go public.

3. Methodology

The work of Gompers et al. (2016) and Calder-Wang and Gompers (2017) suggests that homophily is a strong force that affects collaboration and hiring decisions in the venture capital industry. Our empirical approach is to examine whether having daughters debiases 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 the venture capital industry. Also, because the gender of one's children is exogenous, we examine how differences in children's gender affects investment performance and, conditional on the validity of our exclusion restriction, whether greater gender diversity affects that performance.

Our thought experiment is as follows. A venture capital partner and his/her spouse decide 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 versus a son, which we refer to as the "daughter effect." One can interpret the coefficient on the daughters' variable as the effect of replacing one son with one daughter.

$$Y_{i,t} = \beta_1 \#\text{Daughters}_{i,t} + \beta_2 \#\text{Children}_{i,t} + \text{Controls}_{i,t} + \epsilon_{i,t} \quad (1)$$

For each hiring event, we run a regression in which $Y_{i,t}$ is the gender of the hire i that occurs at time t. On the right-hand side of Eq. (1) *number of daughters* and *number of children* refer to the average number of daughters or children among the existing partners of the firm. We also divide partners who were present at the time of the hire into senior and junior partners. Senior partners are defined as those with an investment tenure of more than three years.[3] We control for a variety of other venture capital firm characteristics that may influence firm hiring decisions. These include the age of the venture capital firm at the time of the hiring event, the average age of the existing partners, the number of active partners in the firm, and the size of the fund defined as the logarithm of the capital per partner.

In Eq. (1), 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 different beliefs, as also in 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 whether the venture capital behavior is related to having a daughter, not having 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 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 its effect on venture capital performance.

We first rule out sex-selection that can skew the sex ratio. Given that direct sex-selection through abortions is uncommon in the US, it is not surprising that we find that the 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

[2] As noted earlier, we can only identify a partner's connection to a deal if they are explicitly noted on the board of directors. Our venture capitalists almost certainly have done more deals than this. Amornsiripanitch et al. (2019) show that venture capitalists get board seats approximately one third of the time.

[3] By this definition, senior partners account for 54% of the partner sample and they account for 73% of the hiring-partner pairs. At the hiring event level, over 95% of the hires are made with at least one senior partner present. The senior partners are more active, taking a median of seven board seats versus two board seats for junior partners.

subgroups, namely the senior partners, the junior partners, the male partners, and the female partners. 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 that 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 the online appendix. 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 Eq. (1) can then identify the impact of the children's gender on female hiring.

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 makeup of the existing partners' children. Additionally, we include control variables for firm size (partner count), venture capital firm age, the average existing partners' age, log capital per partner, and year fixed effects.

In addition to examining the effects of children's gender on hiring decisions, we instrument for gender diversity induced by having a hiring a female investor using children's gender to examine the causal effect of diversity on venture capital investment performance. These results are dependent upon the validity of our exclusion restriction, which we discuss in detail in Section 4.3 after presenting our instrumental regression results. The performance effects are examined in two ways. First, we simply look at the reduced-form regression results: We examine a 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 children for partners who were present when the current partners were hired (more details below on how this is constructed).

Our performance results exploit the exogenous nature of a venture capital partners' children's gender. We use the "number of daughters" relative to the total number of children as an instrument for the "female hired ratio." In this instrumental variable (IV) framework, we look at the performance effect of the exogenous component of shocks to 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, i.e., looking at the time of a deal, what fraction of the active partners who were hired are female:

$$\text{Female Hired Ratio}_{i,t} = \gamma_1 \#\text{Daughters}^h_{i,t} + \gamma_2 \#\text{Children}^h_{i,t} + \text{Controls}^h_{i,t} + \epsilon_{i,t} \quad (2)$$

$$\text{Performance}_{i,n,t} = \theta_1 \text{Predicted Female Hired Ratio}_{i,t} + \theta_2 \#\text{Children}^h_{i,t} + \text{Controls}^h_{i,t} + \text{Controls}^h_{i,n,t} + \omega_{i,n,t} \quad (3)$$

We employ a linear IV regression framework for estimation. Eq. (2) and (3) present our IV set-up. In Eq. (2) the dependent variable is a measure of gender diversity *Female Hired Ratio* for firm i in year t. It is defined as the number of female partners who have been hired at any prior time who are still active (defined as having done at least one deal in the last three years) divided by the total number of hires who are still active using the same definition. As an instrument, we use the average number of daughters for the partners who were present at the time when an active partner was hired. The purpose of this procedure is to capture the numbers of daughters that are relevant for the hiring of the active partners (who were hired before and sometimes many years before the deal year), rather than the number of daughters at the time of the deal itself. This procedure also makes it consistent with the hiring specification outlined in Eq. (1). We denote such variables by a superscript h. Additionally, there are a number of controls including the average number of children, as well as other firm-level characteristics, similarly averaged over the hires, such as the firm size, average partner age, partner count, and log capital per partner.

Eq. (3) represents our second stage regression. The endogenous regression involves regressing gender diversity on the deal- or fund-level outcomes. Here, *Predicted Female Hired Ratio* can be thought of as the fitted value from the first stage of the IV using the average number of daughters and various controls for deal n in year t made by firm i. In addition to controlling for firm-level characteristics, we also control for deal-level characteristics, including industry, round, and country. Besides the random assignment of the children gender, for the identification of θ_1, the exclusion restriction required is that the gender of partners' children affects firm performance only through the gender of the hiring decisions made. We discuss possible alternative channels through which a partner's children's gender might affect investment performance in Section 4.4.

In this set-up, we can estimate the effect of gender diversity on the performance of venture capital firms. As discussed above, we run a variety of robustness checks to ensure that our findings are not sensitive to the measure of the prevalence of daughters or the measure of the gender diversity of the venture capital firms. Our reduced-form results are also robust to a randomization style inference rather than a conventional inference, in which we make simulation draws of randomly assigned gender for the children in our data set. These robustness tests are in the Appendix.

Table 7
Hiring Level Regression.
The dependent variable is a binary indicator of whether a given hire is a woman. We use the children metrics for the partners the year before the hire. *Avg Daughters* is the average number of daughters of the partners at the firm. *Avg Children* is the average number of children at the firm. Partners are identified in the deals they make when they take a board seat. We define whether a partner is present by the time window in which we observe them making deals. We extend it for two years at the beginning and three years at the end to approximate their active years at the firm. Senior partners are defined as those who make deals for more than three years. To approximate for hiring rather than founding, the sample is restricted to firms that have more than three active partners at the time and have been in existence for more than three years. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Female	(2) Female	(3) Female	(4) Female	(5) Female	(6) Female
Avg Daughters	0.040**	0.044**				
	(0.017)	(0.018)				
Avg Children	−0.016	−0.020*				
	(0.011)	(0.012)				
Avg Daughters (Senior)			0.046***	0.051***	0.044***	0.050***
			(0.016)	(0.017)	(0.016)	(0.017)
Avg Children (Senior)			−0.013	−0.016	−0.012	−0.016
			(0.010)	(0.011)	(0.010)	(0.011)
Avg Daughters (Junior)					0.018	0.018
					(0.025)	(0.025)
Avg Children (Junior)					−0.005	−0.004
					(0.013)	(0.014)
VC Firm Age		9.743e-05		−8.568e-05		−1.017e-04
		(1.310e-03)		(1.338e-03)		(1.340e-03)
Avg Partner Age		1.154e-03		1.094e-03		1.036e-03
		(1.147e-03)		(1.161e-03)		(1.162e-03)
Partner Count		4.963e-04		8.469e-04		8.016e-04
		(8.741e-04)		(8.780e-04)		(8.946e-04)
Log(Capital Per Partner)		−6.775e-04		−6.208e-04		−1.425e-03
		(6.398e-03)		(6.824e-03)		(6.846e-03)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1645	1573	1617	1546	1617	1546

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

4. Empirical results

We present our empirical findings in this section. 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 performance. Finally, we use an IV framework to estimate the impact of the female hires on venture capital firm performance.

4.1. Effects on venture capital hiring

In Table 7, we show the effect of daughters on the gender of new hires. As discussed earlier, our dependent variable is one if the gender of a new hire is female and zero otherwise. We express data on children by averaging across all the partners present when the individual was hired. We include the average number of daughters that existing partners have, as well as the average number of children.[4] We also include a variety of firm-level controls, including firm size (number of still active partners), firm age, the average partner age, and the size of the fund measured as log capital per partner. In column (1), we observe a positive and significant coefficient on the average number of daughters, implying a positive relationship between having more daughters (holding the number of children constant) and the probability that the new hire is female. It is also important to note that holding the number of daughters constant, increasing the average number of children is correlated with a reduction in the probability of hiring a female. Adding additional firm-level controls does not change the magnitude of the effect that daughters have on the hiring decisions, with the coefficient remaining statistically significant at the 5% level. We also see that the hiring effect is limited entirely to senior partners. The gender of junior partners' children has no effect on the gender of a hire controlling for senior partners' children. Here, senior partners are those that have an investment tenure of more than three years. We expect that long-standing partners are more likely to have a greater role in hiring new partners. In this specification in column (4), conditioning on the total number of children, the relative effect of having one more daughter for all senior partners increases the probability of hiring a female by 5.1%. Given that, on average, firms have a female hired ratio of 9.9%, this is a substantial increase of 50%.[5]

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

[5] The standard deviation of the number of daughters is 0.9, implying that an increase of one daughter is slightly more than a 1.1 standard deviation increase.

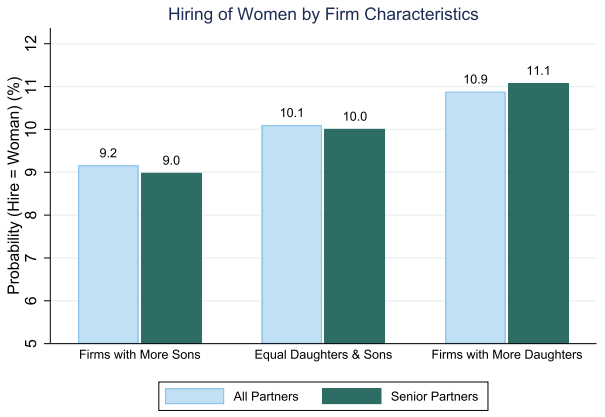


Fig. 1. Probability of Hiring a Woman. In this figure, we plot the probability of hiring a woman based on the existing partners' children information. Firms are categorized into those with more sons, equal number of daughters and sons, and more daughters.

Figure 1 shows the main result from these regressions. We divide firms into those in which the existing partners have more daughters, have an equal number of daughters and sons, and have more sons. Firms with more daughters and an equal number of daughters and sons have a higher percentage of females that are hired (10.9% and 10.1%, respectively) than firms with more sons (9.2%). The pattern is even stronger when we look only at the gender of senior partners. For firms in which the senior partners have more daughters, the percentage hires that are female is 11.1%. Females represent 10.0% of new hires for firms in which senior partners have an equal number of sons and daughters. Finally, for firms in which senior partners have more sons, women represent 9.0% of the new hires.

We also run the hiring regressions with several alternative measures of the gender composition of partners' children. 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. The dependent variable is a binary indicator of whether a given hire is a woman. We look at the original measure, the average number of daughters at the firm, as well as the daughter ratio (defined as the ratio of total number of daughters to children at the firm), the average daughter ratio (defined as the average of the daughter-to-children ratio over active partners), the daughter-heavy partner fraction (the fraction of partners with more daughters than sons less those with fewer daughters than sons), the first daughter partner fraction (the fraction of partners at the firm whose first child is a daughter), and at least one daughter fraction (the fraction of partners who have at least one daughter at the firm). In Table 8 where the regression includes the same controls including holding constant the number of children, we observe that the first five variables are all positive and the first four are statistically significant. The only measure of daughter intensity that is not positive is the fraction of partners that have at least one daughter, but the standard error is large, suggesting this definition of daughter-heaviness is not particularly informative. The results are qualitatively identical if we use data on all partner's children, shown in the online appendix.

Since the source of randomization is the gender of the children, we also conduct statistical inference using a randomization test. Specifically, we randomly assign the gender of the children in the data set of all partners, holding the birth years and the total number of children the same as the original data set. We regress the gender of the hire on the children and firm-level characteristics as specified in Table 7. Compared to the coefficient distribution produced by 1000 simulations, the true coefficient has a p-value smaller than 5% for the specification with all partners and less than 1% for the specification with senior partners, both shown in Appendix Fig. A1. Taken together, we are confident that when partners have relatively more daughters, there is a positive relationship with hiring more female investors.

4.2. Effects on venture capital performance

In the prior section, we established a link between having a greater fraction of children who are daughters and hiring more female partners. In this section, we explore the performance implications of these effects. We first examine the reduced-form regressions to explore the relationship between children's gender and investment performance. Clearly, given that the gender of children is randomly assigned, it is exogenous relative to investment performance. 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:

$$\mathrm{Y}_{i,n,t} = \alpha_1 \#\mathrm{Daughters}^h_{i,t} + \alpha_2 \#\mathrm{Children}^h_{i,t} + \mathrm{Controls}^h_{i,t} + \mathrm{Controls}^h_{i,n,t} + \epsilon_{i,t} \quad (4)$$

At the deal-level, $\mathrm{Y}_{i,n,t}$ is a success indicator for a deal n made by firm i in year t, and it is defined as successful if the investment exited via an IPO or high value acquisition. $\#\mathrm{Daughters}^h_{i,t}$ denotes the average number of daughters by partners of firm i who contributed to the hiring of active partners present in year t.[6] In addition to the firm-level controls, such as firm age, firm size (partner count), fund size (log capital per partner), and partner age, we also add deal-level controls, including the industry, the country, and the funding round. Analogously, for the fund-level regressions, $\mathrm{Y}_{i,n,t}$ is the net IRR achieved by the fund, while $\#\mathrm{Daughters}^h_{i,t}$ is similarly defined for the fund raising year t.

In Table 9, the dependent variable in the regression is a binary "success" indicator based on whether the deal resulted in an IPO or a successful acquisition where the acquisition value is greater than the amount of capital invested. We see a positive and significant coefficient on the number of daughters across all specifications controlling for the number of children. Like the hiring results, we find the effect of children's gender to be larger for senior partners. In the main specification with senior partners' daugh-

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

Table 8
Hiring Level Regression (Alternative Measures of Daughters).
The dependent variable is a binary indicator of whether a given hire is a woman. *Avg Daughters* is the original measure, the average number of daughters at the firm. *Daughter Ratio* is defined as the ratio of total number of daughters to the number of children at the firm. *Average Daughter Ratio* is the average of the daughter-to-children ratio over active partners. *Daughter-Heavy Partner Fraction* is the fraction of partners with more daughters than sons, less those with fewer daughters than sons. *First Daughter Partner Fraction* is the fraction of partners at the firm whose first child is a daughter. *At Least One Daughter Fraction* is the fraction of partners who have at least one daughter at the firm. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Female	(2) Female	(3) Female	(4) Female	(5) Female	(6) Female
Avg Daughters (Senior)	0.051***					
	(0.017)					
Daughter Ratio (Sr)		0.066**				
		(0.032)				
Average Daughter Ratio (Sr)			0.059*			
			(0.031)			
Daughter-Heavy Partner Fraction (Sr)				0.036**		
				(0.014)		
First Daughter Partner Fraction (Sr)					0.048	
					(0.034)	
At Least One Daughter Fraction (Sr)						−0.012
						(0.023)
Avg Children (Senior)	−1.625e-02	9.885e-03	9.540e-03	1.059e-02	7.985e-03	7.217e-03
	(1.120e-02)	(1.063e-02)	(1.065e-02)	(9.852e-03)	(1.053e-02)	(1.041e-02)
VC Firm Age	−8.568e-05	−2.094e-04	−2.191e-04	−1.158e-04	−2.416e-04	−2.649e-04
	(1.338e-03)	(1.392e-03)	(1.392e-03)	(1.339e-03)	(1.392e-03)	(1.350e-03)
Avg Partner Age	1.094e-03	1.225e-03	1.242e-03	8.986e-04	1.311e-03	1.234e-03
	(1.161e-03)	(1.190e-03)	(1.190e-03)	(1.162e-03)	(1.196e-03)	(1.177e-03)
Partner Count	8.469e-04	1.201e-03	1.135e-03	9.001e-04	1.022e-03	5.544e-04
	(8.780e-04)	(9.632e-04)	(9.630e-04)	(8.772e-04)	(9.618e-04)	(8.790e-04)
Log(Capital Per Partner)	−6.208e-04	−2.740e-04	−4.046e-04	−1.153e-03	−3.978e-04	−1.394e-03
	(6.824e-03)	(7.129e-03)	(7.082e-03)	(6.810e-03)	(7.091e-03)	(6.749e-03)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1546	1484	1484	1546	1485	1546

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

Table 9
Daughter Effect on Performance (Deal-Level Reduced-Form).
This table reports reduced form results of the deal-level sample. The dependent variable *Success* equals to one if the portfolio company went public or was acquired with acquisition value greater than invested amount. Independent variables are the averages of existing partners children and firm characteristics when current partners were hired. The sample of deals are restricted to those made after the first fund is raised and before 2014 to allow the investment outcomes to have time to realize. Standard errors are clustered at venture capital firm, year level and are reported in parentheses.

	(1) Success	(2) Success	(3) Success	(4) Success
Avg Daughters	0.023***	0.023***		
	(0.009)	(0.009)		
Avg Children	−0.021***	−0.017***		
	(0.006)	(0.006)		
Avg Daughters (Senior)			0.030***	0.032***
			(0.009)	(0.009)
Avg Children (Senior)			−0.024***	−0.023***
			(0.007)	(0.007)
VC Firm Age		2.117e-03**		2.115e-03**
		(1.010e-03)		(1.003e-03)
Avg Partner Age		−1.462e-03**		−1.568e-03**
		(6.833e-04)		(6.632e-04)
Partner Count		2.971e-03***		3.157e-03***
		(1.116e-03)		(1.103e-03)
Log(Capital Per Partner)		5.973e-03		5.250e-03
		(5.208e-03)		(5.206e-03)
Year FE	Yes	Yes	Yes	Yes
Industry FE, Round FE, Country FE	Yes	Yes	Yes	Yes
Observations	10,435	10,435	10,435	10,435

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

ter information in column (4), the point estimate suggests that a relative increase of one daughter on average leads to a 3.2% increased probability of success. Compared to the overall success rate of 27.3%, this is an economically meaningful magnitude. Therefore, in a reduced-form, we find strong evidence of a relationship between the gender of venture capitalists' children and investment performance.

In Table 9, we also find a positive significant coefficient for firm size. Firms with more partners have greater investment success. Similarly, venture capital firm age is positively related to success rates. This is consistent with the survival of better performing firms and the persistence in venture capital investment performance [Kaplan and Schoar (2005); Gompers et al. (2010)]. Surprisingly, we find that venture capital partner age is negatively related to success when we control for firm age and size.[7] As before, we perform a randomization test by comparing the actual coefficients with the distribution of simulated coefficients obtained using the same specification but with randomly assigned children's gender, as shown in Appendix Fig. A2. The results provide support for our findings in Table 9.

So far, we have been measuring performance at the deal-level with binary outcomes, but there may be a meaningful difference between two "successful" exits in terms of the actual rate of return that is achieved. Our deal-level analysis is limited by the lack of comprehensive deal-level return data, as well as the fact that we do not have the structure of the deals and share class preferences, which affect the ultimate realized IRR for any venture capital investment. Fortunately, we are able to match a meaningful portion of the venture capital funds in our sample to the Preqin Funds database in which we can access the fund-level IRRs. We have return information for 395 of the 1263 funds in our sample and perform the same reduced-form regression as in Table 9, controlling for log fund size. Because IRRs vary by investment focus and year, we use excess IRR, defined as the fund-level IRR minus the median fund return for venture capital funds raised in the same year and geographic region.

Despite the limited sample size, consistent with the findings in Table 9 for the deal-level sample, Table 10 shows a positive and statistically significant coefficient for the number of daughters. Our reduced-form regression indicates a positive relationship between the fund return and the number of daughters controlling for the total number of children. Like all the previous results, the effect of children's gender is stronger for senior partners. In column (4), we find that the relative effect of having a daughter over a son is a 4.56% increase in excess return for the fund. In comparison, the average net IRR is 14.0% and the average excess return is 3.9% for the funds in our sample.

Our two main results establish that having a greater number of daughters controlling for the number of children for venture capital partners, especially for senior partners, leads to a significant increase in the proportion of female partners hired. We also saw in the reduced-form regression, that there is a significant improvement in the firm's investment performance. Not only does the statistical significance remains robust across different specifications, but the economic magnitude of the estimated coefficients is meaningful: The relative effect of having a daughter instead of a son increases the female hired ratio by about 5.1%, compared with a base rate of 9.9%. It lifts deal success by about 3.2% relative to an overall success rate of 27.3%.

4.3. Instrumental variable regression

Having established a strong, positive relationship between having more daughters relative to the total number of children and hiring female investors as well as fund performance, we next explore an IV specification in which we identify exogenous increases in gender diversity and its effect on investment performance. In particular, we use the average number of daughters and the average number of children of the partners as an instrument for the variations in the female hire ratio. For the specification to be a feasible empirical strategy, we need the instrument to be relevant for a firm's gender diversity, and the hiring regression suggests this is likely the case. We also need the gender of these children to be randomly assigned, independent of potential outcomes for the firm, which is also very likely. Finally, the relevant exclusion restriction is that having daughters only affects venture capital investment performance through the proportion of female partners hired.

We are sympathetic to the possibility that the gender of partners' children can affect investment performance through alternative channels. We next discuss some of these alternative channels through which our exclusion restriction could be violated. Additional data are collected to test these channels to the extent possible, and the analyses follow after the IV results. For example, we do not find evidence that having more daughters increases the percentage of female entrepreneurs within a partner's investment portfolio. We also do not find that general sensitivity affects the role allocated to female investors, i.e., when senior partners have more daughters, female investors are not assigned more board seats nor do they have longer investment tenures. Moreover, we do not find that individuals with more daughters are more successful themselves; the improvement in performance is a broader firm-level improvement. We do find an interaction effect in which the performance of female venture capitalists is enhanced by having senior partners with more daughters. Taken together, we find the exclusion restriction plausible, but we acknowledge that there may be other alternatives that our data are unable to rule out.

We employ a linear two-stage least square (2SLS) estimation of our IV regressions. Table 11 presents both ordinary least squares (OLS) and 2SLS estimates for our deal-level performance regressions in which success is our outcome measure. In the OLS regression, we use the actual female hired ratio at the time of the deal, while in the 2SLS, we use the predicted value, *Predicted Female Hired Ratio*, from the first-stage regression as our measures of shocks

[7] We also present the reduced-form result if we focus just on the IPO in the Online Appendix. 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 have increased. We find moderately statistically significant results for the number of daughters of all partners and that the *t-statistics* increase if we focus only on the gender of the senior partners' children.

Table 10
Daughter Effect on Performance (Fund-Level Reduced-Form).
This table reports reduced-form results in the fund-level sample. The dependent variable is the excess return of the fund, defined as the net internal rate of return less the median fund benchmark. The median fund benchmark is defined as the median fund return in each region and year, as provided by Preqin. Independent variables are the averages of existing partners children and firm characteristics when the current partners were hired. Partners are considered current if they are active as of the fund closing year.

	(1) ExcessReturn	(2) ExcessReturn	(3) ExcessReturn	(4) ExcessReturn
Avg Daughters	0.044**	0.039*		
	(0.019)	(0.020)		
Avg Children	−0.028**	−0.015		
	(0.012)	(0.014)		
Avg Daughters (Senior)			0.048**	0.046**
			(0.020)	(0.021)
Avg Children (Senior)			−0.034***	−0.027**
			(0.012)	(0.013)
VC Firm Age		7.402e-04		7.222e-04
		(2.426e-03)		(2.430e-03)
Avg Partner Age		−3.089e-03*		−2.719e-03*
		(1.642e-03)		(1.517e-03)
Partner Count		−2.883e-04		2.138e-05
		(1.164e-03)		(1.190e-03)
Log(Capital Per Partner)		−1.604e-02*		−1.519e-02
		(9.689e-03)		(9.797e-03)
Year FE	Yes	Yes	Yes	Yes
Observations	371	371	371	371

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

Table 11
Deal-Level Instrumental Variable Regression.
This table reports regression results of deal success in the deal-level sample using the average 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. *Female Hired Ratio* is the number of active female partners divided by the total number of active partners. In the instrumental variable regression, the instruments are the average number of existing partners' daughters when the hires (now active partners) were made. The sample of deals are restricted to those made after the first fund is raised and before 2014 to allow the time for realization of investment outcomes. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Success	(2) Success	(3) Success	(4) Success	(5) Success	(6) Success
Female Hired Ratio	−0.011	−0.024	0.823**	0.895**	0.873***	0.942***
	(0.038)	(0.038)	(0.352)	(0.387)	(0.299)	(0.315)
Avg Children	−0.013**	−0.009	0.001	0.007		
	(0.005)	(0.006)	(0.009)	(0.010)		
Avg Children (Senior)					−3.203e-03	−7.715e-04
					(7.230e-03)	(7.656e-03)
VC Firm Age		2.540e-03**		2.409e-04		1.898e-04
		(1.015e-03)		(1.564e-03)		(1.465e-03)
Avg Partner Age		−1.579e-03**		−1.021e-03		−7.529e-04
		(6.831e-04)		(8.553e-04)		(8.725e-04)
Partner Count		2.531e-03**		3.133e-03**		2.986e-03**
		(1.118e-03)		(1.329e-03)		(1.312e-03)
Log(Capital Per Partner)		7.069e-03		4.985e-03		4.960e-03
		(5.194e-03)		(6.474e-03)		(6.556e-03)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE, Round FE, Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Instrumented for Female Hired Ratio						
Average # Daughters	N/A	N/A	X	X		
Average # Daughters (Senior Partner)					X	X
First Stage F-stat			17.08	15.79	25.93	25.16
Observations	10,435	10,435	10,435	10,435	10,435	10,435

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

to gender diversity. Our OLS results show that the female hired ratio is not related to deal-level performance. The coefficients are small and negative. By contrast, the IV results are positive and significant. When we instrument for *Female Hired Ratio* with the average number of daughters for all partners, the *Predicted Female Hired Ratio* is positive and significantly related to deal-level success. When we use the gender of senior partners' children as instruments, the results are even stronger. The coefficient of 0.942 in column (6) implies that if the female hired ratio increases by 5%, the deal success rate would increase by 4.7%. With an overall success rate of 27.3% in our deal-level sample, this represents a 17% increase in the success rates. As we saw with the reduced-form regressions, venture capital firm age and size (partner count) are positively related to performance.

Comparing the OLS with the IV regressions, we believe there could be a number of omitted variables that can cause the OLS estimator to be either biased upward or downward. On the one hand, one might a priori expect higher quality firms to hire more diverse candidates, biasing the OLS coefficients upward. However, any "window-dressing" motives in hiring females or minorities by firms can produce a number of negative effects or be correlated with different firm characteristics under which female investors perform poorly, possibly biasing the OLS coefficients downward. Additionally, given the cyclical nature of the venture capital business, there could be time-varying omitted variables (e.g., unobserved over-optimism during booms) that influence both the hiring of females and the subsequent performance. Given such an array of possible omitted variables in the OLS regressions, we view our daughter-instrumental variable framework, despite all its limitations, as a valuable contribution to understanding the performance impact of diversity (Tables A1 and A2).

In Appendix Table A3, we present results for the first-stage regressions corresponding to columns (3) through (6) in Table 11. The dependent variable is, as discussed for Eq. (4), the *Female Hired Ratio* for deal *n*, in year *t*, for firm *i*. As our hiring regressions in Table 7 demonstrates, the average number of daughters for partners, controlling for the average number of children, is positive and statistically significant. Once again, the gender of senior partners' children has a more pronounced effect on hiring in the first stage.The economic significance of the effect is also significant.

We next estimate OLS and IV regressions for fund-level excess IRR. We again use the *Female Hired Ratio* as the measure of gender diversity. Table 12 shows that like the deal-level results in Table 11, *Female Hired Ratio* is only weakly correlated with excess fund IRR in the OLS regressions. When we run the 2SLS, however, we find that *Predicted Female Hired Ratio* is positively and statistically significantly related to fund excess IRR, although the results are somewhat weaker than our deal-level results. The lower significance level is driven primarily by the smaller sample size. Deals are collapsed into fund returns, reducing the number of observations by a factor of 10. Similarly, we only have return data on approximately one-fourth of our funds. This means fund return observations are only about 2.5% of the number of deal outcome observations. The economic magnitude of the effect also appears reasonable. A 5% increase in the female hired ratio increases fund excess IRR by between 4.2% and 4.7%.

In Appendix Table A4, we provide the results of the first-stage regression for our 2SLS estimation of the impact of gender diversity on performance. *Female Hired Ratio* for these regressions is defined as the ratio of females who were hired at any time in the past who were active in the fund divided by the total number of historical hires who were active in the fund. The results look qualitatively identical to the first stage in the deal-level results in Appendix Table A3. The differences arise because the analysis is at the fund-level and we have only 371 fund-level observations for excess IRR.

Next, we address a number of potential alternative explanations that might be a concern for the validity of the identification and discuss additional tests that could help alleviate them. There are a number of other potential channels through which the gender of children might affect firm performance. While we cannot rule out every potential channel, we address several obvious alternatives.

One potential concern is that having more daughters may lead the firm to invest in more companies with female founders. If the average quality of the entrepreneurs is higher than male entrepreneurs because they are overlooked by other firms, then their success rates would also be higher. As such, it would constitute an alternative channel in which the gender of partners' children may affect firm investment performance, but not via the channel of increased gender diversity at the firm itself. To test this, we collected data on the gender of the founders of venture capital-backed companies for the venture capital firms in our sample. The sample consists of 13,000 founders for portfolio companies of the venture capital firms in our sample. On average, the portfolio firms have 2.1 founders and only 6.1% of them are female.

We test whether venture capital firms with more daughters invest in more female founders. The dependent variable is the fraction of the portfolio company's founders who are women. In Table 13, we do not find any evidence that having more daughters leads to more investment into female-founded companies at the firm-level. If we look at the firm-level founder ratio, a greater number of daughters relative to the total number of children leads to a slightly lower percentage of female founders. The presence of a female venture capitalist, however, is significantly related to the fraction of female founders. Therefore, if the channel through which children's gender affects performance is through investing in more female entrepreneurs, then it is only through actually hiring a female investor in which that channel operates. Having daughters in and of itself does not increase the fraction of female entrepreneurs. We match companies to the individual venture capitalist who invested in the deal. Column (3) shows that there is no significant relation between having more daughters and investment in more female founders at the individual level. The results remain robust regardless of whether we measure the daughters of all partners or just senior partners. In alternative specifications where the dependent variable is an indicator of the presence of any female founders in an investment, we also do not find it correlated with the

Table 12
Fund-Level Instrumental Variable Regression.
This table reports the regression results of success in the fund-level sample. The dependent variable is the excess return of the fund, defined as the net internal rate of return less the median fund benchmark. The median fund benchmark is defined as the median fund return in each region and year, as provided by Preqin. *Female Hired Ratio* is the number of active female partners divided by the total number of active partners. In the instrumental variable regression, the instruments are the average number of existing partners' daughters when the hires (now active partners) were made. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Excess Return	(2) Excess Return	(3) Excess Return	(4) Excess Return	(5) Excess Return	(6) Excess Return
Female Hired Ratio	0.025	0.034	0.819*	0.641*	0.942**	0.779*
	(0.080)	(0.084)	(0.421)	(0.357)	(0.471)	(0.398)
Avg Children	−0.006	0.006	0.006	0.016		
	(0.009)	(0.011)	(0.012)	(0.013)		
Avg Children (Senior)					−4.957e-03	1.074e-03
					(1.087e-02)	(1.089e-02)
VC Firm Age		1.162e-03		3.800e-03		4.367e-03
		(2.498e-03)		(2.514e-03)		(2.683e-03)
Avg Partner Age		−3.729e-03**		−4.625e-03**		−3.788e-03**
		(1.670e-03)		(1.849e-03)		(1.798e-03)
Partner Count		−8.043e-04		−2.508e-03		−3.161e-03*
		(1.131e-03)		(1.657e-03)		(1.875e-03)
Log(Capital Per Partner)		−1.534e-02		−1.045e-02		−7.008e-03
		(9.598e-03)		(1.148e-02)		(1.222e-02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Instrumented for Female Hired Ratio						
Average # Daughters	N/A	N/A	X	X		
Average # Daughters (Senior Partner)					X	X
First Stage F-stat			11.67	13.46	9.99	12.15
Observations	371	371	371	371	371	371

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

Table 13
Daughter Effect on Entrepreneurs.
The dependent variable *Female Founder Ratio* measures the fraction of a portfolio company's founding team who are women. Independent variables are the averages of partners children and firm characteristics at the time of the investment. Standard errors are clustered at the venture capital firm and year level and are reported in parentheses.

	(1) Female Hired Ratio	(2) Female Hired Ratio	(3) Female Hired Ratio	(4) Female Hired Ratio
Daughter Ratio (Individual)			0.011	0.012
			(0.008)	(0.008)
Number of Children (Individual)			−5.347e-03	−5.160e-03
			(3.765e-03)	(3.749e-03)
Daughter Ratio (Firm)	−0.015**	−0.015**		
	(0.007)	(0.007)		
Number of Children (Firm)	0.000	0.000		
	(0.002)	(0.002)		
Female VC		0.020**		0.024
		(0.008)		(0.017)
Partner Count	−3.488e-04	−3.625e-04	−2.975e-04	−3.832e-04
	(3.891e-04)	(3.877e-04)	(8.708e-04)	(8.810e-04)
VC Firm Age	3.456e-05	−4.377e-05	−4.388e-04	−5.356e-04
	(3.770e-04)	(3.717e-04)	(7.506e-04)	(7.316e-04)
Avg Partner Age	9.252e-06	3.884e-05	−1.045e-04	−2.257e-05
	(2.550e-04)	(2.535e-04)	(5.594e-04)	(5.478e-04)
Log(Capital Per Partner)	−0.003	−0.003	−0.006	−0.006
	(0.002)	(0.002)	(0.004)	(0.004)
Year FE	Yes	Yes	Yes	Yes
Industry FE, Round FE, Country FE	Yes	Yes	Yes	Yes
Observations	10,081	10,081	2647	2647

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

number of daughters. Moreover, we also do not find evidence that individual venture partners with more daughters invest more in female founders. Overall, we conclude that the number of daughters does not seem to affect firm performance through the gender of the founders in which they invest.

One may also contend that the effects of having daughters comes not only from the extensive margin of hiring more females, but also the intensive margin, such as assigning female employees more responsibilities or mentoring them better, as well as other unobserved channels. We test this hypothesis by directly controlling for the gender of venture capitalists, as well as its interaction with the fraction of daughters that senior partners have and find that our results remain robust. We run a deal-level performance regression, and show in Appendix Table A5 column (1) that a higher daughter to children ratio leads to better firm performance, consistent with the previous section. Column (2) shows that, on average, deals led by female venture capitalists do not perform significantly differently from their male counterparts. Interestingly, the interaction term in the regression for column (3) suggests that female venture capitalists perform better in firms with more daughters, consistent with this alternative explanation. In some sense, this is not unexpected if we believe that having more daughters has a subtle debiasing effect on how people work with female colleagues. When partners have more daughters, not only does the probability that a firm hires a female investor increase, but the partners are likely to serve as better mentors and, hence, those women perform better. The coefficient in front of the daughter ratio is somewhat smaller and remains positive and significant when controlling for this interaction. Therefore, our results indicate that firm performance improvement is not entirely driven by hiring female investors who perform better than their colleagues. Rather, the entire firm performs better. This may indicate better decision-making through greater diversity or greater overall deal flow.

Another alternative channel for the performance impact of children's gender could be that having more daughters in some way directly improves a partner's investment-related skills (e.g., negotiation or communication skills) allowing them to better source or close deals. We test this alternative by controlling for the children's gender of the individual venture capital partner who actually made the investment. In Appendix Table A6, we find that venture capital partners with more daughters do not have more successful deals. The coefficient is negative and statistically insignificant. Note that the sample size is reduced because we only have children information for a smaller set of venture capital partners. We also acknowledge that there are potentially other alternative explanations that we are not able to directly test. Taken together, the IV provides suggestive evidence that greater gender diversity has a positive impact on venture capital investment performance.

Lastly, we explore the possibility that when senior partners have daughters, they give more authority to female investors. Perhaps the greater authority given to female investors in these firms is the channel through which performance improves. When we look at the number of board seats allocated to male and female investors, we do not find that senior partners having daughters increase the number of board seats held by female investors. Similarly, we look at the career tenure of venture capitalists dependent upon the gender of the investor and interacted with the number of daughters and number of children for senior partners. Once again, we do not find that female investors have longer career tenure in firms in which senior partners have relatively more daughters. These results are available in the online appendix and appear to rule out the possibility that improvement in performance is driven by giving female investors a greater role in the firm.

4.4. Alternative specifications and robustness

In this section, we discuss a number of additional robustness tests. One concern regarding the sample is that about 34% of the information on children is obtained from email solicitations. If the respondents are self-selected in terms of their parental involvement, this could bias the results. When we run the same analysis excluding email respondents while including only those whom we obtain information from public sources, we find that the daughter effects on female hiring and in the reduced-form deal performance regressions remains robust. Similarly, the IV results continue to hold. Statistical significance is slightly weaker, however, due to the reduced sample size. All of our results continue to hold with similar magnitude and statistical significance. Additionally, we also examine the results for the gender of male and female partners separately. Our results remain for the male partners, while the results for the female partners are not significant due to the dramatically smaller sample size for female partners.

Another concern regarding the sample is that we only obtain information about birth years in 70% of the children. Among them, since over 90% of the children were born before the parent takes his or her first board seat, we assume that for those children we did not have the birth year, they were present throughout the parent's career tenure. As a robustness check, if we simply drop those for whom children's birth years were not available, we find that our main results still hold.

Relatedly, we investigate whether the age of children matters for hiring and performance. In Appendix Table A7, we include both the number of daughters over the age of 12 and the number of daughters under the age of 12 at the time of the hiring. Interestingly, our results show that the number of teenage daughters, rather than the number of pre-teen daughters, matters more for the hiring of female investment partners. This might suggest that older daughters 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.

Finally, we also conduct extensive robustness analyses to examine variations in the outcome measures. The results are robust to using IPO as the only success measure. The results are also robust, and in fact even stronger, when we restrict the sample to US-only deals and US-focused funds, presumably because the data quality is the highest for them, all shown in the online appendix.

5. Conclusion

In this paper, we address the effects of gender diversity by collecting a unique data set of the gender of venture capitalists' children and employ a research design, in which this gender is exogenous to the individual partner. Combined with the time series of investment professional hiring and deal/fund-level performance, we establish that a increase in the number of daughters relative to the number of children leads to a significant and economically meaningful increase in the proportion of females hired. In reduced-form regressions, a higher relative fraction of daughters is related to increases in deal success rates and fund-level excess IRRs. Exploiting the exogenous nature of children's gender, when the relative fraction of daughters is used as an instrument for shocks to gender diversity, the results suggest that the exogenously induced increase in firm gender diversity leads to improvement in venture capital performance. These results provide evidence in a real business setting with strong profit motives that performance can be improved with greater gender diversity.

Our results do not necessarily imply that implementing a blunt gender quota would bring about the same positive performance outcomes. Improvement in diversity through having daughters is facilitated by debiasing existing partners. Gompers and Kovvali (2018) discuss how mandatory diversity programs often lead to resentment and reductions in performance. Our result that female venture capitalists perform better in firms in which senior partners have more daughters relative to total children suggests that this is potentially the case in the venture capital industry as well. Having daughters also might make partners better mentors for female venture capitalists.

Our IV results are clearly dependent upon the validity of our exclusion restriction, that the channel for improvement in performance due to partners having more daughters is through induced gender diversity of the investment team. We acknowledge that we cannot exclude all potential alternative mechanisms by which having more daughters could improve venture capital investment performance. We do, however, attempt to rule out several plausible alternatives. We rule out the alternative channel that having more daughters alters the gender composition of the entrepreneurs in whom the firm invests by supplementing our analysis with founder data. Moreover, we also do not find that individuals with more daughters are necessarily more successful with their own deals. We still find, however, that there is an overall venture capital firm investment performance increase. While we have explored these alternative channels, we acknowledge that having daughters can have other effects that we have not taken into account.

Our work highlights the importance of understanding the role that this subtle removal of gender bias has for increasing diversity and improving performance. The subtle debiasing effects of having daughters causes fathers to increase the likelihood that they hire a female investor. Our results suggest that diversity achieved through genuine removal of a bias or a change in beliefs could lead to better economic outcomes than mandated gender ratios. Future research efforts should explore other means of achieving similar debiasing.

There are several potential explanations for the mechanism by which a diverse investment team performs better. First, having 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 could be of higher quality than the counterfactual male hires. The higher quality hires then generate higher returns. Our results on the educational background of male and female hires, however, do not find substantial differences in the background of male and female hires. It is possible, however, that there are unobserved measures of quality that we cannot identify. A second potential explanation is that having a diverse set of backgrounds around the table to make decisions about investments could 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 can reduce group-think and allow venture capital firms to avoid costly investment mistakes. This explanation would be consistent with overall firm improvement. Examining how deal investment memoranda change after firms hire female investors could potentially shed light on whether decision-making improves with diversity. Similarly, collecting information on how investment decisions are made [e.g., Gompers et al. (2020a)] can also help to establish if diversity operates through the decision-making processes. Third, because so much of venture capital investment success is driven by having access to the best deals [e.g., Gompers et al. (2020b)], having more diverse backgrounds can attract broader deal flow and, hence, increased average quality of deals. Collecting data on the deal funnel at venture capital firms can be a fruitful way to explore this channel. We believe that future research on these potential mechanisms will be very fruitful for understanding the sources of performance improvement that greater gender diversity engenders.

Appendix A

Table A1
Impact of the First Child's Gender.
This table reports results from regressing number of children on the gender of the first child. Each observation is an individual partner. The dependent variable is the number of children a partner has. The independent variable *First Child is Daughter* is a binary indicator on whether the partner's first child is a daughter and are reported in parentheses.

	(1) Number of Children	(2) Number of Children	(3) Number of Children
First Child is Daughter	0.057	0.047	0.042
	(0.062)	(0.063)	(0.062)
Partner Age		0.016***	0.015***
		(0.002)	(0.002)
Female Partner			−0.372***
			(0.100)
Constant	2.370***	1.481***	1.579***
	(0.037)	(0.143)	(0.145)
Observations	1310	1235	1235

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

Table A2
Venture Capital Firm Characteristics and Children Metrics: Hiring Level Observations.

	N	Mean	SD
Female	1645	0.099	0.30
Partner Count	1645	12.9	9.59
VC Firm Age	1645	13.2	7.42
Avg Daughters	1645	0.98	0.59
Avg Sons	1645	1.10	0.69
Avg Daughters (Senior)	1617	0.97	0.62
Avg Sons (Senior)	1617	1.08	0.71
Avg Daughters (Junior)	486	0.91	0.77
Avg Sons (Junior)	486	1.00	0.80
Daughter Ratio	1602	0.48	0.26
Average Daughter Ratio	1601	0.49	0.27
Daughter-Heavy Partner Fraction	1645	−0.069	0.61
First Daughter Partner Fraction	1602	0.50	0.23
At Least One Daughter Fraction	1645	0.69	0.33

Table A3
Deal-Level Instrumental Variable Regression (First Stage).
This table reports the first-stage results of the deal level sample. The dependent variable *Female Hired Ratio* is the number of active female partners divided by the total number of active partners at the time of the deal. Independent variables are the averages of existing partners' children and firm characteristics when current partners were hired. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Female Hired Ratio	(2) Female Hired Ratio	(3) Female Hired Ratio	(4) Female Hired Ratio
Avg Daughters	0.027***	0.026***		
	(0.007)	(0.007)		
Avg Children	−0.027***	−0.026***		
	(0.004)	(0.004)		
Avg Daughters (Senior)			0.034***	0.034***
			(0.007)	(0.007)
Avg Children (Senior)			−0.024***	−0.024***
			(0.004)	(0.005)
VC Firm Age		2.096e-03***		2.044e-03***
		(7.621e-04)		(7.595e-04)
Avg Partner Age		−4.929e-04		−8.655e-04*
		(4.737e-04)		(4.541e-04)
Partner Count		−1.807e-04		1.813e-04
		(6.563e-04)		(6.591e-04)
Log(Capital Per Partner)		1.104e-03		3.074e-04
		(3.907e-03)		(3.927e-03)
Year FE	Yes	Yes	Yes	Yes
Industry FE, Round FE, Country FE	Yes	Yes	Yes	Yes
Observations	10,435	10,435	10,435	10,435

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

Table A4
Fund-Level Instrumental Variable Regression (First Stage).
This table reports the first-stage results of the fund-level sample. The dependent variable *Female Hired Ratio* is the number of active female partners divided by the total number of active partners at the time of the deal. Independent variables are the averages of existing partners' children and firm characteristics when current partners were hired. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Female Hired Ratio	(2) Female Hired Ratio	(3) Female Hired Ratio	(4) Female Hired Ratio
Avg Daughters	0.054***	0.061***		
	(0.016)	(0.017)		
Avg Children	−0.042***	−0.048***		
	(0.011)	(0.013)		
Avg Daughters (Senior)			0.051***	0.058***
			(0.016)	(0.017)
Avg Children (Senior)			−0.031***	−0.036***
			(0.011)	(0.012)
VC Firm Age		−4.774e-03**		−4.676e-03**
		(1.854e-03)		(1.882e-03)
Avg Partner Age		2.397e-03		1.372e-03
		(1.596e-03)		(1.453e-03)
Partner Count		3.464e-03**		4.083e-03***
		(1.469e-03)		(1.568e-03)
Log(Capital Per Partner)		−8.726e-03		−1.049e-02
		(1.117e-02)		(1.107e-02)
Year FE	Yes	Yes	Yes	Yes
Observations	371	371	371	371

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

Table A5
Daughter Effect on Performance Controlling for Venture Capitalist Gender.
This table reports the results of a reduced form analysis for the deal-level sample, controlling for the gender of the deal-maker. The dependent variable *Success* equals to one if the portfolio company went public or was acquired with acquisition value greater than invested amount. The independent variable *Female VC* is a binary indicator for whether the individual partner who made the investment is a woman. *Daughter Ratio* is the ratio of total number of daughters to the number of children at the firm, which is a fraction between zero and one. All other dependent variables are the same as the reduced-form regression. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Success	(2) Success	(3) Success
Daughter Ratio (Sr)	0.065***	0.066***	0.055***
	(0.018)	(0.018)	(0.018)
Female VC		−0.012	−0.085**
		(0.017)	(0.036)
Female VC x Daughter Ratio (Sr)			0.145**
			(0.063)
Avg Children (Sr)	−0.008	−0.009	−0.008
	(0.006)	(0.006)	(0.006)
Partner Count	3.496e-03***	3.504e-03***	3.647e-03***
	(1.122e-03)	(1.121e-03)	(1.115e-03)
VC Firm Age	2.111e-03**	2.157e-03**	2.032e-03**
	(1.017e-03)	(1.020e-03)	(1.021e-03)
Avg Partner Age	−1.445e-03**	−1.463e-03**	−1.442e-03**
	(6.961e-04)	(6.963e-04)	(6.943e-04)
Log(Capital Per Partner)	4.859e-03	4.926e-03	5.032e-03
	(5.408e-03)	(5.398e-03)	(5.377e-03)
Year FE	Yes	Yes	Yes
Industry FE, Round FE, Country FE	Yes	Yes	Yes
Observations	10,081	10,081	10,081

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

Table A6
Daughter Effect on Performance Controlling for Individual Venture Capitalist Family Characteristics.
This table reports the results of a reduced-form analysis for the deal-level sample, controlling for the children characteristics of the deal-maker. The dependent variable *Success* equals to one if the portfolio company went public or was acquired with acquisition value greater than invested amount. *Daughter Ratio (Individual)* is the ratio of number of daughters to children for a given venture capital partner, which is a fraction between zero and one. *Number of Children (Individual)* denotes the total number of children for a given venture capital partner. All other dependent variables are the same as the reduced form regression. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

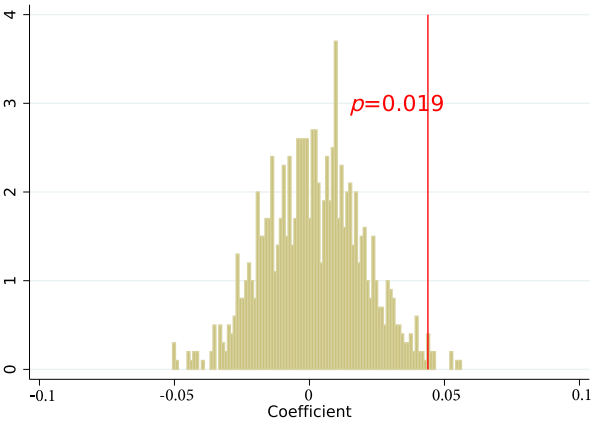
	(1) Success	(2) Success	(3) Success	(4) Success
Daughter Ratio (Individual)			−0.020	−0.021
			(0.025)	(0.025)
Number of Children (Individual)			−0.004	−0.004
			(0.009)	(0.009)
Daughter Ratio (Firm)	0.065***	0.066***		
	(0.018)	(0.018)		
Number of Children (Firm)	−0.008	−0.009		
	(0.006)	(0.006)		
Female VC		−0.012		−0.112***
		(0.017)		(0.028)
Partner Count	0.003***	0.004***	0.002	0.003
	(0.001)	(0.001)	(0.003)	(0.003)
VC Firm Age	0.002**	0.002**	0.004**	0.004**
	(0.001)	(0.001)	(0.002)	(0.002)
Avg Partner Age	−1.445e-03**	−1.463e-03**	5.416e-04	1.623e-04
	(6.961e-04)	(6.963e-04)	(1.430e-03)	(1.427e-03)
Log(Capital Per Partner)	0.005	0.005	0.011	0.009
	(0.005)	(0.005)	(0.010)	(0.010)
Year FE	Yes	Yes	Yes	Yes
Industry FE, Round FE, Country FE	Yes	Yes	Yes	Yes
Observations	10,081	10,081	2647	2647

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

Table A7
Hiring Level Regression: Daughter Age Effects.
In this table, we compare the impact of older daughters and younger daughters on firm hiring. The sample includes partners whose children age information is available. The dependent variable is a binary indicator of whether a given hire is a woman. Standard errors are clustered at venture capital firm and year level and are reported in parentheses.

	(1) Female	(2) Female	(3) Female	(4) Female
Avg Daughters	0.048**			
	(0.020)			
Avg Daughters (≤ 12 Years)		0.047**		0.062**
		(0.024)		(0.025)
Avg Daughters (< 12 Years)			0.015	0.037
			(0.023)	(0.024)
Avg Children	−0.022*	−0.011	−0.008	−0.021*
	(0.012)	(0.010)	(0.011)	(0.012)
VC Firm Age	9.061e-05	1.766e-04	4.226e-04	2.573e-05
	(1.371e-03)	(1.373e-03)	(1.386e-03)	(1.369e-03)
Avg Partner Age	7.579e-04	−7.265e-04	1.459e-03	−1.256e-04
	(1.257e-03)	(1.400e-03)	(1.495e-03)	(1.497e-03)
Partner Count	6.219e-04	3.524e-04	3.575e-05	6.838e-04
	(9.205e-04)	(9.070e-04)	(8.994e-04)	(9.211e-04)
Log(Capital Per Partner)	2.392e-03	1.771e-03	2.133e-03	2.194e-03
	(6.837e-03)	(6.876e-03)	(6.864e-03)	(6.856e-03)
Year	Yes	Yes	Yes	Yes
Observations	1428	1428	1428	1428

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



(b) Randomization test on the number of daughters by senior partners.

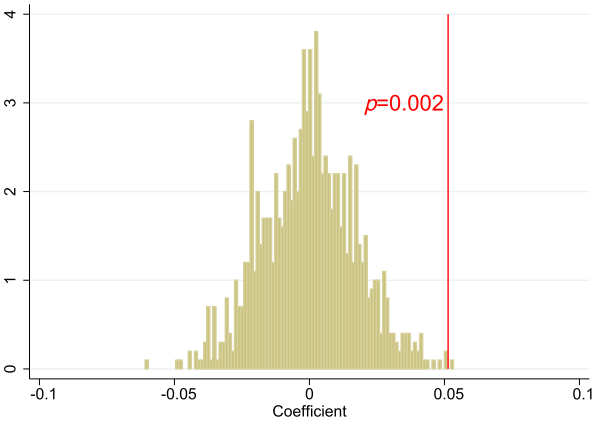
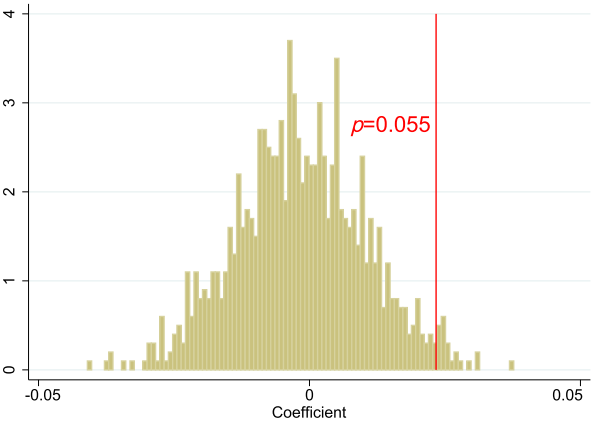


Fig. A1. Randomization Inference: Hiring Level Regression. Randomization test on the number of daughters by all partners. Specifically, we randomly assign the gender of the children in the data set of partners, holding the birth years and the total number of children same as the original data set. We regress the gender of the hire on the children and firm-level characteristics as before. The chart displays the true coefficient for *Avg Daughters* in the hiring regression, compared to the coefficient produced by the gender permutation simulated 1000 times.



(b) Randomization test on the number of daughters by senior partners.

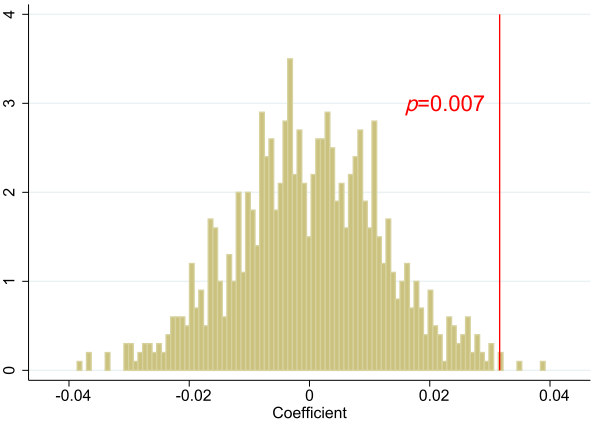


Fig. A2. Randomization Inference: Deal-Level Performance Regression. Randomization test on the number of daughters by all partners. Specifically, we randomly assign the gender of the children in the data set of partners, holding the birth years and the total number of children same as the original data set. We regress the deal-level success on the children and firm-level characteristics as before. The chart displays the true coefficient for *Avg Daughters* in the deal-level reduced-form performance regression, compared to the coefficient produced by the gender permutation simulated 1000 times.

Supplementary material

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jfineco.2020.06.026.

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