Ownership Concentration and Firm Value: New Evidence from Owner Stakes in IPOs

Borja Larrain, Peter Roosenboom, Giorgo Sertsios, and Francisco Urzúa I.

April 2023

Abstract

We study the relationship between ownership concentration and firm value using hand-collected data on the stakes of owner-managers before and after IPOs. We instrument for the reduction in stake using market returns shortly before IPOs. Short-run market returns are plausible instruments since owners engage in market timing by selling more when prior returns are high, but high short-run returns are unlikely to directly affect firm value years after the IPO. As predicted by agency theory, a large reduction in ownership concentration at the IPO is negatively related to valuation. Future asset growth is low when owners have low stakes.

Acknowledgments: We thank comments and suggestions from Felipe Aldunate, Joan Farre-Mensa, Francisco Gallego, Federico Huneeus, Pablo Moran, Carlos Parra, Andrei Shleifer, Jerome Taillard, Jose Tessada, Alminas Zaldokas, and seminar participants at the AEA meetings, Calgary, Chicago Fed, Florida International University, PUC Chile, Texas A&M University, Universidad Andres Bello, University of Illinois Chicago, the Uandes Corporate Finance Conference, the Virtual Finance Seminar Brazil, Warwick, and Wisconsin-Milwaukee. Larrain acknowledges funding from ANID/CONICYT Proyecto FONDECYT Regular #1180593. We also thank Alexandra Dresco, Malvina Fouridi, Augusto Orellana, and Mark Straver for excellent research assistance.

Larrain (*): Pontificia Universidad Católica de Chile, Escuela de Administración and FinanceUC; borja.larrain@uc.cl

Roosenboom: Erasmus University, Rotterdam School of Management; proosenboom@rsm.nl

Sertsios: University of Wisconsin Milwaukee, Lubar College of Business; sertsios@uwm.edu

Urzúa I.: City University of London; Francisco.Urzua@city.ac.uk

(*) Corresponding author. Address: Avenida Vicuña Mackenna 4860, Macul, Santiago, Chile. Tel: (56) 2-2354-4025.

Keywords: ownership; firm value; instrumental variables; IPOs.

JEL code: G30, G32

Many firms around the world are simultaneously controlled and managed by their owners (La Porta, Lopez-de-Silanes, and Shleifer, 1999; Morck, Wolfenzon, and Yeung, 2005; Bennedsen, Nielsen, Perez-Gonzalez, and Wolfenzon, 2007). The main conflict of interest in this case is between the owner-manager and minority shareholders, rather than between professional managers and a dispersed set of shareholders (Jensen and Meckling, 1976; Shleifer and Vishny, 1997; Pagano and Roell, 1998; Faccio, Lang, and Young, 2001). Owner-managers with less than full-ownership face a classical incentive problem: They appropriate all the benefits of perquisites or earnings diversion (Bertrand, Mehta, and Mullainathan, 2002), but suffer less than the full monetary cost of these actions. Owner-managers with small stakes are thus more tempted to consume private benefits at the expense of market value. This incentive problem implies that ownership concentration and firm value should be positively related, as emphasized by Jensen and Meckling (1976).

Despite the strong theoretical arguments, the empirical evidence on the positive relationship between ownership concentration and firm value is mixed at best (Demsetz and Villalonga, 2001; Basu, Paeglis, Toffanin, 2022). Many obstacles persist in this vast literature, including the absence of large changes in ownership in the data, and the endogeneity of ownership structures. In this paper, we revisit the relationship between ownership concentration and firm value in the context of Initial Public Offerings (IPOs). The study of ownership and valuation around IPOs allows us to address some of the previous empirical challenges, while at the same time provide novel economic insights.

We hand collect data on the stakes of owner-managers immediately before and after IPOs for close to 1,200 firms in European markets between 1990 and 2013. This setup has several advantages to examine the relationship between ownership and firm value. First, most IPOs involve a large change in ownership. For example, the average stake reduction of the owner-manager in our sample is 13%. As argued by Fahlenbrach and Stulz (2009), and Zhou (2001), many empirical strategies (e.g., firm fixed effects) have little power to identify the relationship between ownership and firm value because other changes in ownership are frequently small. Second, the IPO setup, in particular in Europe with high-stakes owner-managers, better resembles Jensen and Meckling's paradigm. There is no delegation of control in our setup, so we can identify a pure incentive effect. In large and mature firms, which are the focus of the past empirical literature, management is typically delegated, and hence entrenchment effects also enter the analysis (e.g., Morck, Shleifer, and Vishny, 1988).

Most importantly, the IPO setting allows us to develop an instrumental variables (IV) strategy for the stake being sold. Finding plausible exogenous variation in ownership is crucial since endogeneity has been the main obstacle in this literature (Demsetz and Lehn, 1985). For instance, one can imagine that owners of firms with relatively poor prospects, and therefore with lower firm value, are less able to sell large stakes. This induces a downward bias in the OLS coefficient of a regression of firm value on owner stakes. Fabisik, Fahlenbrach, Stulz, and Taillard (2021) argue that this type of omitted variable bias can explain the negative relationship between firm value and ownership that is typically observed in U.S. firms.

Our main regression relates the *reduction* in the stake of the owner-manager at the IPO with subsequent firm value, measured by Tobin's q at the end of the three years that follow the IPO. We exclude the short period following the IPO to avoid distortions in valuation due to frictions in the going public process (e.g., first-day underpricing, sentiment of retail investors, underwriters' price stabilization, and others). In the spirit of Bernstein (2015), we use the returns on the market index over the 3 months before the IPO as instrument for the stake reduction. While Bernstein (2015) uses recent market returns to instrument for the decision to complete or withdraw the IPO, we use returns to instrument for the simultaneous decision on how many shares to sell at the IPO. Consistent with random assignment of the instrument in our sample of completed IPOs, we do not find differences in pre-IPO characteristics according to market returns (i.e., there is balance in the instrument).

The instrument must be relevant for the IV estimation to work (it must also be valid, as we explain below). In our setup, relevance means that 3-month market returns must have a significant impact on the stake reduction at the IPO. As shown by Graham and Harvey (2001) and Brau and Fawcett (2006), managers closely watch recent returns when deciding to raise equity. Managers try to time the market and issue in certain windows of opportunity when valuations are high, or, equivalently, when the expected returns for IPO investors are low (Baker and Wurgler, 2000; Ritter and Welch, 2002; Pastor and Veronesi, 2005; Henderson, Jegadeesh, and Weisbach, 2006). Variation in the expected returns of IPO investors can have rational or irrational underpinnings. For the instrument to be relevant, we just need managers to try to time the market, not that they successfully identify periods of low expected returns.

In the data, we find that owner-managers sell an additional 0.83% of ownership when 3-month returns before the IPO are one-standard-deviation higher. The magnitude of this first-stage effect is large compared to other instances of ownership changes and block sales, but reasonable within the context of IPOs. For example, the effect accounts for only 8% of the standard deviation of stake reductions in the sample. The impact of past returns on the stake reduction is robust to several controls. In particular, the instrument is not picking up a tendency of firms in a given industry, market, or year to sell larger stakes, nor selection effects along observable pre-IPO characteristics such as firm size, profitability, and others.

The coefficient on the stake reduction in the second stage of the IV estimation implies that, in response to the 0.83% reduction in stake in the first stage, there is a fall in Tobin's q of close to one-tenth of the standard deviation of valuations in our sample. This fall is comparable, for example, to the difference in average q between France and Germany, but much smaller than the fall in q in years of stock market crisis. The effect is stable across the three years after the IPO, without a tendency to revert or increase. The IV coefficient is larger (in an absolute sense) than the OLS coefficient, which can be expected from mitigation bias in OLS. Pre-IPO returns pass F-tests for weak instruments and other diagnostics (Young, 2022), implying that our IV setup is not affected by a "blow-up" problem (Jiang, 2017). We note, however, that most firms in our sample are high-growth, small firms, as we look at a specific moment in their life cycle when they enter public markets. Hence, their valuations are potentially more sensitive to ownership changes than large and mature firms.

Beyond being relevant, the instrument must be valid, or, equivalently, obey the exclusion restriction. In our case, the exclusion restriction means that 3-month prior market returns do not have an impact on future firm value, except through their effect on ownership. Any alternative story must account for the supposed influence of 3-month returns over firm value more than two or three years after the IPO. Moreover, alternative explanations need to account for the differences *within* the set of firms that respond to past returns in their issuance decisions (i.e., market timers, or "compliers" in the language of IV). Specifically, a violation of the exclusion restriction needs to explain why firms that sell a large stake after high returns are in some way worse than firms that sell a small stake after low returns. Standard asymmetric information models, for instance, predict that those two types of firms are of comparable quality (Leland and Pyle, 1977; Lucas and McDonald, 1990).

Since we cannot test the exclusion restriction directly, we explore auxiliary tests to assess its validity. We do this in two ways: placebo tests and predictability tests. We use as placebo instruments the market returns just outside the pre-IPO window previously defined. We show that returns between months t-6 and t-3, or between months t and t+3 have no effect on the stake reduction at the IPO. Crucially, these returns also do not have any explanatory power either for future firm value in reduced-form regressions.

Next, we exploit additional hand-collected data of a placebo sample where controlling shareholders are not owner-managers. This sample includes shareholders such as banks, venture capitalists, other companies doing spin-offs, and the state. These other shareholders are interesting because they differ from Jensen and Meckling's owner-managers: they are likely to have different objective functions, they are bound by different contractual constraints when selling equity, and perhaps they do not engage in market timing. In fact, we find that the stakes sold by these other controlling shareholders are not affected by 3-month prior returns. In reduced-form regressions, we do not see that the instrument has any effect on long-run firm value for firms in this placebo sample. The results for the placebo sample speak against the idea that 3-month returns have a direct impact on long-run firm value, and hence that the exclusion restriction fails, because it is hard to justify that past returns belong to the structural equation for owner-managers, but not for other controlling shareholders. Similarly, it is harder to argue that the instrument is proxying for some form of selection on unobservables for the case of owner-managers, but not for the case of other shareholders. Overall, these placebo tests show that there are no reduced-form effects on firm value when the first stage effect is absent. Consistent with the exclusion restriction, there is no effect on firm value when the ownership decision is fixed.

Second, we conduct predictability tests. If 3-month market returns capture variation in the long-run expected returns of investors, then they should be included in the structural equation for firm value, and the exclusion restriction would not hold. Movements in expected returns imply predictability of future *changes* in firm value. If owners issue more when expected returns are low (i.e., when prices are high), then 3-month market returns should predict future changes in firm value with a negative sign (i.e., a reversal). In the data, we find that there is indeed a reversal in firm value, but the reversal is complete within a few months. These dynamics can be explained by short-run sentiment of IPO investors (Derrien 2005; Cornelli, Goldreich, and Ljungqvist, 2006), or frictions related to first-day underpricing (Ritter and Welch, 2002). There is no predictability of changes in firm value beyond the end of the IPO year when using 3-month pre-IPO returns as predictors. Hence, our results are consistent with short-run variation in expected returns, but not with the type of long-run variation that defies our identification strategy. Interestingly, we find that predictability dynamics are common to all IPOs, including those with other controlling shareholders. The difference is that some owner-managers behave as market timers, riding the short-run predictability wave more aggressively, and hence impacting long-run firm value with their dilution.

The negative effect on firm value is in line with the prediction of Jensen and Meckling (1976), and it showcases the incentive problem of owner-managers that is reflected by the market. Additional results speak about the mechanism that explains the agency discount. We find that the stake reduction is associated with lower asset growth in the years that follow the IPO (using the same IV setup). Lower asset growth illustrates one real effect of ownership dilution, which can be particularly damaging in the context of newly public firms that are expected to grow fast. This goes against an alternative hypothesis where value effects are derived from short-run market dynamics that do not have a correlate on real variables. Overall, the results suggest that the agency problem is related to low incentives to invest rather than to excessive growth (i.e., empire building). We find no effects on capital structure, suggesting that the channel is not a debtholder-shareholder conflict.

Our main contribution is to identify the causal effect of ownership changes on firm value. Jensen and Meckling (1976)'s model is a good characterization of our sample of owner-managers. Hence our results can be interpreted as an estimation of the agency costs of owner-managers with less than full ownership. Such a causal estimate is an important addition to the large literature on ownership concentration and firm value that followed Jensen and Meckling (1976) (see Demsetz and Lehn, 1985; Stulz, 1988; Morck, Shleifer, and Vishny, 1988; McConnell and Servaes, 1990; Himmelberg, Hubbard, and Palia, 1999; DeMarzo and Urosevic, 2006; Fahlenbrach and Stulz, 2009; Coles, Lemmon, and Meschke, 2012; Fabisik, Fahlenbrach, Stulz, and Taillard, 2021). We do not only provide a causal estimate of the value consequences of ownership dilution, but we also examine real effects of the deterioration of incentives for owner-managers. Both value and real effects are relevant for equity investors, boards of directors, and other stakeholders such as creditors and employees.

Identifying the causal effect of ownership on firm outcomes has proven difficult in other setups since exogenous variation in ownership structures is extremely rare in practice. Still, there are a few exceptions. For instance, Becker, Cronqvist, and Fahlenbrach (2011) use the presence of wealthy individuals in a firm's geographic area to instrument for large shareholders. Slovin and Sushka (1993) use the sudden death of large shareholders as a source of exogenous changes in ownership. Despite the novelty of these approaches, Edmans and Holderness (2017) conclude that valid instruments or natural experiments for ownership structures are rare at best. By focusing on the moment of a firm's birth into public markets, our IV strategy can contribute to an area where identification is hard to achieve. Relatedly, our IV estimates can complement estimates of agency costs from structural models (Hennessy and Whited, 2007; Page, 2018).

The rest of the paper is organized as follows. Section 1 describes the data. Section 2 presents OLS results and explains the identification strategy behind our IV estimation. Section 3 reports the main IV results, placebo and predictability tests, and other auxiliary results. Section 4 concludes.

1. Data Sources and Summary Statistics

Our sample covers IPOs in 33 stock markets spread over 19 European countries between 1990 and 2013. We first identify IPOs from *Thomson ONE* (formerly *SDC*) and information provided by stock exchanges. We collect details on the firm that goes public such as the IPO date, the market where shares are issued, and the firm's industry, among other characteristics. Having identified IPO firms, we then check by hand their respective prospectuses. We obtain prospectuses from *Thomson ONE* (formerly *Thomson Research*), *Bloomberg*, the websites of companies, and stock exchanges. We focus on the largest shareholder, whose identity the prospectuses are mandated to disclose, and her ownership stake before and after the IPO (derived from the shares offered at the IPO). From the prospectuses, we also collect data on the ownership stakes of other large shareholders and firms' financials before the IPO. For post-IPO years we collect data on firm financials (stock prices, assets, profitability, etc.) from *Datastream*. Finally, we get market return data from *Compustat Global*.

Our main sample consists of 1,172 IPOs where the largest shareholder is an owner-manager. Owner-manager is an umbrella term to refer to large non-institutional shareholders, e.g., CEOs, founders, directors, or families. For instance, the CEO is the largest shareholder in 73% of the firms in our sample. These firms closely follow the paradigm in Jensen and Meckling (1976), where the owner intends to run the business for the foreseeable future. We also collect data on 973 IPOs controlled by other large shareholders such as financial intermediaries (banks, venture capitalists), other companies (e.g., spin-offs), or the state (i.e., privatizations), who often have different objective functions, investment horizons, and contractual constraints when selling shares. Figure 1 Panel A shows the number of IPOs of each type across time.[1] Panel B shows the average year-end Tobin's q across IPOs of each type each year. As previously documented (Ritter and Welch, 2002), periods with many IPOs coincide with valuation booms like the one seen in the late 1990s. The mid-2000s, before the subprime crisis, also show many IPOs, although with less extreme valuations when compared to the late 1990s. IPOs of firms with owner-managers and other IPOs share similar aggregate dynamics.

The IPO prospectus allows us to see the ownership stake of the largest shareholder before the IPO, and what the largest shareholder retains immediately after the IPO. We define the ownership stake as the fraction of common shares outstanding in the hands of the largest shareholder.[2] Figure 2 shows averages of the pre-IPO stake, the post-IPO stake, and the stake reduction (the difference between pre and post) by year in our main owner-manager sample. The pre-IPO stake is close to 50% throughout the sample. The post-IPO stake bounces around 40%, which implies that the average reduction in stake is approximately 10%. We see no discernible upward or downward trend in these averages across time. Figure 3 shows the histogram of pre- and post-IPO stakes. All owner-managers have a pre-IPO stake of at least 5%. The distribution of pre-IPO stakes has spikes at 50% and 100%. The distribution of post-IPO stakes is shifted

[1] Figures A.1 and A.2 show the distribution of IPOs by industrial sector and stock market. We consider a firm to have a dual listing when the firm is listed in multiple countries. Cross-country listing is when the main country of listing is different from the country where the firm is headquartered, even if the firm is listed in only one market. We have 25 (2.13%) cross-country listings and 118 (10.06%) dual listings. All cross listings are dual listings in our sample. In the case of dual listings we use the main market to determine the pre-IPO return. The main market is the market where the offering initially takes place (sometimes the firm is listed in other markets shortly following the first listing), or where more shares are issued if the IPO is concurrently listed in multiple markets. All our results are robust to excluding dual listings.

[2] The company going public offers common stock in nearly all cases. Pre-IPO ownership is based on cash-flow rights on a pro-forma basis, i.e., any convertible preferred shares are turned into common shares. Dual-class shares are infrequent, although other control-enhancing mechanisms may exist (pyramidal structures, shareholder agreements, takeover defenses, etc.). Regardless of these mechanisms, owners typically retain a large fraction of common stock after IPOs (see, for example, Roosenboom and Schramade, 2006). Prospectuses focus on ultimate ownership and not on describing the web of corporations through which control is sometimes achieved. Hence, it is hard to identify pyramidal structures. Following the procedure of Larrain, Sertsios, and Urzua (2021), we are able to match 521 firms in our sample to *Amadeus* and determine whether these firms belong to pyramids or not. We find that 125 firms (24%) belong to pyramids. However, out of those 125 firms, 92 firms are the top of the pyramid, i.e., they are firms that have stakes in other companies, but control on them is not exercised through other companies. In only 33 firms (6%), control is exerted through another firm.

towards the left of the figure, as can be expected, with more mass concentrated in the 20%-40% range than the pre-IPO distribution.

Most firms begin with IPO-related activities, such as selecting an underwriter, around 6 months before the planned IPO date.[3] A draft prospectus is submitted to the stock market regulator between one and two-and-a-half months before the IPO. The marketing phase of the IPO (presentation to analysts, investor education, roadshow, and book-building) is typically compressed during the four weeks before the IPO date. In Europe, price ranges and deal size (the number of shares being offered) are decided around 1 to 2 weeks from the IPO date before book-building starts (see Ljungqvist and Wilhelm, 2002, Table 8). In the U.S., firms can adjust price ranges and the number of shares sold in case of strong investor demand, even in the week leading up to the IPO, via filing an amendment to the original prospectus (Ang and Brau, 2003). These amendments are very infrequent in Europe. Hence, the decision on how many shares to sell at the IPO is mostly finalized between 1 and 2 weeks before the IPO date. This decision involves the owner with the advice of investment bankers, who can have preliminary information about demand from early testing of the waters.[4]

Figure 4 shows the timing conventions for our main variables. Year t=0 is the year of the IPO. From the prospectus, we measure the stake before the IPO and immediately after the IPO. Lockups typically ensure that the stake of the largest shareholder cannot change for 1 to 2 years after the IPO. In Europe, pre-IPO owners are subject to longer and mandatory lockup periods than the standard and voluntary lockup period of 180 days in the U.S. (Goergen, Renneboog, and Khurshed, 2006). Beyond lockup restrictions, empirical studies show that ownership dynamics after IPOs are slow (Helwege, Pirinsky, and Stulz, 2007; Foley and Greenwood, 2010). Importantly, even if ownership changes afterwards, the level of concentration at the birth of public firms sets an initial condition that affects the firm moving forward.

---

[3] See Espinasse (2014, p. 85) or Euronext's IPO Guide (2022, p. 8) for the typical timeline of an IPO process.

[4] These early phases of IPO marketing (e.g., "pilot fishing" in the U.K.) can occur 2 or 3 months before the IPO. Investor education and the management roadshow, which constitute the official marketing phase, are typically concentrated in the last few weeks before the IPO.

In the 3 months leading up to the IPO, we record the return on the main country index where the firm is being listed.[5] Returns are computed up to the end of the previous month, so there is no overlap with the IPO itself. At the end of years t=0, 1, and 2, we measure firm value using Tobin's q (the market value of equity plus the book value of debt, all divided by the book value of assets). We compute q at the end of the year since it uses accounting data from the year closing. To illustrate the timing conventions, consider the following example: an IPO on the 15th of May of 2010 is matched with market returns from the close of January through the close of April of 2010. We then measure Tobin's q at the end of December of 2010, 2011, and 2012. We also explore the effects at longer horizons, but only as a robustness because there is sample attrition as we extend the time window.

Since we focus our tests on valuations starting from the end of year t=0, we are effectively excluding the short period that follows the IPO. Valuation in the first few months after listing can be noisy for several reasons. First, the first-day return or underpricing, which has been studied by a vast literature, is on average large (Ritter and Welch, 2002). Derrien (2005) and Cornelli, Goldreich, and Ljungqvist (2006) argue that underpricing reflects the sentiment of retail investors. For example, Baker and Wurgler (2006) include average IPO underpricing in their index of investor sentiment. Second, early valuations can be affected by the intervention of underwriters. Price stabilization by underwriters can be a way to alleviate short-run price pressure. Third, valuations can be noisy because information about the firm arrives only sparsely as analyst coverage begins. Most of these forces are stabilized after a few weeks or months.

Table 1 shows summary statistics for the main variables in our analysis. Variables are reported in chronological order along the IPO timeline. A detailed description of all variables is reported in the appendix. Through the prospectus, we have access to pre-IPO firm characteristics, which include (log) book assets, leverage (book debt over book assets), operational return on assets (OROA=EBITDA/book assets), and a dummy for

[5] We use the nominal return on each country's main FT index (e.g., FTSE100 for the U.K.), except for Norway (MSCI index), and Greece (Athens Stock Exchange Index).

IPOs that are backed by venture capital.[6] Approximately 26% of IPOs in our main sample of owner-managers have backing from venture capital investors. The stake reduction at the IPO is 13% on average. This reduction can be made by issuing new shares (dilution) or through the sale of old shares owned by the largest shareholder (secondary sales). The firm raises fresh capital when issuing new shares, while firm capital stays the same and the owner cashes out when selling old shares. As seen in Table 1, most of the stake reduction is done through dilution (10% on average), and only a small part through secondary sales (3% on average). Tobin's q in this table is the average of year-end q across t=0, 1, and 2. Since our main tests are cross-sectional tests, we use this average to smooth out valuation differences across years. We also examine year-by-year valuations and find very similar results. Mean (median) Tobin's q is 3.69 (2.48), which is high compared to other listed firms, because IPOs are skewed towards small-growth firms. The dispersion of Tobin's q is also large (3.49), which shows that there can be large differences in value between recently listed firms in different markets and years.

A maintained assumption throughout our analysis is that the largest shareholder remains pivotal after the IPO, or that she continues to enjoy substantial control rights after the IPO. For close to 85% of our main sample we can obtain the ownership stakes of several other large pre-IPO shareholders. We compute the stake of all insiders, which includes executives, directors, family members, and business partners together with the largest shareholder. We also compute the stake of large outsiders: venture capitalists, financial firms, and other companies. Table A.1 in the appendix shows summary statistics for the ownership stakes of these different groups. Insiders and large outsiders together account for 89% of the pre-IPO ownership structure and 66% of the post-IPO ownership structure. On average, all groups reduce their ownership stake in the IPO. While the stake of the largest shareholder goes down by 13%, the stake of all insiders goes down by 19%, and the stake of large outsiders goes down by 4%. Because of this generalized reduction in stakes, the pivotal role of the largest shareholder vis-à-vis other large pre-IPO shareholders remains similar.

[6] Leverage is relatively high in this sample because many IPOs have small book equity from accumulated losses before listing.

We also identify firms where the largest shareholder has a stake below a certain ownership threshold, for example, 10% or 20%. In only 53 firms (4.5% of our sample) the largest shareholder has less than 10% before or after the IPO. There are 262 firms (22% of our sample) when we consider the 20% threshold. Our results are robust to excluding these firms where the largest shareholder may not have a pivotal role.

2. Estimating the Relationship between Concentration and Firm Value

2.1. The Relationship between Concentration and Firm Value in OLS Regressions

The main relationship of interest in the literature is between firm value and the ownership stake:

$$Firm\ Value_i^{post} = \alpha\ Stake_i^{post} + \rho' X_i^{pre} + \mu_j + \mu_m + \mu_t + e_i \qquad (1)$$

Equation (1) represents a cross-sectional regression, so the underlying question is why some firms are worth more than others, and whether the ownership structure can explain some of the differences in valuation between them. By definition, firm *i*'s value ($Firm\ Value_i^{post}$) is observed only after the company is listed. As in most of the literature, we use Tobin's q as a measure of firm value (see Demsetz and Villalonga, 2001; Basu, Paeglis, Toffanin, 2022). Although not free from measurement error (Erickson and Whited, 2000), the main advantage of Tobin's q is its forward-looking nature when compared to other proxies of firm value such as accounting variables. The post-IPO stake ($Stake_i^{post}$) is the main explanatory variable. The pre-IPO controls included in vector X_i^{pre} are log-assets, OROA, leverage, and a dummy for VC-backed IPOs. Fixed effects are included at the industry (μ_j), market (μ_m), and calendar-year (μ_t) levels. Industry (3-digit SIC) level fixed effects allow us to control for average differences in valuation across industries. Different lockup restrictions and free-float requirements motivate the market-level fixed effects. Year fixed effects are necessary to capture calendar effects common to all IPOs (e.g., Gompers and Lerner, 2003). In the appendix, we explore the robustness of our results to including industry-by-year and market-by-year fixed effects, but we do not have enough degrees of freedom to include industry-by-market-by-year fixed effects. Standard errors (e_i) are clustered at the market-by-year level.[7]

The estimation of a linear relationship between ownership and firm value has a long tradition in the finance literature (see Demsetz and Villalonga, 2001). Many authors add quadratic terms for the stake or a piecewise linear specification for different segments of the stake distribution (Morck, Shleifer, and Vishny, 1988; Basu, Paeglis, Toffanin, 2022). Some authors also consider a log-linear specification where firm value is measured with the log of Tobin's q. This is particularly relevant for newly listed firms, which have high valuation ratios, and, therefore, is our preferred specification. The other advantage of using log-Tobin's q is that the coefficient on the stake is a semi-elasticity.[8]

Table 2 shows OLS results for regression (1) in our main sample of owner-managers. As dependent variable we use the log of the average Tobin's q at the end of years t=0, 1, and 2. Column 1 shows that an increase of ten percentage points in the post-IPO stake implies a 3.30% increase in Tobin's q (*t*-stat 2.27). In column 2, we find no evidence of a quadratic relationship between ownership and firm value. A negative quadratic term could showcase an entrenchment effect, i.e., a lower likelihood of successful takeovers when stakes are high (see Stulz, 1988; Morck, Shleifer, and Vishny, 1988; McConnell and Servaes, 1990; Himmelberg, Hubbard, and Palia, 1999; Coles, Lemmon, and Meschke, 2012). Our setup is likely to be free from entrenchment effects because management has not been delegated yet.

In column 3, we try a piecewise-linear specification like the one in Morck, Shleifer, and Vishny (1988). We split the distribution of the post-IPO stake into three segments: below 20%, between 20% and 50%, and above 50%. These thresholds are

[7] Our results are robust to alternative clustering of standard errors, in particular, at the country-by-year, 3-digit SIC, 2-digit SIC, and market levels.
[8] Our main results are not affected if we use a linear or a log specification.

motivated by definitions of control thresholds in the previous literature (e.g., La Porta, López-de-Silanes, Shleifer, 1999). We find that the relationship between the stake and Tobin's q is positive throughout the different segments. The magnitude and statistical significance are strongest for stakes above 50%. This may explain the failure of the previous literature to find a positive and monotonic relationship because average concentration is lower in other settings (e.g., mature firms). These results highlight one of the advantages of the IPO setup since the literature has not been able to find a robust relationship between ownership and firm values in OLS, even before endogeneity concerns are considered.

In column 4 of Table 2, we run a similar OLS regression where we split the post-IPO stake according to the identity $Stake_i^{post} \equiv Stake_i^{pre} - \Delta Stake_i$. In words, the post-IPO stake is equal to the pre-IPO stake minus the reduction in the stake at the time of the IPO. We find a positive coefficient on the pre-IPO stake and a negative coefficient on the stake reduction at the time of the IPO, so both effects suggest that more concentration is associated with higher market value. Despite having the same directional implication, the coefficient on the stake reduction is larger in magnitude than the coefficient on the pre-IPO stake. Hence, the cross-sectional effect on firm value of recent changes in concentration is higher than the effect of baseline levels of concentration.

In column 5 of Table 2, we further split the stake reduction into reduction through dilution and secondary sales. We find that most of the effect comes from dilution, which can be expected since dilution is responsible for the lion's share of the stake reduction in Table 1. The effect of secondary sales is not statistically significant.

2.2. The Endogeneity Problem and IV Setup

Endogeneity is the main obstacle to properly estimate equation (1). The literature typically focuses on simultaneity bias, in particular, when considering the relationship between ownership and firm value in mature firms. Demsetz and Lehn (1985) argue that the market for control makes the ownership structure converge to the appropriate structure for each firm (i.e., shifting control to the most productive user of the assets), and hence that no systematic relationship between concentration and firm value should be apparent in the data. Regressions of firm value on ownership like equation (1) should thus give a coefficient close to zero. The argument rests on a frictionless market for control. This type of simultaneity is less of a concern with IPOs. Owner-managers are endowed with strong control rights, and most of them plan to run the firm for the foreseeable future. In practice, the nascent interaction of IPO firms with public markets only marks the beginning of a slow convergence towards the long-run market-mediated equilibrium (Helwege, Pirinsky, and Stulz, 2007; Foley and Greenwood, 2010).

Reverse causality in equation (1) is a more pressing concern in the IPO setting. Owners of firms that receive high valuations are more prone to sell large stakes. Omitted variable bias is a related concern. For instance, firms that have strong prospects, which are typically hard to observe for the econometrician, receive high market valuations and, at the same time, face strong demand for their shares. Both reverse causality and omitted variables suggest a positive correlation between firms with high valuations and large *reductions* in ownership stakes. This bias can be so strong that Fabisik, Fahlenbrach, Stulz, and Taillard (2021) argue it can explain the negative - instead of positive- relationship between valuation and ownership *levels* observed in U.S. firms. Overall, because of the various sources of endogeneity, we can expect a bias towards zero in the negative coefficient on the stake reduction estimated through OLS (column 4 Table 2).

One suggestion that this type of endogeneity is pervasive is shown in Table 3. We split the sample according to the median stake reduction and compute averages of the different firm characteristics for each subsample. The pre-IPO OROA of firms in the high-stake-reduction sample is 4.9 percentage points higher than in the low-stake-reduction sample. If profitability differences are persistent, this can be an indicator that high-stake-reduction firms have better prospects than low-stake-reduction firms.

We also compute averages that are adjusted for year, market, and industry fixed effects. The regression model in equation (1) removes fixed effects, so the sample averages that are adjusted for fixed effects are closer to the regression results. For visual clarity and comparison to previous columns, we add back the sample average to each variable after we purge the fixed effects (this does not affect the comparison between high- and low-stake-reduction samples). As seen in the last column of Table 3, the adjustment for fixed effects does not materially affect the differences in pre-IPO characteristics across subsamples. In particular, the pre-IPO OROA of firms in the high-stake-reduction sample is still 3.9 percentage points higher than in the low-stake-reduction sample. High-stake-reduction firms are still less likely to be VC-backed. Overall, sorting by the stake reduction produces meaningful differences in firm characteristics that suggest potential endogeneity.

In order to tackle the endogeneity problem head-on, we need an instrument for the stake reduction at the IPO ($\Delta Stake_i$). The instrument that we propose is the return of the market index in the three months prior to the firm's listing ($Ret3_m^{pre}$). In short, our 2SLS system is as follows:

$$1st\ Stage\colon \Delta Stake_i = \omega\ Ret3_m^{pre} + \theta\ Stake_i^{pre} + \pi' X_i^{pre} + \mu_j + \mu_m + \mu_t + \varepsilon_i \quad (2)$$

$$2nd\ Stage\colon Firm\ Value_i^{post} = \beta\ \Delta\widehat{Stake}_i + \gamma\ Stake_i^{pre} + \rho' X_i^{pre} + \mu_j + \mu_m + \mu_t + \epsilon_i \quad (3)$$

In the first stage, we explain the stake reduction with $Ret3_m^{pre}$ plus the other variables included in the second stage. Bernstein (2015) uses a similar instrument to explain the going public decision itself: If market returns are poor in the pre-IPO period, then some firms decide to withdraw the IPO. The dependent variable in the second stage is different in both approaches since Bernstein (2015) is interested in innovation and not in firm value (which cannot be observed in firms that withdraw their IPOs).

Instead of the binary choice to complete or withdraw the IPO, we focus on the size of the stake reduction. Bernstein (2015) deals with the extensive margin of the problem while we focus on the intensive margin *within* the sample of firms that complete their IPO. Since they are both likely to be decided around the same time, the same instrument can be valid for both margins. To the extent that the instrument is valid for the extensive margin, then the selection of firms into the IPO status (our sample) is as good as random assignment. In other words, if Bernstein (2015)'s identification is valid, then the extensive margin does not introduce a selection effect that invalidates comparisons along the intensive margin. Moreover, even if there were selection problems in the extensive margin, those selection effects are unlikely to invalidate our strategy because we make comparisons *within* the sample of completed IPOs, rather than between withdrawn and completed IPOs.

In our baseline specification, we control for the pre-IPO level of ownership ($Stake_i^{pre}$) since the level can affect changes in ownership ($\Delta Stake_i$) and firm value. This makes our results more comparable to the rest of the literature, since the relationship of interest is between ownership levels and firm value, and not just between ownership changes and firm value. The pre-IPO stake is not a "bad control" since it is fixed long before the stake reduction and firm value are determined, and hence it cannot be an outcome of the causal relationship that we estimate in the second stage (Angrist and Pischke, 2009). We still show that our results are robust to excluding the pre-IPO stake as a regressor.[9]

2.3. IV Assumptions

2.3.1 Relevance and Instrument Balance

The instrument is potentially relevant because the literature shows that managers sell more equity after strong market returns (Baker and Wurgler, 2000; Ritter and Welch, 2002; Henderson, Jegadeesh, and Weisbach, 2006). For example, Graham and Harvey (2001) show that more than 60% of surveyed CFOs say that (i) the magnitude of equity undervaluation/overvaluation, and (ii) recent stock price increases (or selling

[9] A related exercise is to consider the stake reduction *relative* to the pre-IPO stake ($= \Delta Stake_i / Stake_i^{pre}$) as the endogenous variable of interest. This has the advantage of still using the information contained in the pre-IPO stake, while considering it potentially endogenous at the same time. The mean (median) relative stake reduction is 0.24 (0.25) implying that owner-managers sell on average one quarter of their pre-IPO stake. The results using the relative stake reduction as regressor (and market returns as instrument) are in line with our main results.

if the price is "high"), are important factors when issuing equity. Bancel and Mittoo (2009), and Brau and Fawcett (2006), also report that overall stock market conditions are closely watched by CFOs when issuing equity. Market timing is an important motivation for equity issues, although it is neither the sole nor the most important motivation quantitatively speaking (Kim and Weisbach, 2008; DeAngelo, DeAngelo, and Stulz, 2010).

The tendency to sell more equity after strong returns is labeled as market timing since managers and owners are, in principle, taking advantage of periods of low expected returns (i.e., "high" prices). Movements in the expected returns of IPO investors can have rational or irrational underpinnings. Pastor and Veronesi (2005) present a fully rational model that predicts more issuance after strong returns and subsequent poor returns (see also, Carlson, Fisher, and Giammarino, 2006). Baker and Wurgler (2000) argue that positive investor sentiment explains the strong returns that precede issuance. Managers can identify the overvaluation and issue accordingly. From the behavioral perspective, the low future returns reflect the reversal of sentiment. Although investor sentiment can explain low expected returns, it is also true that managerial expectations of future returns are often miscalibrated (Ben-David, Graham, and Harvey, 2013), and that managers are overconfident about their predictive abilities (Malmendier and Tate, 2005). Importantly, for our first stage to work, we only need that owner-managers try to time the market, not that they successfully identify periods of low expected returns. Variation in expected returns implies predictability of future changes in firm value, which we discuss in the next section as it relates to the exclusion restriction.

In Table 4, we show evidence consistent with the relevance of the instrument. When splitting firms according to the market returns in the previous 3 months (above and below the sample median), we find that the stake reduction is larger in the sample with high past returns. The difference in stake reduction in this table is akin to a first-stage estimate in the sense that it captures the effect of the instrument on the explanatory variable. Table 4 (Panel A) shows that a 12.6 percentage points difference in returns is associated with a 1.5 percentage points larger stake reduction.

Table 4 also allows us to check for balance between the samples with high and low prior market returns. In Panel A, we find that firm size and OROA are significantly higher in the sample with high 3-month returns, suggesting that firms that go public after high returns are different from those that go public after low returns. However, these differences can be traced back to broader issuance waves and not exclusively to the returns in the last 3 months. In order to show this, in Panel B, we adjust each variable for additive year, market, and industry fixed effects. After adjusting for fixed effects, none of the pre-IPO covariates (firm size, profitability, leverage, and the dummy for VC-backed IPOs) are significantly different when comparing samples with high and low returns. Therefore, although underlying cycles related to year, market, and industry effects can affect the type of firm that goes public, once we look within year, market, or industry it is not true that the observable characteristics of firms that go public after high 3-month returns are different from the characteristics of firms that go public after low 3-month returns. Simply put, the instrument does not split the sample into "good" and "bad" firms based on pre-IPO covariates. In this sense, Table 4 is consistent with the as-random assignment of the instrument (Atanasov and Black, 2016; Bennedsen, Nielsen, Perez-Gonzalez, and Wolfenzon, 2007).

At the same time, Table 4 shows that differences in the endogenous variables (stake reduction, Tobin's q) remain significant after the adjustment for fixed effects. This implies that 3-month returns have explanatory power for variation in the stake reduction even within a year, market, or industry. Hence, the adjustment for fixed effects does not take away the instrument's relevance. Differences in Tobin's q are still observable, and they are consistent with a reduced-form effect of 3-month returns on the dependent variable.

2.3.2 Exclusion Restriction

The exclusion restriction in our case says that market returns on the 3 months before the IPO have no impact on long-run firm value, except through the reduction in ownership stake. This assumption is ultimately untestable. In this section, we spell out alternative theories that predict a direct link between prior market returns and firm value, which would constitute a violation of the exclusion restriction. We propose additional tests of the alternative theories to see if we can reject them. In this way, we can find indirect support for the exclusion restriction.

Given the timing conventions of our empirical design (Figure 4), any alternative theory must account for the supposed influence of *short-term* returns over *long-term* firm value. In particular, 3-month market returns need to have an impact on firm value more than two or three years after the IPO. It is not enough to argue that short-term returns have an impact on value immediately following the IPO, or on the first-day underpricing (as they probably do). This effect needs to persist for years after the IPO, which sets the bar higher for alternative explanations.

A first potential violation of the exclusion restriction is when prior market returns capture variation in long-run expected returns. Such variation can follow from rational or irrational IPO investors. In either case, prior market returns belong to the structural equation on their own merit. The usual predictors of long-run returns are slow-moving variables at the business cycle frequency, and 3-month returns are not among them (Campbell and Thompson, 2008). Still, it can be the case that 3-month returns proxy for variation in expected returns in the IPO context.

Variation in expected returns must translate into predictability of future *changes* in firm value (i.e., future returns). If we find that future changes in firm value are unpredictable using prior 3-month returns, then there is no evidence of this violation of the exclusion restriction. The relevant predictability horizon is related to the horizon at which we conduct our tests. Our identification assumption does not require the absence of short-term predictability, for example, in the first few months after the IPO. Instead, our identification assumption requires the absence of long-term predictability in the years that follow the IPO. The advantage of predictability is that it can be contrasted with the data, and hence we can test this alternative hypothesis.

Although variation in expected returns is a potential violation of the exclusion restriction, it is important to emphasize that its cross-sectional prediction is the opposite of the agency model. This happens because our main tests deal with a cross-section of firm values and not with a cross-section of *changes* in firm values. Low expected returns do not imply that the firms that issue more are worth less than other firms. If firms issue when expected returns are low, then they issue at relatively high prices. After prices revert to fair levels (i.e., after return predictability is extinguished), then there should be no systematic difference between the value of high and low issuance firms. If the reversal is not yet complete, then the values of high-issuance firms should be higher than the value of low-issuance firms because prices are converging from above. Hence, variation in expected returns, although it predicts low *changes* in firm value after IPOs, it does not predict low *values* of high-issuance firms relative to low-issuance firms. Agency theory, instead, predicts a discount in high-issuance firms relative to low-issuance firms.

It could be argued that self-selection based on an unobservable component of firm quality is another threat to the exclusion restriction. Under this hypothesis, the discount related to large stake reductions would only reflect the poor quality of the firm, which the market can infer from the issuance decision (Leland and Pyle, 1977). However, it is not enough to argue that there is self-selection in the issuance decisions of firms, which is likely to be the case, and one of the motivations for the IV estimation in the first place. Self-selection must be related to our instrument to violate the exclusion restriction.

To fix ideas, we discuss the implications of standard asymmetric information models for our identification strategy. Figure 5 summarizes the model's predictions and their relation with market returns. According to asymmetric information models, top firms on the quality ladder do not even go public since undervaluation in the market is too severe for them (Myers and Majluf, 1984). Relatively good, but below top, firms sell small stakes because selling equity is still costly for them (Leland and Pyle, 1977). Finally, bad firms sell large equity stakes, because they are always overvalued by the market.

Market returns can affect the average composition of firms going public. High returns, for instance, due to changing investor appetite for stocks, reduce the asymmetric information discount (Lucas and McDonald, 1990). The smaller discount leads more firms to go public, and nudge some firms that would otherwise sell small stakes to sell large stakes. Hence, the average quality of issuers increases when returns are high. However, the IV coefficient does not compare the average issuer after good returns with the average issuer after poor returns. Instead, it makes comparisons within market timers, i.e., within firms that change their issuance decision depending on past returns. In the asymmetric information model, market timers, which are at the margin between selling a large and a small stake, are of intermediate quality. Really bad firms sell large stakes irrespective of market returns because the market always overvalues them. Similarly, relatively good firms never sell large stakes. The IV setup does not focus on such firms, as they do not respond to past returns.

From an exclusion restriction perspective, the important message of the asymmetric information model is that market timers are firms of similar quality. A violation of the exclusion restriction requires that market timers that sell a large stake after high returns are in some unobservable way different than market timers that sell a small stake after low returns. However, this is not what asymmetric information models predict. Similarly, if we think of market timers as high-quality firms, this does not affect the exclusion restriction either, because the comparison is within such high-quality firms. Another model, perhaps including behavioral features, may have different predictions regarding returns and self-selection along unobserved firm quality.[10] Standard asymmetric information models, or whether market timers as a class are different from the overall population, however, do not invalidate the exclusion restriction.[11]

3. Results

3.1. IV Results

3.1.1. Baseline Estimation

Table 5 shows the results for the IV system in equations (2) and (3). Column 1 shows the first stage, where we run the stake reduction on prior 3-month market

[10] For instance, imagine a situation where only bad firms sell large stakes after high returns and only good firms issue small stakes after poor returns. This cannot be an equilibrium under the asymmetric information model because bad firms cannot resist the temptation to issue shares when good firms are issuing. However, if bad firms are somewhat myopic, and ignore their incentive compatibility constraint, then this can be an equilibrium that would invalidate the exclusion restriction.

[11] If the exclusion restriction holds, then market timers are “compliers” in IV terminology. The IV coefficient is the local average treatment effect (LATE) for compliers (Angrist and Pischke, 2009). In Figure 5, compliers are firms of intermediate quality. Good (bad) firms are “never takers” (“always takers") since they sell small (large) stakes regardless of past returns.

returns. We find that a one-standard-deviation higher return leads to a 0.83% larger reduction in stake (=0.092x0.09; *t*-stat 3.68).[12] We can think of the 0.83% larger stake reduction as the treatment in our setup.

The effect of returns on ownership can be considered small or large depending on the benchmark one has in mind. On the one hand, the treatment is only 8% of the standard deviation of the stake reduction in our sample (11%). This small piece of the stake reduction is arguably exogenous and is the key to our identification strategy. The rest of the variation in stake reduction is likely driven by endogenous forces. Hence, the variation provided by the instrument in the first stage is consistent with the owner's attempt to time the market, but without claiming that market timing is quantitatively the most important driver of the stake reduction or of equity financing decisions in general. On the other hand, a change in stake of 0.83% is a sizeable and infrequent event in the life of any firm (Edmans and Holderness, 2017; Fahlenbrach and Stulz, 2009; Helwege, Pirinsky, and Stulz, 2007).

In order to check for weak instruments, we report the Montiel-Olea and Pflueger (2013) effective first-stage F-statistic, which corrects for heteroskedasticity. The F-statistic of 13.22 (column 1) is above the critical value of 10. This implies that our instrument is not weak, and hence that we can use standard IV inference.

Column 2 in Table 5 shows the second stage results. The coefficient on the stake reduction is negative and significant at the 5% level. Under the agency theory of Jensen and Meckling (1976), the negative impact on valuation is associated with the deterioration of the owners' incentives. According to Jensen and Meckling (1976), owners are aware that the stake reduction comes at the expense of long-run market value, but they are perfectly content with it because they are compensating with the extraction of more private benefits from a larger firm under their control.

Column 3 in Table 5 reports the reduced-form regression, which directly relates Tobin's q with 3-month returns. Under IV assumptions, the reduced-form coefficient is basically the first stage coefficient times the second stage coefficient, which is very close

[12] In unreported results we find that most of the explanatory power comes from the returns on months t-3 and t-2 rather than the last month t-1. This fits well with the timing of IPO decisions previously discussed.

to what we find here (-0.892 vs. 0.092x-9.69). The reduced form is perhaps a more natural way to assess the magnitude of the effects. It shows that firm value falls by 8% from a one-standard-deviation return shock (=-0.892x0.09). Under our interpretation, this fall in firm value is caused by the 0.83% larger stake reduction in the first stage.

An 8% fall from the average q in the sample implies a reduction of 0.3 in q, or slightly less than one-tenth of the standard deviation of valuations (3.49 in Table 1). From the perspective of the cross-sectional dispersion of valuations among recently listed firms, the effect of ownership changes does not seem to be large. This is the relevant comparison for our purposes, and not the time series volatility of each firm's value. The 0.3 reduction in q is close to the difference in q between two countries such as France and Germany. Other cross-country differences in q are typically larger than this effect. For example, the difference in valuations between the U.K. and Italy is 4 times larger than our estimate. The difference in q between years is often larger than the 0.3 effect that we find. For instance, the end of the hot market of the 1990s implied a reduction in q from 6.4 in 1999 to 4.3 in 2000 (Figure 1 Panel B), or close to 7 times our effect. These comparisons indicate that the magnitude of the effect is reasonable for our sample.

The regressions without the pre-IPO stake as a control variable (columns 4-6) yield similar results. The first stage coefficient is higher (11.4% vs. 9.2%), but the second stage coefficient is smaller in magnitude (-7.771 vs. -9.690). Given these two effects, the reduced form coefficient is almost the same as our baseline estimate (-0.882 vs. -0.892). This is not our preferred specification since we need to include the pre-IPO stake to make our results more comparable to the rest of the literature.

3.1.2. Magnitude of IV Coefficient

The IV coefficient on the stake reduction is still about 10 times larger than the OLS coefficient (comparing column 2 in Table 5 with column 4 in Table 2). This could indicate an IV-blow-up problem, whereby a weak instrument amplifies a potentially small violation of the exclusion restriction and leads to spurious statistical significance. We address the issue from both the econometrics and the theory angles, following the recommendations of Jiang (2017). Yet we acknowledge that if the IV effect was smaller and statistically insignificant, the results may have discouraged this project. This type of selection problem can create a publication bias across studies.

First, from the econometrics perspective, although our results pass the standard threshold of 10 using the F-test of Montiel-Olea and Pflueger, we still conduct tests using inference that is robust to weak instruments (Andrews, Stock, and Sun, 2019). In particular, the IV coefficient on the stake reduction in column 2 of Table 5 is significant when using the Anderson-Rubin or the conditional likelihood ratio test (*p*-value of 0.24%).[13]

Young (2022) argues that many IV results are sensitive to a few clusters of observations. He shows in a sample of IV estimations that the average *p*-value goes from 2.9% to 15.4% after removing just one cluster or observation. In our case, and as seen in Figure A.4 in the appendix, the coefficient for the stake reduction is tightly estimated in the different samples that result from excluding one firm (cluster) at a time. We get similar results when excluding market-year buckets. The *p*-value for the stake reduction coefficient is never above 5% in any of these sub-samples. Another indication of problems with the IV estimation pointed out by Young (2022) is that IV confidence bands often contain the OLS point estimate. Instead, in our case, the IV confidence bands at the 5% level (from column 2 in Table 5) allow us to reject the OLS estimate (from column 4 in Table 2).

Second, from the perspective of economic theory, we argue that the magnitude of the IV coefficient is plausible. As suggested by Jiang (2017), the first thing to note is the direction of the endogeneity bias in OLS. Fabisik, Fahlenbrach, Stulz, and Taillard (2021) suggest that endogeneity should bias the OLS coefficient towards zero, given that the owners of high-value firms are able to sell larger stakes. Hence, from an ex-ante perspective we should not be surprised that the IV coefficient is larger than the OLS coefficient.

[13] Following Brodeur, Cook, and Heyes (2020)'s concerns on the use of *p*-hacking, we also check the robustness of our main result on the stake reduction in column 2 of Table 5 using alternative specifications that consider all possible combinations of our control variables (log assets, ROA, leverage and VC backed). As can be seen in Figure A.3 in the Appendix, our main result is always significant (minimum *t*-stat of 2.44) and of similar economic magnitude as the one reported in Table 5.

The magnitude of the IV coefficient is also plausible if we compare it to other parameter estimates in the literature. Under the agency theory, owners sacrifice 8% of firm value by reducing their stake in response to higher returns but gain at least 8% of private benefits in the new firm. This gain of private benefits corresponds to approximately 40% of the cross-sectional standard deviation of private benefits reported by Dyck and Zingales (2004). Similarly, the agency cost is not prohibitively high when compared to other costs of equity financing. For example, 8% of firm value is below the average underpricing of 18% in IPOs (Ritter and Welch, 2002), and only slightly higher than the toll of 4%-7% of proceeds implied by listing and underwriting fees (Abrahamson, Jenkinson, and Jones, 2011). All these comparisons suggest that an agency cost of the magnitude that we report can be an equilibrium outcome.

3.1.3. External Validity

Any IV strategy relies on compliers, i.e., those agents that get treatment in response to the instrument. In our case, compliers are the market timers since they change their issuance decision (the treatment) in response to past returns (the instrument). We cannot identify market timers individually, but we can still identify the fraction of the population that is a market timer. In Table 6, we define the treatment as a dummy for stake reductions above the sample median, and the instrument as a dummy variable for firms that face 3-month returns above the sample median. Although our main results are with continuous variables for both treatment and instrument, we use the dichotomous variables to ease the exposition in this section. The fraction of compliers in the population is the coefficient from the first-stage regression of the treatment indicator on the instrument indicator, plus the other controls and fixed effects (Angrist and Pischke, 2009). We find that the fraction of compliers in our sample is 6.28%, which compares well with other IV studies.[14] Therefore, most of the sample is

[14] The fractions of compliers within the treated and non-treated populations are both equal to 6.28% given that we define the treatment (high stake reduction) and instrument (high past returns) according to sample medians. This can be seen from the formula for the fraction of compliers in the treated population (analogously for the non-treated population): $P(complier|stake\ reduction\ is\ high) = \frac{P(returns\ are\ high) \times 1st\ Stage\ Coeff}{P(stake\ reduction\ is\ high)}$.

composed of "always takers" (firms that sell a large stake regardless of past returns), and "never takers" (firms that sell a small stake regardless of past returns).[15]

Understanding the characteristics of compliers is important for extrapolating the results to other samples. The relative likelihood of a complier having a characteristic is given by the ratio of the first stage coefficient in the subsample with that characteristic to the first stage coefficient in the full sample. We report these ratios of first stage coefficients in Panel B of Table 6. A ratio above (below) one implies that compliers are more (less) likely than the overall population to have that characteristic. In our sample, compliers or market timers are more likely to be large firms (ratio 1.67), and profitable firms (ratio 2.04), but are less likely to be highly levered firms (ratio 0.39). The confidence intervals for these ratios suggest that only the profitability effect is significant (i.e., it is the only confidence interval that does not contain the 1). Large, profitable, and low leverage are features typically associated with strong firms. Hence, we can argue that market timers are of intermediate quality or above-average quality among the firms that go public.

Our estimate can be understood as the effect of selling a marginally larger ownership stake while remaining within the typical demand conditions faced by IPOs. Simply extrapolating our results to other cases may not be appropriate because overall conditions are likely to change. First, we might be tempted to extrapolate our results to changes in ownership in large and mature firms instead of small, high-growth firms going public. Demand for large firms is different, for example, because it includes passive institutional investors that follow stock indices (which typically do not include IPOs). On top of variation in demand conditions, the ownership structure of large firms can change the nature of the stake being sold. For example, a 0.83% stake in a large firm (say, IBM)

---

[15] Always takers and the never takers do not defy the monotonicity assumption required for IV; namely, that agents either respond to the instrument as expected or do not respond at all. Agents who respond to the instrument against what is expected ("defiers") would violate the monotonicity assumption. In our context, these would be firms that sell a larger stake when returns are low. If we have many defiers, we could find ourselves in a situation where the reduced form is zero even if the true causal effect of the stake reduction exists. This would happen because the effect on defiers cancels out the effect on compliers. However, in our case we find that the reduced-form coefficient is significantly negative (-0.892, from column 3 Table 5) and very close to multiplying the coefficients on the first and second stages of the IV estimation (0.092 x -9.69, from columns 1 and 2 Table 5). This suggests that defiers are few, or none, and that the monotonicity assumption holds in our setup.

with a dispersed shareholder base is very different from a 0.83% stake in a small firm with a dominant owner-manager (see Barclay and Holderness, 1989, 1991). Hence, we cannot be sure if selling a 0.83% stake of a large firm will cause a loss of 8% of firm value as the extrapolation of our results would suggest. These thought experiments abandon the local nature of our results and must be interpreted carefully.

Second, we can think of a larger change in stake, for instance, a 5% stake reduction. Although seemingly small, only a shock to returns of six standard deviations (=5/0.83) would induce such a reduction, which is clearly an atypical situation. We claim to identify an exogenous piece of the stake reduction that allows us to move along the same investor demand curve. This is almost, by definition, a small piece of the variation. If we consider much larger changes, it is hard to believe that we are holding all other factors constant.

Finally, it is worth emphasizing that the institutional setup of our European sample is different from the U.S. While different, this does not necessarily imply that our results do not carry over to other markets. Many of the countries in Europe are at a similar level of economic development to the U.S. Moreover, in the last two decades, the European IPO market has been comparable in size to the U.S. IPO market, partly because the U.S. market has declined in importance (Doidge, Karolyi, and Stulz, 2013). Notably, the control premium is high in many European countries, which suggests that private benefits of control are sizeable (Dyck and Zingales, 2004). This implies that agency is a more pressing concern in Europe than in the U.S., and hence that ours is arguably a better laboratory to test the agency model.

3.1.4. Timing of the Effects

The previous regressions use average valuations between t=0 and t=2. We use an average to smooth out valuations that can be volatile during the first few years. We consider three years in our main regressions to avoid losing observations due to sample attrition.

We now run regressions on a year-by-year basis (between t=0 and t=4), and with different horizons for taking averages to better analyze the dynamics of the effects and biases by comparing OLS and IV estimations. The dependent variable (Tobin's q) varies across these different regressions. The stake reduction is still measured at the time of the IPO to capture the effect of changes in firms' initial conditions. The pre-IPO covariates are the same across all specifications. Results are reported in Table A.2 in the appendix.

We find a significant OLS coefficient for the stake reduction in year t=0, although smaller in magnitude compared to the IV estimate. The OLS coefficient then falls in magnitude and statistical significance as time passes, and by year t=2, it is practically zero. The IV coefficients are, instead, stable in terms of magnitude and significance across the five year-by-year cross-sections, despite the declining number of observations. The IV results using alternative horizons for taking averages, all of which exclude year t=0, are comparable to our main results.

Our interpretation is that the IV estimation isolates the exogenous and stable relationship between ownership and firm value. The endogeneity bias, which pulls the OLS coefficient towards zero, is likely stronger for later years than for year t=0. One source of endogeneity is that firms with poor prospects receive weaker demand for their shares at the time of the IPO. Poor prospects lead to bad profitability after the IPO, which in turn can reduce valuations even more. Hence, owner-managers that endogenously retain a high stake at the IPO can be "stuck" with a large stake in a poorly-performing-low-valuation firm after two years (Fabisik, Fahlenbrach, Stulz, and Taillard, 2021). This reinforcement of the endogeneity problem further biases the OLS coefficient at longer horizons compared to year t=0. The IV estimation produces more stable coefficients by focusing on the exogenous variation in concentration that occurs at the birth of the firm into public markets.

3.2. Placebo tests

3.2.1 Tests with Placebo Returns

Table 7 reports the first stage and the reduced-form regressions using returns around the 3-month window. Columns 1-3 explore the impact of past and future returns on the first stage, i.e., the regression where the stake reduction is the dependent variable. We find that returns adjacent to our main 3-month window have no bearing on the stake reduction for owner-managers. In particular, we find no impact of returns between months -6 and -3, or between the IPO and month +3. In column 4, we run the reduced-form regression with all returns, and we find that only returns in the 3 months before the IPO have an impact on firm value that is statistically significant.

The results in Table 7 speak in favor of the exclusion restriction because we see an impact of 3-month returns on future valuation (reduced form) only when those returns also have an impact on the ownership decision (first stage). Returns slightly before or slightly after the window that is relevant for the ownership decision have no impact on valuation. Hence, it becomes harder to argue that 3-months returns are part of market dynamics that directly affect long-run valuation through channels other than ownership.

3.2.2 Tests with placebo sample

The second placebo test deals with IPOs where the largest shareholder is not an owner-manager. These IPOs are controlled by financial institutions (i.e., banks, venture capitalists), other companies (e.g., spin-offs), and the state (i.e., privatizations), all of which are interesting because they have objective functions and contractual, or even political, constraints that differ from owner-managers. Table A.3 in the appendix shows averages of the main variables for these other IPOs and the comparison with IPOs controlled by owner-managers. The IPOs controlled by other shareholders are from larger and less profitable firms than IPOs controlled by owner-managers. Post-IPO stakes are smaller with other shareholders, mostly because secondary sales (and not dilution) are twice as big. This suggests a strong exit motive in other shareholders that is absent from owner-managers. Prior 3-month market returns are indistinguishable when we compare across different IPO types.

Table 8 shows regressions for the sample of other IPOs. In columns 1 and 2, we run OLS regressions of Tobin's q on our ownership variables. The coefficients on the post-IPO stake, pre-IPO stake, and stake reduction have the same signs as in the sample of owner-managers, but magnitudes fall approximately by half (when comparing Table 8 with Table 2). There is no statistical significance with OLS. We see at least two explanations for these results. First, agency theory applies more readily to owner-managers than to other large shareholders, and hence the ownership stake can be less relevant to determine firm value in the alternative sample. Second, endogeneity can be stronger in the sample with other shareholders since these firms have significantly lower profitability (OROA) than the firms of owner-managers (see Table A.3). This would bias the OLS coefficients further down, following the type of endogeneity suggested by Fabisik, Fahlenbrach, Stulz, and Taillard (2021).

Columns 3 and 4 in Table 8 show the first stage regression and the reduced-form regression for the sample of other IPOs. We find that 3-month market returns have no explanatory power for the stake reduction (column 3) or Tobin's q (column 4). Our interpretation is twofold. First, other shareholders possibly do not try to time the market like owner-managers or cannot time the market because the number of shares offered depends on other constraints. Second, the reduced-form regression for other IPOs supports the exclusion restriction because it is not clear why, under alternative theories, 3-month returns should belong to the structural equation for owner-managers, but not for other IPOs. If the 3-month market returns proxies for variation in expected returns, then this variation should be relevant for the entire market and not only for owner-managers that represent a subset of the market.

3.3. Predictability tests

Predictability tests are crucial to study variation in expected returns in the IPO market. If 3-month returns proxy for low expected returns (i.e., high prices), then they should predict future changes in firm value with a negative sign (i.e., a reversal). These low future returns reflect the low discount rates that rational investors accept for the high initial prices, or they reflect a reversal of the irrational optimism that initially produced overvaluation. There is predictability in both cases, but the source of predictability is different.

In Table 9, we show regressions where we look at the predictive power of 3-month market returns for future changes in firm value. Before exploring long-run changes, in column 1 of Panel A, we show regressions with underpricing (first-day return) as the dependent variable. In line with the results on "hot markets" (Ritter and Welch, 2002), high market returns predict stronger IPO underpricing. Derrien (2005) and Cornelli, Goldreich, and Ljungqvist (2006) relate this result to the sentiment of retail investors in the pre-IPO market. Interestingly, the underpricing result can also be seen in the IPOs with other large shareholders (see column 1 of Panel B). Hence, the sensitivity of underpricing to past returns is a market-wide effect, and not exclusive to owner-managers.

Starting with column 2 of Table 9, we present regressions where the dependent variable is the change in log-Tobin's q between different points in time. These different time windows allow us to estimate the precise horizon at which expected returns are varying. In column 2, we use the difference between q at the end of the IPO year (t=0) and the IPO date. Tobin's q at the IPO date uses the offer price to value equity. In column 3, we use the difference between q at the end of years t=1 and t=0; so on and so forth for the columns that follow. In columns 1, 2, 5, and 6, the sample is smaller than in our main tests because there are missing values for q at the IPO date and for years beyond t=2.

In column 2 of Panels A and B, we find that Tobin's q strongly reverts between the IPO date and the end of year t=0. Therefore, there is short-term predictability. The effect is of similar magnitude in both samples (-0.832 for owner-managers and -0.896 for other IPOs). Expected returns on all IPOs are low during the first few months after listing in a hot market. Although all IPOs ride a similar valuation wave, only owner-managers do it aggressively by selling more or less depending on the strength of the wave (column 1 Table 5), while other large shareholders do it passively and do not engage in market timing (column 3 Table 8). Short-term predictability helps rationalize our first stage results in the sense that owner-managers appear to be effective market timers.

Crucially for our empirical design, we find no predictability for more distant changes in Tobin's q: between t=0 and t=1 (column 3 of Table 9), and in later years (columns 4-6 of Table 9). Hence, there is short-term predictability with prior 3-month market returns, but not long-run predictability (i.e., beyond the end of t=0). Our main tests (Table 5) exclude valuations before the end of year t=0, so we are effectively excluding the period that is affected by predictability. Our results are also robust to excluding year t=0 completely (see Table A.2). This lack of predictability implies that the exclusion restriction holds because 3-month returns are not proxying for movements in expected returns at the horizon of our tests.

Figure 6 summarizes the dynamics of Tobin's q in our sample of owner-managers. We split IPOs into firms going public after high 3-month returns and firms going public after low 3-month returns (as in Table 4). Before plotting, we purge the data for market, industry, and year fixed effects. At the IPO date, IPOs that follow high returns are valued slightly below IPOs that follow low returns. Both IPOs increase in value sharply on the first day of trading. Since underpricing is stronger in IPOs that follow high returns (column 1 of Table 9), both IPOs end up basically with the same Tobin's q after the first day of trading. Between the first day of trading and the end of year t=0, we see reversals in the valuation of both types of IPOs, but more strongly so in IPOs that follow high market returns. This is again what the results in Table 9 show (column 2).

The cross-sectional difference in valuation between IPOs that follow high and low returns is seen at the end of year t=0 (see Panel B of Figure 6). If reversal were complete (and in the absence of an agency discount), then there should be no premium nor discount at the end of year t=0. If reversal were incomplete, then there should be a price premium at the end of year t=0, instead of a price discount, because prices are converging from above. The fact that firms' values preceded by high 3-month returns fall below the prices of other IPOs is evidence that this is not merely a reversal. Instead, it is consistent with an agency discount because these owners reduced their ownership stakes more in response to high returns. The discount on IPOs that follow high returns persists at approximately the same magnitude for all subsequent years in Figure 6. Our main regression starts with data at the end of year t=0, and basically captures the value discount that is illustrated by Figure 6 in a reduced-form fashion.

Our main tests are cross-sectional comparisons, so what we really care about is the wedge between the valuations of IPOs that follow high and low returns, which is very stable in time (e.g., compare the wedges for t=0, 1, and 2 in Figure 6). The stability of the wedge also helps us to shed light on the short-run nature of predictability in our data. For example, if 3-month returns capture changes in discount rates at long horizons, then we should find that the wedge grows in time as returns are compounded. An annual difference in the discount rate of, say, 5% should translate into a price wedge of approximately 5% at the end of the first year, 10% in the second year, and 15% in the third year. We find instead that the cross-sectional wedge is of similar magnitude across years, which speaks against 3-month returns as a proxy for discount rates at long horizons.

3.4. Mechanisms

We now explore the effects of stake reductions on other firm outcomes, such as investment, profitability, and capital structure. Our goal is to distinguish between potential mechanisms driving the lower valuation for firms selling larger equity stakes. We first spell out the predictions of the potential explanations for these other firm outcomes, and we then contrast our findings with these explanations.

The asymmetric information model of Leland and Pyle (1977) is, in essence, a selection model (see also Downes and Heinkel, 1982; Ritter, 1984). The price effect of selling a larger stake reflects the poor quality of the firm that the market uncovers in the issuance decision. As explained in Section 2.3.2, according to asymmetric information models, the IV estimation does not compare across quality types but within market timers of a given quality. Hence, it is unlikely that asymmetric information underlies our results. Besides the theoretical argument, if asymmetric information models were to explain the results, we should observe that firms that sell a smaller equity stake (i.e., high-value firms in these models) invest less. For instance, in Myers and Majluf (1984), high-value firms decide not to issue and pass on good investment opportunities when asymmetric information is strong. Also, since firms selling small equity stakes are high-quality firms in asymmetric information models, their post-IPO profitability should be higher.

The agency model is a model of treatment effects. That is, the stake reduction causes changes in the firm, which in turn, are reflected in the market value. Our identification strategy attempts to get at causal effects, so agency problems are the most likely explanation for our findings. There are two possibilities within the agency models. First, the agency cost can reflect a conflict between the owner and debt holders. A larger stake reduction can lower the owner's risk aversion leading to higher leverage choices. The higher leverage, in turn, can lead to lower firm value if it creates risk shifting or debt overhang problems. For this channel to play a role, we should see that changes in owners' stakes predict changes in firms' financial leverage. Second, the high dilution may lead to a stronger divergence of interests between the owner-manager and other shareholders. Depending on the owner-manager's preferences, this divergence might lead to different outcomes ranging from empire building to the quiet-life hypothesis (Bertrand and Mullainathan, 2003). Empire building predicts higher investment for firms that sell a larger stake, whereas the quiet life predicts the opposite.

The results on other firm-level outcomes are presented in Table 10. We use asset growth as our proxy for investment. We study average asset (sales) growth over the period t=0, 1, and 2, where growth for year t is computed as the log difference in book assets (sales) between the end of years t+1 and t. We also study averages of year-end values on t=0, 1, and 2 for OROA, leverage, and the ratio of cash holdings to assets. No pre-IPO information is used when computing these dependent variables.

The IV results in Table 10 show a negative and significant effect on asset growth and sales growth but no effects on firm leverage and cash over assets.[16] The IV coefficient in column 6 implies that asset growth falls by 4.56% from a reduction in stake of 0.83%. Like the effect of the stake reduction on firm value, this effect also represents one-tenth of the standard deviation of the variable of interest in the sample (see the standard deviation of asset growth in Table 1). Hence, firms that raise more money at the IPO through their owner's stronger dilution do not spend the fresh new capital on faster growth.

The lower asset growth for firms with a larger stake reduction is consistent with the agency costs of Jensen and Meckling (1976). According to this explanation, the market discounts the value of a firm with a small-stake owner because it anticipates a stronger divergence of interests between the owner and minority shareholders. This

[16] We find no significant effects of the stake reduction on a battery of additional outcome variables: employment growth, employees over sales, cost over sales, operational expenses over sales, sales over assets, tangibility, and an indicator variable for positive EBITDA.

divergence translates into weaker incentives to invest for the owner-manager.[17] The fact that cash holdings do not increase despite the lower growth and higher stake reduction suggests that funds could be diverted to non-productive uses. Overall, these findings are consistent with the quiet-life hypothesis.

The lower asset growth for firms selling more equity is inconsistent with the empire-building hypothesis. The insignificant effect on capital structure is inconsistent with the results being driven by shareholder-debtholder conflicts. The fall in investment for firms selling larger equity stakes, and the muted effect on profitability, are inconsistent with asymmetric information models. However, we acknowledge that it is hard to rule out any of these mechanisms entirely because our results deal with broad outcome variables. The evidence simply seems to agree with the quiet-life hypothesis as the more straightforward interpretation for why firms where owners retain a smaller equity stake have lower valuation and investment.

3.5. Robustness

Table A.4 reports a battery of robustness checks for our results. We find that the main result becomes even stronger when adding market-by-year fixed effects. This result reinforces the idea that the instrument captures differences across IPOs in the same market and year instead of broad valuation waves that jointly affect IPOs and their markets, as suggested by Gompers and Lerner (2003). The results also hold when including industry-by-year fixed effects.

The end of the dot-com period (1999-2001) and the market crash of 2008-9 are not the drivers of our findings since we get basically the same magnitude and statistical significance of the coefficients of interest when excluding these sub-periods. Some

[17] As Jensen and Meckling (1976) put it: "We shall continue to characterize the agency conflict between the owner-manager and outside shareholders as deriving from the manager's tendency to appropriate perquisites out of the firm's resources for his own consumption. However, we do not mean to leave the impression that this is the only or even the most important source of conflict. Indeed*, it is likely that the most important conflict arises from the fact that as the manager's ownership claim falls, his incentive to devote significant effort to creative activities such as searching out new profitable ventures falls.* He may in fact avoid such ventures simply because it requires too much trouble or effort on his part to manage or to learn about new technologies. Avoidance of these personal costs and the anxieties that go with them also represent a source of on-the-job utility to him and it can result in the value of the firm being substantially lower than it otherwise could be." (p. 313; our emphasis).

industries, such as the service industry (SIC 7), which accounts for close to one-third of the sample, the finance industry (SIC 6), or the government (SIC 9), might be affected by distorted valuations. Again, our results are robust to excluding IPOs from these industries or those with very high valuations. Excluding markets with very few IPOs (less than 20) or excluding small firms (firms with less than 5 MM in pre-IPO assets) does not affect our results either. Excluding firms with seasoned equity offerings (SEOs) in the two years that follow the IPO, i.e., firms where ownership concentration is likely to change, does not have an impact on our results. This is perhaps expected, as our setting isolates the effects of differences in stakes at the birth into public markets instead of the endogenous effects of time-varying ownership stakes on valuations. Finally, excluding firms with dual listings does not affect the main result.

In Tables A.5 and A.6, we present robustness checks for our measures of ownership. In Table A.5, we show that results are robust to excluding firms where the owner-manager has a stake below certain ownership thresholds (5%, 10%, or 20%) either before or after the IPO. Hence, our results are not driven by owner-managers with low control rights. We note that this is not our preferred sampling criterion because excluding observations based on their post-IPO stake can create a look-ahead bias.

In Table A.6, we show that using the stake reduction of the CEO or the stake reduction of all insiders gives similar results, both in terms of the first and second stages. While large outsiders reduce their stakes at the IPO, they do not appear to time the market, as their stake reduction is not sensitive to market returns (i.e., their first stage coefficient is small and insignificant). Hence, changes in outsiders' incentives to monitor are unlikely to explain our results.

4. Conclusions

The relationship between ownership concentration and firm value has been a cornerstone of corporate finance since Jensen and Meckling (1976), but it has proven elusive to identify in many empirical setups. We study this relationship using hand-collected data on the stakes of owner-managers immediately before and after IPOs. Our sample covers IPOs in 19 European countries between 1990 to 2013. The IPO setup has several advantages, for instance, we can observe large changes in ownership.

In OLS regressions, we find a negative relationship between reductions in the stake of the owner-manager and firm value years after the IPO. We confirm that the effect of ownership concentration on value is causal by instrumenting for the reduction in stakes using the market return on the 3 months prior to the IPO. Pre-IPO returns are relevant instruments since owner-managers engage in market timing by selling a larger stake after high returns. The exclusion restriction is likely to hold since we measure differences in value several years after the IPO.

We also conduct a placebo test using returns outside the window where owner-managers decide how much to sell and find no effect on long-term valuations. We conduct a second placebo test using a sample of IPOs not controlled by owner-managers and find that these returns do not predict dilution and have no bearing on long-term valuations. Finally, we discard the presence of predictability of long-term changes in firm value using pre-IPO returns. These findings are consistent with the exclusion restriction because the impact of pre-IPO returns on future firm value comes solely through changes in ownership.

Finally, we show that the reduction in ownership leads to lower asset growth. Hence, large shareholders with smaller stakes have lower incentives to invest. We find no effects on firm profitability and capital structure decisions. Overall, our findings are consistent with the agency theory of Jensen and Meckling (1976).

References

Abrahamson, M., T. Jenkinson, and H. Jones. Why Don't U.S. Issuers Demand European Fees for IPOs? Journal of Finance 66 (2011), 2055-2082.

Andrews, I., J. H. Stock, and L. Sun, Weak Instruments and Instrumental Variables Regression: Theory and Practice. Annual Review of Economics 11 (2019), 727-753.

Ang, J.S., and J.C. Brau. Concealing and Confounding Adverse Signals: Insider Wealth-Maximizing Behavior in the IPO Process. Journal of Financial Economics, 67 (2003), 149-172.

Angrist, J., and J. Pischke. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press (2009).

Atanasov, V.A., and Black, B.S. Shock-based causal inference in corporate finance and accounting research. Critical Finance Review 5 (2016), 207-304

Baker, M. P., and J. A. Wurgler. The Equity Share in New Issues and Aggregate Stock Returns, Journal of Finance, 55 (2000), 2219-2257.

Baker, M. P., and J. A. Wurgler. Investor Sentiment and the Cross-Section of Stock Returns, Journal of Finance, 61 (2006), 1645-1680.

Bancel, F., and U.R. Mittoo. Why Do European Firms Go Public? European Financial Management, 15 (2009), 844-884.

Barclay, M.J., and C. Holderness. Private Benefits from Control of Public Corporations. Journal of Financial Economics, 25 (1989), 375-391.

Barclay, M.J., and C. Holderness. Negotiated Block Trades and Corporate Control. Journal of Finance, 46 (1991), 861-878.

Basu, N., I. Paeglis, and M. Toffanin. Insider Ownership and Firm Value: One Shape Does Not Fit All. Critical Finance Review (2022).

Becker, B., H. Cronqvist, and R. Fahlenbrach. Estimating the Effects of Large Shareholders using a Geographic Instrument. Journal of Financial and Quantitative Analysis 46 (2011), 907-942.

Ben-David, I., J. Graham, and C. Harvey. Managerial Miscalibration. Quarterly Journal of Economics 128 (2013), 1547-1584.

Bennedsen, M., K. Nielsen, F. Perez-Gonzalez, and D. Wolfenzon. Inside the Family Firm: The Role of Families in Succession and Performance. Quarterly Journal of Economics 122 (2007), 647-691.

Bernstein, S. Does Going Public Affect Innovation? Journal of Finance 70 (2015), 1365-1403.

Bertrand, M., Mehta, P., Mullainathan, S., 2002. Ferreting out tunneling: An application to Indian business groups. Quarterly Journal of Economics 117, 121–148.

Bertrand, M., and S. Mullainathan. Enjoying the quiet life? Corporate governance and managerial preferences. Journal of Political Economy 111 (2003), 1043-1075.

Brau. J.C., and S.E. Fawcett. Initial Public Offerings: An Analysis of Theory and Practice. Journal of Finance 61 (2006), 399-436.

Brodeur, A., N. Cook, and A. Heyes, Methods Matter: p-Hacking and Publication Bias in Causal Analysis in Economics. American Economic Review 110 (2020), 3634-3660.

Campbell, J. Y., and S. Thompson. Predicting excess returns out of sample: can anything beat the historical average? Review of Financial Studies 21 (2008), 1509-1531.

Carlson, M., A. Fisher, and R. Giammarino. Corporate investment and asset price dynamics: Implications for SEO event studies and long-run performance. Journal of Finance 61 (2006), 1009-1034.

Coles, J., M. Lemmon, and J.F. Meschke. Structural Models and Endogeneity in Corporate Finance: The Link between Managerial Ownership and Corporate Performance. Journal of Financial Economics 103 (2012), 149-168.

Cornelli, F., D. Goldreich, and A. Ljungqvist. Investor sentiment and pre-IPO markets. Journal of Finance 61 (2006), 1187-1216.

DeAngelo, H., L. DeAngelo, and R. Stulz. Seasoned Equity Offerings, Market Timing, and the Corporate Lifecycle. Journal of Financial Economics 95 (2010), 275-295.

DeMarzo, P., and B. Urosevic. Ownership Dynamics and Asset Pricing with a Large Shareholder. Journal of Political Economy, 114 (2006), 774-815.

Demsetz, H., and K. Lehn. The Structure of Corporate Ownership: Causes and Consequences. Journal of Political Economy 93 (1985), 1155-1177.

Demsetz, H., and B. Villalonga. Ownership Structure and Corporate Performance. Journal of Corporate Finance 7 (2001), 209-233.

Derrien, F. IPO pricing in 'hot' market conditions. Who leaves money on the table? Journal of Finance 60 (2005), 487-521.

Doidge, C., A. Karolyi, and R. Stulz. The U.S. Left Behind? Financial Globalization and the Rise of IPOs Outside the U.S. Journal of Financial Economics 110 (2013), 546-573.

Downes, D., and R. Heinkel. Signaling and the Valuation of Unseasoned New Issues. Journal of Finance 37 (1982), 1-10.

Dyck, A., and L. Zingales. Private benefits of control: An international comparison. Journal of Finance 59 (2004), 537-600.

Edmans, A., and C. Holderness. Blockholders: A Survey and Theory and Evidence. Handbook of Corporate Governance (2017), chapter 8.

Espinasse, P., IPO: A Global Guide. Hong Kong University Press, second edition (2014).

Erickson, T., and T. Whited. Measurement Error and the Relationship between Investment and q. Journal of Political Economy 108 (2000), 1027-1057.

Euronext. IPO Guide: A Guide to Listing on the Stock Exchange (2022).

Fabisik, K., R. Fahlenbrach, R. Stulz, and J. Taillard. Why Are Firms with More Managerial Ownership Worth Less? Journal of Financial Economics 140 (2021), 699-725.

Faccio, M., L. Lang, and L. Young. Dividends and expropriation. American Economic Review 91 (2001), 54-78.

Fahlenbrach, R., and R. Stulz. Managerial Ownership Dynamics and Firm Value. Journal of Financial Economics 92 (2009), 342-361.

Foley, F., and R. Greenwood. The Evolution of Corporate Ownership After IPO: The Impact of Investor Protection. Review of Financial Studies, 23 (2010), 1231-1260.

Goergen, M.; L. Renneboog; and A. Khurshed. Explaining the Diversity in Shareholder Lockup Agreements. Journal of Financial Intermediation, 15 (2006), 254-280.

Gompers, P., and J. Lerner. The really long-run performance of initial public offerings: The pre-Nasdaq evidence. Journal of Finance 58 (2003), 1355-1392.

Graham, J. R., and C. R. Harvey. The Theory and Practice of Corporate Finance: Evidence from the Field. Journal of Financial Economics, 60 (2001), 187-243.

Helwege, J.; C. Pirinsky; and R. M. Stulz. Why Do Firms Become Widely Held? An Analysis of the Dynamics of Corporate Ownership. Journal of Finance, 62 (2007), 995-1028.

Henderson, B., N. Jegadeesh, and M. Weisbach. World markets for raising new capital. Journal of Financial Economics, 82 (2006), 63-101.

Hennessy, C., and T. Whited. How Costly is External Financing? Evidence from a Structural Estimation. Journal of Finance 62 (2007), 1705-1745.

Himmelberg, C., G. Hubbard, and D. Palia. Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance. Journal of Financial Economics 53 (1999), 353-384.

Jensen, M., and W. Meckling. Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. Journal of Financial Economics 3 (1976), 305-360.

Jiang, W. Have Instrumental Variables Brought Us Closer to Truth? Review of Corporate Finance Studies 6 (2017), 127-140.

Kim, Woojin, and Michael Weisbach. Motivations for public equity offerings: An international perspective, Journal of Financial Economics 87 (2008), 281—307.

La Porta, R.; F. López-de-Silanes; and A. Shleifer. Corporate Ownership Around the World. Journal of Finance 54 (1999), 471-517.

Larrain, B., G. Sertsios, and F. Urzua I. The Going Public Decision of Business Group Firms. Journal of Corporate Finance 66 (2021), article 101819.

Leland, H., and D. H. Pyle. Informational Asymmetries, Financial Structure, and Financial Intermediation. Journal of Finance 32 (1977), 371-387.

Ljungqvist, A.P., and W.J. Wilhelm. IPO Allocations: Discriminatory or Discretionary? Journal of Financial Economics, 65 (2002), 167-201.

Lucas, D., and R. McDonald. Equity Issues and Stock Price Dynamics. Journal of Finance 45 (1990), 1019-1043.

Malmendier, U., and G. Tate. CEO Overconfidence and Corporate Investment. Journal of Finance 60 (2005), 2661-2700.

McConnell, J., and H. Servaes. Additional Evidence on Equity Ownership and Corporate Value. Journal of Financial Economics 27 (1990), 595-212.

Montiel-Olea, J.L., and C. Pflueger. A Robust Test for Weak Instruments. Journal of Business & Economic Statistics 31 (2013), 358-369.

Morck, R., Shleifer, A., and R. W. Vishny. Management Ownership and Market Valuation: An Empirical Analysis. Journal of Financial Economics 20 (1988), 293-315.

Morck, R., Wolfenzon, D., Yeung, B., 2005. Corporate governance, economic entrenchment, and growth. Journal of Economic Literature 43, 655–720.

Myers, S., and N. Majluf. Corporate Financing and Investment Decisions when Firms Have Information that Investors Do Not Have. Journal of Financial Economics 13 (1984), 187-221.

Pagano, M., F. Panetta, and L. Zingales, Why do companies go public? An empirical analysis. Journal of Finance 53 (1998), 27-64.

Pagano, M., and A. Roell. The choice of stock ownership structure: Agency costs, monitoring, and the decision to go public. Quarterly Journal of Economics 113 (1998), 187-225

Page, T. B. CEO Attributes, Compensation, and Firm Value: Evidence from a Structural Estimation. Journal of Financial Economics 128 (2018), 378-401.

Pastor, L., and P. Veronesi. Rational IPO Waves. Journal of Finance 60 (2005), 1713-1757.

Ritter, J. R. Signaling and the Valuation of Unseasoned New Issues: A Comment. Journal of Finance 39 (1984), 1231-1237.

Ritter, J. R., and I. Welch. A review of IPO activity, pricing, and allocations. Journal of Finance 57 (2002), 1795-1828.

Roosenboom, P., and W. Schramade. The price of power: Valuing the controlling position of owner-managers in French IPO firms. Journal of Corporate Finance 12 (2006), 270-295.

Shleifer, A., and R. Vishny. A survey of corporate governance. Journal of Finance 52 (1997), 737-783.

Slovin, M. and M. Sushka. Ownership Concentration, Corporate Control Activity, and Firm Value: Evidence from the Death of Inside Blockholders. Journal of Finance 48 (1993), 1293-1321.

Stulz, R. Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control. Journal of Financial Economics 20 (1988), 25-54.

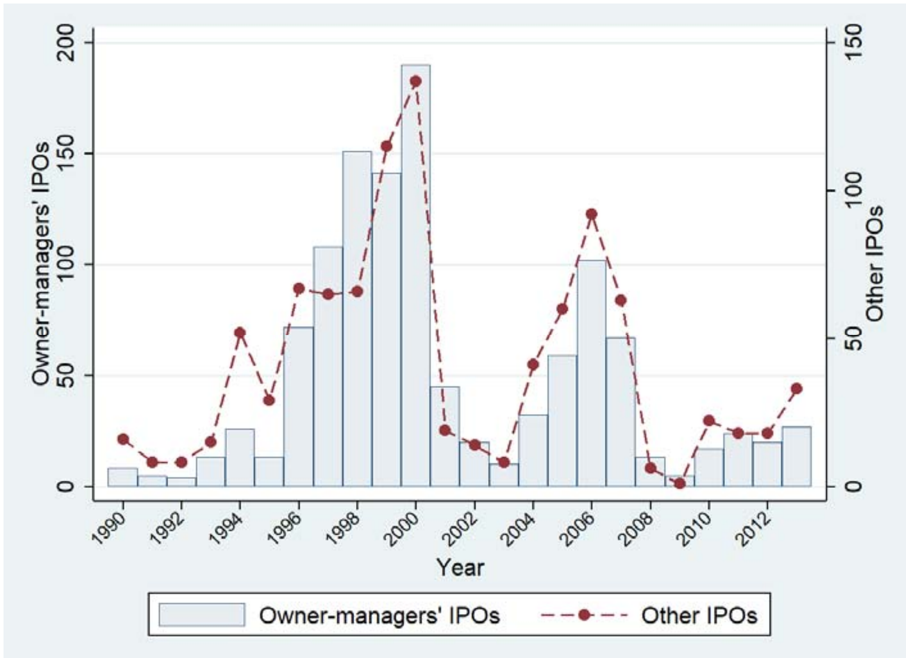
Young, A. Consistency without Inference: Instrumental Variables in Practical Application. Forthcoming European Economic Review (2022).

Zhou, X., Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance: Comment. Journal of Financial Economics 62 (2001), 559-571.

Figure 1: Number of IPOs and Tobin's q by Year

This figure displays the number and valuations by year of hand-collected European IPOs with complete information on pre-IPO controlling stakes, pre-IPO firms' financials, stake reduction at the IPO, and post-IPO valuation. The bars (left axis) represent IPOs where the controlling shareholder is an owner-manager, and the dotted line (right axis) represents IPOs where the controlling shareholder is a financial institution, another company, or the state ("other" IPOs). Panel A displays the number of IPOs over the years. Panel B showcases the mean Tobin's q by the end of the year for IPOs that went public during that year.

Panel A



Panel B

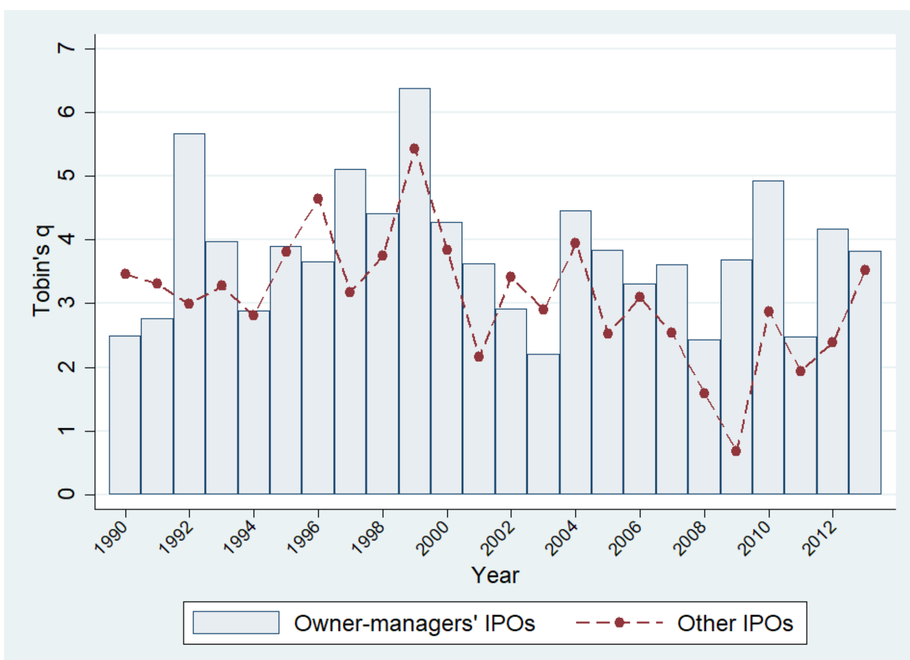


Figure 2: Pre-IPO and Post-IPO Stakes of Owner-Managers by Year

This figure displays the annual average of the ownership stake held by the owner-manager before the IPO, the stake retained after the IPO, and the stake reduction at the IPO.

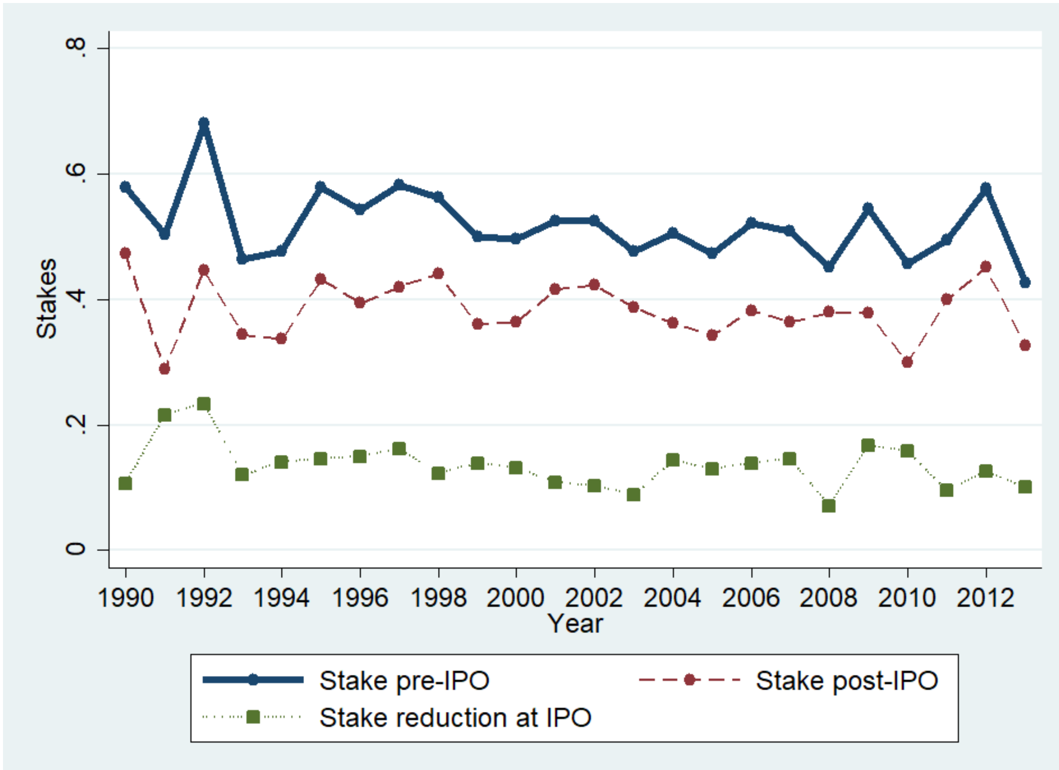


Figure 3: Distribution of Owner-Manager Stakes Before and After the IPO

The figure displays the histogram of the ownership stake held by the owner-manager pre-IPO (solid bars), and the stake retained immediately after the IPO (dashed bars).

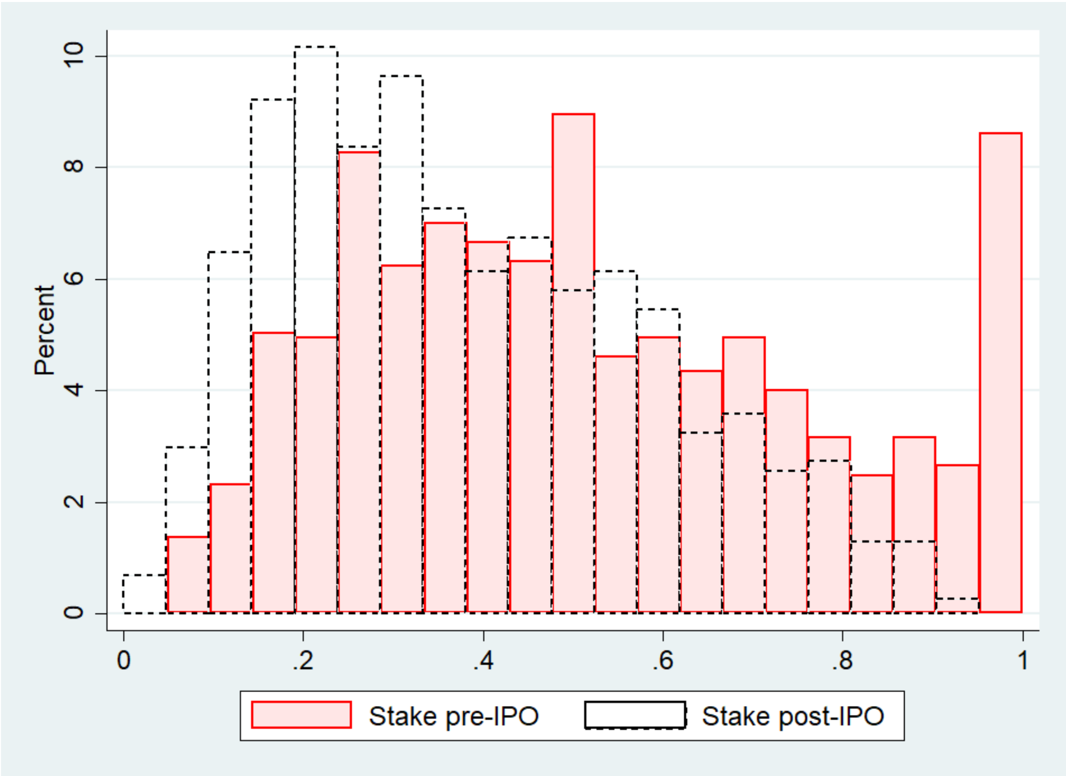


Figure 4: Timing Conventions of Main Variables

The figure shows the timing conventions for our main variables. Year t=0 is the year of the IPO. From the prospectus, we measure the stake before the IPO and the stake immediately after the IPO. In the 3 months before the IPO, we record the index return of the market where the IPO is listed. These months are the 3 calendar months that end prior to the date of the IPO, so there is no overlap with the IPO itself. We measure firm value using Tobin's q at the end of years t=0, 1, and 2.

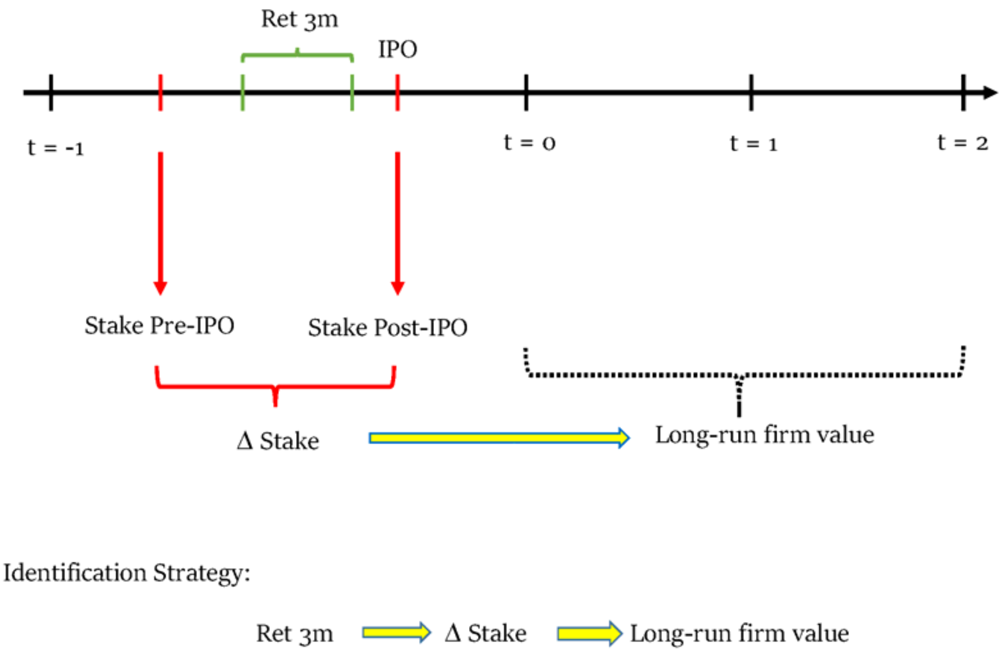


Figure 5: Market Timers in Asymmetric Information Models

The figure summarizes the predictions of asymmetric information models for the issuance decision. The x-axis corresponds to unobservable firm quality. The y-axis corresponds to prior market returns. Firms that go public are split according to whether they sell a large or a small ownership stake at the IPO. Market timers correspond to firms that are at the margin between selling a large or a small stake, according to market returns.

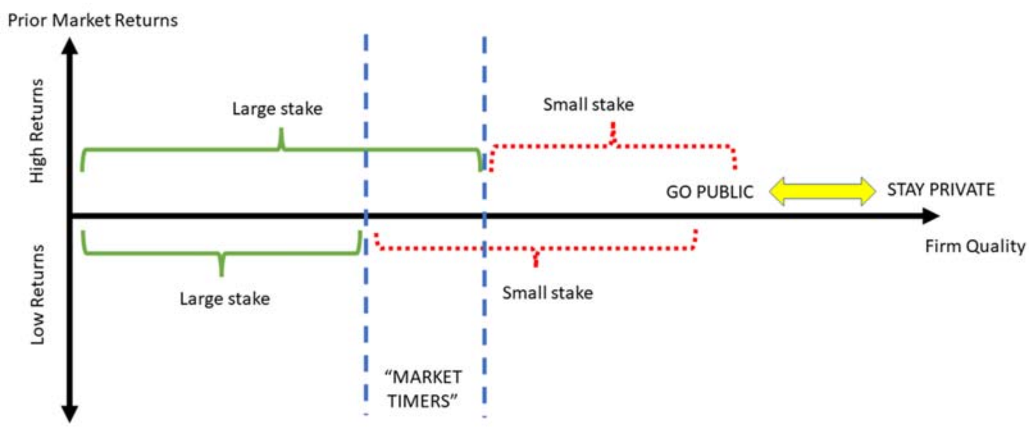
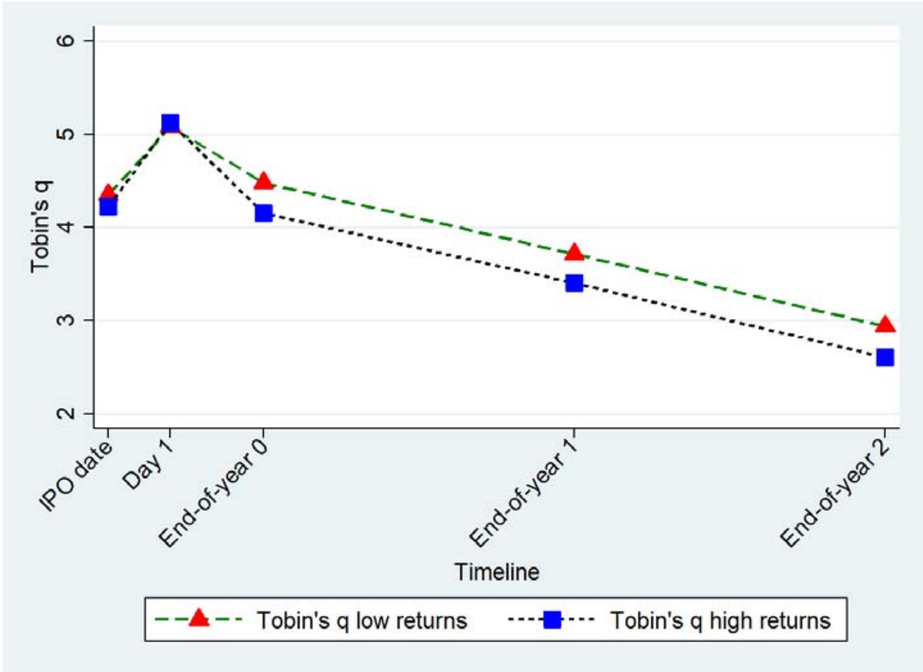


Figure 6: Dynamics of Tobin's q after IPOs

This figure plots the evolution of average Tobin's q from the IPO date up to the year-end of the second year after the IPO. In Panel A, we plot the evolution of Tobin's q for two groups: Firms that faced high (above average) and low (below average) 3-month market returns prior to the IPO. In Panel B, we plot the difference in Tobin's q between the two groups. Tobin's q for each firm is adjusted by market, year, and industry fixed effects. To that end, we first run Tobin's q on market, industry, and year fixed effects and obtain the residual for each firm (i.e., the portion unexplained by the fixed effects). We then add the residual to the sample mean of Tobin's q. The sample is restricted to firms that have observations for all time periods, including the IPO date (1,142 observations).

Panel A: Tobin's q for IPOs after high and low returns



Panel B: Wedge between Tobin's q of IPOs after high and low returns

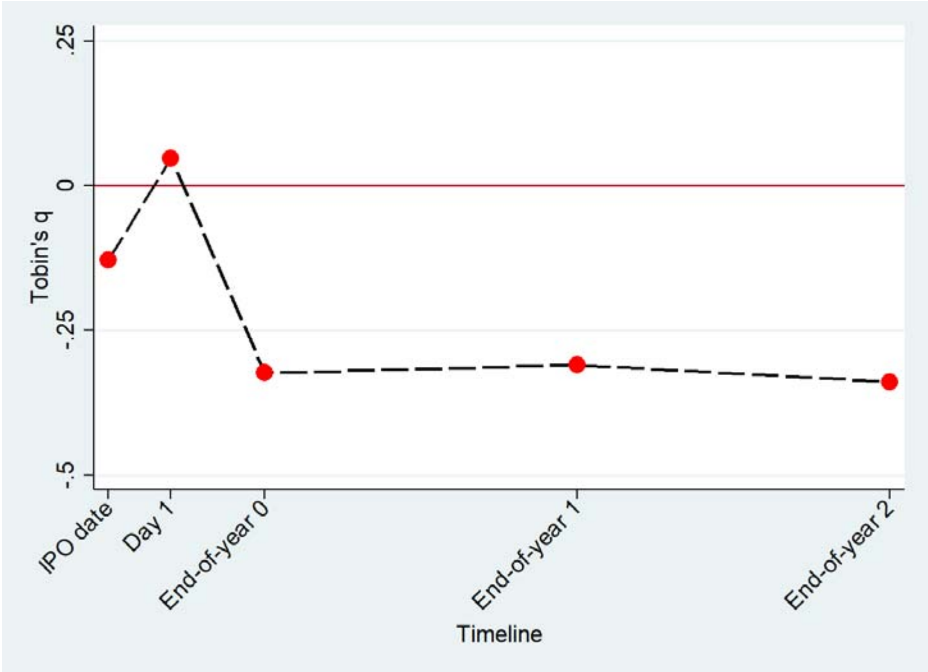


Table 1
Summary Statistics

This table displays summary statistics for the sample of IPOs controlled by owner-managers. The appendix contains detailed definitions for all variables. Pre-IPO variables are hand-collected from the IPO prospectus.

	Mean	P10	P25	P50	P75	P90	SD	Total
Log(assets) pre-IPO	16.60	13.66	15.44	16.92	18.13	19.39	2.54	1,172
OROA pre-IPO	0.11	-0.13	0.04	0.15	0.27	0.41	0.36	1,172
Leverage pre-IPO	0.70	0.26	0.52	0.70	0.84	0.97	0.38	1,172
VC-backed	0.26	0.00	0.00	0.00	1.00	1.00	0.44	1,172
Stake pre-IPO	0.52	0.20	0.31	0.49	0.70	0.92	0.26	1,172
Mkt ret 3m	0.03	-0.06	-0.01	0.03	0.07	0.14	0.09	1,172
Stake post-IPO	0.39	0.14	0.22	0.35	0.53	0.69	0.21	1,172
Stake reduction at IPO	0.13	0.03	0.06	0.11	0.18	0.27	0.11	1,172
Stake dilution at IPO	0.10	0.00	0.04	0.08	0.14	0.21	0.09	1,172
Secondary sales at IPO	0.03	-0.00	-0.00	0.00	0.05	0.10	0.08	1,172
Underpricing	0.20	-0.01	0.00	0.05	0.18	0.50	0.51	1,130
Tobin's q	3.69	1.10	1.57	2.48	4.22	7.69	3.49	1,172
Asset growth post-IPO	0.04	-0.52	-0.18	0.08	0.26	0.51	0.46	1,172
OROA post-IPO	0.02	-0.28	-0.02	0.09	0.16	0.24	0.27	1,171
Leverage post-IPO	0.47	0.15	0.29	0.48	0.65	0.80	0.24	1,172
Cash/Assets post-IPO	0.16	0.01	0.04	0.09	0.22	0.43	0.18	1,125

Table 2

Ownership Stakes and Firm Value: OLS Regressions

This table displays the OLS regressions of firm value on ownership stakes. Firm value is measured with the logarithm of Tobin's q. In Columns 1-3, the main explanatory variables are variations of the stake post-IPO. Column 1 includes a linear term, column 2 includes linear and quadratic terms, and column 3 considers a piecewise-linear specification with two dummies: one if the stake retained post-IPO is between 20% and 50%, and another one if the stake is larger than 50%. In Column 4 we consider the two components of the stake post-IPO: the stake pre-IPO and the stake reduction at the IPO. In column 5 we further split the stake reduction at the IPO into the stake dilution (issuance) and secondary sales. Control variables include pre-IPO log(assets), leverage, OROA, and the VC-backed dummy variable. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) log(Tobin's q)	(2) log(Tobin's q)	(3) log(Tobin's q)	(4) log(Tobin's q)	(5) log(Tobin's q)
Stake post-IPO	0.330**	0.013			
	(0.145)	(0.561)			
Stake pre-IPO				0.415***	0.526***
				(0.153)	(0.154)
Stake reduction at IPO				-0.967***	
				(0.366)	
(Stake post-IPO)^2		0.365			
		(0.659)			
0.2<(Stake post-IPO)<0.5			0.037		
			(0.060)		
(Stake post-IPO)>=0.5			0.147*		
			(0.078)		
Stake dilution at IPO					-2.052***
					(0.545)
Secondary sales at IPO					0.280
					(0.393)
Observations	1,172	1,172	1,172	1,172	1,172
R-squared	0.359	0.359	0.357	0.363	0.385
Market FE	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes
Sample	Owner/ Managers	Owner/ Managers	Owner/ Managers	Owner/ Managers	Owner/ Managers

Table 3

Averages of Main Variables by Sub-Samples of High and Low Stake Reduction

This table displays variable means, and their difference, according to whether the stake reduction at the IPO is above or below the raw median in the owner-managers sample. Panel A shows the results with raw data. Panel B shows the results with data purged for market, industry, and year fixed effects. Significant at the *10%, **5%, ***1%.

	Panel A: Unadjusted sample			Panel B: Adjusted (by FE) sample		
Variable	Low stake reduction	High stake reduction	Diff.	Low stake reduction	High stake reduction	Diff.
Pre-IPO covariates						
Log(assets) pre-IPO	16.656	16.546	0.110	16.631	16.571	0.060
OROA pre-IPO	0.086	0.134	-0.049**	0.091	0.130	-0.039**
Leverage pre-IPO	0.685	0.715	-0.030	0.696	0.704	-0.008
VC-backed	0.317	0.205	0.113***	0.304	0.218	0.086***
Stake pre-IPO	0.373	0.667	-0.294***	0.406	0.634	-0.228***
Instrument						
Mkt ret 3m	0.028	0.036	-0.007	0.027	0.037	-0.010**
Explanatory variable						
Stake reduction at IPO	0.055	0.213	-0.158***	0.079	0.190	-0.111***
Dependent variable						
Tobin's q	3.851	3.535	0.316	3.782	3.603	0.179
# of firms	586	586		586	586	

Table 4

Averages of Main Variables by Sub-Samples of High and Low Returns

This table displays variable means, and their difference, according to whether the market return in the 3 months prior to the IPO is above or below the raw median in the owner-managers sample. Panel A shows the results with raw data. Panel B shows the results with data purged for market, industry, and year fixed effects. Significant at the *10%, **5%, ***1%.

	Panel A: Unadjusted sample			**Panel B: Adjusted (by FE) sample**		
Variable	Low return	High return	Diff.	Low return	High return	Diff.
Pre-IPO covariates						
Log(assets) pre-IPO	16.421	16.782	-0.361**	16.580	16.622	-0.042
OROA pre-IPO	0.072	0.148	-0.076***	0.109	0.111	-0.002
Leverage pre-IPO	0.716	0.685	0.031	0.704	0.697	0.007
VC-backed	0.263	0.259	0.003	0.274	0.248	0.025
Stake pre-IPO	0.502	0.537	-0.036**	0.515	0.525	-0.010
Instrument						
Mkt ret 3m	-0.031	0.095	-0.126***	-0.011	0.075	-0.086***
Explanatory variable						
Stake reduction at IPO	0.127	0.142	-0.015**	0.128	0.141	-0.013**
Dependent variable						
Tobin's q	3.787	3.598	0.189	3.918	3.467	0.451***
# of firms	586	586		586	586	

Table 5

The Effect of Ownership Stakes on Firm Value: IV Estimation

This table displays the instrumental variables (IV) estimation using the owner-managers sample. Column 1 presents the regression estimates from the first-stage equation (equation (2) in the main text), where the dependent variable is the stake reduction at the IPO, and the main independent variable is the market return for the three months before the IPO. Column 2 presents the second-stage regression, where the logarithm of Tobin's q is the dependent variable, and the stake reduction at IPO is instrumented by market returns. Column 3 presents the reduced-form estimates, where we directly run a regression of Tobin's q on the 3-month market returns. Columns 4-6 repeat the first stage, second stage, and reduced form specifications, but excluding the pre-IPO stake as control variable. All regressions include market, industry, and year fixed effects, together with pre-IPO controls (log assets, leverage, OROA, and a dummy for VC backing). Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) Stake reduction at IPO	(2) log(Tobin's q)	(3) log(Tobin's q)	(4) Stake reduction at IPO	(5) log(Tobin's q)	(6) log(Tobin's q)
Mkt ret 3m	0.092***		-0.892***	0.114***		-0.882***
	(0.025)		(0.280)	(0.039)		(0.276)
Stake pre-IPO	0.298***	3.017**	0.134			
	(0.018)	(1.217)	(0.119)			
Stake reduction at IPO		-9.690**			-7.771**	
		(3.920)			(3.300)	
Observations	1,172	1,172	1,172	1,172	1,172	1,172
Market FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	First stage	Second Stage	Reduced form	First stage	Second Stage	Reduced form
F-test Montiel-Olea-Pflueger	13.22			8.56		
Instrument		Mkt ret 3m			Mkt ret 3m	

Table 6

Sample Frequency and Characteristics of Compliers (Market Timers) in the IV Estimation

Compliers are market timers, i.e., firms that respond to market returns in their stake reduction decisions. Panel A shows the elements that allow us to compute the frequency of compliers in our sample. The fraction of compliers in the overall sample corresponds to the first stage coefficient from a regression of the treatment indicator (stake reduction above the sample median) on the instrument indicator (returns above the sample median), plus the control variables and fixed effects as in the regressions in Table 5. The fraction of compliers among the treated (firms with a high stake reduction) is the previous first stage coefficient from the full sample times the likelihood of experiencing high returns (P[Z=1]) divided by the likelihood of a high stake reduction (P[D=1]). Panel B shows the first stage coefficient in different subsamples of firms constructed according to the full-sample median of a characteristic (stake pre-IPO, assets, OROA, leverage), or whether the characteristic is present (VC backing). The relative complier likelihood of having a given characteristic is the first stage coefficient in each subsample divided by the full-sample first stage coefficient in Panel A. Using the delta method we compute 95% confidence intervals of the ratios of first-stage coefficients.

Panel A

Endogenous variable	Instrument	P[D=1]	P[Z=1]	First stage	Proportion of treated that are compliers
Stake reduction at IPO above the median	Mkt ret 3M above the median	50.00%	50.00%	6.28%	6.28%

Panel B

Variable	First stage	Relative complier likelihood	Ratio 95% Confidence intervals
Stake pre-IPO above the median	6.76%	1.08	(0.136, 2.019)
Assets pre-IPO above the median	10.46%	1.67	(0.559, 2.774)
OROA pre-IPO above the median	12.84%	2.04	(1.010, 3.080)
Leverage pre-IPO above the median	2.47%	0.39	(-0.581, 1.367)
VC-backed	6.39%	1.02	(-0.315, 2.351)

Table 7

The Effect of Ownership Stakes on Firm Value: Placebo Returns

This table presents regressions where we use market returns at different horizons as explanatory variables. In columns 1-3, we use the stake reduction as dependent variable, and the estimation is akin to the first-stage regressions in Table 5. Mkt ret 3m corresponds to returns between months -3 and the IPO month. Mkt ret 6-3m corresponds to returns between months -6 and -3 with respect to the IPO. Mkt fwd ret 3m corresponds to returns between the month of the IPO and month +3. In column 4 we use the logarithm of Tobin's q as dependent variable, like the reduced-form regressions in Table 5. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) Stake reduction at IPO	(2) Stake reduction at IPO	(3) Stake reduction at IPO	(4) log(Tobin's q)
Mkt ret 3m			0.095***	-0.776**
			(0.026)	(0.314)
Mkt ret 6-3m	0.000		0.009	0.019
	(0.028)		(0.030)	(0.368)
Mkt fwd ret 3m		-0.014	0.012	0.682
		(0.040)	(0.046)	(0.430)
Stake pre-IPO	0.298***	0.299***	0.298***	0.121
	(0.018)	(0.018)	(0.018)	(0.120)
Observations	1,172	1,172	1,172	1,172
Market FE	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	First stage	First stage	First stage	Reduced form

Table 8

The Effect of Ownership Stakes on Firm Value: Placebo Sample

This table presents regression results using a sample of firms not controlled by owner-managers at the time of the IPO (placebo sample). Columns 1 and 2 present OLS regression estimates where the key explanatory variables are the post-IPO stake (col. 1; equation 1), and the pre-IPO stake together with the stake reduction (col. 2; equation 3). Column 3 presents regression estimates from the first stage regression (equation 2) and column 4 from a reduced form regression, where firm value is regressed against the instrument. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) log(Tobin's q)	(2) log(Tobin's q)	(3) Stake reduction at IPO	(4) log(Tobin's q)
Stake post-IPO	0.228			
	(0.206)			
Stake pre-IPO		0.237	0.421***	0.056
		(0.206)	(0.024)	(0.144)
Stake reduction at IPO		-0.425		
		(0.279)		
Mkt ret 3m			0.006	0.069
			(0.071)	(0.493)
Observations	973	973	973	973
Market FE	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes
Sample	Other IPOs	Other IPOs	Other IPOs	Other IPOs
Regression	OLS	OLS	First stage	Reduced form

Table 9

Predictability of Future Changes in Firm Value using Pre-IPO Market Returns

This table presents regressions for underpricing or the stock return on the first day of trading (column 1), and changes in log Tobin's q (columns 2-6) as dependent variables. In column 2 the change is the difference between the log of q at the end of the IPO year and the log of q valued at the offer price. The dependent variables in columns 3-6 are changes between year-end log q. Explanatory variables are market returns in the 3 months before the IPO, the pre-IPO stake and controls (log assets, OROA, leverage, Vc backing), together with market, industry, and year fixed effects. Panel A shows results for the owner-managers' sample and Panel B for the sample with other IPOs. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

Panel A

VARIABLES	(1) Underpricing	(2) log (q) (t=0) - log(q) (offer)	(3) log (q) (t=1) - log(q) (t=0)	(4) log (q) (t=2) - log(q) (t=1)	(5) log (q) (t=3) - log(q) (t=2)	(6) log (q) (t=4) - log(q) (t=3)
Mkt ret 3m	0.831***	-0.832***	-0.034	0.023	0.114	-0.209
	(0.225)	(0.296)	(0.253)	(0.258)	(0.269)	(0.230)
Stake pre-IPO	-0.014	0.030	-0.040	-0.042	-0.025	-0.050
	(0.042)	(0.112)	(0.096)	(0.126)	(0.108)	(0.106)
Observations	1,130	1,147	1,172	1,172	1,042	922
Market FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	reduced form	reduced form	reduced form	reduced form	reduced form	reduced form

Panel B

VARIABLES	(1) Underpricing	(2) log (q) (t=0) - log(q) (offer)	(3) log (q) (t=1) - log(q) (t=0)	(4) log (q) (t=2) - log(q) (t=1)	(5) log (q) (t=3) - log(q) (t=2)	(6) log (q) (t=4) - log(q) (t=3)
Mkt ret 3m	1.061***	-0.896**	0.441	0.208	-0.126	0.348
	(0.298)	(0.414)	(0.455)	(0.557)	(0.326)	(0.348)
Stake pre-IPO	-0.104*	0.058	-0.133	-0.001	-0.032	0.026
	(0.061)	(0.134)	(0.121)	(0.116)	(0.142)	(0.128)
Observations	914	937	973	973	863	751
Market FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Other IPOs	Other IPOs	Other IPOs	Other IPOs	Other IPOs	Other IPOs
Regression	reduced form	reduced form	reduced form	reduced form	reduced form	reduced form

Table 10

The Effect of Ownership Stakes on Other Firm Outcomes

This table presents regression results for outcomes other than firm value. Columns 1-5 present OLS estimates and columns 6-10 present second-stage IV estimates. Outcome variables are asset growth, sales growth, OROA, leverage, and cash holdings over assets. All variables are the average between the year-end of the IPO (year 0) and two years after (years 1 and 2). Control variables and fixed effects are as in Table 5. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) Asset growth	(2) Sales growth	(3) OROA	(4) Leverage	(5) Cash/Assets	(6) Asset growth	(7) Sales growth	(8) OROA	(9) Leverage	(10) Cash/Assets
Stake pre-IPO	0.122*	0.056	0.048	-0.002	0.002	1.667***	2.038***	0.075	0.289	-0.080
	(0.071)	(0.088)	(0.040)	(0.033)	(0.029)	(0.535)	(0.740)	(0.200)	(0.270)	(0.143)
Stake reduction at IPO	-0.313**	-0.161	0.035	-0.006	0.038	-5.494***	-6.787***	-0.057	-0.981	0.320
	(0.133)	(0.202)	(0.127)	(0.091)	(0.060)	(1.789)	(2.454)	(0.659)	(0.893)	(0.487)
Observations	1,172	1,154	1,171	1,172	1,088	1,172	1,154	1,171	1,172	1,088
Market FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Own./Man.	Own./Man.	Own./Man.	Own./Man.	Own./Man.	Own./Man.	Own./Man.	Own./Man.	Own./Man.	Own./Man.
Regression	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV	IV
Instrument						Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m

Internet Appendix

Variable Description

Log(assets) pre-IPO	Logarithm of one plus book value of assets (in 2015 USD) before going public.
OROA pre-IPO	EBITDA over book assets before going public.
Leverage pre-IPO	Sum of total liabilities divided by book value of assets before going public.
VC-backed	Dummy that takes a value of 1 if the firm was backed by venture capital before going public, and 0 otherwise.
Stake pre-IPO	Number of shares over total shares outstanding held by the largest shareholder before the IPO, as identified in the IPO prospectus. Pre-IPO ownership is based on cash-flow rights on a pro-forma basis. This assumes that venture capitalists (if any) convert any convertible preferred shares into common shares. In the very rare cases that there are still multiple share classes outstanding after the IPO, we look at the distribution of common stock ownership only.
Mkt. ret 3m	Return of the market (country-index) where the firm is listed, the three calendar months before the listing date.
Stake post-IPO	Stake retained by the largest shareholder immediately after the IPO.
Stake reduction at IPO	Difference between the stake retained by the largest shareholder immediately after the IPO and the stake held by the largest shareholder before the IPO (Stake post-IPO – Stake pre-IPO).
Stake dilution at IPO	Reduction in the stake at the IPO because of the issuances of primary shares.
Secondary sales at IPO	Reduction in stake due to the sale of secondary shares by the largest shareholder at the IPO.
Underpricing	Stock return of the IPO firm on its first trading day.
Tobin's q	Average for the year-end Tobin's q between years t=0, 1, and 2 where t=0 is the year of the IPO.

Asset growth	Average asset growth for the first three years after the IPO, t=0, 1, and 2. Asset growth on year t is defined as log(assets) (t+1)- log(assets) (t).
Sales growth	Average sales growth for the first three years after the IPO: 0, 1 and 2. Same timing as for asset growth.
OROA	Average return on asset for the first three year-end after the IPO: Years 0, 1 and 2.
Leverage	Average book leverage for the first three year-end after the IPO: Years 0, 1 and 2.
Cash/Assets	Average of cash holdings to book assets ratio for the first three year-end after the IPO: Years 0, 1 and 2.
Mkt ret 6-3m	Return of the market (country-index) where the firm is listed, from the sixth to the third calendar months before the listing date.
Mkt fwd ret 3m	Return of the market (country-index) where the firm is listed, for the three-calendar months following the listing date.
q (offer price)	Tobin's q at the IPO date (before trading starts). Market value of equity is computed as total shares outstanding times the offer price. Debt is book value of debt. Book assets is pre-IPO assets plus the IPO proceeds, assuming proceeds are kept as cash by the firm. IPO proceeds are defined as primary shares times the offer price.
q (t=0)	Year-end Tobin's q for the year of the IPO (year 0).
q (t=T)	Year-end Tobin's q for the year T after the IPO (T={1-4}).
CEO stake pre-IPO	Ownership stake of the CEO before the IPO.
CEO stake post-IPO	Stake retained by the CEO immediately after the IPO.
CEO stake reduction	CEO stake post-IPO – CEO stake pre-IPO.
Insiders stake pre-IPO	Ownership stake of all insiders (including the largest shareholder) identified in the IPO prospectus, such as the CEO, directors, executives, family members, and others.

Insiders post-IPO	Stake retained by all insiders immediately after the IPO.
Insiders stake reduction	Insiders stake post-IPO – Insiders stake pre-IPO.
Outsiders stake pre-IPO	Ownership stake of all large outsiders identified in the IPO prospectus, such as venture capitalists, financial firms/investors, and other companies.
Outsiders post-IPO	Stake retained by large pre-IPO outsiders immediately after the IPO.
Outsiders stake reduction	Outsiders stake post-IPO – Outsiders stake pre-IPO.
HHI pre-IPO	Hirschman-Herfindahl Index of the ownership structure before the IPO using three mutually exclusive shareholder categories: the CEO, insiders excluding the CEO, and large outsiders.
HHI post-IPO	Hirschman-Herfindahl Index of the ownership structure immediately after the IPO using the same shareholder groups as the pre-IPO HHI.
HHI reduction	HHI post-IPO – HHI pre-IPO.
CEO is largest shareholder	Dummy that takes a value of 1 if the CEO of the company is the largest shareholder, and 0 otherwise.

Valuation and accounting variables are winsorized at the 2.5% level.

Figure A.1: IPOs by Industry

This figure displays the number of hand-collected European IPOs over one-digit SIIC codes for the owner-managers' sample.

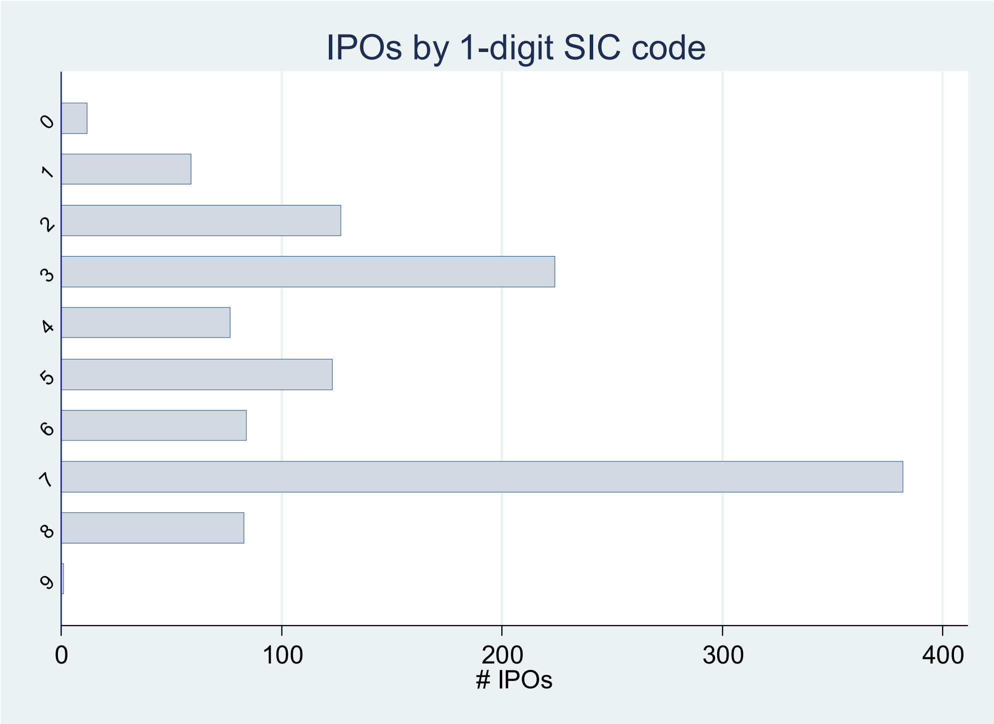


Figure A.2: IPOs by Market

This figure displays the number of hand-collected European IPOs over the seven largest markets where IPOs took place for the owner-managers' sample. IPOs in this sample took place in 33 markets. The remaining 26 exchanges are grouped into a single category displayed at the bottom ("*Others").

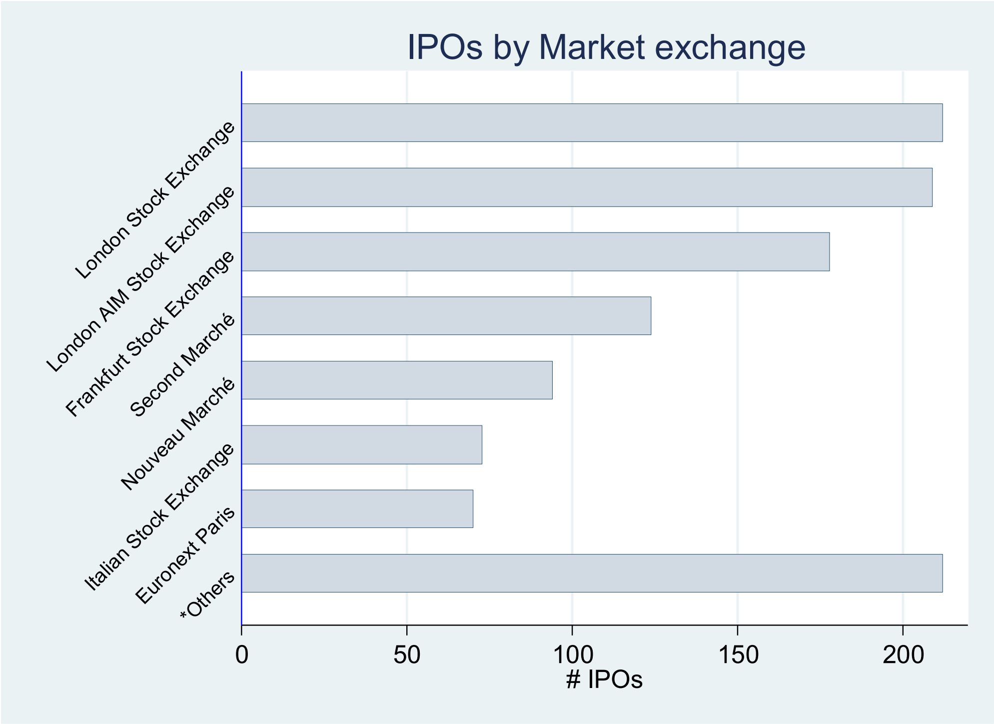


Figure A.3: *p*-hacking Tests

This figure displays the results from the p-hacking tests as proposed by Brodeur et el (2020). Using speccheck we alternate specifications of our main regression in Table 5 column 2 by changing the following control variables: log assets, leverage, OROA and VC backed. In the first figure starting from the top left corner, we plot the distribution of t-stats (t-Curve); in the second figure we plot the coefficients (Effect curve); in the third figure we show how the t-stats vary depending on the number of controls (t-statistic by # of coefficients); and in the fourth figure we how the coefficients vary depending on the number of controls (Effect Size by # of coefficients). In the last two figures, there is no variation in the cases with 0 or 4 controls since there is only one possible regression specification in such cases.

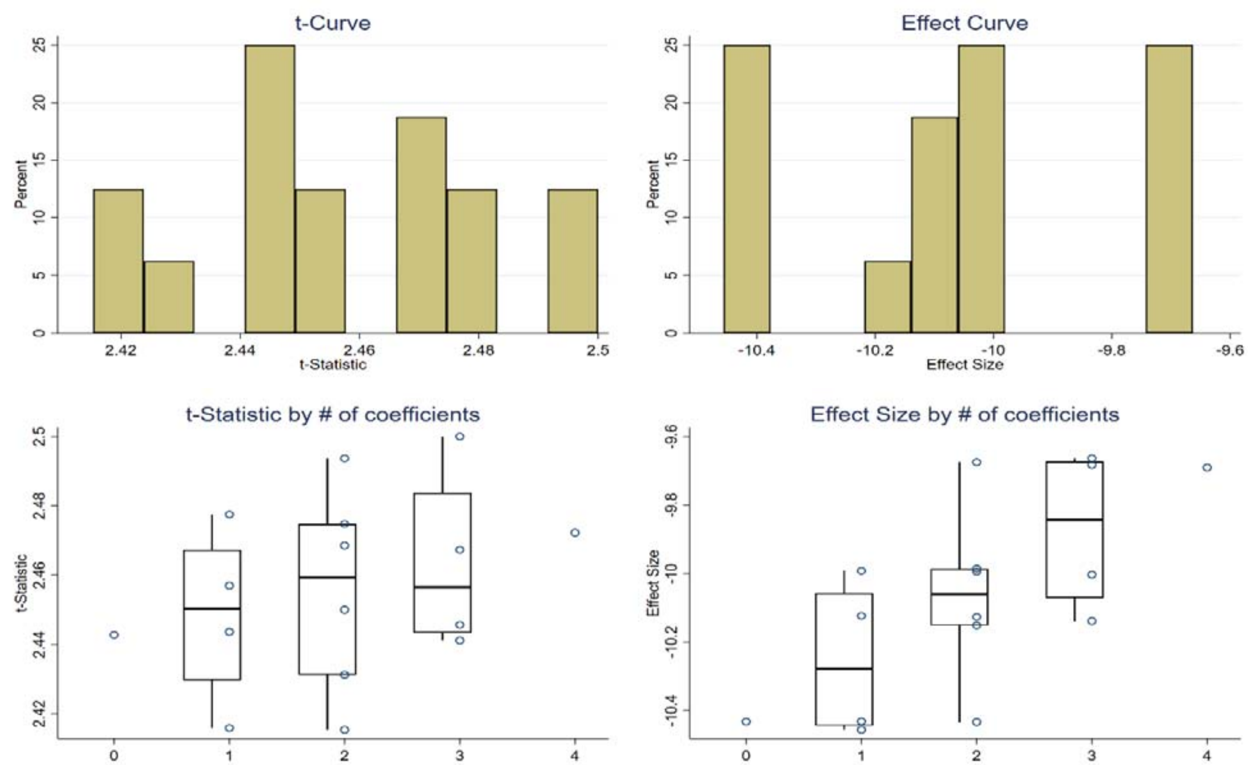
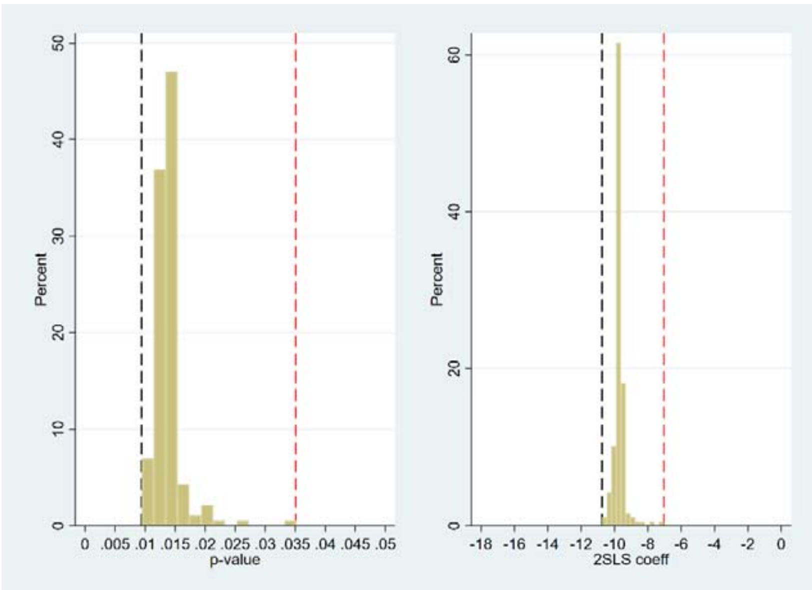


Figure A.4: Sensitivity of IV Results to Excluding Clusters of Observations

The figure shows the distribution of p-values and coefficients on the stake reduction from the second stage regression of the multiple samples that result from excluding one cluster at a time. For panel A, we exclude a market-year at a time. For panel B, we exclude one firm at a time. Dashed vertical lines show the maximum and minimum values obtained.

Panel A: Excluding one market-year at a time



Panel B: Excluding one firm at a time

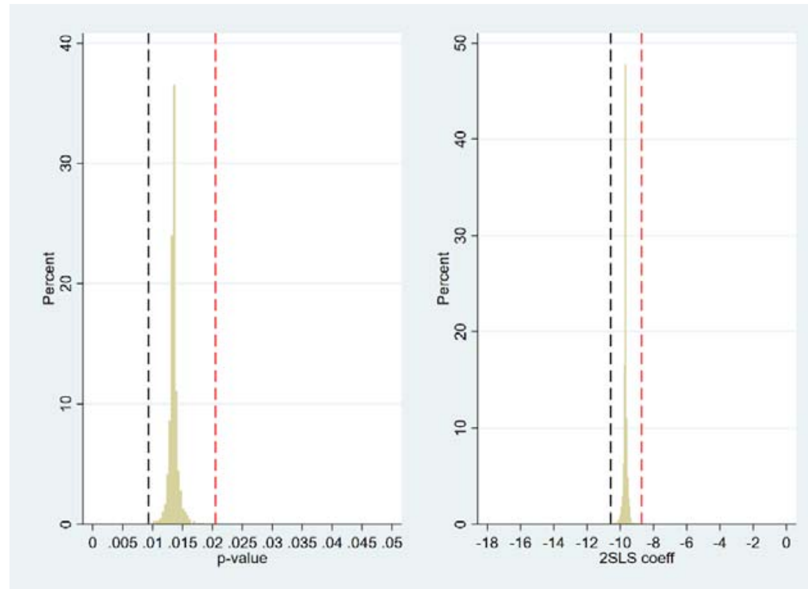


Table A.1

Summary Statistics for Other Ownership Variables

This table displays summary statistics for other ownership variables in the sample of IPOs controlled by owner-managers. The appendix contains detailed definitions for all variables. Raw data are hand-collected from the IPO prospectus.

	Mean	P10	P25	P50	P75	P90	SD	Total
CEO stake pre-IPO	0.43	0.02	0.20	0.41	0.66	0.88	0.29	987
CEO stake post-IPO	0.32	0.01	0.14	0.29	0.49	0.67	0.23	987
CEO stake reduction	0.11	0.00	0.03	0.09	0.16	0.24	0.12	986
Insiders stake pre-IPO	0.75	0.42	0.59	0.80	0.99	1.00	0.24	946
Insiders stake post-IPO	0.56	0.28	0.42	0.57	0.71	0.81	0.20	953
Insiders stake reduction	0.19	0.05	0.11	0.18	0.27	0.34	0.14	945
Outsiders stake pre-IPO	0.14	0.00	0.00	0.04	0.25	0.41	0.19	932
Outsiders stake post-IPO	0.10	0.00	0.00	0.04	0.17	0.29	0.14	944
Outsiders stake reduction	0.04	0.00	0.00	0.00	0.06	0.15	0.11	929
HHI pre-IPO	0.51	0.24	0.34	0.48	0.63	0.93	0.24	932
HHI post-IPO	0.29	0.10	0.16	0.26	0.38	0.52	0.17	944
HHI reduction	0.22	0.05	0.12	0.20	0.30	0.43	0.16	929
CEO is largest shareholder	0.73	0.00	0.00	1.00	1.00	1.00	0.44	932

Table A.2

Year-by-Year Results

Panel A shows OLS regressions in the style of Table 2, and Panel B shows IV regressions in the style of Table 5. Columns 1 through 5 in each panel present regressions where Tobin's q is measured at the end of years t=0,…,4 where year 0 is the year of the IPO. In columns 6 through 8 we take averages of year-end Tobin's q between years t=1 and t=3 (column 6), years t=2 and t=4 (column 7), and years t=1 and t=4 (column 8). Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

Panel A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	log(q) (t=0)	log(q) (t=1)	log(q) (t=2)	log(q) (t=3)	log(q) (t=4)	log(q) (t=1-3)	log(q) (t=2-4)	log(q) (t=1-4)
Stake pre-IPO	0.546***	0.351*	0.019	0.169	0.294	0.257*	0.227	0.296**
	(0.162)	(0.195)	(0.179)	(0.189)	(0.180)	(0.136)	(0.149)	(0.146)
Stake reduction at IPO	-1.532***	-1.012**	-0.040	-0.434	-0.691*	-0.520*	-0.274	-0.480
	(0.456)	(0.459)	(0.401)	(0.350)	(0.369)	(0.301)	(0.357)	(0.318)
Observations	1,172	1,172	1,172	1,042	941	1,032	917	913
Market FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Panel B

VARIABLES	(1) log(q) (t=0)	(2) log(q) (t=1)	(3) log(q) (t=2)	(4) log(q) (t=3)	(5) log(q) (t=4)	(6) log(q) (t=1-3)	(7) log(q) (t=2-4)	(8) log(q) (t=1-4)
Stake pre-IPO	2.683**	2.752**	2.635**	2.581**	2.088**	3.466**	2.155*	2.686**
	(1.102)	(1.216)	(1.304)	(1.224)	(1.048)	(1.435)	(1.135)	(1.260)
Stake reduction at IPO	-8.693**	-9.059**	-8.808**	-8.700**	-6.948*	-11.354**	-6.954*	-8.652**
	(3.605)	(3.996)	(4.300)	(4.097)	(3.557)	(4.700)	(3.831)	(4.215)
Observations	1,172	1,172	1,172	1,042	941	1,032	917	913
Market FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage
Instrument	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m

Table A.3

Alternative Sample - Summary Statistics

This table displays variable means according to whether the IPO had an owner-manager as a controlling shareholder or not. Other IPOs are controlled by financial institutions or investors (e.g., venture capitals), other companies (i.e., spin-offs), or the state (i.e., privatizations). The first column in each panel displays the variable means for owner-manager IPOs, the second column displays the means for other IPOs, and the third column 3 reports the difference. Panel A shows the results with raw data. Panel B shows the results with data purged for market, industry, and year fixed effects. Significant at the *10%, **5%, ***1%.

	Panel A: Unadjusted sample			**Panel B: Adjusted (by FE) sample**		
Variable	Owner/Managers	Other IPOs	Diff.	Owner/Managers	Other IPOs	Diff.
Log(assets) pre-IPO	16.601	17.760	-1.159***	16.856	17.453	-0.597***
OROA pre-IPO	0.110	0.029	0.081***	0.094	0.049	0.045***
Leverage pre-IPO	0.700	0.713	-0.013	0.700	0.714	-0.014
VC-backed	0.261	0.395	-0.134***	0.274	0.379	-0.105***
Stake pre-IPO	0.520	0.511	0.009	0.516	0.516	0.000
Mkt ret 3m	0.032	0.033	-0.001	0.031	0.034	-0.003
Stake post-IPO	0.385	0.331	0.055***	0.371	0.348	0.024***
Stake reduction at IPO	0.134	0.180	-0.046***	0.145	0.168	-0.023***
Stake dilution at IPO	0.103	0.104	-0.001	0.105	0.102	0.003
Secondary sales at IPO	0.031	0.076	-0.045***	0.040	0.066	-0.026***
Underpricing	0.196	0.138	0.059***	0.179	0.159	0.020
Tobin's q	3.693	3.242	0.451***	3.584	3.372	0.212*
# of firms	1,172	973		1,172	973	

Table A.4

Robustness Checks

This table presents results for the instrumental variables estimation presented in Table 5 but using alternative regression specification or sub-samples. Columns 2 and 3 include market-by-year and industry (SIC 1 digit)-by-year fixed effects respectively. Columns 4 and 5 exclude particular periods such as the end of the dot-com hot market (1999-2001) and the market crash of 2008-9. Columns 6 and 7 exclude particular industrial segments. Column 8 truncates the sample by excluding the top 10% values of Tobin's q. Column 9 excludes markets with fewer than 20 IPOs. Column 10 excludes IPOs with less than US$5 MM in assets. Column 11 excludes IPOs with SEOs in the following two years. Column 12 excludes dual listing IPOs. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) log(q)	(2) log(q)	(3) log(q)	(4) log(q)	(5) log(q)	(6) log(q)	(7) log(q)	(8) log(q)	(9) log(q)	(10) log(q)	(11) log(q)	(12) log(q)
Stake pre-IPO	3.017**	3.804***	3.145***	2.888***	3.069**	1.693***	3.547***	2.272**	2.861***	3.199**	3.208**	2.862**
	(1.217)	(1.353)	(1.051)	(1.032)	(1.239)	(0.629)	(1.258)	(0.925)	(1.106)	(1.439)	(1.274)	(1.259)
Stake reduction at IPO	-9.690**	-12.026***	-9.949***	-9.079***	-9.832**	-5.309***	-11.927***	-7.651**	-9.178**	-10.554**	-10.849**	-8.980**
	(3.920)	(4.276)	(3.428)	(3.056)	(3.957)	(1.995)	(4.281)	(3.136)	(3.582)	(4.843)	(4.409)	(3.934)
Observations	1,172	1,172	1,172	796	1,154	790	1,087	1,053	1,061	883	1,007	1,054
Market FE	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market-year FE	No	Yes	No	No	No	No	No	No	No	No	No	No
SIC1-year FE	No	No	Yes	No	No	No	No	No	No	No	No	No
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage	Second Stage
Instrument	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m
Baseline	Yes	+ Mkt-year FE	+ SIC1-year FE	Excl. 1999-2001	Excl. 2008-2009	Excl. SIC1 7	Excl. SIC1 6 & 9	Excl. Top 10% q	Excl. Mkt IPO<20	Excl. Assets<5MM	Excl. firms with SEOs	Excl. dual listings

Table A.5

The Effect of Ownership Stakes on Firm Value: Control Thresholds

This table presents results for the instrumental variables estimation presented in Table 5 but using alternative sub-samples. In each column, we exclude from the sample those IPOs where the stake of the largest shareholder is less than a certain threshold (5%-10%-20%) either before or after the IPO. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

VARIABLES	(1) log(Tobin's q)	(2) log(Tobin's q)	(3) log(Tobin's q)
Stake pre-IPO	2.623***	2.624***	3.128***
	(0.978)	(0.983)	(1.203)
Stake reduction at IPO	-8.703***	-8.956***	-10.602**
	(3.291)	(3.407)	(4.207)
Observations	1,164	1,119	910
Market FE	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers
Regression	Second Stage	Second Stage	Second Stage
Instrument	Mkt ret 3m	Mkt ret 3m	Mkt ret 3m
Excluded	stake pre/post<5%	stake pre/post<10%	stake pre/post<20%

Table A.6

The Effect of Ownership Stakes on Firm Value: Alternative Ownership Variables

This table presents results for the instrumental variables estimation presented in Table 5 but using alternative ownership variables. In columns 1 and 2, we focus on the stake of the CEO; in columns 3 and 4, we focus on the stake of all insiders (which includes the largest shareholder); and in column 5 we focus on the stake of large outsiders. More detailed variable descriptions are presented in the appendix. Standard errors are adjusted by heteroscedasticity and clustered at the market-by-year level. Significant at the *10%, **5%, ***1%.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	CEO stake red.	log(Tobin's q)	Insiders stake red.	log(Tobin's q)	Outsiders stake red.
Mkt ret 3m	0.088***		0.080**		-0.016
	(0.028)		(0.033)		(0.029)
CEO stake pre-IPO	0.290***	3.220**			
	(0.018)	(1.391)			
CEO stake red.		-10.818**			
		(4.614)			
Insiders stake pre-IPO			0.361***	4.611**	
			(0.041)	(1.924)	
Insiders stake red.				-12.405**	
				(5.294)	
Outsiders stake pre-IPO					0.450***
					(0.042)
Observations	986	986	945	945	929
Market FE	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes
Sample	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers	Owner/Managers
Regression	First stage	Second Stage	First stage	Second Stage	First stage
F-test Montiel-Pflueger	9.69		5.89		0.33
Instrument		Mkt ret 3m		Mkt ret 3m	