

Bias in the Reporting of Venture Capital Performance: The Disciplinary Role of FOIA

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Abstract:

Using a large sample of fund-years, we investigate the performance reporting behaviors of general partners (GPs) and limited partners (LPs) of Venture Capital (VC) funds. Self-reporting by GPs raises the concern that the information investors rely on may be biased, either due to selective reporting from the most successful funds or from overstated performance. Our results indicate that selective reporting is the more important concern: GPs report irregularly and are more likely to report when LPs report good performance. We estimate that selective reporting by GPs overstates VC fund returns by 4 percentage points. We look specifically at the disciplinary role of FOIA in mitigating distortions in reported performance. FOIA-eligible LPs are 8.5 times more likely to report than are other LPs. The presence of FOIA-eligible LPs may also restrain GPs from overstating results GPs. We find no evidence that FOIA-eligible LPs are disadvantaged in their ability to invest in top-performing funds or funds managed by the most reputable GPs.

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1. Introduction

Venture capital (VC), and, more generally, private equity, has become an increasingly important asset class for institutional investors, such as pension funds, endowments, insurance companies, and sovereign wealth funds, as well as for wealthy individuals (i.e., accredited investors). Because PE is viewed as an attractive addition to a diversified portfolio, mutual funds and innovative private equity firms have sought to find ways to provide broader access to PE for retail investors. Moreover, in a move designed to give more retail investors access to PE, the SEC has recently expanded the definition of an accredited investor.¹

These developments, especially those that enable less-sophisticated investors to access VC, give rise to concerns about the accuracy, reliability, and possible bias or overstatement of key performance metrics. There is a great deal of hype related to the potential benefits of investing in VC. Everyone is aware of the examples of phenomenally successful VC investments, including in such companies as Amazon, Facebook, Tesla, Starbucks, and Genentech. However, there is much less attention paid to the many failed or poorly performing and failed ventures. The potential for VC investment to yield returns in the 15 to 30 % range is asserted by many sources that are easily found on the Internet.²

¹ See the SEC's August 26, 2020 press release, "SEC Modernizes the Accredited Investor Definition," <https://www.sec.gov/news/press-release/2020-191>.

² Angelblog.net points to a minimum "respectable" return of 20% per year (http://www.angelblog.net/Venture_Capital_Funds_How_the_Math_Works.html). Seraf, a provider of a portfolio management platform for early-stage investment, describes LPs as looking for annual returns in the high teens to low twenties (<https://seraf-investor.com/compass/article/dividing-pie-how-venture-fund-economics-work-part-ii>). Zacks points to an NBER claim of an average return of 25% (<https://finance.zacks.com/return-venture-capitalists-expect-10600.html>). Upcounsel, an organization of lawyers for growing companies, points to the same 25% number from NBER, describing it as the average return on VC (<https://www.upcounsel.com/venture-capital-roi-expectations>). The NBER, itself, in describing a paper by one of its associates, refers to 25% as the most probable return for VC investing (<https://www.nber.org/digest/may01/w8066.html>). A *Harvard Business Review* from the late 1990s claims that investors in VC expect returns of 25% to 35% per year (<https://hbr.org/1998/11/how-venture-capital-works>). Industry Ventures references data from Cambridge Associates to claim that the average net

Academic studies of private equity and VC performance reach mixed conclusions. Ljungqvist and Richardson (2003), in a study of performance that includes the tech rally of the late 1990s but not the full subsequent decline, find excess returns of 5 to 8% compared to public market equity. Harris, Jenkinson, and Kaplan (2015) find that VC funds outperformed public equities in the 1990s but underperformed in the 2000s. In a survey article, Kaplan and Sensoy (2015) reiterate this finding. Using data from Burgiss, Harris, Jenkinson, and Kaplan (2014) report that as of 2011, VC funds from 2008 and earlier outperformed public equities by a factor of 1.36 times.³

The appeal of such high returns is obvious. There is, however, a concern about the reliability and validity of the claimed returns. Fund-level performance is self-reported to data collection services, by the general partners (GPs) of the venture fund, some of the limited partners (LPs), or both. Since investments in private equity are not publicly traded, the reported valuations are based on fair value standards and are subject to judgment and the potential for selective reporting. Self-reporting by interested parties raise the possibility that performance may be overstated.⁴ Hall and Woodward (2003) find that GPs are less likely to report VC investments with unfavorable valuations or to delay reporting. They argue that vintage-year valuation indices are biased upward partly because the indices miss data from less-successful investments.⁵ Phalippou and Gottschalg (2009) indicate a concern with the potential for fund managers to inflate performance by overvaluing the ongoing holdings in the fund's portfolio.

annual return to early-stage investing was 21.3% over a 30-year span (<https://www.industryventures.com/the-venture-capital-risk-and-return-matrix/>).

³ Outperformance in this study is calculated as the public market equivalent proposed by Kaplan and Schoar (2005).

⁴ While the LPs in a fund are contractually entitled to periodic information on their investments, it is ultimately up to the fund managers, the GP, to decide how to value the assets under management.

⁵ Aiken, Clifford, and Ellis (2013) point to a similar problem of selective reporting by hedge fund managers.

While data provision is voluntary for GPs and some LPs, it is not voluntary for LPs that are subject to the U.S. Freedom of Information Act (FOIA) disclosure requirements. Enacted in 1967, FOIA gave the public the right to access records from federal agencies. As reported by Hurdle (2005), all 50 states have enacted disclosure provisions that resemble the federal FOIA in structure and content.⁶ Because disclosure of information possessed by federal or state FOIA-eligible LPs is mandatory if an information request is made, performance reported by FOIA-eligible LPs is less susceptible to concerns about reporting bias and selective reporting. A unique contribution of this paper is that we use performance reported by LPs (most of which reports are from FOIA-eligible LPs) as a benchmark against which to assess possible bias and selective reporting by GPs and to gauge the effects of bias and selective reporting on aggregate reported performance.

Below, we explore four primary research questions: What are the VC firm and fund characteristics of those funds that provide performance measures? Who provides the performance information—the GP, the LP, or both? Is there evidence that GPs tend to report selectively or to over-state the performance of their funds? Does the involvement of FOIA-eligible investors as LPs lead to more accurate and reliable information about fund performance? To study these questions, we use data on GP and LP reporting behavior for a large sample of 7690 fund-years.

We find that the average performance reported by GPs is much higher than that reported by LPs, a result that could be due to selective reporting, biased reporting, or both. Our evidence indicates that selective reporting is the more important factor explaining the differences but that bias is also a contributing factor.

⁶ See also, <http://www.foiadvocates.com/records.html>.

We also consider the possibility that differences in reported performance arise because FOIA-eligible LPs are excluded from the better performing VC funds. The probability of an LP reporting is strongly related to its FOIA eligibility: Funds with FOIA-eligible LPs are about 8.5 times more likely to have performance reported by LPs than are other funds. Since most reporting is on funds with LPs that are FOIA-eligible, it is possible that the lower performance reported by LPs is because FOIA-eligible LPs are excluded from the better-performing funds. Robinson and Sensoy (2013) express the concern that FOIA-eligible LPs might be excluded from top-performing funds, particularly for performance during the 1990s. In our more recent sample, we find no evidence of exclusion from top funds. On the contrary, FOIA-eligible LPs tend to invest in funds managed by more reputable GPs, and performance reported for funds with FOIA-eligible LPs is, in fact, better than that reported for funds without FOIA-eligible LPs. We also find that the propensity of GPs to report selectively is attenuated (but still present) for funds with FOIA-eligible LPs, suggesting FOIA-eligibility commits GPs to more consistent reporting.

Section 2 describes the organization of VC, the role of FOIA, and provides background on performance reporting. Section 3 develops the hypotheses. Sections 4 describe the data and Section 5 presents results, while section 6 concludes.

2. The organization of VC funds and performance reporting

VC funds, a subset of private equity, pool capital from their investors and invest in private (nonpublic) portfolio companies. The funds are organized as limited liability partnerships, with the GP taking on an active management role, while the LPs providing most of the investment capital. Typically, a fund is designed to have a finite life of about 10 years. Most investments are made during the early years, and most harvesting occurs in the later years.

The objective of the fund is to increase the equity values of its portfolio companies, with an ultimate objective of exiting, or harvesting, the investments in about 5 years after the initial investment. Exit is normally by a portfolio company going public, being acquired, or being liquidated. In the interim, the GP attempts to increase value by actively monitoring the portfolio company. Typically, the GP collects an annual fee of 2-3% of invested capital, and receives 20% of the capital appreciation as a “carried interest.” After the return of their capital investments and possibly a preferred dividend, the LPs normally receive 80% of the capital appreciation.

a. Performance reporting

Generally, GPs are required by their investment agreements to report performance to LPs at least annually. While the details of vary, reporting typically will include disclosure of the returns on investments that have been harvested and estimates of the fair value of on-going investments. The provided information normally is sufficient to enable the GP and LPs to compute a variety of measures of performance. The most common performance metrics employed in the VC industry are the Internal Rate of Return (IRR) and the total return as a Multiple of Invested Capital (MOIC). MOIC is also referred to as Total Value to capital Paid-in (TVPI), which is the term we use to more clearly distinguish it from two incremental measures that are sometimes reported. The TVPI multiple is calculated as the fund's cumulative distributions plus residual value divided by Paid-in capital. The ratio of Distributions to Paid-in capital (DPI) is the value of realized investments to capital paid-in. Residual Value to Paid-in capital (RVPI) is the estimated fair value of unrealized investment returns. Together, DPI plus RVPI sum to TVPI.

Both IRR and TVPI have shortcomings relative to NPV. Comparisons of IRR between funds do not take account of possible differences in required returns due to risk and implicitly

reflect the assumption that harvested investments can be reinvested to achieve the same IRR. TVPI does not take account of the time value of money, so comparisons of TVPIs between funds do not take account of the timing of when the cash returns are realized. Reporting of NPV, however, is not feasible since the GP and LPs are unlikely to agree on the appropriate discount rate.

b. The role of FOIA

Most U.S. GPs are privately held and are not required to report performance information to the public. However, many LP investors in VC are subject to disclosure requirements under federal or state FOIA requirements that have been in place for decades. Before the early 2000s, VC fund performance was not an important focus of FOIA-based demands for disclosure. Fund performance information, including returns data, was often held in strict confidence between the GPs and LPs. The ability of GPs to restrict access to fund-level performance information changed in 2002 when LPs were confronted with a series of FOIA requests, mainly from the media. LPs that were approached under FOIA were institutions funded by public money such as public universities, public pension funds, and other state and local government entities.

Hurdle (2005) points out that the reactions of the VC industry have not been uniform. Many VC firms expressed concern that disclosure could threaten their trade secrets and the success of future investments. In response, states have established limitations on disclosure requirements to protect strategic or confidential information.

Some of these exceptions to disclosure were put in place after a well-publicized incident in 2003 when Sequoia, citing concerns with confidentiality, booted the University of Michigan endowment from its active LP roster because the university had complied with a FOIA request and provided performance data including IRR. Sequoia vowed to exclude the university from

future funds. Soon after, the State of Michigan passed a shield law that protected certain information, easing the concerns for Sequoia.

Entities subject to state or federal FOIA mandates include, for example, state and local government employee pension funds and public university endowments. Prominent examples include the California Public Employees Retirement System (CalPERS) and the California State Teachers Retirement System (CalSTRS), both very large pension funds that invest on behalf of public sector employees. Under the California statute, public entity investors in California such as CalPERS, CalSTRS, the University of California, and city and county-level pension funds are required to affirmatively disseminate fund-level information.

The fund-level disclosure requirements vary by state but can include fund name, year founded, capital commitments, dollar amount contributed, the dollar amount distributed, market value at a specific time, fees, etc. Other frequent providers of fund-level performance data include the Hawaii Employees Retirement System, Pennsylvania State Employees Retirement System, Teachers Retirement System of Texas, and University of Texas, each of which is among a large number of frequent investors in private equity that regularly report fund-level performance.

c. Public reporting of the returns to VC investing

In response to the growing interest in VC by all types of investors, data services have entered the market and, for a fee, collect, process, and disseminate the data broadly to the business press and trade associations such as the National Venture Capital Association (NVCA). Investors and much of the academic research rely on these data services, which include, among others, Cambridge Associates, Pitchbook (PB), Preqin, Burgiss, and Venture Expert.⁷

⁷ Kaplan and Lerner (2017) review the differences and relative strengths of these alternative data sources.

The basis for published returns in the venture capital industry are the self-reported performance measures on fund performance by the GP and/or LPs. Because it has broad coverage of VC and because it reports returns information provided separately by GPs and LPs, PB is the primary data source used in this analysis. The performance information that PB reports, whether supplied by the GP or LPs, are returns to LPs net of all fees and carried interest deductions. For the most part, performance information from GPs is provided voluntarily to PB directly or through public source. Generally, performance information from LPs is either voluntary or provided in response to a FOIA request. Because PB provides both GP and LP performance reports, we are able to study the firm and fund characteristics for which performance information is reported by GPs and/or LPs.⁸

3. Hypothesis development

Previous literature documents reporting biases with private equity firms and hedge funds. Johan and Zhang (2020) use PB data to study private equity funds from multiple countries and find that GPs with good fund-level performance tend to report more frequently and that GPs that report infrequently are more likely to overstate the residual value of investments that have not been harvested (RVPI). This result arises from incentives of private equity fund managers to overstate valuations of privately held companies in their portfolios, or to report only the most positive returns. Other studies, including Stucke (2011), Brown, Gredil, and Kaplan (2019), and Jenkinson, Sousa, and Stucke (2013) find that GPs tend to value ongoing investments conservatively. Cumming and Walz (2010) find systematic biases in managers' reporting on fund performance in private equity funds, with higher reputation firms being more conservative

⁸ Performance data reported by other services can be different and may be collected in different ways. For example, CA only reports data from GPs and indicates that the information is obtained from audited sources.

in their valuations. The incentive of GPs to overstate performance, especially in the initial fund of a VC firm is suggested by the evidence of Nanda, Samilia, and Sorenson (2020), that initial success improves access to deal flow.

Based on prior literature we set out the following hypotheses to address two overarching questions: 1) what factors influence the decisions of VC fund GPs and LPs to report fund performance to data collection services, and 2) what factors influence the differences in performance reported by GPs compared to LPs? We are particularly interested in how the presence of FOIA-eligible LPs affects reporting propensities and reported performance.

Since the GPs of VC fund are under no obligation to report to data collection services, it is instructive to understand better the conditions that affect their decisions to report. However, GPs are obligated to provide performance information to LPs, and those LPs can voluntarily pass along performance information to data collection services, subject to conditions of their investment agreements. While some LP reporting is voluntary, LPs that are subject to FOIA are generally obligated to provide fund-level performance information to requesting parties. We expect the presence of FOIA-eligible LPs to positively affect the probability that LPs report, and that LP reporting positively affects the probability that the GP reports. We further expect the higher reporting propensity of FOIA-eligible LPs to lead to greater convergence of reported performance between the GP and the LPs and that GPs are more likely to report when the LPs report higher performance.

Thus, we test the following five hypotheses related to reporting behavior of LPs and GPs:

H1: The probability of the LP reporting of fund performance is positively related to participation in the fund by FOIA-eligible LPs.

H2: The probability of the GP reporting of fund performance is positively related to participation of LP investors in the fund by FOIA-eligible LPs.

H3: The probability of the GP reporting of fund performance is positively related to whether the LP reports.

H4: The probability of the GP reporting of fund performance is positively related to the return reported by the LP.

H5: The presence of FOIA-eligible LPs in the fund is associated with smaller differences between what the LP reported performance and the GP reported performance.

The original objection from VC firms to FOIA disclosure laws was that they required LPs to divulge private information about the VC firm, its funds and its portfolio companies. Such disclosures could diminish competitive advantage or otherwise jeopardize the firm's trade secrets or future fund raising. While this concern has diminished over time, there may be lingering concerns that FOIA-eligible LPs would be required to divulge returns that are less than stellar or to release proprietary information. Such concerns could lead to systematic exclusion of FOIA-eligible LPs from high performing funds and funds sponsored by the high reputation VC firms. To address this, we test the following two hypotheses:

H6: FOIA-eligible LPs are excluded from the funds offered by high-reputation GPs.

H7: FOIA-eligible LPs are excluded from the funds with the highest performing funds.

4. Summary statistics and preliminary analysis

The data used in our analysis come from PB, which is one of the most widely relied upon reporting services for fund-level performance and is the data partner of the NVCA.⁹ For the

⁹ <https://nvca.org/research/pitchbook-nvca-venture-monitor/>. NVCA's publications serve as the authoritative quarterly and annual reports on venture capital activity in the U.S. entrepreneurial ecosystem.

analysis we use detailed fund-level data on venture funds. The dataset is a panel with the unit of analysis being a fund-year. The sample includes all VC fund reporting years from 2103 through 2017 for funds that are managed by firms headquartered in the U.S. An observation for a fund-year is generated if the GP or at least one LP provides information to PB for that year. We begin the sample period with 2013 because prior to that time, collection of performance data by PB was limited and GPs tended not to report. We end the sample period with 2017 because performance reporting sometimes is substantially delayed. Ending with 2017 allows sufficient time for the reporting to be complete.

Reported information can include, but is not limited to, financial performance data as of the reporting year. Thus, the observations in our dataset can include records with no financial performance information supplied by either the GP or any LP, observations with financial performance information reported only by the GP, observations with financial performance information reported only by one or more of the LPs, and observations with financial performance reported by both the GP and LPs. The specific financial information that is reported can also vary.

We study the two most common VC performance measures (Gompers et al., 2020), IRR and TVPI. These measures (either or both) can be reported by either the GP, LPs or both. When more than one LP reports financial performance, PB reports the median of the reported values.¹⁰ The focus on medians helps to remove the effects of outlier reporting.¹¹ Individually reported values are available in the PB “reporting details,” and are used by us for validation. Generally,

¹⁰ When PB reports annual industry performance averages, those average are based on GP provided returns, when available, and otherwise the median LP returns are used.

¹¹ Begenau and Siriwardane (2020) document that the fees across limited partners can vary, even for the same fund. Their study focuses on pension funds and finds differences in net-of-fee performance for public pensions funds investing in the same private equity fund. We address this below as one potential reason for discrepancies between returns reported by the GP and those reported by LPs and for differences in the returns reported by LPs.

the returns reported by LPs are similar to each other, but occasionally there are material differences.

As a check on the validity of the self-reported data from PB, we compared the GP-reported performance to performance reported by Cambridge Associates (CA), another service that is used widely in academic research. In contrast to PB, CA relies on audited financial statements received only from GPs and its sample of GP reports is larger. In a comparison of GP reported returns between PB and CA over the 1995-2010 period, the mean (median) IRR reported by CA is 24.4%, (10.3%), which is similar to the 23.0% (10.9%) return reported by GPs in the PB sample. Thus, based on the comparison to CA, our sample of GP reported IRRs appears to be representative. This reinforces the concern about selective reporting and reliance on performance data reported by GPs as a reliable indication of the returns to investing in VC.

LPs may also have incentives to report selectively, either to demonstrate good performance or as expressions of disappointment with realized returns. To identify a subsample that are less likely to have selectively reported performance outcomes, we breakdown LP data by the federal or state FOIA eligibility status of the LPs. Because all states have FOIA-based disclosure requirements, we classify all state, county, or city entities as FOIA-eligible and others as not-subject to FOIA. For example, public pension funds, state universities, local police and fire departments are FOIA-eligible, whereas, insurance companies and non-public pension funds are not. If the LPs of a fund include both FOIA-eligible and other LPs, we classify the returns reported by LPs as FOIA-eligible. For such funds, we find that performance reporting is predominantly provided by the FOIA-eligible LPs. Using this subsample of FOIA-eligible LPs, we ascertain the extent of selective reporting by GPs and provide an estimate of the resulting bias in aggregate performance measures that are based solely on GP reporting.

a. *Descriptive statistics for the full sample*

Table 1 provides descriptive data on the full sample of fund-years, focusing on reporting propensities and mean and median reported financial performance. The table also includes aggregate performance measures reported by subsamples of all GPs, all LPs, and the subsample of observations where both the GP and LPs report performance. As shown, the full sample comprises 7,690 fund-years. Of the full sample, 2,951 fund-year IRR observations (38.4% of the sample) and 3151 TVPI observations (41.0%), including returns reported by the GP, the LPs or both. The average 8.074% IRR of the reporting observations is calculated using returns reported by GPs, when available, or by LPs when only LP returns are available. Since reporting by LPs is much more common, it is less prone to selective reporting than is reporting by GPs. As can be seen, the full sample includes only 502 observations where the GP reported an IRR, (17.0% of the subsample with reported IRRs) and 2,654 where LPs reported (90.0% of the subsample with reported IRRs). Only 205 observations (6.9% of the subsample) include returns reported by both the GP and LPs. TVPI reporting propensities are similar to those for IRR.

The table compares mean and median returns reported by GPs, LPs, or both GPs and LPs, and also returns where only GPs report or only LPs report. As shown, mean and median IRRs and TVPIs reported by LPs are materially lower than those reported by GPs. The mean IRR reported by LPs is 8.08% higher and the mean TVPI is 0.236 times higher.¹² However, it is not clear whether the higher IRRs reported by GPs are due to selective reporting (i.e., they only report when IRRs are high), or to over-claiming. As an indicator of the effects of biased reporting, we examine the subsample where both the GP and LPs report.

¹² Because TVPIs normally increase over the life of the fund, the TVPI differences between GP and LP reported values could be due partly to differences in average time from vintage year to reporting year. We control for such differences in the empirical analysis.

The final panel of Table 1, labeled Paired Subsample, is based on the subset of IRR and TVPI observations where both the GP and LPs report. For this subsample, the differences between average returns reported by GP and those reported by LPs are much smaller. The average IRR (TVPI) difference of 2.2% (0.0635 times) suggest that selective reporting, as opposed to biased reporting, is the main reason that GPs report higher returns than do LPs. While this suggests that the more important explanation for the large difference in unpaired comparisons is selective reporting by the GP, it does not rule out the possibility that the GP knows when LPs are unlikely to report and uses those opportunities to claim better performance.

We considered the possibility that the average 2.2% difference when both report could be due to the GP reporting returns that are not net of the fees paid by the typical LPs of the fund. However, this does not appear to be the explanation. Of the 205 observations where the GP and LPs report, 155 (75.6%) are cases where the difference between the IRR reported by the GP and the median IRR reported by LPs is no more than one percent and 96 (46.8%) where the difference is no more than one-tenth of one percent. Moreover, median IRRs reported by the LPs are higher than those reported by the GP in 51 (24.9%) cases. We conclude that the most likely causes of differences in IRRs across GPs and LPs for the paired subsample are reporting errors and differences in net-of-fees returns to LPs, as documented by Begenau and Siriwardane (2020).

b. Descriptive statistics by reporting year

Table 2 provides additional descriptive statistics on the sample over time. As indicated in the table, observations are spread approximately uniformly over the five years of the sample period. The information in the table includes annual tests of significant differences in IRR and TVPI performance reported by GPs and LPs. For the full sample, and in each reporting year, IRR and TVPI returns reported by GPs are higher than those reported by LPs. The annual differences

in the means of IRRs are all significant at the 0.05 level or beyond. When the sample is restricted to observations where both the GP and LPs report, the differences in reported IRRs are smaller and only significant at the 0.10 level or beyond in the last two years.

The annual TVPI differences are only statistically significant for the 2017 reporting year. The weaker results for TVPI as compared to IRR are unsurprising since TVPI depends on the length of the holding period, a factor that is not controlled in this bivariate comparison. Here, again, limiting the sample to cases where both GP and LPs report returns, the TVPI differences between GP and LP reported means are generally smaller and 2017 is the only year with a difference that is significant at the 0.10 level or beyond.

c. Effects of FOIA on LP reporting

Table 3 is a bivariate comparison that shows the effects of FOIA on reporting practices. The sample of fund-year observations is divided between those where the list of participating LPs reported by PB includes at least one LP that is FOIA-eligible, and fund-years where the LP list includes none that is FOIA-eligible.

It is apparent from the Percent Reporting panel of Table 3 that IRRs are over 5 times more likely to be reported when the fund LPs include a FOIA-eligible entity (54.06% reporting compared to 10.21%). Also, among the funds with FOIA-eligible LPs, LPs are almost 9 times more likely to report IRRs than are GPs. IRRs of funds without FOIA LPs are reported by LPs only about 6.1% of the time. For these funds, there is very little overlap between LP and GP reporting. GP reporting is always low but is somewhat higher when the fund includes FOIA-eligible LPs. The TVPI reporting propensities are similar. Overall, the evidence in this panel suggests that FOIA involvement may help to discipline GP reporting.

The Reported Returns panel of the table shows mean and median IRRs and TVPIs for observations with and without FOIA-eligible LPs. Statistics in this panel are based on all observations with returns reported. In all IRR and TVPI comparisons, returns reported by GPs are higher than those reported by LPs, but the differences between returns reported by GPs and LPs are much higher when the LP list does not include a FOIA-eligible entity. The evidence suggests that GPs are more likely to report good performance, whereas LPs are more likely to report poor performance. The differences are particularly striking for funds without FOIA-eligible LPs.

The differences in the Reported Returns panel may arise because of either biased reporting or because GPs are more likely to selectively report when performance is good, including reporting in fund-years when no LP reports. In the Both Reports panel, we examine the relation between inclusion of one or more FOIA-eligible entity and the difference between returns reported by GPs and LPs. We find that even when the LPs include FOIA-eligible entities, returns reported by GPs are higher than those reported by LPs. However, for those with FOIA-eligible LPs, the difference between IRRs reported by GPs and LPs are small and much smaller than for funds without FOIA-eligible LPs. Neither difference is statistically significant at conventional levels, but the sample without FOIA LPs is quite small. The differences in reported TVPI are less clear. In both groups, LPs report lower performance. As noted, the bivariate TVPI results are difficult to interpret because TVPIs are expected to increase over the life of the fund.

The evidence in Table 3 suggests that FOIA-eligible LPs may mitigate overstatements of VC investment performance by increasing the likelihood that performance is reported even when weak, and possibly by encouraging more accurate reporting by GPs. However, it is possible that the differences in Table 3, while correlated with the presence of FOIA-eligible LPs are not due to

FOIA. To address this concern, we examine the effects of FOIA-eligible LP involvement, controlling for other factors.

5. Empirical analysis

a. GP selective reporting

To better understand the sources of differences between GP and LP reporting, we examine the likelihood of GP reporting as a function of the LPs' reported IRRs for FOIA and non-FOIA eligible firms. Results are plotted in Figure 1a and 1b. The results suggest that for funds with or without FOIA-eligible LPs, GP reporting likelihood is increasing in the IRR or TVPI performance reported by LPs. The relationship is particularly strong for funds without FOIA-eligible LPs.

Compared to GP reporting probabilities of funds with FOIA-eligible LPs, the figures also show that when funds do not include FOIA-eligible LPs, the GPs are less likely to report bad performance and more likely to report good performance. The result in the figure suggests that the greater reporting propensities of FOIA-eligible LPs may have a disciplining effect on the extent to which GPs selectively report performance of their most successful funds.

b. How does FOIA affect the probability of LP reporting?

Table 4 quantifies the effects of FOIA on the reporting choices of LPs. We estimate several models to better understand reporting propensities and potential sources of bias. The dependent variable in the models is an indicator that takes on the value of one if at least one LP reports a return (IRR or TVPI) for the year. We examine the effects of four different measures of involvement by FOIA-eligible LPs. First, we include the same indicator of FOIA involvement that is used in Table 3; second, we include the natural log of one plus the number of LPs that are FOIA-eligible; third, we include the percentage of the fund's LPs that are FOIA-eligible; and

fourth, we include an indicator for whether the LP list includes CalPERS, CalSTRS, or both. This variable is included because it is well-documented that these pension plans are subject to California FOIA reporting, are frequent targets of FOIA requests, and because they invest in a large fraction of VC funds.¹³

We estimate the FOIA relationships to LP reporting probabilities using Probit. Table 4 shows the marginal effects. We also tried estimating these relationships by OLS as linear probability models and found very similar results, with r^2 s similar to the reported Pseudo r^2 s.

Models 1 through 5 of Table 4 show the results of including these FOIA-involvement variables individually or collectively, with only year fixed effects as controls. In Models 1 through 4, where the FOIA measures are included individually, each is highly significant in explaining the probability of LP reporting. In Model 5, we include all four FOIA measures and find that the overall effect remains strong and that each of the four is positively related to reporting probability. In Model 6, we include a number of controls. The controls indicate whether the fund is reported to be the GP's first fund; the sequential fund number of the GP; the natural log of the fund size in millions; fund age in years and the square of fund ages to allow for nonlinearity; the natural log of VC firm (GP) age in years; an indicator of whether the investment preference of the fund is focused on a particular sector; and indicators of whether the GP is based in the Bay Area, Boston, or New York (the three locations with the highest representations in the sample). Although many of the controls are statistically significant in Model 6, they add little to overall explanatory power and coefficients on the FOIA variables are not materially affected by their inclusion. Collectively, the FOIA involvement variables have a marginal effect of 66.2% on the probability of LP IRR reporting and a 64.1% effect on the probability of TVPI reporting.

¹³ Both CalPERS and CalSTRS responded to our FOIA requests to identify past requests of performance of funds in which they had invested.

In summary, the evidence in Table 4 indicates that the likelihood of returns being reported by LPs is considerably higher when the LPs include FOIA entities and that reporting probability increases with the number of FOIA LPs and with inclusion of CalPERS and/or CalSTRS among the LPs.

To gain perspective on the effects of FOIA involvement, as shown in Table 5, we group the observations by number of FOIA-eligible LPs and calculate the probabilities of IRR and TVPI reporting within each group. With no FOIA-eligible LPs, an IRR was reported for 6.1 percent of firm-year observations. As the number of FOIA-eligible LPs increases the probability that a return is reported by LPs gradually increases and reaches 91.1 percent for the group with at least 9 FOIA-eligible LPs. Thus, for the top group, though we do not expect selective reporting of returns by LPs, with nearly full reporting, there is very little potential for returns reported by LPs to be biased by selective reporting. In contrast, over all groups, only a small fraction of GPS report, so that selective reporting is a concern. There is some evidence in the last column of Table 5, that the probability of GP reporting increases when the number of FOIA-eligible LPs is greater than two.

c. How does LP reporting affect GP reporting?

In Table 6, we examine the effects of LP reporting on the probability that the GP reports a return, controlling for other factors. IRR results are reported in Panel A, and TVPI in Panel B. In Probit models of the GP's choice to report either IRR or TVPI, the table reports marginal effects on the probability of GP reporting. In Model 1 of the table, we include the natural log of 1 + the number of FOIA-eligible LPs in the fund and find a significant positive relationship to GP reporting. This indicates that GP reporting probability increases with the number of FOIA-eligible LPs in the fund. In Model 2, we replace the number of FOIA LPs with an indicator of

whether a return is reported by the LPs and find a positive relationship that is statistically significant in explaining the probability that the GP reports an IRR. The probability that a GP reports an IRR increases by 2.37 percentage points when the fund LPs report. In Model 3, we replace the binary indicator of LP reporting with the return reported by the LP. As expected, we find that GPs are significantly more likely to report when the return reported by the LPs is high. We estimate that a 10 percentage-point increase in the IRR reported by LPs is associated with a 0.672 percentage point increase in the probability that a GP reports. In Model 4, we include both the natural log of the number of FOIA-eligible LPs and the return reported by the LPs. We find, in this specification that FOIA-eligible LP involvement, per se, does not significantly affect the probability of GP reporting. Rather, the effect of FOIA eligibility on GP reporting is indirect. FOIA eligibility increases the probability of the LP reporting and the higher those reported returns, the greater the probability of GP reporting. The TVPI results in Panel B are similar though statistical significance is somewhat lower.

The results in Table 6 provide evidence of selective reporting by GPs. They are more likely to report performance when fund returns are high. Selective reporting has the potential to overstate returns to VC investing. If GPs are more likely to report when fund performance is good and sometimes report when LPs do not, average VC performance will be overstated. The potential for overstatement is mitigated by FOIA since LPs that are FOIA-eligible are more likely than other LPs to report performance, whether good or bad.

As additional tests of the effects of LP reporting on GP reporting, we examine whether, within a VC fund, over time, GPs are more likely to report when LPs report high returns. In untabulated models with fund-level fixed effects, we find no significant evidence that the GP is more likely to report when LPs report either high IRR or TVPI returns. The coefficients on

returns reported by LPs in these models, which include both fund and year fixed effects, are both positive, but the p-value in the IRR model is 0.202 and in the TVPI model is 0.253. The low significance levels are likely to be affected by the tendency of GPs not to report and the low time-series variation of returns within a fund.

We also consider the possibility that VC firms are more likely to report performance for their more successful funds. To test this, we estimate the models of GP reporting in models that include VC firm-level and year fixed effects. We find, in un-tabulated results, that GPs are more likely to report when returns reported by LPs are high. In the IRR model, the coefficient is positive but only significant at the 0.114 level, whereas in the TVPI model the relationship is significant at the 0.011 level. The firm-level evidence suggests that GPs are more likely to report returns for their funds when LPs report high returns.

d. Does LP reporting discipline GP reporting?

In Table 7, we compare returns reported by LPs and GPs broken down by FOIA-eligible group, using the same groups as in Table 5. As shown, LPs in the group with no FOIA-eligible LPs report very low IRRs, whereas GPs in this group report the highest IRRs of any group. Since the overlaps of reporting by fund-year are very low for this group, the differences could be due to selective reporting by GPs. Alternatively, they could reflect over-claiming by GPs in situations where there is little likelihood that LPs will report much lower returns. The table shows a similar, but smaller, difference in reported performance for the fund-years where the number of FOIA LPs in the fund is low. When three or more LPs are FOIA-eligible, the differences in reported performance between GPs and LPs are much smaller, around 2 percent. The results suggest that as the number of FOIA-eligible LPs increases, reported performance differences between LPs and GPs decline. Results for TVPI are less clear but, in contrast to IRR, TVPI comparisons

would require controls for length of holding period and other factors, which is not feasible given the small subsample sizes at the group level.

It is noteworthy, based on returns reported by LPs, that the top FOIA group, the group of funds with more than 8 FOIA-eligible LPs, outperforms all other groups. The IRRs and TVPIs reported by LPs are quite high compared to the other FOIA groups. This is the group where the probability of returns being reported by LPs is over 90 percent. Importantly, the evidence in Table 7 indicates that FOIA-eligible LPs are not excluded from the high-performing funds in FOIA Group 4.

e. Do high-reputation GPs exclude FOIA-eligible LPs?

We use three different indicators of VC firm reputation to test whether FOIA-eligibility negatively affects access to funds of high-reputation GPs: (1) VC Centrality is the 10 VC firms identified by CB Insight as the most “centrally involved.” (2) Number of VC Funds is the top 8 VC firms in terms of numbers of VC funds in the PB database. (3) Top AUM is the 10 firms identified by CrunchBase as being highest in terms of assets under management. There is a high degree of overlap in these three indicators. Interestingly, no returns are reported by GPs for any of these indicator groups. Regression results indicate that GPs of high-reputation VC firms, regardless of how reputation is measured, generally do not report performance irrespective of whether performance reported by LPs is good or bad. In Table 6, we tried including these indicators of reputation, but the variables were dropped because the GPs never reported.

In Table 8, we test the hypothesis that FOIA-eligibility negatively affects access to funds offered by high-reputation VC firms. We find little support for the hypothesis. In the table, we provide results for the three different indicators of high reputation, as described above. Results are similar for all three. First, the probability of a fund including at least one FOIA-eligible LP is

high for both groups and is significantly greater for funds offered by high-reputation VC firms than for other funds. Second, the natural log of the number of FOIA-eligible LPs is significantly higher for funds offered by high-reputation VC firms. Third, while the number of FOIA-eligible LPs is greater in funds of high-reputation VCs, the percentage of LPs that are FOIA-eligible is significantly lower. Finally, when we focus narrowly on involvement by CalPERS and/or CalSTRS, two well-known FOIA-eligible LPs that regularly report performance, we find that the probability of their involvement in funds offered by high-reputation VCs is similar to, or slightly greater than, the probability of their involvement in funds offered by other VCs. Overall, the evidence is inconsistent with the hypothesis that FOIA-eligibility negatively affects access to funds offered by high-reputation VCs.

f. Do the GPs of high-performing VC funds exclude FOIA-eligible LPs?

A further concern is that firms with FOIA-eligible LPs may be lower quality funds than firms that exclude FOIA-eligible LPs. In Table 9, we test the hypothesis that FOIA-eligible LPs tend to be excluded from the better performing VC funds. To do this, we regress fund-year IRRs and TVPIs reported by LPs on our indicators of LP involvement in the fund. Clustering by fund ID to address lack of independence over time, we find the opposite. For funds that include at least one FOIA-eligible LP, IRRs reported by LPs are estimated to be 7.39% higher and TVPIs are estimated to be 0.260 higher. The relationships to the number of FOIA LPs are also positive and statistically significant. There is no significant relationship between performance and the percentage of LPs that are FOIA-eligible, and no significant relationship of performance to the involvement of CalPERS or CalSTRS, a finding that may say more about the investment selections of these large two pension funds than about the effects of FOIA. In summary, we find

on evidence that FOIA eligibility negatively affects access to funds offered to high-performing funds.

g. Robustness checks

One potential concern with relying on PB data is that PB may collect results from different funds and sources that do other reporting services. If so, our findings related to selective reporting bias may not generalize to the bias present in samples from other data sources. We have already noted that over the vintage years from 1995 through 2010, the annual mean and median IRRs reported by CA are similar to those in our PB-based sample of GP-reported IRRs. As a further examination of the generalizability of our analysis, we regressed the annual returns reported by PB GPs on those reported by CA. The r^2 in that model is 0.782 and is highly significant. The relationship between PB returns reported by LPs and CA returns from GPs is also highly significant with an r of 0.922. These results suggest that PB and CA are requesting information from a similar subset of funds and that GP's self-reporting to PB provides a reasonable proxy for the aggregate performance measures reported by CA.

6. Summary and discussion

We find that the probability of LP reporting is strongly related to LP FOIA eligibility: FOIA-eligible LPs are about 8.5 times more likely to report performance metrics than are other LPs. Since most LP reporting is on funds with FOIA-eligible LPs, it is possible that LPs report lower vintage-year average performance than do GPs report because FOIA-eligible LPs are excluded from the best-performing funds. However, we find no evidence of such exclusion. On the contrary, FOIA-eligible LPs tend to invest in funds managed by more reputable GPs according to several measures of reputation, and IRRs reported for funds with FOIA-eligible LPs are, in fact, higher than those reported for funds with non-FOIA-eligible LPs.

Our results suggest that GPs report better performance mainly because they selectively choose when to report. We find that GPs report better fund performance than do both FOIA-eligible or other LPs. We find strong evidence that GPs selectively are more likely to report fund-level performance when the metrics reported by LPs are favorable. The propensity of GPs to report selectively is attenuated (but still present) for funds with FOIA-eligible LPs, suggesting FOIA-eligibility commits GPs to more accurate reporting. There is little evidence that aside from selective reporting, GPs also overstate performance compared to LPs. We also find no significant evidence that FOIA-eligible LPs are disadvantaged in their ability to invest in high-performing funds or funds of highly reputable VCs.

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Figure 1a

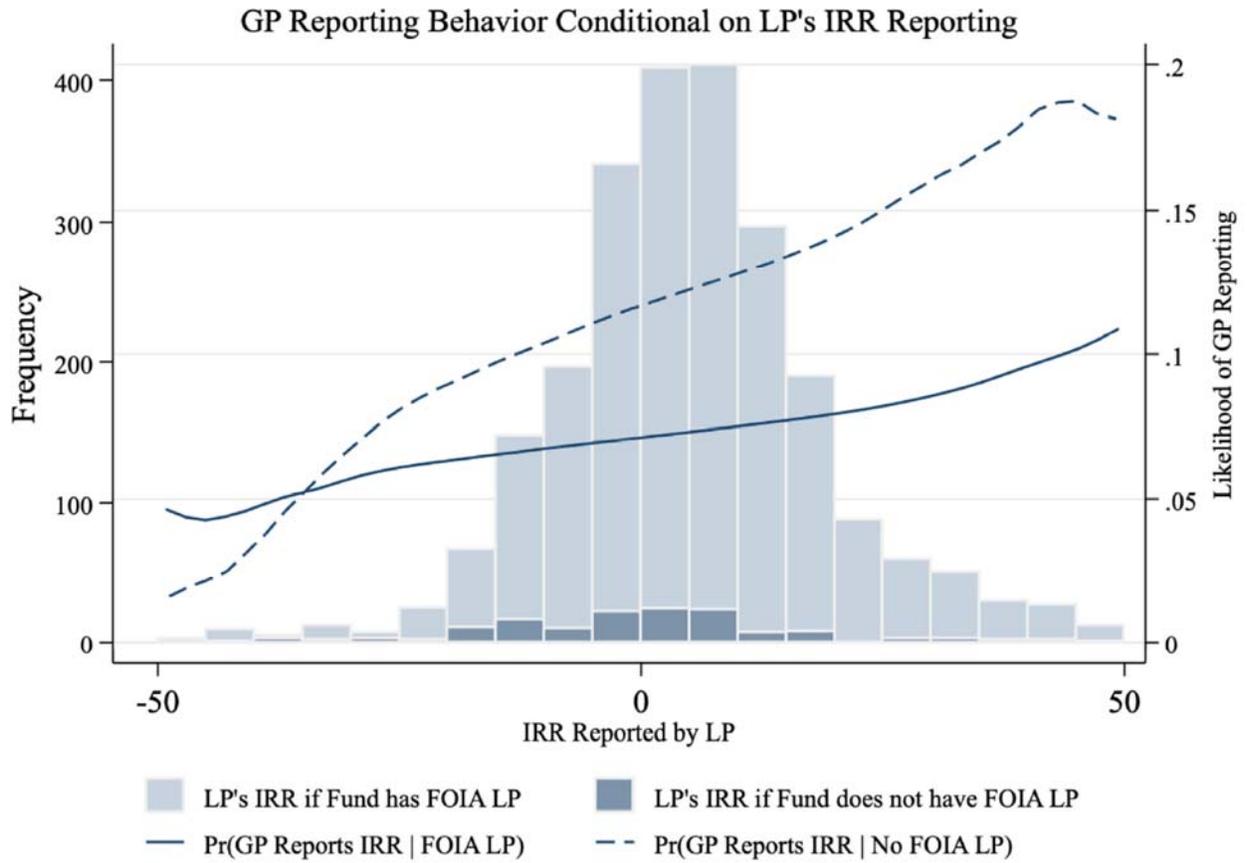


Figure 1b

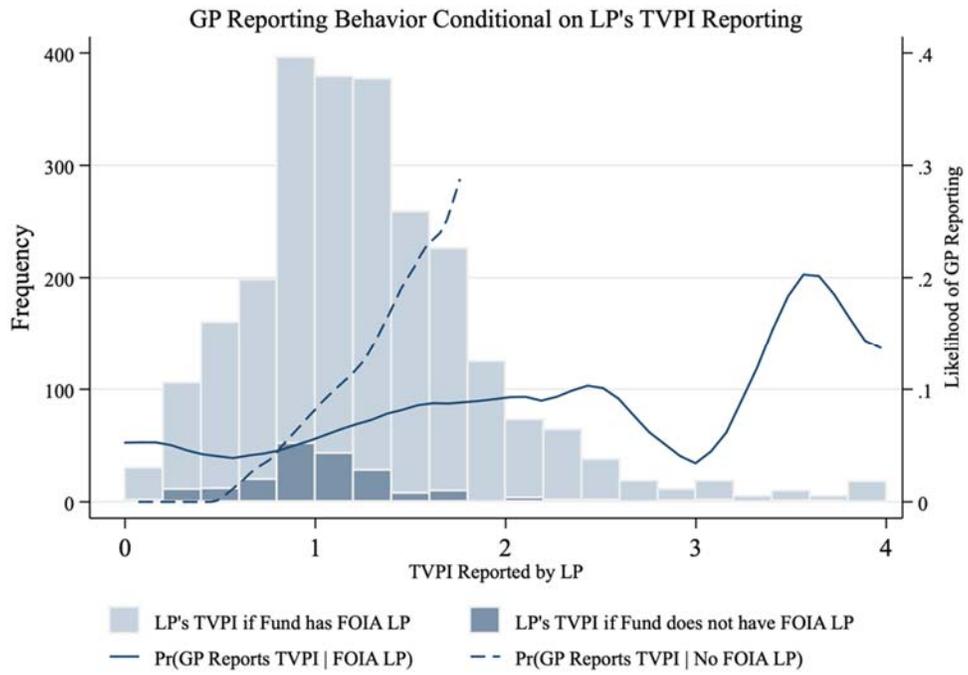


Table 1**Sample Sizes and Subsample Mean and Median IRR and TVPI**

The sample includes all fund-year observations for U.S. VC funds included in the Pitchbook database for reporting years 2013-2017. Total Sample is the total number of records for the reporting period. Reported IRR (TVPI) is the IRR (TVPI) return reported by either the GP or the median reported by LPs. Difference is calculated for all IRR (TVPI) return observations and for observations where both GP and LPs report and is calculated as GP return - LP return.

	N.Obs.	IRR Mean	IRR Median		N.Obs.	TVPI Mean	TVPI Median
Total Sample	7690			Total Sample	7690		
Reported IRR	2951	0.08074	0.05490	Total with TVPI	3151	1.43224	1.21000
IRR Reported by LP	2654	0.06990	0.04880	TVPI Reported by LP	2841	1.40929	1.19000
IRR Reported by GP	502	0.15069	0.10310	TVPI Reported by GP	513	1.64534	1.43000
Difference		0.08079	0.05430	Difference		0.23605	0.24000
IRR if Both Report	205	0.13352	0.09060	TVPI if Both Report	203	1.69084	1.47000
IRR of LP Only	2449	0.06638	0.04500	TVPI of LP Only	2638	1.39161	1.17000
IRR of GP Only	297	0.16271	0.11200	TVPI of GP Only	310	1.60868	1.40000
Paired Subsample: Both Report IRR				Paired Subsample: Both Report TVPI			
IRR Reported by LP	205	0.11148	0.0891	TVPI Reported by LP	203	1.63778	1.39000
IRR Reported by GP	205	0.13352	0.0906	TVPI Reported by GP	203	1.70133	1.47000
Difference	205	0.02204	0.0015	Difference	203	0.06355	0.08000

Table 2**Sample Size and Reporting Statistics by Fund Reporting Year**

The sample includes all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. Fund-Year Total is the total number of observations for the reporting period, including those without returns information. Reported IRR (Panel A) or TVPI (Panel B) is the IRR or TVPI return reported by either the GP or the median return reported by LPs. Paired IRR (TVPI) Diff. is calculated for observations where both GP and LPs report and is calculated as GP return - LP return. Diff. p-value is based on t-tests of differences in means.

	2013		2014		2015		2016		2017	
	N.Obs.	Mean	N.Obs.	Mean	N.Obs.	Mean	N.Obs.	Mean	N.Obs.	Mean
Fund-Year Total	1498		1519		1556		1565		1552	
Panel A: IRR										
Reported IRR	536	0.082	548	0.080	612	0.093	583	0.075	672	0.075
IRR of LP	531	0.079	524	0.076	517	0.072	494	0.064	588	0.059
IRR of GP	8	0.258	42	0.160	165	0.156	148	0.118	139	0.171
Diff. p-value		0.044		0.026		0.003		0.002		0.000
Paired IRR Diff.	3	-0.001	18	-0.011	70	0.012	59	0.012	55	0.058
Diff. p-value		0.742		0.384		0.477		0.062		0.064
Panel B: TVPI										
Reported TVPI	600	1.355	564	1.443	635	1.422	633	1.475	719	1.459
TVPI of LP	594	1.346	534	1.430	536	1.402	542	1.451	635	1.422
TVPI of GP	7	2.231	45	1.682	174	1.533	150	1.606	137	1.789
Diff. p-value		0.277		0.155		0.116		0.202		0.011
TVPI Difference	1	0.000	15	0.121	75	0.049	59	0.033	53	0.103
Diff. p-value		-		0.437		0.132		0.112		0.084

Table 3**Reporting Statistics by Presence of FOIA-Eligible LP**

The sample includes all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. The table shows percent of observations reporting returns (IRR or TVPI) for subsamples where the LP list includes/does not include a FOIA-eligible LP.

	LPs Include FOIA Eligible			LPs Do Not Include FOIA Eligible		
	N.Obs.	Mean	Median	N.Obs.	Mean	Median
Percent Reporting						
IRR Reported	4793	0.5406		2488	0.1021	
IRR Reported by LP	4793	0.5214		2488	0.0607	
IRR Reported by GP	4793	0.0584		2488	0.0482	
TVPI Reported	4793	0.5692		2488	0.1226	
TVPI Reported by LP	4793	0.5485		2488	0.0820	
TVPI Reported by GP	4793	0.0595		2488	0.0474	
Reported Return						
IRR Overall	2591	0.0765	0.0520	254	0.0689	0.0500
IRR of LP	2499	0.0740	0.0510	151	0.0001	0.0020
IRR of GP	280	0.1208	0.0835	120	0.1638	0.1354
Difference (GP - LP)		0.0468	0.0325		0.1637	0.1334
TVPI Overall	2728	1.4339	1.2200	305	1.2971	1.1000
TVPI of LP	2629	1.4290	1.2200	204	1.1692	1.0000
TVPI of GP	285	1.6407	1.4800	118	1.5181	1.3550
Difference (GP - LP)		0.2117	0.2600		0.3489	0.3550
Both Report						
IRR of LP	188	0.1100	0.0901	17	0.1281	0.0639
IRR of GP	188	0.1243	0.0899	17	0.2350	0.0995
Difference (GP - LP)		0.0144	-0.0002		0.1070	0.0356
p-value		0.1076			0.1639	
TVPI of LP	186	1.6690	1.4250	17	1.2965	1.2400
TVPI of GP	186	1.7317	1.4900	17	1.3694	1.3100
Difference (GP - LP)		0.0627	0.0650		0.0729	0.0700
p-value		0.0122			0.0718	

Table 5**IRR and TVPI Reporting by LPs and GPs: By FOIA Involvement Group**

The sample includes all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. Fund-year observations are grouped based on number of FOIA-eligible LPs. The table shows the percent of observations falling into each group; and, within each group, the percent of fund-year observations where IRR or TVPI return is reported by LPs or GPs.

	N.FOIA LPs	N.Obs.	Pct. of Sample	Pct. with LP IRR	Pct. with GP IRR
Groups 0	0	2488	0.342	0.061	0.048
Group 1	1-2	2772	0.381	0.373	0.047
Group 2	3-5	1237	0.170	0.648	0.075
Group 3	6-8	403	0.055	0.787	0.069
Group 4	>8	381	0.052	0.911	0.073
		7281			

	N.FOIA LPs	N.Obs.	Pct. of Sample	Pct. with LP TVPI	Pct. with GP TVPI
Groups 0	0	2488	0.342	0.082	0.047
Group 1	1-2	2772	0.381	0.408	0.050
Group 2	3-5	1237	0.170	0.667	0.075
Group 3	6-8	403	0.055	0.809	0.065
Group 4	>8	381	0.052	0.911	0.071
		7281			

Table 6**Effects of FOIA-Eligibility and LP Reporting on the Probability of GP Reporting IRR and TVPI**

The sample includes all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. The table reports marginal effects of FOIA-eligible LP involvement: $\ln(\text{No. FOIA})$ is the natural log of the number of FOIA-eligible LPs; LP Reports is an indicator if the LP reports a return; IRR (TVPI) of LP is the return reported by the LP. Control variables are: an indicator that the fund is the first fund of the GP, the sequential fund number of the GP, the natural log of Fund Size in millions, the Fund Age at time of reporting, the square of Fund Age, the natural log of Firm (GP) Age, and indicator that the fund has a narrow sector focus, and indicators if the GP is headquartered in the Bay Area, Boston, or New York. All models include reporting year fixed effects and are clustered by fund ID.

**Panel A:
GP Reports IRR**

	Model 1		Model 2		Model 3		Model 4	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
$\ln(\text{No. FOIA})$	0.0189	0.003					0.0072	0.590
LP Reports			0.0237	0.006				
IRR of LP					0.0672	0.024	0.0681	0.022
First Fund	0.0002	0.986	0.0012	0.928	0.0175	0.500	0.0181	0.485
Fund No.	-0.0073	0.000	-0.0059	0.000	-0.0154	0.000	-0.0157	0.000
$\ln(\text{Fund Size})$	0.0013	0.710	-0.0070	0.034	0.0109	0.173	0.0082	0.333
Fund Age	-0.0049	0.004	-0.0045	0.006	-0.0096	0.001	-0.0099	0.001
Fund Age ²	0.0000	0.717	0.0000	0.615	0.0002	0.111	0.0002	0.099
$\ln(\text{Firm Age})$	0.0339	0.000	0.0277	0.000	0.0890	0.000	0.0885	0.000
Focused	0.0222	0.131	0.0228	0.087	0.0394	0.114	0.0373	0.135
Bay Area	-0.0281	0.005	-0.0273	0.010	-0.0062	0.730	-0.0062	0.734
Boston	-0.0236	0.087	-0.0140	0.302	0.0074	0.747	0.0071	0.757
New York	0.0041	0.758	0.0165	0.207	-0.0008	0.972	-0.0013	0.958
Year								
2014	0.0202	0.000	0.0240	0.000	0.0287	0.000	0.0288	0.001
2015	0.0860	0.000	0.1064	0.000	0.1296	0.000	0.1296	0.000
2016	0.0840	0.000	0.0972	0.000	0.1148	0.000	0.1152	0.000
2017	0.0761	0.000	0.0914	0.000	0.0898	0.000	0.0912	0.000
Pseudo r^2	0.1057		0.1055		0.1276		0.1282	
N.Obs.	6759		7146		2603		2599	

Table 6 (Continued)

Effects of FOIA-Eligibility and LP Reporting on Probability of GP Reporting IRR and TVPI

Panel B:

GP Reports TVPI

	Model 1		Model 2		Model 3		Model 4	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
ln(No. FOIA)	0.0191	0.002					0.0081	0.509
LP Reports			0.0117	0.187				
TVPI of LP					0.0058	0.084	0.0058	0.084
First Fund	-0.0025	0.846	-0.0030	0.811	0.0206	0.388	0.0207	0.384
Fund No.	-0.0079	0.000	-0.0058	0.000	-0.0140	0.000	-0.0142	0.000
ln(Fund Size)	0.0017	0.632	-0.0076	0.023	0.0104	0.147	0.0077	0.319
Fund Age	-0.0058	0.001	-0.0050	0.003	-0.0084	0.002	-0.0089	0.001
Fund Age ²	0.0000	0.496	0.0000	0.583	0.0002	0.114	0.0002	0.091
Ln(Firm Age)	0.0363	0.000	0.0287	0.000	0.0874	0.000	0.0866	0.000
Focused	0.0169	0.226	0.0251	0.054	0.0433	0.072	0.0405	0.095
Bay Area	-0.0318	0.002	-0.0337	0.002	-0.0096	0.557	-0.0102	0.535
Boston	-0.0239	0.084	-0.0090	0.514	-0.0044	0.834	-0.0048	0.817
New York	0.0124	0.337	0.0249	0.053	-0.0089	0.687	-0.0095	0.671
Year								
2014	0.0212	0.000	0.0272	0.000	0.0266	0.000	0.0265	0.000
2015	0.0935	0.000	0.1129	0.000	0.1382	0.000	0.1380	0.000
2016	0.0825	0.000	0.0981	0.000	0.1071	0.000	0.1080	0.000
2017	0.0739	0.000	0.0914	0.000	0.0829	0.000	0.0838	0.000
Pseudo r ²	0.1164		0.1126		0.1428		0.1435	
N.Obs.	6759		7146		2802		2795	

Table 7**Mean and Median IRRs and TVPIs Reported by LPs and GPs by FOIA Group**

The statistics are based on all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. Numbers of observations are the fund-years with reported IRRs or TVPIs by LPs or GP. Fund-year observations are grouped based on number of FOIA-eligible LPs. The table shows the means and medians of fund-year observations where an IRR or TVPI return is reported by LPs or GPs.

N.FOIA LPs	N.Obs.	Pct. of Sample	IRR of LP		N.Obs.	Pct. of Sample	IRR of GP		Differences	
			Mean	Median			Mean	Median	Mean	Median
0	151	0.057	0.0001	0.0020	120	0.300	0.1638	0.1354	0.1637	0.1334
1-2	1033	0.390	0.0662	0.0420	131	0.328	0.1636	0.0960	0.0973	0.0540
3-5	802	0.303	0.0746	0.0478	93	0.233	0.0679	0.0595	-0.0067	0.0117
6-8	317	0.120	0.0583	0.0575	28	0.070	0.0846	0.0839	0.0263	0.0264
>8	347	0.131	0.1104	0.0803	28	0.070	0.1327	0.1036	0.0223	0.0233
	2650				400					

N.FOIA LPs	N.Obs.	Pct. of Sample	TVPI of LP		N.Obs.	Pct. of Sample	TVPI of GP		Differences	
			Mean	Median			Mean	Median	Mean	Median
0	204	0.077	1.1692	1.0000	118	0.295	1.5181	1.3550	0.3489	0.3550
1-2	1131	0.427	1.3613	1.1600	139	0.348	1.7689	1.4700	0.4076	0.3100
3-5	825	0.311	1.5247	1.2100	93	0.233	1.4835	1.3700	-0.0411	0.1600
6-8	326	0.123	1.3515	1.2200	26	0.065	1.6058	1.5650	0.2542	0.3450
>8	347	0.131	1.4949	1.3500	27	0.068	1.5552	1.5000	0.0603	0.1500
	2833				403					

Table 8**FOIA LP Investment in Funds of High-reputation VCs**

The table is based on all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. The table shows the extent of involvement of FOIA-eligible LPs in funds of high-reputation VC firms compared to involvement in other funds. Three indicators of high-reputation are used in the table: the ten VC firms rated highest in centrality by CB Insight, the eight firms that are highest in number of VC funds launched based on Pitchbook data, and the ten VC firms that are highest in VC assets under management as reported by Crunchbase.

VC Centrality	Other Funds			Top Funds			p-value
	N.Obs	Mean	Median	N.Obs	Mean	Median	
LPs incl. FOIA	6756	0.6539		525	0.7143		0.005
ln(No. FOIA)		0.8119	0.6931		1.0066	1.0986	0.000
Pct. FOIA		0.2582	0.1667		0.1791	0.1250	0.000
CalPERS/CalSTRS		0.1627			0.1429		0.235
Number of VC Funds	Other Funds			Top Funds			p-value
	N.Obs	Mean	Median	N.Obs	Mean	Median	
LPs incl. FOIA	6833	0.6495		448	0.7924		0.000
ln(No. FOIA)		0.7949	0.6931		1.2998	1.0986	0.000
Pct. FOIA		0.2564	0.1667		0.1921	0.1429	0.000
CalPERS/CalSTRS		0.1586			0.2009		0.019
Assets Under Management	Other Funds			Top Funds			p-value
	N.Obs	Mean	Median	N.Obs	Mean	Median	
LPs incl. FOIA	6798	0.6515		483	0.7536		0.000
ln(No. FOIA)		0.8069	0.6931		1.0936	1.0986	0.000
Pct. FOIA		0.2575	0.1667		0.1811	0.1364	0.000
CalPERS/CalSTRS		0.1603			0.1739		0.433

Table 9**Tests of Relations of Fund Returns and Involvement of FOIA-eligible LPs**

The table is based on all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. The table tests the hypothesis that returns to LPs are negatively affected by FOIA-eligibility. Coefficients are estimated by linear probability (OLS) regression. Significance test p-values are clustered by fund ID.

	IRR of LP			TVPI of LP		
	Coef.	p-value	N.Obs.	Coef.	p-value	N.Obs.
LPs incl. FOIA	0.073912	0.015	2650	0.259769	0.012	2833
ln(No. FOIA)	0.02676	0.005	2650	0.094316	0.036	2833
Pct. FOIA	-0.0048	0.857	2650	-0.02871	0.896	2833
CalPERS/CalSTRS	-0.01292	0.397	2650	-0.04654	0.611	2833

Table 10**FOIA LP Investment in Funds of High-reputation VCs**

The table is based on all fund-year observations for U.S. VC funds in the Pitchbook database for reporting years 2013-2017. The table shows the extent of involvement of FOIA-eligible LPs in funds of high-reputation VC firms compared to involvement in other funds. Three indicators of high-reputation are used in the table: the ten VC firms rated highest in centrality by CB Insight, the eight firms that are highest in number of VC funds launched based on Pitchbook data, and the ten VC firms that are highest in VC assets under management as reported by Crunchbase.

VC Centrality	Other Funds			Top Funds		
	N.Obs	Mean	Median	N.Obs	Mean	Median
LPs incl. FOIA	6756	0.6539		525	0.7143	
ln(No. FOIA)		0.8119	0.6931		1.0066	1.0986
Pct. FOIA		0.2582	0.1667		0.1791	0.1250
CalPERS/CalSTRS		0.1627			0.1429	
Number of VC Funds	Other Funds			Top Funds		
	N.Obs	Mean	Median	N.Obs	Mean	Median
LPs incl. FOIA	6833	0.6495		448	0.7924	
ln(No. FOIA)		0.7949	0.6931		1.2998	1.0986
Pct. FOIA		0.2564	0.1667		0.1921	0.1429
CalPERS/CalSTRS		0.1586			0.2009	
Assets Under Management	Other Funds			Top Funds		
	N.Obs	Mean	Median	N.Obs	Mean	Median
LPs incl. FOIA	6798	0.6515		483	0.7536	