

# Mutual Funds as Venture Capitalists? Evidence from Unicorns<sup>1</sup>

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## Abstract

Using novel contract-level data, we study open-end mutual funds investing in unicorns—highly valued, privately held start-ups—and their association with corporate governance provisions. Larger funds and those with more stable funding are more likely to invest in unicorns. Both mutual fund participation and the mutual fund share of the financing round are strongly correlated with the round’s contractual provisions. Compared to venture capital groups, mutual funds are underrepresented on boards of directors, suggesting less direct monitoring. However, rounds with mutual fund participation have stronger redemption and IPO-related rights, consistent with mutual funds’ liquidity needs and vulnerability to down-valuation IPOs.

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# 1 Introduction

The past few years have witnessed a dramatic change in the financing of entrepreneurial firms. Whereas once these firms were financed primarily by venture capital groups (VCs), who tightly monitored the companies in their portfolios, in recent years financing sources have broadened dramatically. After firm formation, individual angels—whether operating alone or in groups—have played a far more important role (Lerner et al., 2018). More mature firms have delayed going public by raising considerable sums from investors who are traditionally associated with public market investing, such as mutual funds, sovereign wealth funds, and family offices. A dramatic example of this process is Uber (see Table 1), where successful entrepreneurs dominated the initial financing rounds. After a couple of rounds dominated by venture groups, institutions such as Fidelity and BlackRock emerged as the largest investors.

This change in financing sources provokes some important questions. Over the past two decades, the academic literature has highlighted that venture capitalists are uniquely well suited to the monitoring and governance of entrepreneurial firms. Through such mechanisms as the staging of financing (Gompers, 1995), replacement of management (Lerner, 1995), board meetings (Bernstein, Giroud, and Townsend, 2016), and the use of convertible securities and the associated contractual provisions (Kaplan and Stromberg, 2003), venture capitalists address the problems of uncertainty, asymmetric information, and asset intangibility that characterize start-up firms. This line of work suggests that mutual funds—which tend to invest in common shares of more mature public firms, where governance issues are quite different, and to have limited engagement with the firms in their portfolios—would be ill-suited to such investing. Consistent with this view, anecdotal evidence and press articles often suggest that mutual funds are only interested in investing in initial private offering (IPO) candidate firms to quickly realize

investment returns.<sup>2</sup> Moreover, the open-end nature of mutual funds may be incompatible with investments in illiquid securities (Chen, Goldstein, and Jiang, 2010, Goldstein, Jiang, and Ng, 2017, Chernenko and Sunderam, 2017): funds may be vulnerable to “runs” if investors become concerned about the nature or valuation of their illiquid holdings (Zeng, 2017). These issues have triggered critical articles in the business press about the potential risks of mutual funds “juicing” their returns through private investments, as well as scrutiny by the U.S. Securities and Exchange Commission (SEC).<sup>3</sup>

On the other hand, for public firms, institutional investors have been documented in academic research to provide effective corporate governance through activism and other means (see Brav, Jiang, and Kim, 2010 and Edmans and Holderness, 2016 for reviews). The effects are present over time and across the world (McCahery, Sautner, and Starks, 2016). The concentration of holdings and institutional investors’ portfolio shares, which are often associated with large-block purchases in firms, are important factors determining the provision of monitoring (Chen, Harford, and Li, 2007, Fich, Harford and Tran, 2015). Recent studies show that even index mutual funds, which might be seen as the most passive of investors, provide significant corporate governance to public firms (Appel, Gormley, and Keim, 2016).

Given the debate, it is surprising that there has been virtually no scrutiny in the academic literature of whether and how passive institutional investors provide corporate governance to private firms relative to VCs. Given the increasing popularity of mutual funds directly investing in private firms (particularly the ones with valuations of a billion dollars or more, popularly referred to as “unicorns”), this question has an urgency that it would not have had before.

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<sup>2</sup> See “Capitalism’s Unlikely Heroes,” *The Economist*, February 7, 2015.

<sup>3</sup>See “Regulators Look into Mutual Funds’ Procedures for Valuing Startups,” *Wall Street Journal*, November 17, 2015.

Our paper attempts to answer this question. We seek to identify not only the volume of mutual fund investments, but also the extent of their involvement in the oversight of private firms. We use novel contract-level data—certificates of incorporation (COIs)—to examine the contractual terms between unicorns and their investors, including mutual funds. Thus, our paper contributes to the entrepreneurial finance literature pioneered by Kaplan and Stromberg (2003), who documented that the structure of contracts between VCs and their portfolio firms was consistent with the theoretical predictions of contract theory. Bengtsson and Sensoy (2011) used coded contractual data from VCExperts to explore the relationship between the experience of VCs and the contractual terms that they use. Other related papers include Gompers, Kaplan, and Mukharlyamov (2017) and Gompers et al (2018), which use survey data to examine the allocation of rights between entrepreneurs and investors in venture and private equity transactions.

Using COIs, we focus on the contractual provisions associated with mutual funds' direct investments in unicorns, with a particular focus on the corporate governance implications. We first provide a descriptive analysis regarding mutual fund investment in unicorns. Consistent with anecdotal evidence, our findings reveal a significant upward trend in mutual fund investment in unicorns. Compared to VCs, mutual funds invest in late rounds, hot sectors, and larger firms. We find that larger funds and funds with less volatile fund flows are more likely to invest in unicorns. Our results on the volatility of fund flows highlight the importance of funds' open-end structure and vulnerability to outflows on the types of unicorns that mutual funds invest in and on the contractual provisions that the funds prioritize.

Turning to the main focus of the paper, the analysis of contractual provisions, we relate the provisions in a given investment round to 1) a dummy variable for mutual fund participation

in the round, and 2) a continuous measure of the share of the round's funding that is provided by mutual funds. The former measure provides a straightforward look into how mutual fund involvement is associated with the contractual choices of a round, while the latter measure more accurately reflects the economic importance of mutual funds in shaping the contractual provisions of a given round. Both measures deliver similar results.

On the one hand, we find that mutual fund investments in unicorns are associated with both fewer standard cash flow rights and fewer control rights across a number of dimensions. For instance, rounds with mutual fund participation, which we refer to as mutual fund rounds, are more likely to use straight convertible preferred stock, which is associated with weaker indirect incentive provisions than the participating preferred stock that is popular among VCs (see Kaplan and Stromberg, 2003). Controlling for round number, rounds with mutual fund participation are significantly less likely to include representation on the board of directors: mutual fund rounds are thus less likely to directly monitor portfolio firms through board intervention or voting on important corporate actions. These results suggest that mutual funds are unlikely to provide direct corporate governance services similar to VCs.

On the other hand, we find that mutual fund rounds are associated with stronger investor rights across two dimensions. The first dimension is redemption rights that give investors the right to ask for their stake to be redeemed by the firm. Consistent with the importance of liquidity management, mutual fund rounds are significantly more likely to include such rights. A unique aspect of our study is that we examine not only whether an investment round includes redemption rights (i.e., the extensive margin), but also the details of redemption rights (i.e., the intensive margin, which we articulate later). Conditional on an investment round having redemption rights, mutual fund rounds are not only associated with significantly shorter delays

between the date that shareholders request redemptions and the actual payment date(s), but also require no or less strict voting procedures to trigger redemptions.

The second dimension is IPO-related rights. Following Gornall and Strebulaev (2018), we focus on two major IPO-related rights: IPO ratchets that promise investors a certain return in an IPO, and veto rights on down-valuation IPOs. Our evidence suggests that mutual fund investment is associated with stronger IPO-related rights across both dimensions.

Our results reflect mutual funds' unique contractual preferences compared to VCs. On the one hand, on average, mutual fund managers are unlikely to have the skill set to serve as directors of or mentors to managers, particularly ones with the special challenges facing high-growth private entities. This weakness likely leads to less direct monitoring through directors.

On the other hand, different from VCs, mutual funds' shares are redeemable on a daily basis. Moreover, they have to report their net asset value (NAV) and performance to shareholders on a daily basis. This implies that mutual funds have to carefully manage the liquidity mismatch between their assets and liabilities. Given that the secondary market for stakes in private firms is highly illiquid, mutual funds demand stronger redemption rights, possibly at the cost of sacrificing other cash-flow rights and governance provisions.<sup>4</sup> Similarly, given that a down-valuation IPO may force mutual funds to immediately mark down the value of their shares, mutual funds value stronger IPO-related rights such as IPO ratchets and down-IPO veto rights. Overall, the redemption and IPO-related provisions may help mutual funds better manage the two sides of their balance sheets as well as satisfy the regulatory requirements of the

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<sup>4</sup> Mutual funds may not need to exercise their redemption rights in practice: by strengthening their outside options, stronger redemption rights may also make the preferred stock easier to trade in the secondary market.

Investment Company Act of 1940 and the Investment Company Liquidity Disclosure Rule,<sup>5</sup> which apply to mutual funds but not to VCs.

Although our specifications with a round's mutual fund share suggest that mutual funds play an active role in negotiating or selecting certain contractual provisions, our data does not allow us to identify the causal effect of mutual fund participation on contractual provisions. In other words, the following two interpretations of our results are isomorphic: 1) contractual provisions are a direct outcome of negotiation between mutual funds and unicorns, or alternatively, 2) mutual funds choose to invest in unicorn-rounds with certain contractual provisions that these investors find appealing, and to invest more when such provisions are stronger. However, both interpretations are consistent with mutual funds preferring or requesting certain ex-ante contractual provisions, leading to ex-post implications for corporate governance. Importantly, we show that our results are robust to controlling for round fixed effects, valuations, and unicorn fixed effects. To help further rule out that mutual funds are naively following VCs or are investing in rounds that may not need strong governance, we also conduct a matching analysis between rounds with and without mutual fund participation (Section 4.2) and include additional controls, such as the number of existing directors representing preferred shareholders (Table A2 in the Appendix).

Overall, our findings provide a more balanced view of mutual funds' governance capacity. Although they are less involved than VCs in direct monitoring, their unique capital structure pushes mutual funds towards certain contractual features across financing rounds.

The most closely related papers in the literature are the contemporaneous research by Gornall and Strebulaev (2018) and Kwon, Lowry, and Qian (2018). Gornall and Strebulaev

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<sup>5</sup> See <https://www.sec.gov/rules/final/2018/ic-33142.pdf>.

(2018) use an asset pricing model to show that most unicorns are overpriced when contractual rights are considered. Kwon, Lowry, and Qian (2018) examine the trend of mutual fund investments in private firms using a larger sample of private firms going back to 1990 but a smaller sample of mutual funds. They find that mutual fund investments enable firms to stay private one to two years longer. Our paper complements them in that we focus on the corporate governance implications of mutual fund investments by examining detailed contractual rights.

To keep our paper focused, we leave a number of questions for future research. These include the impact of these non-traditional investors on the long-run performance of the private firms receiving the capital and whether mutual funds are a substitute for or a complement to venture investors. More generally, there are interesting open questions as to the optimal matching between different types of investors and firms. Also, the sample size of unicorns is still relatively small at the time of this study: unicorns are by definition relatively large private firms. We hope to extend this research as more unicorns emerge and exit (potentially via IPOs) in the future.

## **2 Data and institutional background**

One of the major challenges in studying investments in entrepreneurial private firms has been the absence of large, comprehensive datasets that include all investors (particularly those other than VCs), governance provisions, and financial performance (see Kaplan and Lerner, 2017, for a discussion). We combine novel data on the corporate governance provisions in the funding rounds of private firms with information on the mutual fund holdings of these firms. Our data on investment rounds and the associated corporate governance provisions come from the certificates of incorporation (COIs), which are amended and filed every time a firm raises a new

round of financing. Our data on mutual fund holdings of private firms come from SEC forms N-CSR and N-Q, complemented by the CRSP Mutual Fund Holdings database.

## **2.1 Identifying the sample of unicorns and investment rounds**

### **2.1.1 Unicorns**

We focus on U.S.-based private venture-backed firms that at some point between January 2012 and December 2016 had at least one investment round with nominal valuation of at least one billion U.S. dollars, that is, the so-called “unicorns.” Data on these high-profile firms is much more comprehensive: in particular, our main data source, VCExperts, has made a concerted effort to gather these firms’ regulatory filings, including the COIs that we use to identify corporate governance provisions.

We first identify unicorns based on the “WSJ Billion Dollar Startup Club” database compiled by Dow Jones.<sup>6</sup> Since its inception in January 2012, the database includes private firms that have raised VC financing and achieved a nominal valuation of over one billion U.S. dollars. It also includes firms that exited unicorn status during the time period, whether by acquisition, going public, or by being refinanced at a lower nominal valuation. The database excludes firms that achieved a billion-dollar valuation by going public or being acquired. There are 106 unicorns with financing round data and associated COIs in VCExperts.

An important caveat to using a single valuation cutoff is that, as documented by Metrick and Yasuda (2011) and Gornall and Strebulaev (2018), inferring accurate valuations of private venture-backed firms can be challenging. In particular, Dow Jones and most other practitioners would classify a firm as a unicorn if an investor paid \$100 million to purchase a block of

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<sup>6</sup> It is available at <http://graphics.wsj.com/billion-dollar-club/>. The database is maintained by the same team of analysts as the one that compiles Dow Jones’s VentureSource (formerly VentureOne) database, which has been extensively used in academic research (Kaplan and Lerner, 2017).

preferred shares convertible into common stock that would represent 10% of the firm on a fully converted basis (that is, if all other preferred shareholders converted their holdings as well). But these preferred shares may have rights (e.g., mandated dividends and liquidation preferences) that allow them to receive, for example, 40% of the firm's expected cash flows. In this instance, the "true" implied valuation may be \$250 million. For these reasons, we use post-money valuations estimated by VCExperts as a control only and interpret the results related to valuations with caution.

Also, in light of such complexities and potential disagreements about unicorn valuations, we extend the unicorn sample to include another 50 U.S.-based private venture-backed firms that at some point during the 2012-2016 period had at least one investment round with a nominal valuation of at least \$500 million. Although our main results are robust to whether we include these "almost-unicorn" firms, including them helps increase the sample size and thus the statistical power of our analysis. For simplicity, we refer to all firms in our sample as unicorns.

Overall, our sample consists of 156 private firms. We obtain firm-level characteristics, such as geographic and industry information, from Capital IQ and VCExperts.

### **2.1.2 Investment rounds**

We gather investment-round-level information from the COIs available through VCExperts for our sample firms going back to 2010. COIs are public documents filed by a firm with the Secretary of State of the state in which the firm is incorporated. In states such as California, Delaware, and many others, all firms are required to restate and file the COI when there are any changes in the authorized number of shares of equity outstanding, including preferred shares issued to institutional investors such as VCs and mutual funds. In particular, there are separate COIs filed for each investment round of private firms, as long as the given

round requires an increase in the total authorized number of equity shares. As a result, our analysis is unlikely to be subject to reporting biases.

Each COI sets forth the rights, preferences, and restrictions of each class and series of common and preferred shares. All investors in a given round typically share the same COI.<sup>7</sup> COIs thus allow us to document and analyze the contractual terms between the unicorns and their investors in the different investment rounds. For the same reason, our comparison between mutual funds and VCs are conducted across financing rounds but not within a single round. We discuss the definition of each of these contractual terms and the coding procedure in Section 2.4.

For each investment round, the COIs also document the number of authorized shares of common and convertible preferred shares, as well as their conversion price. Although the conversion price allows us to infer the direction of changes in valuations, we are generally not able to estimate valuations from the COIs directly: the number of shares actually outstanding is often ambiguous (often not all authorized shares are issued) and some of the variables we would need to do a “true” valuation along the lines of Metrick and Yasuda (2011) are missing. For this reason, we use the valuations estimated by VCExperts when available and as controls only, and interpret the results with caution.<sup>8</sup>

Overall, our sample consists of 742 financing rounds for which we were able to get COIs from VCExperts as of December 2016. Note that, although our sample selection criterion for firms is whether the firm had an investment round with nominal valuation of at least \$500

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<sup>7</sup> In rare cases, certain investors may enjoy different rights from other investors even within a single round. For example, as documented in Pinterest’s COI filed on March 16, 2015, Ben Silbermann, the President and a key investor, is entitled to three votes in his capacity as a member of the Board of Directors (the “Special Director Vote”), but such right is not applicable to matters relating to his compensation. However, such cases are generally rare and difficult to code systematically.

<sup>8</sup> VCExperts uses its own proprietary model to estimate the valuations of some investment rounds.

million during the 2012 to 2016 period, our sample of financing rounds covers the 2010 to 2016 period to better uncover the time trend of mutual fund investments in unicorns.

Finally, we note that it is generally challenging to get operating and financial data for private firms. We were able to estimate monthly employment numbers using information on employee profiles in LinkedIn. While a noisy proxy for the actual number of employees, we validate this measure by showing that it is strongly correlated with the number of participants in the firm's employee benefit plans, as reported on Form 5500.<sup>9</sup>

## **2.2 Mutual funds and their investments in unicorns**

In recent years, open-end mutual funds have been increasingly investing in the convertible preferred securities issued by unicorns both indirectly through secondary markets and directly by participating in investment rounds. In a mutual fund-involved investment round, mutual funds may either join a syndicate under a lead VC or negotiate directly with the firm. Mutual funds may even lead an investment round, as in Fidelity leading the D round of Uber (see Table 1).

Our sample of mutual funds consists of all actively managed U.S. domestic equity funds. We obtain fund characteristics such as size, family size, institutional share, management fees, and fund flow volatility from the CRSP Mutual Fund Database. Formal definitions of explanatory variables are in the Appendix Table A1. Summary statistics for mutual funds are reported in Table 2.

[Table 2 about here]

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<sup>9</sup> The Form 5500, Annual Return/Report of Employee Benefit Plan, is the publicly available form used to file an employee benefit plan's annual information return with the U.S. Department of Labor.

We use mutual funds' quarterly portfolio holdings for the fund-level analysis of the determinants of mutual fund investments in unicorns, and use their direct investments in unicorns for the round-level analysis of contractual provisions. Since there are no CUSIPs associated with private firms' preferred stocks, we first obtain quarterly portfolio holdings of unicorns from the CRSP Mutual Fund Holdings database by searching for the names of the unicorns in the holdings data.<sup>10</sup>

It is even more challenging to distinguish between direct investments and secondary-market transactions. To identify mutual fund direct investments in unicorns round by round, we further use SEC forms N-CSR and N-Q and apply the following two-step process.<sup>11</sup>

First, we identify cases where the security name in CRSP Mutual Fund Holdings database indicates the series of preferred stock and where a fund initiates a position in the specific series within a 60-day window of the corresponding round's closing date. In principle, it is impossible to fully distinguish between direct investments and secondary-market transactions. The process described above may inevitably include some secondary-market transactions of the corresponding series of preferred stocks. But given the proximity to the closing date, we consider such secondary-market transactions comparable to direct investments. We have also confirmed using other available data sources, such as Crunchbase, that the time difference between a direct

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<sup>10</sup> One challenge is that a unicorn may use different trading names in different investment rounds, and the trading names may be different from its registered name in the COI. We hand-collect all the available trading and alternative names for our sample unicorns (from their company websites and press releases) to obtain the highest-quality match possible between a unicorn name and the associated security names in the holdings data.

<sup>11</sup> Private firms generally disclose the number of their investors in the SEC Form D as well. Although the Form D also asks private firms to disclose the names of their investors and their respective investment amounts, such information is not required and thus the unicorns almost never disclose. The names of investors documented by other commercial databases rely on voluntary disclosure by the investors themselves; such information is only partial and thus is not useful for our purpose. As a result, we have to rely on the realized portfolio holdings of mutual funds, the disclosure of which is subject to the 1940 Act, to infer their investments in unicorns.

investment and the corresponding round closing date may be indeed larger than 30 days but is generally smaller than 60 days. Thus, we pick a 60-day window in our analysis.

In many cases, however, the title of security in CRSP Mutual Fund Holdings database does not state the series of preferred stock. Therefore, in the second step, we identify cases where at least one mutual fund increased its holdings of a unicorn within a 60-day window of a round's closing date. We then use N-CSR and N-Q filings to confirm whether the fund did invest in the series of preferred stock in question.

Once we confirm from the above two steps that at least one fund bought preferred stock within a 60-day window of the round's closing date, we set the *MFs* dummy, which is at the unicorn-round level, to 1, indicating that this round is a *mutual fund round*.<sup>12</sup> In our sample of 156 firms, 56 firms have at least one financing round with mutual fund participation. Table 3 reports the summary statistics for financing rounds, in particular, with and without mutual fund participation.

[Table 3 about here]

For each mutual fund round, we also calculate the share of the round's funding that is provided by mutual funds, which we refer to as the round's *mutual fund share (MF share)*.

## 2.3 Contractual provisions

Following Kaplan and Stromberg (2003), we focus on the major contractual provisions set forth in the COIs. These provisions specify the ex-ante allocation of cash flow and control rights between firms and their investors. We describe these provisions, their governance and

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<sup>12</sup> We do not include investments that are done through private equity funds, even if they are owned by mutual funds, such as Wellington Management's Hadley Harbor fund, which closed on around \$1 billion in 2014.

incentive implications, and our coding procedure in detail below. Table 4 reports summary statistics on the contractual provisions.

[Table 4 about here]

### 2.3.1 Standard cash-flow rights

*Liquidation rights.* Liquidation rights determine how the proceeds are shared among different groups of investors in a deemed liquidation event, which is usually defined as a sale of a firm or the majority of the firm’s assets. We consider three dimensions of liquidation rights.

First, *senior liquidation preference* specifies whether in the event of a liquidation event, a given class or family of classes of convertible preferred stocks is senior (senior liquidation preference = 1), or *pari passu* or junior (senior liquidation preference = 0) to the previous class or classes. Note that it is undefined for the first round (round A or a seed round) of a firm.

Second, *liquidation multiple* specifies how many times the original purchase price (plus any declared but unpaid dividends) the investor will be entitled to receive in preference to other shareholders. In the case of large exits, the amount received by converting the shares to common stock is likely to be greater, an option that investors will consequently exercise. Conversely, if the firm goes bankrupt or is sold for a very low amount, this contractually stipulated amount may not be received. To help with interpretation, we code whether the liquidation multiple is greater than one, that is, *liquidation multiple* > 1 as a dummy variable.

The third dimension of liquidation rights is *participation rights*. There are three possible types of participation rights associated with preferred shares. Participating provisions allow holders of convertible preferred stock to “double dip”: if a liquidation event is triggered, investors receive the stipulated amount—the liquidation multiple times the original purchase

price—back first and can then convert the convertible preferred stock into common stock and share the upside. We divide agreements into those with no participation or capped participation (participation rights = 0)<sup>13</sup> and with full participation (participation rights = 1). Intuitively, participation rights allow investors to receive both upside and downside protections. Overall, more senior liquidation preferences, higher liquidation multiples, and stronger participation rights are suggestive of stronger investor cash flow rights.

*Cumulative dividends.* Dividends provide a time-based guaranteed upside to investors. We consider whether the dividends are *cumulative*. Cumulative dividends (cumulative dividends = 1) are guaranteed; they accumulate over time and effectively increase the investors' return in the event of liquidation. In contrast, if dividends are not cumulative (cumulative dividends = 0), the dividends, if any, are paid only if declared at the discretion of the firm's board of directors, and thus are not guaranteed ex-ante. Overall, cumulative dividends are suggestive of stronger cash flow rights of the investors.

*Full ratchet anti-dilution protections.* Anti-dilution protections aim to protect the preferred investors in the event a firm issues new equity at a lower valuation than in previous financing rounds. Anti-dilution protections can be full ratchet (full ratchet anti-dilution protections = 1; the conversion price of the existing convertible preferred shares is adjusted downwards to the price at which the new shares are issued, regardless of the number of new shares issued), or weighted average (the conversion price of the existing convertible preferred shares is adjusted downwards according to a weighted average of the original and new financing sizes) or absent entirely (full ratchet anti-dilution provisions = 0 in both cases). The use of anti-

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<sup>13</sup> Capped participation means that the holders of a convertible preferred stock receive the liquidation multiple times the original purchase price back first and then share ratably with the holders of common stock up to a total liquidation amount per share equal to some multiple of the original purchase price.

dilution protections, and in particular full ratchet anti-dilution protections, is suggestive of strong investor cash flow rights.

### 2.3.2 Redemption rights

Given our focus on mutual funds, we classify redemption rights and the underlying detailed provisions as a separate category of contractual provisions.

*Redemption rights.* Redemption rights specify whether a class or series of convertible preferred stocks is redeemable (redemption rights = 1) at its holders' discretion. We call this the *extensive margin* of redemption rights. In the event of redemption, the par value of the corresponding convertible preferred stock is paid back to the redeeming investor, provided the firm has enough funds available.<sup>14</sup>

To our knowledge, there does not exist any data documenting how much the redeeming preferred shareholders actually get in the event of redemption. However, thanks to the rich structure of COIs, we are able to document and code several more granular dimensions regarding the details of redemption rights for any given investment round with redemption rights. We call these details the *intensive margin* of redemption rights.

In what follows, we highlight the institutional details regarding redemption rights as well as their economic implications. We stress that although these different dimensions may suggest relatively stronger or weaker redemption rights, the fact that an investment round has redemption rights always indicates stronger redemption rights than one without any redemption rights at all.

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<sup>14</sup> In our sample, some COIs specify that the redemption shall be met at either the original purchase price or an estimated "market" value of the preferred stocks at the time of redemption request. We choose not to code this variation because it is impossible to know the market value ex-ante.

*Months until first redemption.* When preferred stock is redeemable, investors can ask for redemption only after a certain date. We count the number of months from round closing until expiration of the “lock-in” period. A shorter lock-in period indicates stronger redemption rights.

*Delay after redemption notice.* Delay after redemption notice is the maximum number of days from the time investors submit a redemption notice, referred to as the notice or receipt date, to the time of first redemption payment, referred to as the redemption date. In some cases, the COIs indicate that a delay is possible but do not specify the maximum number of days allowed. In such cases, we use two specifications: one treats these cases as missing values, while the other sets these missing values to 365, which is the longest delay observed in the data.

*Voting requirements.* In some circumstances, a redemption notice from any shareholder is sufficient for redemption to take place (No vote necessary = 1), while in other circumstances a voting process by other shareholders is required (No vote necessary = 0). If voting is required, it may take place at either the specific class level (Class vote = 1) or the entire preferred stock level (Class vote = 0). In either case, the firm will send a vote notice to other shareholders in the required pool.<sup>15</sup> From the perspective of investors who want to redeem, no voting indicates strongest redemption rights, while class voting is preferable to voting by all preferred shares.

*Number of annual installments.* Firms may delay redeeming shares by spreading out redemption payments over time. We count the maximum number of annual installments allowed by the COI. If immediate payment is required, the number of annual installments is set to 0.

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<sup>15</sup> Technically, all the shares in the required voting pool will be redeemed by default, but shareholders who do not initiate the redemption request may choose to be excluded from redemptions. No matter whether they choose to be included or excluded from redemptions, they may choose to vote.

Stronger redemption rights, along both the extensive and intensive margins, imply that investors enjoy a higher level of asset liquidity. Stronger investor liquidity rights also imply stronger indirect corporate governance provisions for the entrepreneurs to perform better.

### **2.3.3 IPO-related rights**

Following Gornall and Strebulaev (2018), we consider two IPO-related rights that have been becoming more prevalent recently. These IPO-related rights are likely to be particularly salient for mutual funds that likely target IPO candidate firms and have long participated in IPOs as primary investors.

*IPO ratchets.* IPO ratchets, if present (IPO ratchets = 1), promise investors a pre-negotiated return in an IPO event, determined by the multiple. If the IPO price is below the original purchase price times the multiple, investors will be given extra shares to receive the pre-negotiated return on their investment. Economically, IPO ratchets are analogous to anti-dilution rights where investors are effectively given extra shares (by lowering the conversion price) in the event of future down rounds of private investing.

*Down-IPO veto rights.* Typically, investors of preferred stocks are forced to convert their shares in an IPO event due to the presence of automatic conversion provisions in almost all COIs. However, the veto rights on down-valuation IPOs, if they exist (down-IPO veto = 1) allow the investors an exemption to keep their preferred stocks unconverted and thus senior to common stocks when the IPO price is below a pre-negotiated level. In practice, such veto rights increase the probability that exits are done via M&As rather than IPOs when exit valuations are relatively low, thus increasing the expected present value of having higher liquidation preference or liquidation multiples.

Generally, having these IPO-related rights give investors more protections in a potentially low-valuation IPO. Thus, they are suggestive of stronger investor rights and governance provisions.

### **2.3.4 Control rights**

*Voting rights to elect directors.* Investors in preferred shares may have the right to elect a certain number of directors, who represent either the preferred investors collectively or that particular class or series. We focus on three components of such rights. First, we consider the number of director(s) that the investors of a class or series of convertible preferred stocks are able to elect as a separate voting class. We call such directors *class directors* and code the stipulated number. Second, we consider the number of director(s) that the investors of a class or series are able to elect with all of other classes of convertible preferred stocks as a whole. We again tabulate the number of such *preferred directors*. Third, we consider the number of director(s) that the investors of a class or series are able to elect with some but not all of the other classes of investors as a pool. We again total the number of such *pool directors*. More and stronger voting rights to elect directors are suggestive of stronger corporate governance provisions.

*Protective provisions.* Protective provisions are analogous to veto rights: they give the investors of a class or series of convertible preferred stocks the right to veto certain actions by the firm or other class or series of equity holders. There are many more possible types of protective provisions than one can reasonably code, and it is generally difficult to weigh their relative importance.<sup>16</sup> As a result, we simply count the number of protective provisions for any

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<sup>16</sup> Typical corporate actions that are subject to protective provisions include but are not limited to 1) to liquidate, dissolve, or wind-up the corporation to effect any merger or consolidation, 2) to amend, alter, or repeal any

given class or series of convertible preferred stocks. Similar to the analysis of voting rights to elect directors, we consider protective provisions at two levels. The count of *separate protective provisions* includes the protective provisions exclusively associated with the specific series of convertible preferred shares, while the count of *preferred protective provisions* includes those that are associated with all classes of convertible stock as a single voting class. A larger number of protective provisions is generally suggestive of stronger corporate governance provisions.

Note that we code all the provisions for each unicorn-round at the time of the financing. In other words, we focus on the ex-ante contractual and incentive provisions at the time investors and firm negotiate the investment round. Provisions associated with a specific class or series of convertible preferred stocks may be revised in subsequent investment rounds (see Broughman and Fried, 2010). But such revisions would be a much less clear indicator of the strength of ex-ante corporate governance provisions by the specific class of investors.

### **3 Empirical results**

#### **3.1 Time trends in mutual fund investment in unicorns**

We start by documenting in Figure 1 the increased propensity for mutual funds to invest in unicorns. Panel (a) of Figure 1 shows that over the 2010-2016 period, the number of distinct funds directly investing in unicorns has increased from less than 10 to more than 140. Panel (b) of Figure 1 illustrates the increase over time in mutual funds' aggregate holdings of unicorns. The dollar value of aggregate holdings has also increased by an order of magnitude, from less

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provision of the COI or bylaws of the corporation in a manner that adversely affects the powers, preferences, or rights of the given series, 3) to create any additional class or series of capital stock, 4) to reclassify or alter any existing security of the corporation that is *pari passu* with the given series, and 5) to increase or decrease the authorized number of directors.

than \$1 billion to more than \$8 billion. These results paint a consistent picture of unicorn investments becoming a more important part of the portfolios of open-end mutual funds.

[Figure 1 about here]

From another perspective, Panel (c) of Figure 1 shows that the fraction of unicorn financing rounds with one or more mutual funds participating directly has also increased significantly over our sample period. In 2010-2011, less than 5% of financing rounds involved mutual funds as investors; by 2015-2016, this fraction had climbed to 40%. We note that the quarterly volatility of mutual fund direct investment in unicorns was high across the four quarters of 2016, possibly consistent with the general difficulty of private firms getting new funding that year.<sup>17</sup> Overall, the results in Figure 1 suggest that mutual funds are increasingly becoming an important source of capital for entrepreneurial firms, consistent with the findings in Kwon, Lowry, and Qian (2018).

## **3.2 Determinants of mutual fund investment in unicorns**

We next explore the cross section of mutual fund investments in unicorns, asking two main questions. First, which firms and rounds are mutual funds more likely to invest in? And second, which funds are more likely to invest in unicorns?

### **3.2.1 Which firms and rounds are mutual funds more likely to invest in?**

Figure 2 reports the probability of mutual funds investing in different types of unicorns. Panel (a) shows that mutual funds are much more likely to participate in late than in early financing rounds. In our data, mutual funds did not participate in any seed round. On the other hand, more than 36% of Series F, 50% of Series G, and more than 47% of H or later rounds

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<sup>17</sup> For example, see “Blood in the Water: 90% of the Billion-Dollar Unicorn Startups Are in Trouble,” *Business Insider*, January 21, 2016.

involve mutual funds. This pattern is consistent with the anecdotal evidence that mutual funds hope to boost their portfolio performance by investing in companies that are close to going public or being acquired.<sup>18</sup>

[Figure 2 about here]

Panel (b) shows that Healthcare and Information Technology (IT) are the two industries that are most likely to see mutual fund investments. This result is also consistent with the anecdotal evidence suggesting that mutual funds chase unicorns in “hot” industries.

Panel (c) shows that unicorns in Massachusetts are most likely to attract mutual fund direct investments, followed by unicorns in the states of California, Washington, New York, and other states. Since Fidelity, with its headquarters in Boston, is the largest fund family that has been consistently investing in unicorns, this pattern suggests a potential home bias in mutual fund investments in unicorns. This pattern might also be driven by savings in due diligence costs.

An important question is how firm size interacts with mutual fund investment. Due to the difficulty in getting data on private firms’ sales, we use employment as a proxy for firm size. Panel (d) shows that larger firms, that is, firms with more employees, are more likely to attract mutual fund direct investments.

From a slightly different angle, Figure 3 examines the conditional distribution of unicorn financing rounds with and without mutual fund participation. We report the distribution of mutual fund-involved rounds across rounds (Panel a), sectors (Panel b), states of headquarters (Panel c), and compare it to the corresponding distribution of investment rounds without any mutual fund involvement. Panel (a) shows that the distribution of rounds with mutual fund

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<sup>18</sup> For example, see “T Rowe Price \$17bn Fund Reveals Details of Private Investments,” *Financial Times*, February 28, 2017.

involvement is more heavily tilted towards later investment rounds. Panel (b) shows that mutual fund rounds are more likely to be in the Healthcare and IT sectors. Panel (c) suggests that rounds with mutual funds are more likely to be in California and Massachusetts.

[Figure 3 about here]

Table 5 reports more formal statistical evidence on the characteristics of firms in which mutual funds invest. We estimate linear probability model regressions of mutual fund participation on firm age, size, sector, state of headquarters, and being previously funded by a top-10 VC (in the spirit of Gompers et al, 2010). We also control for year and round fixed effects. Firm size, as proxied by employment, is consistently positively correlated with mutual fund investment. A doubling in firm size is associated with about 4.5-5.1% higher probability of mutual fund participation. However, the top-10 VC dummy is not statistically significant (column 3), suggesting that mutual fund investments are unlikely to be driven by mutual funds naively following star VCs. We still find that mutual funds are more likely to invest in unicorns in the healthcare sector and in firms headquartered in Massachusetts, but the latter location effect is not statistically significant once firm size is controlled for.

[Table 5 about here]

### **3.2.2 Which funds are more likely to invest in unicorns?**

We next ask which funds are more likely to invest in unicorns. First, we hypothesize that larger funds are more likely to invest in unicorns because they incur lower costs in researching private firms (e.g., Iliev and Lowry 2014). Second, according to Chernenko and Sunderam (2017), funds with higher flow volatility should be less likely to invest in unicorns because concerns about their own flows would steer their portfolios away from less liquid assets. Finally,

we control for the management fee and institutional share of mutual funds 1) to check whether mutual funds are investing in unicorns to cater to any specific clientele of investors, and b) to disentangle the effects of institutional share versus flow volatility, since the two variables could be highly correlated with each other (see, e.g., Chen, Goldstein, and Jiang 2010). Table 6 reports the results.

[Table 6 about here]

We estimate a linear probability model to handle the large number of fixed effects. Logit and probit models, as well as Tobit model of the share of the portfolio invested in unicorns, generate similar results. We include year fixed effects (column 2), both year fixed effects and the Lipper objective fixed effects (column 3), and fixed effects for the Lipper objective interacted with year (column 4). These fixed effects control for the aggregate time trends documented in Figure 1, as well as any objective-level unobserved characteristics. All explanatory variables are standardized so that their coefficients represent the effect on a one-standard-deviation change.

We find that larger mutual funds are significantly more likely to invest in unicorns. The economic magnitude is large: a one-standard-deviation increase in fund size is associated with about 1.59-1.76% increase in the probability of investment in unicorns. This is considerable relative to the unconditional investment probability (in any unicorn) of 2.60%. These results are consistent with economies of scale, whereby larger funds are in a better position to bear the fixed research and legal costs necessary to invest in unicorns. We also find evidence of economies of scale at the fund family level: funds offered by larger fund families are significantly more likely to invest in unicorns.

Funds with more volatile fund flows are significantly less likely to invest in unicorns. A one-standard-deviation increase in flow volatility is associated with an about 0.22-0.27%

decrease in the probability of investment in unicorns. Intuitively, investing in a very illiquid asset is likely to be especially costly for funds with more volatile and less predictable fund flows, as these funds might be forced to sell their illiquid assets in order to meet redemption requests.

Finally, we find no significant effect of management fee or institutional share on the probability of investing, suggesting that the effects of fund size and flow volatility are unlikely to be driven by any clientele effects.

### **3.3 Contractual provisions in unicorn investments**

As a benchmark, Figure 4 presents the prevalence of contractual provisions across rounds, and contrasts it to mutual fund participation by financing round. It shows that the prevalence of the various contractual provisions in our sample is comparable to that in earlier studies focusing on venture-backed firms (Kaplan and Stromberg 2003, Bengtsson and Sensoy 2011).<sup>19</sup>

[Figure 4 about here]

How do the contractual provisions vary with and without mutual fund participation? Figure 5 provides a first look at the differences in key ex-ante contractual provisions across rounds with and without mutual fund participation.

[Figure 5 about here]

Figure 5 shows that financing rounds with mutual fund participation are more likely to have IPO ratchets (Panel a), down-IPO veto rights (Panel b), and redemption rights (Panel c), and also less likely to be represented on the board of directors (Panel d). At the same time, rounds with mutual fund participation are less likely to have participation rights (Panel e).

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<sup>19</sup> For example, Kaplan and Stromberg (2003) document that 38% of financial rounds have participation rights while less in later rounds, roughly consistent with Panel (c) in Figure 4.

Although suggestive, the results in Figure 5 do not control for round number or time, and thus could be driven by mutual funds investing in later rounds and increasing their investment pace over time. To address these concerns, we next turn to a more formal regression analysis.

Table 7 reports the results of our baseline regressions of the key contractual provisions, including redemption rights, IPO-related rights, standard cash flow rights, and control rights, on mutual fund participation, as captured by the *MFs* dummy. We use this specific order of different rights (different from the order as we first introduced them) to better illustrate the underlying economic channels. Throughout the various specifications, we include a) year fixed effects to control for systematic differences across vintages and b) round fixed effects to control for systematic differences across early- versus late-state rounds. In certain specifications, we include unicorn-specific fixed effects to control for unobserved firm-level characteristics. We also include post-money round valuations estimated by VCExperts as a control for unobserved firm characteristics at the time of the financing round.

[Table 7 about here]

### **3.3.1 Redemption rights and IPO-related rights**

In columns 1 through 12 of Table 7, the dependent variables are the redemption rights, IPO ratchet, and down-IPO veto rights variables, as well as an index of redemption and IPO-related rights. We find strong evidence that mutual fund rounds are likely to include stronger redemption and IPO-related rights.

First, mutual fund participation is significantly correlated with stronger redemption rights at the extensive margin. The difference in redemption rights between rounds with and without mutual fund participation is particularly large economically. According to the results in column 1,

convertible preferred stock issued in rounds with mutual fund participation is 14.7% more likely to have redemption rights when controlling for round and time fixed effects. After further controlling for post-money valuation (column 2), the results are still statistically significant and the economic magnitude is even stronger: mutual fund rounds are 18.3% more likely to have redemption provisions. The association between mutual fund participation and stronger redemption rights is thus unlikely to be driven by mutual funds selecting more successful investment rounds, but instead reflects the funds' preferences among contractual provisions.

Similarly, mutual fund rounds are 19.0% more likely to have down-IPO veto rights when controlling for round and time fixed effects and post-money valuation (column 8). We also find that some evidence that mutual fund rounds are more likely to include IPO ratchets, although this result is not statistically significant. (This result becomes statistically significant when we use the mutual fund share of the financing round as the explanatory variable in Table 9.) Finally, to increase our statistical power, we create an "IPO and redemption index" by adding up the redemption and the two IPO-related provision dummies. The results reported in columns 10 through 12 are consistent and statistically significant.

### **3.3.2 Standard cash flow rights**

We next look at the variables measuring standard cash flow rights. These are 1) participation rights (columns 13-15), 2) senior liquidation preference (columns 16-18), 3) whether the liquidation multiple is greater than one (columns 19-21), 4) cumulative dividends (columns 22-24), and 5) a "standard cash flow index" that is the sum of the four dummies.<sup>20</sup> For all of these provisions, larger values are indicative of investors in the financing round receiving

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<sup>20</sup> To make the tables concise, we chose not to include the results on full ratchet anti-dilution protections, as these have very few non-zero observations (see Table 4). The regression coefficients are negative but statistically insignificant.

stronger cash flow rights. Thus, a negative regression coefficient suggests a negative association between mutual fund participation and these provisions.

Columns 13-15 show a significant and strong evidence that mutual fund rounds are less likely to include participation rights. For example, with year and round fixed effects, mutual fund rounds are 12.2% less likely to have participation rights. We also find some suggestive, albeit less significant, evidence that mutual fund rounds are less likely to have a liquidation multiple greater than one (columns 19-21) or cumulative dividends (columns 22-24). Mutual fund participation is strongly negatively associated with the cash flow index (columns 25-27).

### **3.3.3 Control and voting rights**

We next turn our attention to control rights and look at 1) the right to elect directors and 2) protective provisions. We start with the regressions of the right to elect the board of directors, since the board of directors plays an important role in corporate governance and monitoring (Adams, Hermalin, and Weisbach, 2010) and since outside directors can be particularly effective (Lerner, 1995, Duchin, Matsusaka, and Ozbas, 2010). Because the vast majority of director elections are uncontested (Cai, Garner, and Walkling, 2009), the number of directors that a class or series of investors can elect and vote for is a good measure of the strength of monitoring.

In columns 28-30, the dependent variable is the number of directors that holders of the preferred series can elect exclusively. In columns 31-33, the dependent variable is the total number of directors that a class or series of investors can elect, including class directors, preferred directors and pool directors, as defined earlier. Since preferred directors and pool directors do not represent a single class of investors, we weight them to reflect the governance provisions by the investors in the investment round. Specifically, we divide the number of

preferred directors by the round's number under the assumption that these preferred directors represent equally all classes of preferred stock investors. Similarly, for pool directors, we divide the number of directors by the number of classes in the voting pool under the same assumption. We sum up these numbers to get the weight-adjusted total directors for each investment round.

The results show a robust pattern: rounds with mutual fund participation are associated with weaker rights to elect and vote for directors, and the effects are both economically and statistically significant. Specifically, mutual funds participation is associated with 0.23-0.40 fewer class directors (columns 28-30) and 0.28-0.45 fewer weight-adjusted total directors (columns 31-33) across different specifications.

These results thus reveal an important difference between mutual funds and VCs in their investments in private firms. While VCs provide monitoring and value-added to their portfolio firms by serving on the board and bringing in outside directors (Lerner, 1995, Hellmann and Puri, 2002), mutual funds are significantly less likely to get involved in corporate governance through representation on the board of directors on average. Our results are thus broadly consistent with the existing evidence that mutual funds are not very active in voting on director elections in public firms (Choi, Fisch, and Kahan, 2013, Iliev and Lowry, 2015).

We next turn to the protective provisions. In columns 34-36, we look at the number of protective provisions. The results show that mutual fund participation is generally associated with more protective provisions, suggesting that mutual fund-involved rounds' lack of representation on boards is likely to be partially compensated by enjoying more veto rights. This is also consistent with our earlier results that mutual fund rounds are more likely to have veto rights on a down-valuation IPO.

While it is difficult to systematically code the various protective provisions, in many cases they are meant to ensure that the rights of a given series of preferred stock are not adversely affected in subsequent rounds. Generic protective provisions require preferred stockholders to approve any changes to the COI that would change the number of authorized shares or that would amend the COI to change the rights of a given series of preferred stock. More specific provisions protect the special redemption, IPO-related, and cash flow rights.<sup>21</sup>

One concern is that mutual funds' lack of board representation is driven by them being more interested in later rounds, when boards already having many existing directors. Although this is unlikely because we include round fixed effects in all specifications, we formally address this concern by directly controlling for the number of existing directors representing the preferred investors. To do this, we calculate the number of existing directors at the time of a given round by summing up the numbers of directors that the preferred shareholders in all the previous rounds are eligible to elect,<sup>22</sup> under the assumption that all existing shareholders have elected directors to represent them. We view this assumption to be plausible because the vast majority of director elections are uncontested (Cai, Garner, and Walkling, 2009).

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<sup>21</sup> For example, Series C-1, C-2, and C-3 of Uber have an IPO ratchet provision with a 1.25 multiple. While Series C-1 IPO ratchet provision itself is described in Article IV, Section (B)4(b)(i), the protective provisions in Article IV, Section (B)6(d)(v) require a majority of Series C-1 shareholders to “amend, alter or repeal Article IV, Section (B)4(b)(i) ... of the Restated Certificate of Incorporation so as to affect the holders of Series C-1 Preferred Stock adversely.” As another example, Series F of Box was guaranteed a return of at least the initial conversion price of \$20, increasing at \$3 per year. These rights are codified in Section 4 of the COI. The protective provisions of Section 6(j)(v) require two-thirds of Series F shareholders to approve any action that “waives, or results in a waiver of, an adjustment of the Series F Conversion Price or any other Series F Preferred conversion rights pursuant to any provision of Section 4 hereof.” The protective provisions also require two-thirds of Series F shareholders to waive “the treatment of any event as a Deemed Liquidation or Qualified IPO, or amend the definition of a Deemed Liquidation or Qualified IPO in the Certificate of Incorporation to exclude a transaction that would otherwise qualify as such.” Finally, to ensure that the protective provisions themselves are not weakened later on, Section 6(j)(vii) requires two-thirds of Series F shareholders to approve any action that “waives, amends, alters or repeals this Section 6(j).”

<sup>22</sup> Specifically, we total up 1) the sum of the number of class directors that the preferred shareholders in all the previous rounds are eligible to elect, 2) the maximum number of preferred directors that the preferred shareholders in all the previous rounds are eligible to elect, and 3) the weight-adjusted sum (by the pool size) of the number of pool directors that the preferred shareholders in all the previous rounds are eligible to elect. Note that the COIs do not have information about the number of directors that common stock shareholders are potentially eligible to elect.

Table A2 in the Appendix reports the results. In particular, columns 28-33 in Table A2 show that the negative association between mutual fund participation and the number of directors becomes even stronger and more statistically significant after controlling for the number of existing directors. In addition, mutual fund participation is still significantly and positively associated with redemption and IPO-related rights, while negatively associated with standard cash flow rights. These findings suggest that our results are unlikely to be driven by later rounds already having many existing directors and instead are more likely to reflect mutual funds' contracting preferences.

### **3.4 Intensive margin of redemption rights**

To better understand along which dimensions mutual fund rounds are likely to be associated with stronger redemption rights, we examine the intensive margin of redemption rights. The results are reported in Table 8, where Panel (a) is the baseline OLS regression, Panel (b) includes year and round fixed effects, and Panel (c) includes unicorn-specific fixed effects.

[Table 8 about here]

Conditional on a round having redemption rights, mutual fund rounds are associated with stronger redemption rights along almost all the detailed dimensions that we consider, with the majority of them being statistically significant in the baseline regression and also when year and round fixed effects are included. First, mutual fund participation is associated with significantly shorter delays between the notice/receipt date and actual redemption date. As suggested in column 2, mutual fund participation is associated with a delay that is 26.6 days shorter (18.0 days when round and year fixed effects are included, as in column 8). Some COIs indicate that a delay is possible but do not specify the maximum days allowed. If we set the delay in these cases

to 365 days (the longest delay observed in the data), instead of treating them as missing values, column 3 suggests that mutual fund participation is associated with a reduced delay of 82.6 days (96.3 days when round and year fixed effects are included, as in column 9). Columns 6, 12, and 18 indicate that in mutual fund rounds, actual cash distributions are spread out across fewer annual installments, that is, less likely to be delayed; in terms of the magnitude, mutual fund participation is associated with a reduced delay of about 0.58-0.78 of a year. Finally, although less statistically significant, we find suggestive evidence that mutual fund rounds may be associated with an about four months shorter delay until investors can initiate a redemption request (columns 1, 7, and 13).

We argue that these results concerning redemption and IPO-related rights are intuitive: mutual funds must manage the risk management associated with their unique balance sheets and regulatory requirements. Compared to VCs, mutual funds have much more liquid liabilities, are subject to daily redemptions, and have to report their NAV and performance on a daily basis according to the Investment Company Act of 1940. To better manage the liquidity risk associated with large redemptions from their shareholders, mutual funds request stronger redemption rights from the unicorns in which they invest. Even if mutual funds do not intend to redeem their holdings of unicorns, they might still want to have the redemption rights ex-ante to inform the SEC and their investors that they can exit their unicorn investment if needed. Similarly, given that a down-valuation IPO may force mutual funds to mark down the value of their shares immediately, which would generate a more immediate, negative impact on their NAV and performance compared to VCs, mutual funds demand stronger IPO protections. This argument is further supported by the fact in Panel (a), Figure 3 that compared to VCs, mutual funds are more likely to invest in later stages, which are closer to potentially going public.

In all, these round-level results shown above are suggestive of mutual funds being willing to give up some standard cash flow and control rights in exchange for stronger redemption and IPO-related rights. These findings regarding the mutual funds' contracting choices are further echoed by the following analysis that examines the share of the round's funding that is provided by mutual funds.

### **3.5 Mutual fund share of the investment round**

If mutual funds are indeed negotiating and selecting rounds with redemption and IPO-related rights, then our results concerning the contractual provisions should be driven by rounds where mutual funds account for a large fraction of the total amount provided in the round. To test this hypothesis, we re-estimate the regressions of Table 7 using *MF share*, which is defined as the share of the round's funding that is provided by mutual funds. Table 9 reports the results.

[Table 9 about here]

Columns 1 through 12 show that investment rounds with a higher *MF share* are significantly more likely to have redemption rights, IPO ratchets, and (in some specifications) down-IPO veto rights. The economic magnitudes are again quite large: with year and round fixed effects and controlling for valuations, a 10% increase in mutual fund share is significantly associated with a 3.4% increase in redemption rights, a 2.4% increase in IPO ratchets, and a 2.4% increase in down-IPO veto rights.

Turning to the cash flow rights, when year and round fixed effects are included, only the liquidation-multiple-greater-than-one variable is statistically significant at the 10% level. While most of the individual cash flow rights are not statistically significant, *MF Share* is statistically significant at the 5% level in the analysis of the cash flow index (column 25). We also find that a

higher *MF Share* is significantly associated with fewer directors and more protective provisions. Overall, the results in Table 9 suggest that the greater representation of mutual funds among investors in a financing round amplifies the relationships between that the presence of mutual funds and contractual provisions documented earlier.

### **3.6 Matching Analysis**

As a robustness check that our results are not driven by the possibility that rounds with and without mutual fund participation are fundamentally different, we conduct a matching analysis examining the presence of various contractual provisions across rounds with and without mutual fund participation. Table 10 reports the average treatment effect on the treated (ATET), where rounds with mutual fund participation are considered to be treated. Odd-numbered columns match rounds with and without mutual fund participation based on the year and financing round (capped at Series E and above). Even-numbered columns further match on log employment and log age, using Mahalanobis distance to help control for time-varying firm-level characteristics. Table 10 shows that along all contractual dimensions, the estimated ATETs are quite similar to the estimated coefficients on the mutual fund participation dummy in Table 7.

[Table 10 about here]

### **3.7 Correlation in contractual provisions**

To provide another perspective on mutual funds' unique contractual preferences, Table 11 presents the pairwise correlations across different contractual provisions and compares rounds without mutual fund participation (Panel a) to those without mutual fund participation (Panel b).

[Table 11 about here]

We focus in particular on the interaction between 1) redemption and IPO-related rights and 2) standard cash flow rights. As Gornall and Strebulaev (2018) suggest, having down-IPO veto rights is generally more valuable if the investors also obtained senior liquidation preferences or a greater liquidation multiple, since those will enable the investors to receive a disproportionately large share of the exit proceeds in case of an exit through an acquisition. Panel (a) shows it is indeed the case for rounds without mutual fund participation (thus, presumably dominated by VCs): the correlation between having down-IPO rights and senior liquidation preference is 0.167 and that between having down-IPO rights and a greater-than-one liquidation multiple is 0.096, both of which are significant. In Panel (b), which restricts the analysis to rounds with mutual fund participation, both correlations become smaller and insignificant.

Given our earlier results that mutual fund investments are associated with stronger down-IPO veto rights and weaker standard cash flow rights, this comparison suggests that mutual funds do disproportionately value stronger IPO-related rights despite the lack of complementary strong cash flow rights. Thus, this comparison provides another way to illustrate mutual funds' unique contractual preferences, due to their higher vulnerability to down-valuation IPOs.

Similarly, the correlation between IPO ratchets and a greater-than-one liquidation multiple is 0.195 and significant for rounds without mutual fund participation, but becomes smaller and insignificant for those with mutual fund participation.

### **3.8 Relationship between fund characteristics and contractual provisions**

To shed additional light on the economic mechanism linking mutual fund participation with the contractual provisions, we explore in Table 12 the association between the characteristics of mutual funds investing in a given round and the round's contractual provisions.

The sample consists of 100 rounds with mutual fund participation. For each round we either calculate the value-weighted average of the characteristics of all participating mutual funds (Panel a) or take the characteristics of the fund purchasing the largest stake (Panel b). For simplicity we refer to such funds as lead funds. We include year and round fixed effects in all regressions.

[Table 12 about here]

Given the relatively small sample size, regressions in Table 12 have limited statistical power. However, a couple of results stand out and are consistent with our key message.<sup>23</sup> As shown in columns 1-4 of Panel (a) and 13-16 of Panel (b), the flow volatility of the participating funds is strongly associated with a higher probability of the round having redemption and IPO-related rights. The economic magnitudes are also quite large: a one-standard-deviation increase in the flow volatility of the participating funds is associated with an 11.8% higher probability of having redemption rights and an 11.3% higher probability of having down-IPO veto rights. These findings are consistent with the economic view that mutual funds' unique capital structure and risk management—in particular, their need to handle daily inflows and outflows and marking-to-market—pushes them to request stronger redemption and IPO-related rights.

### **3.9 IPO ratchets: a case study**

Given mutual funds' preferences for different contractual provisions as revealed by our results, a natural question is whether the rights requested by mutual funds do indeed benefit them ex-post. Answering this question is challenging due to the limited sample period and data

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<sup>23</sup> Given the relatively small sample size and the strong correlation (0.57) between fund size and family size in our sample, we control for only one measure of size at a time. Our benchmark specifications in Table 12 use family size, because the contractual terms with portfolio unicorns are often negotiated by the fund family rather than by individual funds. We obtain similar, though slightly weaker, results when using fund instead of family size.

availability: we are not aware of any reliable and systematic data documenting the ex-post exercise of redemption or down-IPO veto rights. However, as a case study, we provide evidence that in cases where IPO ratchets were triggered, investors were indeed given extra shares that allowed investors to generate promised returns. These cases suggest that mutual funds may indeed benefit from having these protections in the preferred stocks that they invest in.

Within our sample unicorns, we found three unicorns whose convertible preferred stocks had IPO ratchets that were triggered during down IPOs. The first one is Box Inc., which went public at \$14 per share. The firm's series F preferred stock had an initial purchase price of \$20 per share with an IPO ratchet with a multiple of 1.11. Its series E preferred stock had an initial purchase price of \$18 per share with an IPO ratchet with a multiple of 1. The second case is Chegg Inc. which went public at \$12.50 per share. Its series E preferred stock had an initial purchase price of \$9.85 per share with an IPO ratchet with a multiple of 1.5. Finally, Square Inc. went public at \$9 per share, while its series E preferred stock had an initial purchase price of \$15.46 per share with an IPO ratchet with a multiple of 1.2. In all of these cases, investors in rounds with IPO ratchets received extra shares at IPO to guarantee their promised returns.<sup>24</sup> For example, Box Inc. raised \$150 million in its round F from two investors, Coatue Management and TPG Capital. Under the IPO ratchet as described above, Coatue and TPG were entitled to receive additional shares. Specifically, Box's lower IPO price at \$14 a share effectively dropped Coatue and TPG's purchase price to \$12.60 a share ( $= \$14 / 1.11$ ) and thus increased the number of shares they received by 58.7% ( $= \$20 / \$12.6 - 1$ ).

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<sup>24</sup> For detailed documents of these three cases, see <https://www.nytimes.com/2015/06/08/business/dealbook/protections-for-late-investors-can-inflate-start-up-valuations.html/> for Box, <https://blogs.wsj.com/digits/2015/10/21/valuation-hungry-startups-should-heed-cheggs-disastrous-ipo-ratchet/> for Chegg, and <https://blogs.wsj.com/digits/2015/11/18/square-pays-93-million-penalty-to-some-investors-in-ipo/> for Square.

## 4 Conclusion

Using novel contract-level data, we study the recent trend in open-end mutual funds investing in unicorns—large, privately held start-ups—and the contractual consequences of these investments. Larger mutual funds and those having more stable funding are more likely to invest in unicorns. Having to carefully manage their own liquidity, mutual funds require stronger redemption rights along both the intensive and extensive margins and IPO-related rights, suggesting contractual choices consistent with the funds’ reliance on short-term funding. But compared to venture capital groups, mutual funds have weaker standard cash flow rights and are less involved in firms’ corporate governance, being particularly underrepresented on boards of directors.

Overall, our results suggest that compared to VCs, mutual funds request more redemption and IPO-related rights but are less likely to be involved in direct monitoring. We highlight that this trade-off may reflect not necessarily the lack of aptitude for such tasks, but rather the central importance of risk management for mutual funds. In this sense, our findings provide a novel and more balanced view regarding mutual funds’ contracting priorities when investing in private firms.

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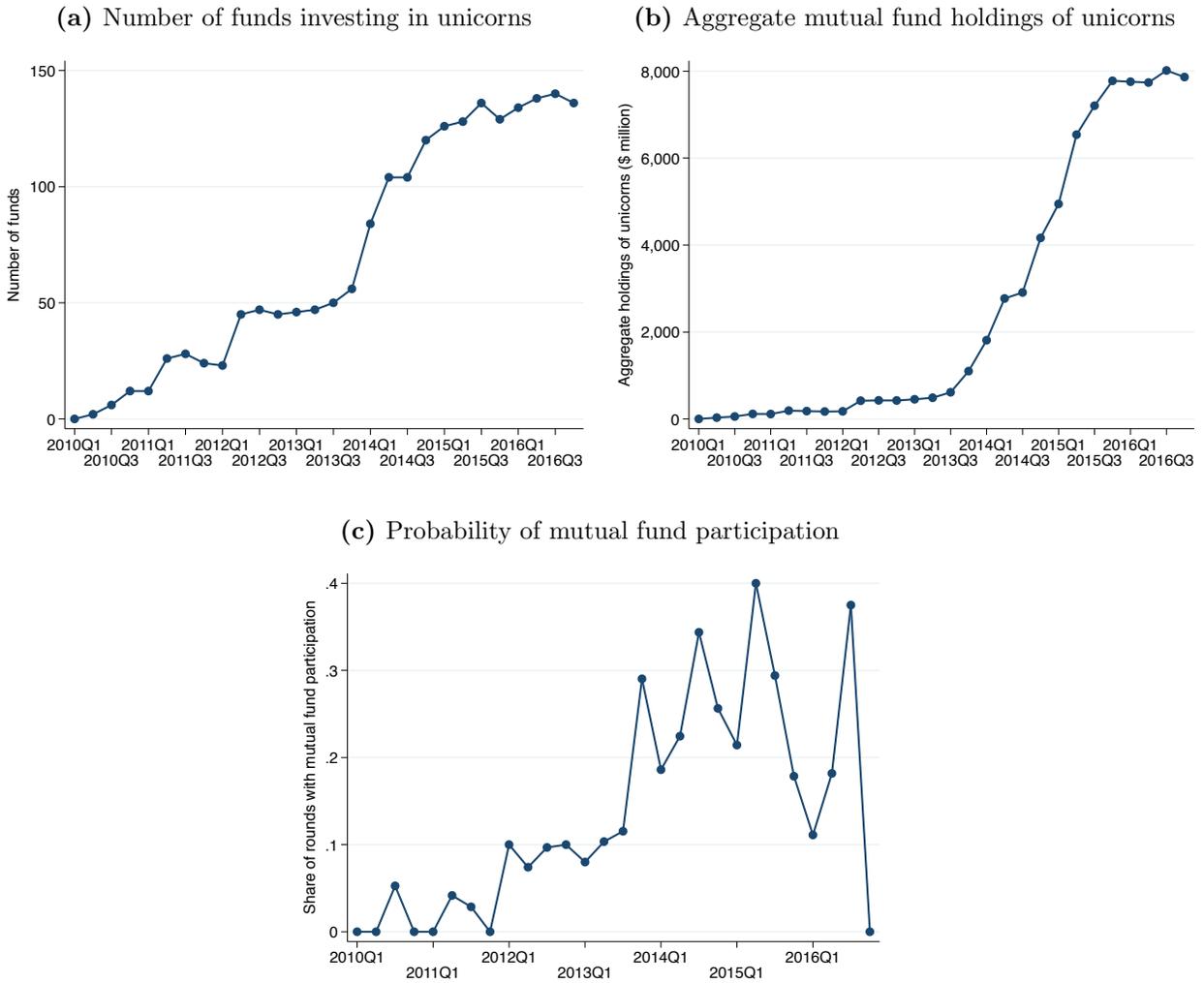
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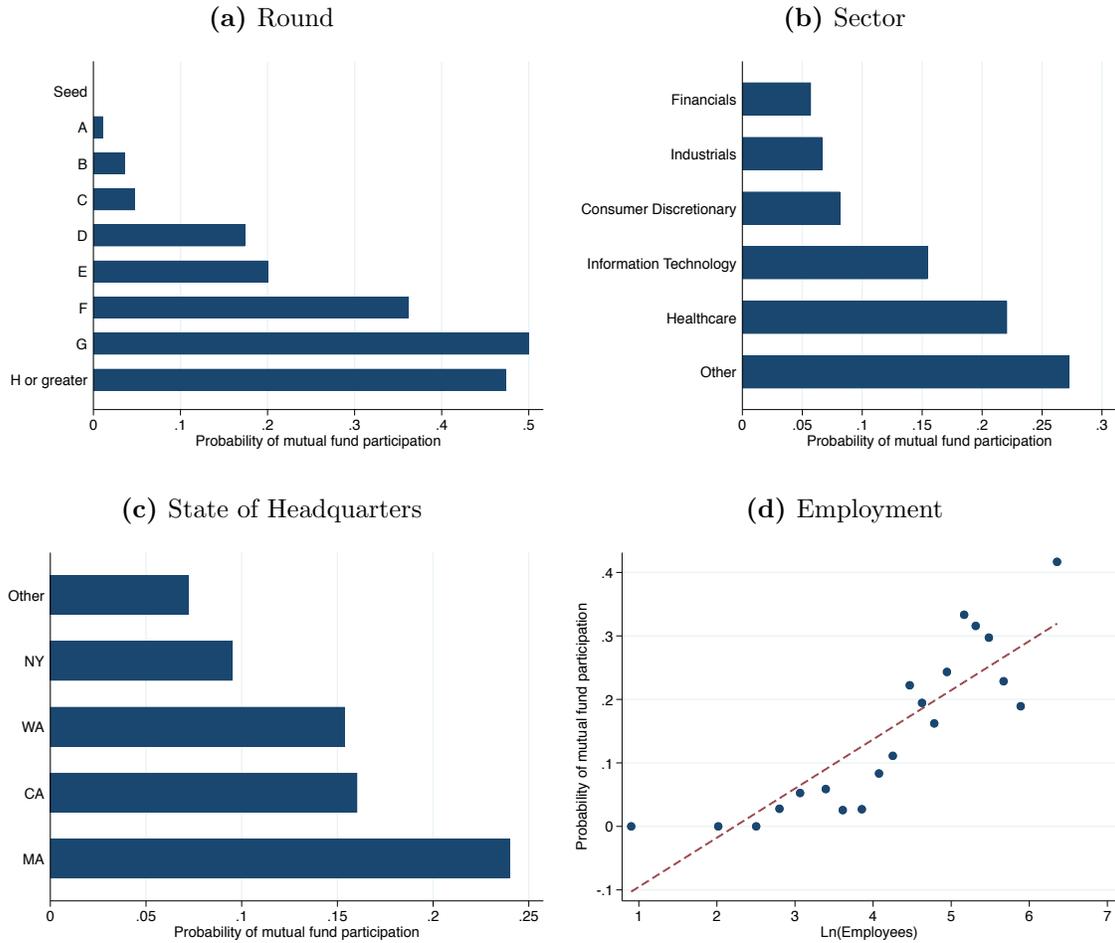
**Figure 1**  
**Time Trend in Mutual Fund Investment in Unicorns**

This figure shows (a) the number of open-end mutual funds investing in unicorns, (b) aggregate mutual fund holdings of unicorns, and (c) the fraction of unicorn financing rounds with mutual fund participation.



**Figure 2**  
**Probability of Mutual Fund Participation**

This figure shows the relation between mutual fund participation and (a) round, (b) sector, (c) state of headquarters, and (d) firm employment. Panel (d) presents a binned scatterplot where all financing rounds in the sample are sorted into twenty bins based on their employment and where each dot reports the average value of employment and mutual fund participation for all rounds in the bin.



**Figure 3**  
**Distribution of Financing Rounds with and without Mutual Fund Participation**

This figure reports the conditional distribution of financing rounds with and without mutual fund participation over (a) round, (b) sectors, and (c) state of headquarters.

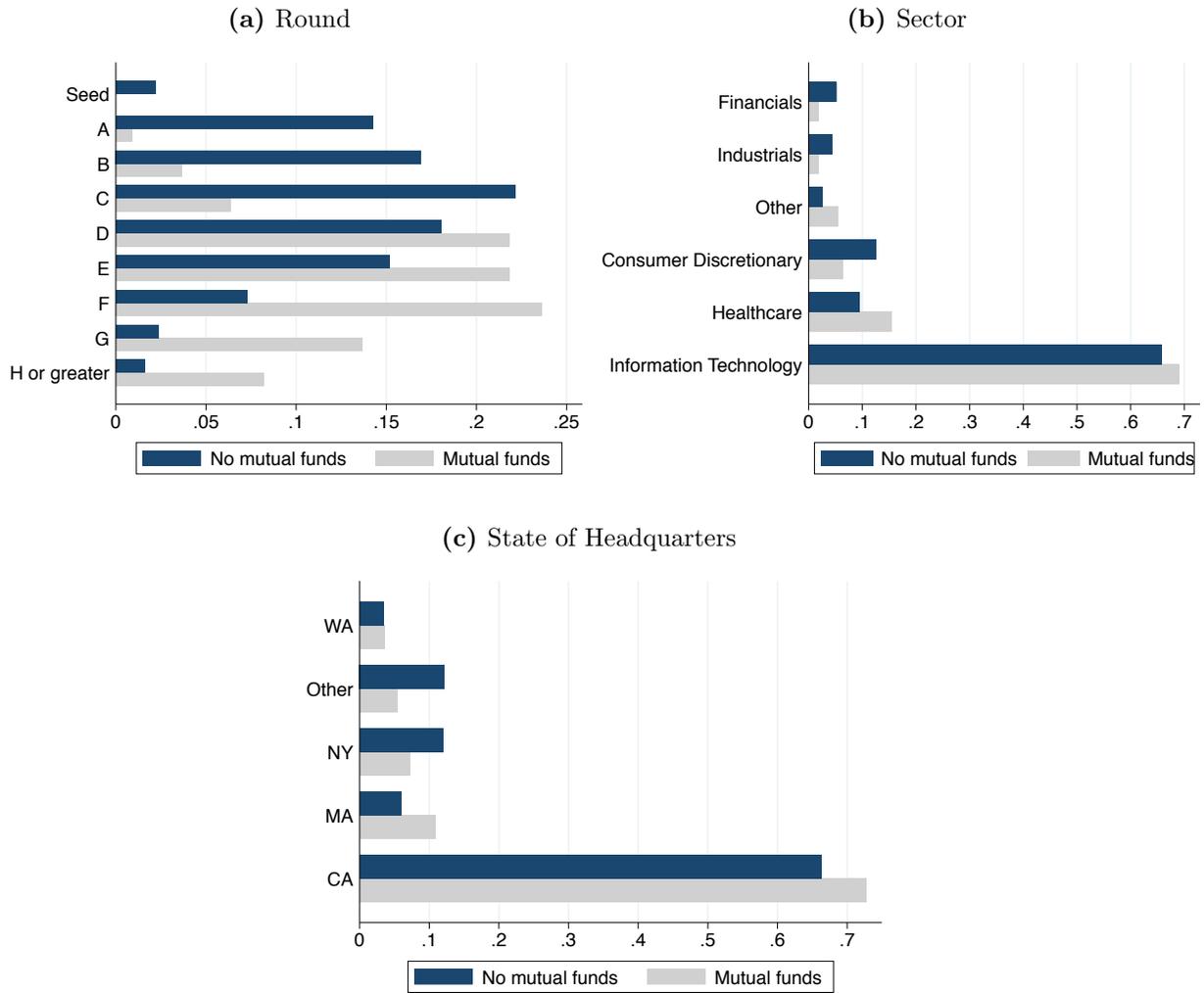


Figure 4

Prevalence of Contractual Provisions and Mutual Fund Participation by Financing Round

This figure shows the prevalence of different contractual provisions and mutual fund participation by financing round.

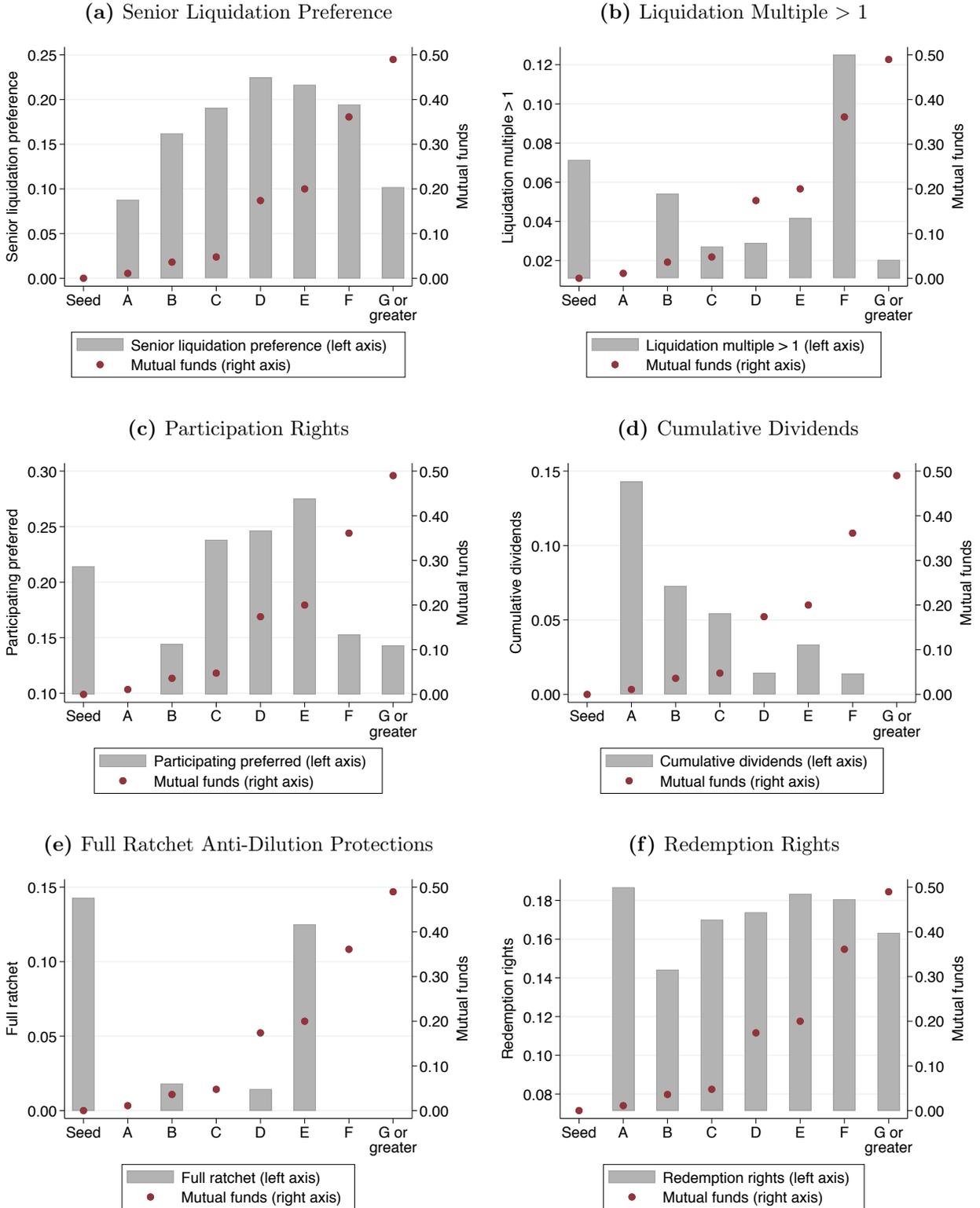
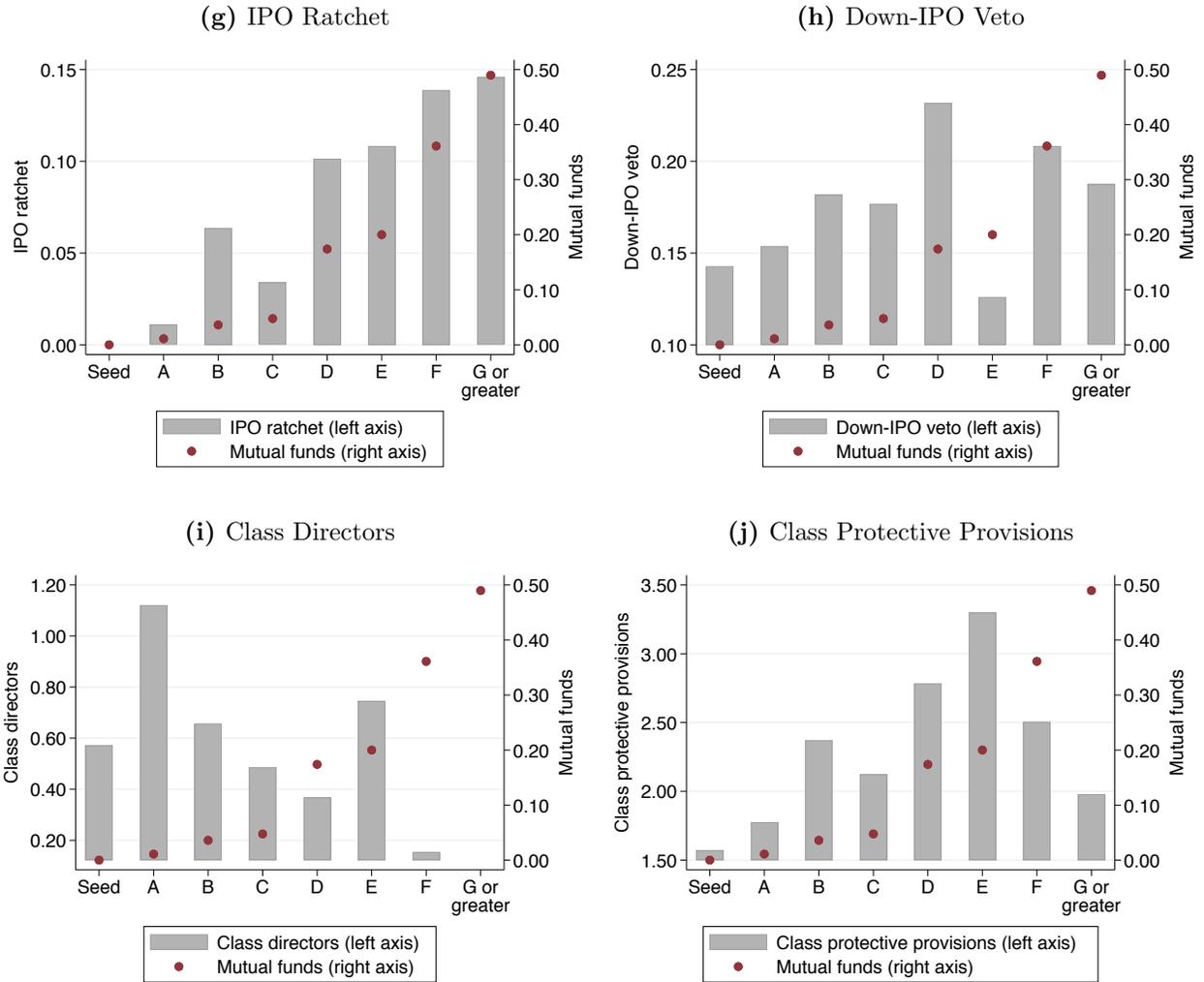


Figure 4 (continued)

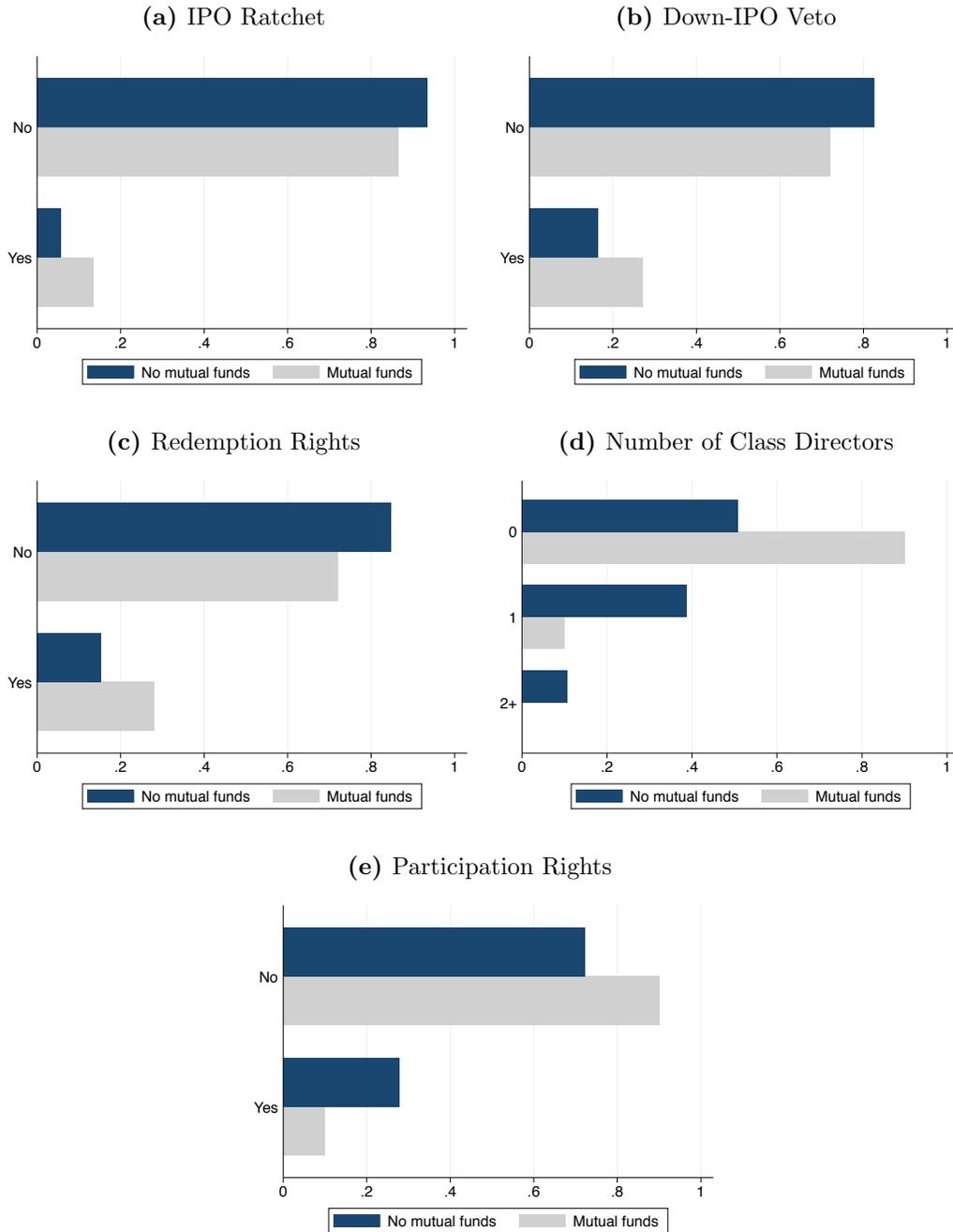
Prevalence of Contractual Provisions and Mutual Fund Participation by Financing Round

This figure shows the prevalence of different contractual provisions and mutual fund participation by financing round.



**Figure 5**  
**Contractual Provisions in Rounds with and without Mutual Funds**

This figure reports the conditional distribution of financing round with and without mutual fund participation over IPO ratchets, down-IPO veto rights, redemption rights, the number of separate class directors, participation rights, and whether liquidation multiple is larger than 1.



**Table 1**  
**The Investors of Uber**

This table, compiled from Crunchbase, reports the list of investors of Uber by rounds and investment types as of December 2017.

<b>Round/Type</b>	<b>Disclosed Investors</b>
Seed	Garrett Camp, Travis Kalanick
Angel	First Round (lead), Adam Leber, AFSquare, A-Grade Investments, Alfred Lin, Babak Nivi, Bechtel Ventures, Bobby Yazdani, Cyan Banister, Data Collective, David Sacks, Dror Berman, Founder Collective, Gary Vaynerchuk, Jason Calacanis, Jason Port, Jeremy Stoppelman, Josh Spear, Kapor Capital, Kevin Hartz, Khaled Helioui, Lowercase Capital, Mike Walsh, Naval Ravikant, Oren Michels, Scott Banister, Scott Belsky, Shawn Fanning, Techstars Ventures
Series A	Benchmark (lead), Alfred Lin, First Round, Innovation Endeavors, Lowercase Capital, Scott Banister
Series B	Menlo Ventures (lead), Benchmark, CrunchFund, Data Collective, Goldman Sachs, Jeff Bezos, Jeff Kearn, Nihal Mehta, Signatures Capital, Summit Action, Troy Carter, Tusk Ventures
Series C	GV (lead), Benchmark, TPG Growth
Series D	Fidelity (lead), BlackRock, General Atlantic, GV, Kleiner Perkins Caufield & Byers, Menlo Ventures, Sherpa Capital, Summit Partners, Wellington Management
Series E	Glade Brook Capital Partners (lead), Brand Capital, Dinesh Moorjani, Foundation Capital, HDS Capital, Jack Abraham, Light Street Capital Management, Lone Pine Capital, New Enterprise Associates, Qatar Investment Authority, Razmig Hovaghimian, Sherpa Capital, Square Peg Capital, Sway Ventures (formerly AITV), Times Internet, Valiant Capital Partners,
Series F	AppWorks Ventures, Bennett Coleman and Co Ltd, Microsoft, Microsoft Corporation - Strategic Investments, MSA
Late Debt	Goldman Sachs (co-lead), Morgan Stanley (co-lead), Barclays PLC, Citigroup
Late PE	Saudi Arabia's Public Investment Fund, Tata Capital, Letterone Holdings SA
Series G	Saudi Arabia's Public Investment Fund (lead), FortRoss Ventures
Late Debt	Morgan Stanley (lead), Goldman Sachs, Barclays PLC, Citigroup
Late Venture	Axel Springer (lead), G Squared
Late Venture	SoftBank Vision Fund (lead)

**Table 2**  
**Summary Statistics: Funds**

This table reports summary statistics for mutual funds in the sample. The sample consists of actively managed domestic equity funds with total net assets (TNA) of at least \$10 million. *Fund size* is the natural log of the fund TNA. *Family size* is the natural log of the aggregate TNA of all funds within the fund family. *Institutional share* is the fraction of fund TNA in institutional share classes. *Flow volatility* is the standard deviation of monthly fund flows over the preceding twelve months. Fund flows are calculated as  $\frac{TNA_t - (1+R_t) \times TNA_{t-1}}{TNA_{t-1}}$ . The sample period is 2010Q1–2016Q4, with each fund-quarter as an observation.

	<i>N</i>	Mean	SD	Percentile		
				25	50	75
Fund size	55,879	5.80	1.75	4.45	5.75	7.06
Family size	55,879	9.83	2.77	8.11	10.32	11.84
Institutional share (%)	55,879	38.03	38.92	0.00	23.23	77.77
Management fee (%)	55,879	0.76	0.28	0.60	0.75	0.90
Flow volatility (%)	55,879	4.29	33.35	0.92	1.83	3.81
Unicorn portfolio share (%)	55,879	0.02	0.20	0.00	0.00	0.00

**Table 3**  
**Summary Statistics: Rounds**

This table reports summary statistics for unicorn financing rounds with and without mutual fund participation. *Firm age* is the number of years since founding. Year founded is from Capital IQ. *Number of employees* is estimated based on LinkedIn employee profiles. *Valuation* is the post-money round valuation estimated by VCExperts. *MF Share* is the share of the financing round that is funded by mutual funds.

	Without mutual fund participation						With mutual fund participation					
	<i>N</i>	Mean	SD	Percentile			<i>N</i>	Mean	SD	Percentile		
				25	50	75				25	50	75
Firm age	632	5.85	4.01	3.00	5.00	8.00	110	8.20	3.83	5.00	7.00	10.00
Number of employees	624	114.47	144.50	19.00	61.00	153.00	109	222.44	156.21	104.00	186.00	266.00
Round number	632	4.63	2.96	3.00	4.00	6.00	110	7.35	2.68	5.00	7.00	9.00
Round amount (\$ million)	612	54.59	80.29	12.06	30.00	65.30	107	247.56	480.26	55.50	100.00	225.00
Valuation (\$ million)	432	1,081	2,644	164	495	1,002	93	5,324	11,612	841	1,553	3,512
MF Share	632	0.00	0.00	0.00	0.00	0.00	110	0.32	0.26	0.11	0.25	0.47

**Table 4**  
**Summary Statistics: Contractual Provisions in Unicorn Financing Rounds**

This table describes the contractual provisions studied in the paper and presents basic summary statistics on their frequency. Firm-level statistics are based on maximum across each firm’s financing rounds, in other words, the presence of a certain contractual feature in at least one round.

**Senior liquidation preference** specifies whether in a liquidation event, a given class or family of classes of convertible preferred stocks is senior to the previous class or classes.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	130	538	74
Firms	63	92	1

**Liquidation multiple** > 1: holders of convertible preferred stock receive the liquidation multiple times the original purchase price back first and then share ratably with the holders of common stock up to a total liquidation amount per share equal to some multiple of the original purchase price.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	31	711	0
Firms	22	134	0

**Participation rights** allow holders of preferred stock to “double dip”: if liquidation preferences is triggered, investors receive the stipulated amount (the liquidation multiple times the original purchase price) back first and then can convert the convertible preferred stock into common stock and share the upside. We divide agreements into those with no participation or capped participation (participation rights = 0) and with full participation (participation rights = 1).

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	148	594	0
Firms	46	110	0

**Cumulative dividends** mean that dividends accumulate over time and effectively increase the investors’ return in the event of liquidation.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	36	705	1
Firms	17	139	0

**Full ratchet anti-dilution protection** means that in the event a firm issues new equity at a lower valuation than in previous financing rounds, the conversion price of the existing convertible preferred shares is adjusted downwards to the price at which the new shares are issued, regardless of the number of new shares issued.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	21	720	1
Firms	4	151	1

**Table 4 (continued)**  
**Summary Statistics: Contractual Provisions in Unicorn Financing Rounds**

**Redemption rights** give investors the right to demand redemption of their stake in the firm.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	126	616	0
Firms	36	120	0

**IPO ratchets** give investors additional shares in IPOs in which the offer price is below a specific threshold.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	57	683	2
Firms	29	126	1

**Down-IPO veto** exempts investors from automatic conversion in IPOs with offer price below a specified fraction of the round price.

	<u>Yes (1)</u>	<u>No (0)</u>	<u>N/A</u>
Financing rounds	133	606	3
Firms	41	114	1

**Class directors** indicate the number of directors that a series can vote as a separate class.

	<u>0</u>	<u>1</u>	<u>2+</u>	<u>N/A</u>
Financing rounds	429	244	63	6
Firms	42	78	35	0

**Weight-adjusted total directors** indicate the weight-adjusted total number of directors that a series can vote. It includes class directors, preferred directors that the investors of a class or series are able to elect with all of other classes of convertible preferred stocks as a whole, and pool directors that the investors of a class or series are able to elect with some but not all of the other classes of investors as a pool. In summing up the three, the number of preferred directors is divided by the round's number under the assumption that these preferred directors represent equally all classes of preferred stock investors. Similarly, for pool directors, the number of directors is divided by the number of classes in the voting pool under the same assumption.

	<u>0</u>	<u>(0, 1]</u>	<u>(1, 2]</u>	<u>2+</u>	<u>N/A</u>
Financing rounds	290	353	68	26	5
Firms	24	85	36	10	1

**Protective provisions** indicate the number of protective provisions that a series can vote as a separate class.

	<u>0</u>	<u>1</u>	<u>2-4</u>	<u>5-9</u>	<u>10+</u>	<u>N/A</u>
Financing rounds	263	96	227	125	19	12
Firms	20	13	60	50	11	2

**Table 5**  
**Unicorn Characteristics and Mutual Fund Participation**

This table reports the results of linear probability model regressions of whether at least one mutual fund participates in the financing round on unicorn characteristics:

$$MFs_{i,t} = \alpha_t + \beta' \mathbf{X}_{i,t} + \varepsilon_{i,t}$$

where  $i$  indexes financing rounds and  $t$  indexes quarter dates. *Firm age* is the number of years since founding. Year founded is from Capital IQ. *Number of employees* is estimated based on LinkedIn employee profiles. Sector and state of headquarters information is from Capital IQ. *Top 10 VC* is a dummy variable equal to one for firms backed by a top-10 VC (Gompers et al. 2010). Standard errors are adjusted for clustering by fund. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	(1)	(2)	(3)
Ln(Firm age)	-0.009 (0.027)	-0.010 (0.027)	-0.009 (0.027)
Ln(Employees)	0.045*** (0.013)	0.051*** (0.013)	0.047*** (0.013)
IT	0.008 (0.035)	-0.004 (0.036)	0.008 (0.036)
Consumer Discretionary	-0.089* (0.048)	-0.102** (0.047)	-0.098** (0.049)
Healthcare	0.116** (0.054)	0.090* (0.051)	0.121** (0.053)
New York		-0.040 (0.034)	
Massachusetts		0.091 (0.057)	
Other states		-0.063* (0.032)	
Top 10 VC			0.039 (0.026)
Constant	-0.101** (0.041)	-0.097** (0.041)	-0.124*** (0.045)
<i>N</i>	733	733	733
Adjusted $R^2$	0.157	0.163	0.158
Year FE	✓	✓	✓
Round FE	✓	✓	✓

**Table 6**  
**Fund Characteristics and Investment in Unicorns**

This table reports the results of linear probability model regressions of whether a fund invests in unicorns:

$$y_{f,t}\% = \alpha + \beta' \mathbf{X}_{f,t} + \varepsilon_{f,t}$$

where  $y\%$  is the conditional probability of investing in any unicorn, expressed in percentage form,  $f$  indexes funds and  $t$  indexes quarter dates. All explanatory variables are standardized so that the coefficients represent the effect of a one standard deviation change in each explanatory variable. *Fund size* is the natural log of the fund TNA. *Family size* is the natural log of the aggregate TNA of all funds within the fund family. *Flow volatility* is the standard deviation of monthly fund flows over the preceding twelve months. Fund flows are calculated as  $\frac{TNA_t - (1+R_t) \times TNA_{t-1}}{TNA_{t-1}}$ . *Institutional share* is the fraction of fund TNA in institutional share classes. The sample period is 2010Q1–2016Q4, with each fund-quarter as an observation. Standard errors are adjusted for clustering by fund. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Probability of investing in unicorns (%)			
	$\mu = 2.60\%$			
	(1)	(2)	(3)	(4)
Fund size	1.689*** (0.348)	1.592*** (0.344)	1.757*** (0.356)	1.685*** (0.357)
Family size	1.307*** (0.241)	1.350*** (0.242)	1.047*** (0.259)	1.081*** (0.260)
Flow volatility	-0.264*** (0.090)	-0.270*** (0.090)	-0.252** (0.108)	-0.223** (0.106)
Management fee	0.168 (0.143)	0.147 (0.143)	-0.147 (0.161)	-0.140 (0.159)
Institutional share	-0.100 (0.265)	-0.271 (0.268)	-0.056 (0.273)	-0.052 (0.273)
<i>N</i>	55,879	55,879	55,879	55,879
Adjusted $R^2$	0.033	0.043	0.068	0.087
Year FE		✓	✓	
Lipper objective FE			✓	
Objective-Year FE				✓

Table 7  
**Contractual Provisions and Mutual Fund Participation in Financing Round**

This table reports the results of regressions of contractual provisions on mutual fund participation in the financing round:

$$Provision_{i,k} = \alpha + \beta_0 \cdot MF_{si,k} + \beta_1 \cdot Ln(Valuation)_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds.  $MFs$  is a dummy variable equal to one for rounds with mutual fund participation. Contractual provisions are defined in Section 2.4 and summarized in Table A1 in the Appendix.  $Valuation$  is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redemption rights			IPO ratchets			Down-IPO veto			IPO & redemption index		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MFs	0.147*** (0.047)	0.183*** (0.053)	0.055** (0.027)	0.030 (0.038)	0.042 (0.045)	0.011 (0.031)	0.113** (0.048)	0.190*** (0.055)	0.060** (0.030)	0.283*** (0.095)	0.408*** (0.110)	0.126** (0.052)
Ln(Valuation)		-0.035*** (0.015)			-0.007 (0.010)			-0.058*** (0.016)			-0.103*** (0.027)	
$N$	742	525	737	740	523	736	739	522	735	739	522	735
Adjusted $R^2$	0.017	0.029	0.811	0.020	0.011	0.493	0.005	0.034	0.793	0.015	0.049	0.798
	Participation rights			Senior liquidation preference			Liquidation multiple > 1			Cumulative dividends		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
MFs	-0.122*** (0.037)	-0.075* (0.044)	-0.053 (0.033)	-0.038 (0.046)	-0.006 (0.052)	0.007 (0.042)	-0.041* (0.022)	-0.023 (0.026)	-0.042 (0.026)	-0.017 (0.017)	0.007 (0.024)	-0.061*** (0.022)
Ln(Valuation)		-0.073*** (0.017)			-0.037** (0.016)			-0.011 (0.009)			-0.023** (0.011)	
$N$	742	525	737	742	525	737	742	525	737	741	524	736
Adjusted $R^2$	0.046	0.086	0.689	0.204	0.088	0.541	0.002	0.003	0.112	0.030	0.027	0.468
	Cash flow index			Class directors			Weighted-average total directors			Protective provisions		
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
MFs	-0.218*** (0.067)	-0.098 (0.076)	-0.149** (0.063)	-0.401*** (0.059)	-0.383*** (0.075)	-0.226*** (0.068)	-0.446*** (0.058)	-0.416*** (0.074)	-0.277*** (0.069)	0.643* (0.381)	0.837* (0.444)	0.698*** (0.226)
Ln(Valuation)		-0.143*** (0.030)			0.027 (0.036)			0.000 (0.034)			0.148 (0.123)	
$N$	741	524	736	736	519	730	737	520	732	730	514	725
Adjusted $R^2$	0.085	0.080	0.527	0.120	0.119	0.594	0.142	0.151	0.582	0.022	0.023	0.567
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE			✓			✓			✓			✓

**Table 8**  
**Redemption Rights**

This table reports the results of regressions of various aspects of investor redemption rights on mutual fund participation in the financing round:

$$Redemption_{i,k} = \alpha + \beta_0 \cdot MFs_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds.  $MFs$  is a dummy variable equal to one for rounds with mutual fund participation. *Months until redemption* is the number of months until the first date investors can ask for their shares to be redeemed. *Delay after notice* is the maximum number of days from the time investors submit redemption notice to the first redemption payment. In cases of no stated maximum, *Delay after notice 1* sets such observations to missing, while *Delay after notice 2* sets them to 365 days, the maximum value observed in the data. *No vote necessary* is a dummy variable equal to one if redemption notice is sufficient and if no vote by other investors is necessary for redemption to take place. *Class vote* is a dummy variable equal to one if redemption vote takes place at the class level. The omitted case is voting by all preferred shareholders. *Annual installments* is the number of annual installments. Financing round and year fixed effects are included in all specifications. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Months until redemption	Delay after notice 1	Delay after notice 2	No vote necessary	Class vote	Annual installments
Panel A: OLS						
	(1)	(2)	(3)	(4)	(5)	(6)
MFs	-3.663 (5.112)	-26.581*** (7.135)	-82.620*** (13.402)	0.046 (0.048)	0.037 (0.061)	-0.575** (0.284)
$N$	126	104	122	126	126	128
Adjusted $R^2$	-0.002	0.055	0.091	0.004	-0.004	0.027
Panel B: Year and Round FEs						
	(7)	(8)	(9)	(10)	(11)	(12)
MFs	-3.803 (5.726)	-18.003*** (6.113)	-96.303*** (21.397)	0.037 (0.051)	0.046 (0.078)	-0.781** (0.326)
$N$	126	104	122	126	126	128
Adjusted $R^2$	-0.029	0.089	0.093	0.031	0.062	-0.006
Round FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Panel C: Unicorn FEs						
	(13)	(14)	(15)	(16)	(17)	(18)
MFs	-4.280 (4.318)	-1.900 (1.596)	-1.900 (1.571)	0.032 (0.037)	0.000 (.)	-0.683*** (0.237)
$N$	126	104	122	126	126	128
Adjusted $R^2$	0.769	0.984	0.964	0.762	0.748	0.870
Unicorn FE	✓	✓	✓	✓	✓	✓

**Table 9**  
**Contractual Provisions and Mutual Fund Share of Financing Round**

This table reports the results of regressions of contractual provisions on mutual fund share of the financing round:

$$Provision_{i,k} = \alpha + \beta_0 \cdot MF Share_{i,k} + \beta_1 \cdot Ln(Valuation)_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds. *MF Share* is the share of the financing round that is funded by mutual funds. Contractual provisions are defined in Section 2.4 and summarized in Table A1 in the Appendix. *Valuation* is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redemption rights			IPO ratchets			Down-IPO veto			IPO & redemption index		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MF Share	0.309*** (0.112)	0.342*** (0.119)	0.103* (0.059)	0.210* (0.109)	0.241** (0.118)	0.128 (0.096)	0.144 (0.110)	0.236** (0.116)	0.012 (0.076)	0.646*** (0.231)	0.802*** (0.245)	0.244* (0.140)
Ln(Valuation)		-0.029* (0.015)			-0.010 (0.010)			-0.049*** (0.016)			-0.089*** (0.027)	
$N$	742	525	737	740	523	736	739	522	735	739	522	735
Adjusted $R^2$	0.014	0.023	0.810	0.031	0.026	0.497	-0.002	0.016	0.791	0.015	0.043	0.798
	Participation rights			Senior liquidation preference			Liquidation multiple > 1			Cumulative dividends		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
MF Share	-0.161 (0.098)	-0.081 (0.104)	-0.102 (0.068)	-0.086 (0.104)	-0.000 (0.113)	0.003 (0.097)	-0.074* (0.042)	-0.049 (0.045)	-0.103* (0.054)	-0.030 (0.045)	0.007 (0.052)	-0.080* (0.042)
Ln(Valuation)		-0.077*** (0.016)			-0.037** (0.015)			-0.011 (0.009)			-0.022** (0.011)	
$N$	742	525	737	742	525	737	742	525	737	741	524	736
Adjusted $R^2$	0.039	0.083	0.689	0.204	0.088	0.541	0.001	0.003	0.113	0.030	0.026	0.463
	Cash flow index			Class directors			Weighted-average total directors			Protective provisions		
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
MF Share	-0.351** (0.149)	-0.124 (0.150)	-0.282* (0.147)	-0.787*** (0.102)	-0.726*** (0.114)	-0.644*** (0.133)	-0.833*** (0.104)	-0.758*** (0.117)	-0.671*** (0.134)	1.534** (0.683)	1.883*** (0.717)	1.373*** (0.450)
Ln(Valuation)		-0.148*** (0.029)			0.014 (0.034)			-0.015 (0.032)			0.170 (0.121)	
$N$	741	524	736	736	519	730	737	520	732	730	514	725
Adjusted $R^2$	0.080	0.079	0.526	0.113	0.114	0.598	0.132	0.142	0.584	0.022	0.024	0.566
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE			✓			✓			✓			✓

**Table 10**  
**Contractual Provisions and Mutual Fund Participation in Financing Round: Matching Analysis**

This table reports estimates of the average treatment effect on the treated (ATE) using nearest-neighbor matching with Mahalanobis distance. Positive ATE indicates that rounds with mutual fund participation are more likely to have a given contractual provision. Financing rounds with and without mutual fund participation are matched exactly on year and series (capped at Series E). Even numbered columns also match on log employment and log age since founding using Mahalanobis distance. Abadie-Imbens robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redemption rights	IPO ratchets	Down-IPO veto	IPO & redemption index	Participation rights	Senior liq preference						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ATE	0.120*** (0.047)	0.074 (0.058)	0.100* (0.054)	0.100 (0.065)	0.140** (0.059)	0.135* (0.069)	0.241** (0.103)	0.235** (0.119)	-0.108*** (0.039)	-0.138*** (0.048)	-0.083* (0.046)	-0.051 (0.055)
N	315	312	314	311	313	310	313	310	315	312	315	312
	Liquidation multiple > 1	Cumulative dividends	Cash flow index	Class directors	Weighted-average total directors	Protective provisions						
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
ATE	-0.014 (0.040)	-0.038 (0.044)	0.023 (0.039)	0.058 (0.042)	-0.183** (0.074)	-0.170** (0.082)	-0.315*** (0.051)	-0.351*** (0.061)	1.001** (0.413)	0.729** (0.354)	-0.083* (0.046)	-0.051 (0.055)
N	315	312	315	312	315	312	311	308	309	306	315	312

**Table 11**  
**Correlation in Contractual Provisions**

This table reports pairwise correlations across different contractual provisions. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redempt. rights	IPO ratchet	Down-IPO veto	IPO & Redempt. index	Particip. rights	Senior liquid. pref.	Liquidit. multiple > 1	Cum. divs	Cash-flow index	Class directors	Adj. directors	Protect. provis.
Panel A: Rounds without Mutual Fund Participation												
Redemption rights	1.000											
IPO ratchets	0.101*	1.000										
Down-IPO veto	0.111**	0.327***	1.000									
IPO & redemption index	0.642***	0.616***	0.746***	1.000								
Participation rights	0.088*	0.013	0.077	0.097*	1.000							
Senior liquidation preference	-0.033	0.095*	0.167***	0.107**	0.030	1.000						
Liquidation multiple > 1	0.059	0.195***	0.096*	0.150***	0.055	0.224***	1.000					
Cumulative dividends	0.133***	0.021	0.007	0.085*	-0.041	0.131***	0.017	1.000				
Cash-flow index	0.055	0.124**	0.183***	0.175***	0.443***	0.858***	0.408***	0.315***	1.000			
Class directors	0.072	-0.027	0.073	0.066	0.189***	0.166***	0.127**	0.045	0.239***	1.000		
Adjusted directors	0.064	-0.023	0.077	0.066	0.161***	0.122**	0.121**	0.063	0.197***	0.939***	1.000	
Protective provisions	0.011	0.051	-0.014	0.019	0.143***	0.116**	0.034	0.004	0.158***	0.213***	0.183***	1.000
Panel B: Rounds with Mutual Fund Participation												
Redemption rights	1.000											
IPO ratchets	-0.065	1.000										
Down-IPO veto	0.295**	0.483***	1.000									
IPO & redemption index	0.636***	0.612***	0.851***	1.000								
Participation rights	0.340***	-0.132	0.074	0.163	1.000							
Senior liquidation preference	-0.064	0.029	0.106	0.036	-0.072	1.000						
Liquidation multiple > 1	-0.103	0.096	0.153	0.064	-0.056	0.071	1.000					
Cumulative dividends	-0.083	0.342***	0.227*	0.210*	-0.045	-0.062	-0.023	1.000				
Cash-flow index	0.032	0.053	0.193*	0.140	0.282**	0.902***	0.241*	0.085	1.000			
Class directors	0.068	-0.044	0.350***	0.198*	0.192*	0.088	-0.056	-0.045	0.133	1.000		
Adjusted directors	-0.025	0.059	0.392***	0.214*	0.116	0.004	-0.003	-0.020	0.042	0.884***	1.000	
Protective provisions	-0.052	-0.062	-0.063	-0.078	0.241*	0.209*	-0.033	0.110	0.294**	0.132	0.038	1.000

**Table 12**  
**Contractual Provisions and Fund Characteristics**

This table reports the results of the regressions of contractual provisions on the characteristics of mutual funds participating in the round:

$$Provision_{i,k} = \alpha_t + \alpha_{round} + \beta \mathbf{X}_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds. The sample is limited to rounds with mutual fund participation. In Panel A, fund characteristics are value-weighted averages across all mutual funds participating in the round; in Panel B fund characteristics refer to the lead mutual fund, i.e., the fund acquiring the largest number of shares across all funds participating in the round. Round and year fixed effects are included in all specifications. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redem. rights (1)	IPO ratchets (2)	Down-IPO veto (3)	IPO index (4)	Particip. right (5)	Senior liq. pref. (6)	Liq. mult. > 1 (7)	Cum. divs (8)	Cash flow ndex (9)	Class directors (10)	Adjusted directors (11)	Protect. provisions (12)
Panel A: Value-Weighted												
Family size	0.035 (0.046)	0.031 (0.036)	-0.035 (0.060)	0.031 (0.086)	-0.017 (0.028)	0.077* (0.045)	-0.024 (0.024)	0.006 (0.013)	0.119 (0.092)	-0.019 (0.046)	-0.013 (0.047)	-0.314 (0.357)
Flow volatility	0.118** (0.050)	0.063 (0.042)	0.113** (0.049)	0.294*** (0.092)	-0.011 (0.033)	0.054 (0.042)	-0.000 (0.012)	0.019 (0.025)	0.115 (0.082)	0.030 (0.042)	0.043 (0.043)	-0.700* (0.386)
Management fee	-0.001 (0.047)	0.043 (0.033)	0.063 (0.040)	0.104 (0.070)	0.029 (0.049)	0.030 (0.030)	0.009 (0.009)	0.031 (0.035)	0.129* (0.068)	-0.069** (0.034)	-0.057* (0.030)	0.085 (0.390)
$N$	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted $R^2$	0.088	0.078	0.097	0.118	-0.024	0.023	-0.037	0.045	0.051	0.031	0.139	0.025
Panel B: Lead Fund												
Family size	0.063 (0.046)	0.016 (0.041)	-0.016 (0.050)	0.063 (0.092)	0.028 (0.023)	0.078** (0.036)	-0.021 (0.021)	0.015 (0.013)	0.179** (0.076)	0.017 (0.032)	-0.001 (0.036)	-0.209 (0.377)
Flow volatility	0.131** (0.053)	0.062 (0.044)	0.115** (0.051)	0.308*** (0.091)	0.002 (0.036)	0.062 (0.044)	-0.002 (0.013)	0.023 (0.026)	0.147* (0.085)	0.039 (0.045)	0.046 (0.045)	-0.701* (0.392)
Management fee	0.007 (0.049)	0.037 (0.034)	0.069* (0.040)	0.113 (0.071)	0.043 (0.052)	0.029 (0.032)	0.010 (0.010)	0.033 (0.037)	0.145** (0.068)	-0.058** (0.029)	-0.054** (0.027)	0.123 (0.415)
$N$	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted $R^2$	0.098	0.075	0.094	0.121	-0.018	0.028	-0.040	0.052	0.076	0.030	0.138	0.022

# Appendix

**Table A1**  
**Variable Definitions**

This table provides the definitions of the variables in the paper. For round-level variables that are explained in detail in the main text this table provides a summary for brevity.

Variable	Definition
Fund-Level Variables	
Fund size	Log of the fund's total net assets (TNA), expressed in millions of current dollars.
Family size	Log of the aggregate fund TNA, expressed in millions of current dollars, across all CRSP mutual funds within the same fund family.
Flow volatility	Standard deviation of monthly fund flows over the preceding twelve months. Fund flows are calculated as $\frac{TNA_t - (1+R_t) \times TNA_{t-1}}{TNA_{t-1}}$ .
Management fee	Fund management fee as a percent of fund TNA from CRSP.
Institutional share	Following Chen, Goldstein and Jiang (2010), a share class is institutional if a) CRSP's institutional dummy is equal to Y and retail dummy is equal to N, or b) fund name includes the word institutional or its abbreviation, or c) class name includes one of the following suffixes: I, X, Y, or Z. Share classes with the word retirement in their name or suffixes J, K, and R are retail.
Unicorns portfolio share	Fund holdings of unicorns in the sample divided by fund TNA.
Round/Series-Level Variables	
Valuation	Post-money valuation, in millions of current dollars, as calculated by VCExperts.
Liquidation preference	Whether a series is senior to its closest previous series.
Liquidation multiple > 1	Whether the liquidation multiple of a given series is greater than one.
Participation rights	Whether a series has full participation rights.
Cumulative dividends	Whether the dividends of a series are cumulative.
Full ratchet	Whether a series has full-ratchet anti-dilution provisions.
Redemption rights	Whether a series has redemption rights.
Months until redemption	Number of months until investors can redeem shares.
Delay after notice	Maximum number of days from the time investors submit redemption notice to the first redemption payment.
No vote necessary	Whether no vote by other investors is necessary for redemptions.
Class vote	Whether the redemption vote is at the class level.
Annual installments	Number of delayed annual installments allowed for redemption payments.
IPO ratchets	Whether a series has IPO ratchets.
Down-IPO veto rights	Whether a series has down-IPO veto rights.
Class directors	The number of directors that a series can vote as a separate class.
Total directors	The weight-adjusted total number of directors that a series can vote.
Class protective provisions	The number of protective provisions that a series can vote as a separate class.
Total protective provisions	The weight-adjusted number of total protective provisions that a series can vote.
MFs	Binary variable equal to one for rounds with at least one mutual fund investing.
MF Share	The share of the financing round that is funded by mutual funds.
Top 10 VC	Whether the firm is backed by a top-10 VC (Gompers et al 2010).

**Table A2**  
**Controlling for Existing Directors**

This table reports the results of the regressions in Table 7 while controlling for the number of existing directors representing preferred shareholders. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redemption rights		IPO ratchets		Down-IPO veto		IPO & redemption index					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MFs	0.146*** (0.047)	0.182*** (0.053)	0.056** (0.027)	0.028 (0.036)	0.041 (0.044)	0.013 (0.031)	0.111** (0.048)	0.189*** (0.053)	0.061** (0.030)	0.279*** (0.093)	0.405*** (0.105)	0.130** (0.051)
Num. existing directors	0.011 (0.007)	0.014 (0.009)	0.011 (0.008)	0.030*** (0.008)	0.035*** (0.010)	0.042*** (0.012)	0.024** (0.010)	0.041*** (0.012)	0.019* (0.011)	0.065*** (0.019)	0.090*** (0.023)	0.072*** (0.019)
Ln(Valuation)	-0.032** (0.015)				0.001 (0.010)			-0.049*** (0.016)			-0.082*** (0.027)	
<i>N</i>	742	525	737	740	523	736	739	522	735	739	522	735
Adjusted <i>R</i> <sup>2</sup>	0.018	0.030	0.811	0.051	0.047	0.508	0.014	0.059	0.794	0.036	0.085	0.805
	Participation rights		Senior liquidation preference		Liquidation multiple > 1		Cumulative dividends					
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
MFs	-0.124*** (0.036)	-0.075* (0.043)	-0.052 (0.033)	-0.037 (0.046)	-0.006 (0.052)	0.006 (0.042)	-0.041* (0.022)	-0.023 (0.026)	-0.041 (0.026)	-0.017 (0.017)	0.007 (0.024)	-0.061*** (0.022)
Num. existing directors	0.039*** (0.009)	0.021* (0.012)	0.006 (0.012)	-0.008 (0.008)	-0.006 (0.011)	-0.015 (0.018)	0.006 (0.005)	0.009 (0.007)	0.017 (0.013)	-0.003 (0.004)	-0.003 (0.005)	-0.006 (0.011)
Ln(Valuation)	-0.068*** (0.017)				-0.038** (0.016)			-0.009 (0.009)			-0.023** (0.011)	
<i>N</i>	742	525	737	742	525	737	742	525	737	741	524	736
Adjusted <i>R</i> <sup>2</sup>	0.070	0.091	0.689	0.204	0.086	0.541	0.004	0.007	0.116	0.030	0.025	0.467
	Cash flow index		Class directors		Weighted-average total directors		Protective provisions					
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
MFs	-0.220*** (0.067)	-0.098 (0.076)	-0.149** (0.063)	-0.402*** (0.060)	-0.383*** (0.074)	-0.235*** (0.067)	-0.450*** (0.059)	-0.416*** (0.073)	-0.287*** (0.066)	0.638* (0.378)	0.833* (0.441)	0.694*** (0.232)
Num. existing directors	0.033** (0.015)	0.020 (0.019)	0.001 (0.028)	0.053*** (0.014)	0.047*** (0.017)	-0.158*** (0.037)	0.097*** (0.014)	0.092*** (0.017)	-0.176*** (0.036)	0.071 (0.070)	0.099 (0.082)	-0.152 (0.145)
Ln(Valuation)	-0.138*** (0.031)				0.039 (0.036)			0.024 (0.034)			0.173 (0.130)	
<i>N</i>	741	524	736	736	519	730	737	520	732	730	514	725
Adjusted <i>R</i> <sup>2</sup>	0.090	0.081	0.526	0.129	0.127	0.617	0.179	0.184	0.612	0.022	0.024	0.568
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE												✓

# Online Appendix

Online Appendix for  
**Mutual Funds as Venture Capitalists? Evidence from Unicorns**

Not for Publication

**Table OA1**  
**Contractual Provisions and Restricted Securities Portfolio Share**

This table reports the results of the regressions of contractual provisions on the restricted securities portfolio share of the mutual funds participating in the round:

$$Provision_{i,k} = \alpha_t + \alpha_{round} + \beta \mathbf{X}_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds. The sample is limited to rounds with mutual fund participation. In Panel A, fund characteristics are value-weighted averages across all mutual funds participating in the round; in Panel B fund characteristics refer to the lead mutual fund, i.e., the fund acquiring the largest number of shares across all funds participating in the round. All explanatory variables are standardized so that the coefficients represent the effect of a one standard deviation change in each explanatory variable. Round and year fixed effects are included in all specifications. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redem. rights (1)	IPO ratchets (2)	Down-IPO veto (3)	IPO index (4)	Particip. rights (5)	Senior liq. pref. (6)	Liq. mult. > 1 (7)	Cum. divs (8)	Cash flow index (9)	Class directors (10)	Adjusted directors (11)	Protect. provisions (12)
Panel A: Value-Weighted												
Family size	0.047 (0.049)	0.029 (0.038)	-0.024 (0.064)	0.051 (0.094)	-0.026 (0.031)	0.087** (0.040)	-0.015 (0.018)	-0.002 (0.018)	0.130 (0.085)	-0.034 (0.052)	-0.033 (0.052)	-0.358 (0.406)
Flow volatility	0.124** (0.049)	0.062 (0.043)	0.119** (0.051)	0.305*** (0.094)	-0.016 (0.034)	0.059 (0.042)	0.004 (0.011)	0.015 (0.028)	0.121 (0.081)	0.022 (0.043)	0.033 (0.042)	-0.724* (0.403)
Management fee	-0.018 (0.050)	0.046 (0.039)	0.048 (0.045)	0.075 (0.084)	0.042 (0.056)	0.016 (0.039)	-0.003 (0.006)	0.042 (0.043)	0.112 (0.087)	-0.048 (0.033)	-0.029 (0.031)	0.148 (0.458)
Restricted securities share	0.047 (0.059)	-0.008 (0.043)	0.041 (0.060)	0.080 (0.101)	-0.038 (0.046)	0.042 (0.061)	0.034 (0.026)	-0.032 (0.033)	0.047 (0.119)	-0.058 (0.037)	-0.080** (0.039)	-0.175 (0.484)
$N$	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted $R^2$	0.084	0.068	0.092	0.113	-0.022	0.021	-0.009	0.069	0.042	0.051	0.178	0.015
Panel B: Lead Fund												
Family size	0.063 (0.046)	0.016 (0.041)	-0.017 (0.050)	0.062 (0.093)	0.029 (0.023)	0.078** (0.037)	-0.021 (0.021)	0.015 (0.013)	0.178** (0.077)	0.017 (0.032)	-0.001 (0.036)	-0.210 (0.376)
Flow volatility	0.134** (0.053)	0.058 (0.044)	0.122** (0.050)	0.315*** (0.091)	-0.003 (0.037)	0.072 (0.046)	-0.002 (0.013)	0.020 (0.028)	0.160* (0.087)	0.034 (0.046)	0.038 (0.045)	-0.669 (0.432)
Management fee	-0.002 (0.053)	0.046 (0.038)	0.051 (0.045)	0.096 (0.084)	0.054 (0.055)	0.005 (0.036)	0.010 (0.010)	0.039 (0.044)	0.114 (0.080)	-0.045 (0.029)	-0.033 (0.027)	0.042 (0.488)
Restricted securities share	0.022 (0.054)	-0.022 (0.035)	0.045 (0.045)	0.045 (0.086)	-0.028 (0.035)	0.061 (0.057)	0.000 (0.008)	-0.014 (0.021)	0.080 (0.110)	-0.032 (0.026)	-0.052* (0.027)	0.207 (0.530)
$N$	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted $R^2$	0.089	0.067	0.092	0.113	-0.022	0.041	-0.052	0.049	0.075	0.030	0.152	0.014

**Table OA2**  
**Controlling for Presence of VCs from Previous Round**

This table reports the results of the contractual provisions regressions, while controlling for whether any VC who participated in the previous round also invested in the current round

$$Provision_{i,k} = \alpha + \beta_0 \cdot MF_{s,i,k} + \beta_1 \cdot Ln(Valuation)_{i,k} + \beta_2 \cdot Same VC_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds.  $MFs$  is a dummy variable equal to one for rounds with mutual fund participation.  $Same VC$  is a dummy variable equal to one when at least one VC firm that participated in the previous financing round also invested in the current round. Contractual provisions are defined in Section 2.4 and summarized in Table A1 in the Appendix.  $Valuation$  is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Redemption rights			IPO ratchets		Down-IPO veto			IPO & redemption index			
MFs	0.155*** (0.050)	0.190*** (0.055)	0.056** (0.028)	0.038 (0.040)	0.051 (0.047)	0.006 (0.034)	0.117** (0.051)	0.191*** (0.057)	0.049 (0.032)	0.302*** (0.101)	0.426*** (0.114)	0.111** (0.054)
Same VC	-0.016 (0.033)	-0.005 (0.040)	0.017 (0.019)	-0.019 (0.024)	-0.016 (0.031)	-0.004 (0.025)	0.038 (0.033)	0.030 (0.040)	0.039* (0.022)	0.002 (0.060)	0.006 (0.073)	0.052 (0.038)
Ln(Valuation)		-0.042*** (0.016)			-0.006 (0.011)			-0.057*** (0.017)			-0.108*** (0.029)	
$N$	669	483	657	667	481	656	666	480	655	666	480	655
Adjusted $R^2$	0.019	0.032	0.835	0.020	0.014	0.508	0.006	0.038	0.804	0.018	0.059	0.824
	Participation rights			Senior liquidation preference			Liquidation multiple > 1			Cumulative dividends		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
MFs	-0.121*** (0.040)	-0.060 (0.046)	0.004 (0.031)	-0.035 (0.049)	-0.009 (0.053)	-0.023 (0.042)	-0.040* (0.024)	-0.017 (0.028)	-0.039 (0.031)	-0.014 (0.019)	0.009 (0.024)	-0.044* (0.024)
Same VC	0.065** (0.031)	0.035 (0.039)	0.034 (0.026)	-0.119*** (0.037)	-0.147*** (0.045)	-0.035 (0.035)	0.011 (0.017)	0.013 (0.020)	0.028 (0.023)	-0.043* (0.022)	-0.078*** (0.026)	-0.010 (0.015)
Ln(Valuation)		-0.079*** (0.018)			-0.038** (0.017)			-0.011 (0.010)			-0.027** (0.012)	
$N$	669	483	657	669	483	657	669	483	657	669	483	657
Adjusted $R^2$	0.056	0.097	0.704	0.186	0.093	0.542	0.002	0.000	0.134	0.035	0.046	0.496
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Table OA2 (continued)**  
**Controlling for Presence of VCs from Previous Round**

This table reports the results of the contractual provisions regressions, while controlling for whether any VC who participated in the previous round also invested in the current round

$$Provision_{i,k} = \alpha + \beta_0 \cdot MF_{s_i,k} + \beta_1 \cdot Ln(Valuation)_{i,k} + \beta_2 \cdot Same VC_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds.  $MFs$  is a dummy variable equal to one for rounds with mutual fund participation.  $Same VC$  is a dummy variable equal to one when at least one VC firm that participated in the previous financing round also invested in the current round. Contractual provisions are defined in Section 2.4 and summarized in Table A1 in the Appendix.  $Valuation$  is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
		Cash flow index		Class directors	Class directors		Class directors	Weighted-average total directors	Weighted-average total directors	Protective provisions	Protective provisions	
MFs	-0.209*** (0.072)	-0.077 (0.080)	-0.101 (0.069)	-0.415*** (0.063)	-0.409*** (0.077)	-0.243*** (0.077)	-0.467*** (0.062)	-0.441*** (0.076)	-0.283*** (0.079)	0.767* (0.411)	0.961** (0.464)	0.958*** (0.240)
Same VC	-0.086 (0.062)	-0.177** (0.073)	0.017 (0.055)	0.043 (0.066)	0.113 (0.077)	-0.057 (0.062)	0.079 (0.063)	0.119 (0.074)	-0.038 (0.060)	-0.251 (0.265)	-0.006 (0.300)	-0.417* (0.244)
Ln(Valuation)		-0.156*** (0.033)		0.040 (0.039)			0.018 (0.037)				0.094 (0.136)	
$N$	669	483	657	664	478	652	664	478	652	658	473	646
Adjusted $R^2$	0.062	0.077	0.526	0.131	0.123	0.606	0.152	0.151	0.596	0.024	0.018	0.567
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE			✓			✓			✓			✓

**Table OA3**  
**Controlling for Round Direction**

This table reports the results of the contractual provisions regressions, while controlling for the round direction

$$Provision_{i,k} = \alpha + \beta_0 \cdot MF_{si,k} + \beta_1 \cdot Ln(Valuation)_{i,k} + \beta_2 \cdot Down_{i,k} + \beta_3 \cdot Flat_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds.  $MFs$  is a dummy variable equal to one for rounds with mutual fund participation.  $Down$  rounds are closed at a lower price than the last financing round.  $Flat$  rounds are closed at the same price as the last financing round. Contractual provisions are defined in Section 2.4 and summarized in Table A1 in the Appendix.  $Valuation$  is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redemption rights			IPO ratchets		Down-IPO veto		IPO & redemption index				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MFs	0.123*** (0.046)	0.181*** (0.053)	0.057** (0.029)	0.037 (0.039)	0.044 (0.046)	0.004 (0.033)	0.115** (0.050)	0.194*** (0.056)	0.052* (0.031)	0.268*** (0.098)	0.412*** (0.111)	0.113** (0.057)
Down	-0.114** (0.051)	-0.085 (0.075)	-0.023 (0.026)	0.005 (0.047)	0.038 (0.075)	0.013 (0.051)	0.006 (0.071)	0.051 (0.100)	-0.030 (0.046)	-0.100 (0.128)	0.007 (0.181)	-0.040 (0.091)
Flat	-0.133** (0.053)	-0.209*** (0.041)	-0.043 (0.056)	0.050 (0.084)	-0.047 (0.092)	0.074 (0.074)	0.001 (0.082)	-0.034 (0.106)	0.055 (0.076)	-0.079 (0.179)	-0.288 (0.179)	0.086 (0.135)
Ln(Valuation)		-0.041*** (0.015)			-0.008 (0.011)			-0.059*** (0.017)			-0.110*** (0.029)	
$N$	660	496	647	658	494	646	657	493	645	657	493	645
Adjusted $R^2$	0.019	0.035	0.816	0.011	0.006	0.497	0.008	0.034	0.812	0.011	0.050	0.800
	Participation rights			Senior liquidation preference			Liquidity multiple > 1			Cumulative dividends		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
MFs	-0.142*** (0.038)	-0.079* (0.046)	-0.057 (0.035)	-0.066 (0.045)	-0.035 (0.051)	-0.033 (0.043)	-0.045** (0.022)	-0.027 (0.026)	-0.054** (0.027)	-0.012 (0.018)	0.008 (0.024)	-0.046** (0.022)
Down	0.274*** (0.079)	0.234** (0.101)	0.045 (0.070)	0.245*** (0.084)	0.325*** (0.108)	0.153 (0.102)	0.085 (0.055)	0.097 (0.077)	0.104 (0.082)	-0.010 (0.032)	-0.001 (0.043)	0.024 (0.047)
Flat	0.015 (0.096)	0.144 (0.121)	0.052 (0.071)	0.261** (0.115)	0.191 (0.143)	0.310*** (0.119)	0.001 (0.051)	-0.050** (0.020)	-0.003 (0.070)	0.155* (0.085)	0.258* (0.133)	0.109 (0.075)
Ln(Valuation)		-0.070*** (0.018)			-0.024 (0.017)			-0.010 (0.010)			-0.020* (0.011)	
$N$	660	496	647	660	496	647	660	496	647	659	495	646
Adjusted $R^2$	0.062	0.091	0.706	0.028	0.021	0.497	0.007	0.006	0.121	0.029	0.051	0.444
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE			✓			✓			✓			✓

**Table OA3 (continued)**  
**Controlling for Round Direction**

This table reports the results of the contractual provisions regressions, while controlling for the round direction

$$Provision_{i,k} = \alpha + \beta_0 \cdot MF_{s_{i,k}} + \beta_1 \cdot Ln(Valuation)_{i,k} + \beta_2 \cdot Down_{i,k} + \beta_3 \cdot Flat_{i,k} + \varepsilon_{i,k}$$

where  $i$  indexes firms and  $k$  indexes financing rounds.  $MF_s$  is a dummy variable equal to one for rounds with mutual fund participation.  $Down$  rounds are closed at a lower price than the last financing round.  $Flat$  rounds are closed at the same price as the last financing round. Contractual provisions are defined in Section 2.4 and summarized in Table A1 in the Appendix. *Valuation* is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Cash flow index			Class directors			Weighted-average total directors			Protective provisions		
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
MFs	-0.266*** (0.068)	-0.134* (0.076)	-0.189*** (0.066)	-0.439*** (0.063)	-0.387*** (0.075)	-0.209*** (0.067)	-0.485*** (0.062)	-0.418*** (0.074)	-0.248*** (0.067)	0.582 (0.394)	0.873* (0.451)	0.645*** (0.223)
Down	0.595*** (0.146)	0.657*** (0.172)	0.326* (0.190)	0.479** (0.200)	0.148 (0.163)	-0.252 (0.269)	0.426** (0.197)	0.071 (0.161)	-0.294 (0.270)	0.606 (0.554)	0.406 (0.761)	0.104 (0.713)
Flat	0.435** (0.200)	0.545** (0.250)	0.468** (0.196)	-0.096 (0.179)	0.094 (0.274)	0.147 (0.138)	-0.063 (0.169)	-0.018 (0.260)	0.119 (0.142)	-0.939* (0.557)	-0.657 (0.780)	0.008 (0.551)
Ln(Valuation)		-0.124*** (0.029)			0.029 (0.037)			-0.002 (0.035)			0.108 (0.125)	
$N$	659	495	646	654	490	640	655	491	642	650	486	637
Adjusted $R^2$	0.060	0.099	0.546	0.126	0.099	0.620	0.141	0.124	0.598	0.017	0.022	0.628
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE			✓			✓			✓			✓

Table OA4  
**Controlling for Industry Fixed Effects**

This table reports the results of the regressions in Table 7 while controlling for industry fixed effects. Industry definitions are from Capital IQ. There are 31 unique industries in the sample. *Valuation* is the post-money round valuation estimated by VCExperts. Robust standard errors are reported. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%.

	Redemption rights		IPO ratchets		Down-IPO veto		IPO & redemption index					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
MFs	0.095* (0.048)	0.128** (0.055)	0.055** (0.027)	0.010 (0.036)	0.020 (0.042)	0.011 (0.031)	0.055 (0.047)	0.144*** (0.051)	0.060** (0.030)	0.157* (0.093)	0.291*** (0.102)	0.126** (0.052)
Ln(Valuation)		-0.030* (0.018)			-0.020 (0.013)			-0.088*** (0.017)			-0.140*** (0.032)	
N	742	525	737	740	523	736	739	522	735	739	522	735
Adjusted R <sup>2</sup>	0.070	0.075	0.811	0.111	0.160	0.493	0.209	0.297	0.793	0.144	0.220	0.798
	Participation											
	rights			liquidation preference			Senior multiple > 1			Cumulative dividends		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
MFs	-0.050 (0.037)	0.006 (0.045)	-0.053 (0.033)	-0.056 (0.045)	-0.006 (0.053)	0.007 (0.042)	-0.053** (0.022)	-0.038 (0.028)	-0.042 (0.026)	-0.044** (0.017)	-0.035 (0.022)	-0.061*** (0.022)
Ln(Valuation)		-0.087*** (0.018)			-0.032* (0.017)			-0.016 (0.011)			-0.007 (0.009)	
N	742	525	737	742	525	737	742	525	737	741	524	736
Adjusted R <sup>2</sup>	0.154	0.193	0.689	0.265	0.170	0.541	0.029	0.018	0.112	0.158	0.217	0.468
	Class											
	Cash flow index			directors			Weighted-average total directors			Protective provisions		
	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
MFs	-0.202*** (0.065)	-0.073 (0.078)	-0.149** (0.063)	-0.246*** (0.054)	-0.131** (0.062)	-0.226*** (0.068)	-0.313*** (0.054)	-0.179*** (0.062)	-0.277*** (0.069)	0.781** (0.322)	1.245*** (0.361)	0.698*** (0.226)
Ln(Valuation)		-0.142*** (0.033)			-0.093*** (0.028)			-0.125*** (0.025)			0.073 (0.132)	
N	741	524	736	736	519	730	737	520	732	730	514	725
Adjusted R <sup>2</sup>	0.173	0.169	0.527	0.394	0.520	0.594	0.403	0.538	0.582	0.131	0.158	0.567
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Round FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Industry FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unicorn FE												✓