

Ownership structure and IPO underpricing

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A Thesis

In

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Science (Option Finance) at

Concordia University

Montréal, Quebec, Canada

June 2020

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CONCORDIA UNIVERSITY

School of Graduate Studies

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Abstract

We examine the influence of ownership structure on underpricing of initial public offerings (IPOs) in the US. While the existing literature has largely focused on either founders or venture capitalists, we show that the ownership structure of US IPOs is more complex and cannot be adequately characterized by these two types of blockholders. We find that the influence of blockholders on underpricing is not unidimensional – the positive influence of individual blockholders (venture capital backing) on underpricing is present only in the venture-backed firms (those with individual blockholders). Further, we also find that such firms experience insignificant offer price revision, suggesting that their higher underpricing is not driven by negative information revealed during the roadshow. Finally, we show that the difference in underpricing between VC-backed firms with individual blockholders and those without is no longer significant once we control for the celebrity status of individual blockholders.

Acknowledgement

First of all, I would like to express my sincere appreciation to my two supervisors, Professor Imants Paeglis and Parianen Veeren. Their patient guidance and academic advice to me are the most valuable assets I have gained during my postgraduate study. Led by professors' professional research methodology and attitude throughout the entire research, I had a deeper understanding of corporate finance, ownership structure and IPO underpricing.

Secondly, I would like to thank all other professors in Msc finance, the professional financial knowledge in different areas and research methodology I learn from them in these three years are the fundamentals of my thesis.

Last but not the least, I would like to thank my parents and friends for their solid supports during the past year. Under this extremely difficult condition, their continuous encouragements motivate me greatly.

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1. Introduction

We examine the influence of ownership structure on underpricing of initial public offerings (IPOs) in the US. The existing literature, for the most part, has focused either on founders (as individual blockholders) or on venture capitalists (as corporate blockholders). We show that the ownership structure of US IPOs is more complex and cannot be adequately characterized by the above two types of blockholders. Further, we show that the influence of such blockholders is not unidimensional – the influence of individual blockholders varies by the presence (if any) of corporate blockholders while that of the corporate blockholders – by the presence of individual blockholders.

In this paper, we characterize the ownership structure using both the type (individual versus corporate) and the identity of the largest blockholder. Individual blockholders are classified into family, non-family insiders, and outsiders, while corporate blockholders – into venture capitalists (VCs) and non-VCs ones. From now onwards, we will refer to firms with family as the largest individual blockholder as *family firms*. Similarly, we will refer to firms with non-family insiders (outsiders) as the largest individual blockholder as *non-family insider (outsider) firms*. Finally, we will refer to firms with venture capitalists (non-VC) as the largest corporate blockholder as *venture-backed (non-venture-backed) firms*. It is important to note that in our paper the term *non-venture-backed firms* have a different meaning than in the existing literature, which has used the term to denote both the firms without corporate blockholders and those with non-VC corporate blockholders. We use it to refer only to the latter ones.

We hypothesize that firms with individual blockholders will be associated with higher underpricing for one (or both) of the following reasons. First, presence of individual blockholders can increase the level of asymmetric information about the firm either because (a) such blockholders, especially the founders, may not have enough knowledge and experience to lead (manage) a public firm or (b) they may also have power in excess of that implied by their ownership stakes allowing them to become entrenched more easily (as compared to blockholders in more mature firms). Second, individual blockholders may attract media interest and thus attain a celebrity status, which, in turn, creates an

additional demand from IPO (mostly retail) investors. This is most likely to happen with founders in venture-backed firms.

While both of the above reasons are likely to result in higher IPO underpricing, they have different implications for offer price revision between the middle of the initial filing range and the final offer price. This allows us to distinguish between the two potential causes of higher underpricing of firms with individual blockholders. In the case of individual blockholders increasing the level of asymmetric information, we expect there to be either a reduction (no change) in the offer price as a result of a roadshow if the underwriters have not (have) priced in the potential negative effects of the individual blockholders presence. If, on the other hand, firms with individual blockholders attract media interest becomes celebrities, we expect there to be an upward revision (no change) in the offer price as a result of a roadshow if the underwriters have not (have) priced in the potential positive effects of the individual blockholders presence. Finally, if the main reason for the higher underpricing of firms with individual blockholders is the additional media attention and celebrity status of such blockholders, we expect to see no significant differences between such firms and the firms with no individual blockholders, after controlling for the celebrity status of the individual blockholders.

Our findings can be summarized as follows. First, we find that firms with individual blockholders have higher IPO underpricing, especially those in which the largest corporate blockholder is a VC. Further, of the three types of individual blockholders, the effect is most pronounced for founders and outsiders. Second, we find that firms with individual blockholders do not experience a significant downward revision in the offer price. In fact, such firms exhibit higher offer price revision relative to the firms with no individual blockholders, which experience significant reductions in the offer price during the roadshow. This suggests that the higher IPO underpricing of firms with individual blockholders is most likely driven by the media attention and the celebrity status of such blockholders.

We further test this conjecture using the dollar wealth of the largest individual blockholder as a measure of her celebrity status. Anecdotal evidence suggests that more successful IPO insiders (as

measured by the value of their ownership stakes) are more likely to attract media attention. We find that the dollar wealth of the largest individual blockholder is positively related to the offer price revision and underpricing for venture-backed firms. More importantly, after controlling for the celebrity status of the largest individual blockholder, we find that firms with individual blockholders no longer exhibit higher IPO underpricing.

Our paper is related and contributes to several streams of literature. First, we contribute to and extend the literature on the influence of ownership structure on IPO underpricing. We show that the unidimensional classification into either family or VC-backed firms does not adequately describe the complexity of the ownership structure of US IPOs and its influence on underpricing. Consider the literature on the influence of VCs on underpricing, which has reported conflicting results. While the early studies showed that venture-backed IPOs are less underpriced, the more recent ones have found the opposite result. Our findings suggest that the higher underpricing of VC-backed firms may not be driven by the venture capitalists themselves but rather by the celebrity status of individual blockholders of such firms.

Second, we contribute to the literature on IPO underpricing. In particular, we identify a new factor that has a significant influence on underpricing, namely, the celebrity status of the largest individual blockholder. While there is a literature on the media coverage of the firms going public, we are not aware of any study to link the celebrity status of the individual blockholders and IPO underpricing.

The rest of the paper is organized as follows. We review the relevant literature in Section 2. Section 3 develops testable hypotheses, while Section 4 describes our data and sample selection criteria. In Section 5 we describe our empirical tests and report their results. Section 6 concludes.

2. Literature review

Our paper is related and contributes to the following three streams of literature. First, we contribute to the literature on IPO underpricing. Second, we contribute to the literature on the influence of

blockholders on IPO underpricing. Third, our study builds on the literature that has examined the advantages and disadvantages of the celebrity status of firm insiders. We now review these three streams of literature in detail.

2.1. Determinants of IPO underpricing

Theoretical literature on underpricing has viewed asymmetric information as the main determinant of IPO underpricing. Three main theories of IPO underpricing are signalling model of Welch (1989), bookbuilding model of Benveniste and Spindt (1989), and information production model of Chemmanur (1993).

Welch (1989) provided a two-period signalling model, stating that firm owner knows more about firm's value than do outside investors. Because of this information asymmetry, owners of high-quality firms use underpricing to signal their quality to the outsiders. These costs of signalling are later recuperated when such firms obtain a higher price at their SEOs. Low-quality firms have to incur imitation costs to pretend to be high quality ones, but, since their true quality will be discovered by the market between IPO and SEO, such firms will not recover their losses due to underpricing. Underpricing by high-quality firms makes imitation by the low-quality too costly and therefore forces low-quality firms to reveal their true value at IPO.

Benveniste and Spindt (1989) build on the evidence that underwriters change the expected offer price in prospectus to the final offer price based on the information gathered during the pre-issue period. The final offer price is higher (lower) than the expected offer price when investors reveal positive (negative) information. When the demand is high, they adjust offer price upward and vice versa. Underpricing is used by underwriter to compensate investors for truthfully revealing information. In this case, firms with an upward adjusted offer price are likely to have higher underpricing. Hanley (1993) empirically test this prediction of Benveniste and Spindt (1989), confirming that issues that have upward revision of offer price are more underpriced.

Chemmanur (1993) proposed a theoretical model in which insiders know more than do outsiders. In his model underpricing emerges as the solution to the asymmetric information between insiders and outsiders. In other words, insiders use underpricing to promote information production by outsiders. Higher information production reduces the level of asymmetric information, increasing the firm's secondary market share price. This, in turn, benefits the insiders when they either want to sell their own shares in the secondary market or when the firm need to raise money through an SEO.

2.2. The influence of blockholders on IPO underpricing

At the time of the IPO, there are two types of blockholders present in the firm – individual and corporate ones. In this section, we will first review literature on the influence of individual blockholders on underpricing and then proceed with a review of literature on the influence of corporate blockholders.

2.2.1. The influence of individual blockholders on IPO underpricing

The literature has focused almost exclusively on the founders and founding families, with some attention to professional CEOs (non-family insiders), and almost complete ignorance of outside individual blockholders. This is not surprising, given that at the time of IPO, the founder or her descendants is most likely the largest individual blockholder in the company and has a significant influence on the management and governance of the firm. He (2008) finds that founder-managed firms are associated with better financial performance as compared to those managed by professional CEOs. Also, founder-CEOs' interests are better aligned with those of the minority shareholders, relative to their professional counterparts. Paeglis and Tirtiroglu (2006) compared family and non-family firms, and found that former are more underpriced, especially those in which the founder is both the CEO and the chairman of the board. Chandler et al. (2019) find that family firms are more underpriced and argue this is driven by the fact that the more conservative, less aggressive, and more long-term orientation of family firms makes

them less attractive to investors, resulting in higher underpricing. Finally, Bruton et al. (2009) find that underpricing of UK IPOs is a convex function of founder ownership.

According to psychological ownership theory, founder-CEOs are more likely to feel a greater sense of possessiveness and psychological attachment to the firm they have created than are non-founder CEOs (Piercer et al., 2001). Therefore founder-CEOs have the incentive to implement control-enhancing mechanisms (CEMs) to protect them from losing control over the firm. Fattoum and Delmar (2012) and Fattoum, Delmar, and Wright (2018) found that founder CEOs are more likely to implement these mechanisms (as compared to non-founder CEOs). They also document a positive relationship between number of CEMs and IPO underpricing. In addition, the influence of CEMs on underpricing is stronger in founder-CEO led firms as compared to the non-founder CEOs managed ones.

2.2.2. The influence of corporate blockholders on IPO underpricing

There are two types of corporate blockholders presents in a firm before its IPO. First, venture capitalists, for which the IPO represents the beginning of the exit from their portfolio company. Second, non-venture-capitalist corporate blockholders who may have incentives to maintain their ownership stakes in the newly public firm and therefore are likely to have a different influence on underpricing. Unfortunately, we are not aware of any study that has explicitly looked at the influence of non-VC corporate blockholders on IPO underpricing. Most of the studies has distinguished between venture-backed and non-venture backed firms, with the latter including both the firms without corporate blockholders and those with non-VC ones. Consequently, the literature review on this topic will focus exclusively on the VC-backed ones.

Venture capitalists support portfolio companies in their early stages and exit after the end of the lockup period. Many previous studies have examined the influence of venture capital backing on the IPO underpricing. Part of the literature argues that VC-backed firms are associated with lower underpricing.

Three different hypotheses have been used to explain the role of venture capital backing in the IPO process: certification hypothesis, screening and monitoring hypothesis, and market power hypothesis.

Meggison and Weiss (1991) argue that venture capitalists can mitigate information asymmetry, certify the true inside information, and therefore reduce IPO underpricing. They also show that the presence of venture capitalists certifies the offer to underwriters, which lowers the underwriter compensation, and reduces the costs of offering. Dolvin and Pyles (2006) also find that higher quality venture capitalists will perform a more valuable certification role.

Barry et al. (1990) and Jain and Kini (1995) provide support for screening and monitoring hypothesis. The monitoring role of VCs leads to lower underpricing of the firm. They further pointed out that better monitoring skills of venture capitalists reduce investor uncertainty and therefore decrease IPO underpricing. Kaplan and Stromberg (2001) also show that venture capitalists' ability to conduct pre-investment screening and post-investment monitoring enable them to select the best portfolio companies and subsequently improve their performance.

Chemmanur and Loutskina (2006) strongly reject the certification hypothesis. They argue that venture capitalists aim at obtaining the highest price possible (rather than the one closest to the intrinsic value). More importantly, their findings show strong evidence for the market power hypothesis, showing that venture capitals are able to attract greater participation to an IPO (such as underwriters, institutional investors, and analysts), thus obtaining a higher valuation for the IPOs backed by them.

However, a number of studies have called the above hypotheses into question. Gompers (1996) provide evidence in support of the grandstanding hypothesis arguing that young VCs have incentives to bring IPOs to market pre-maturely. This leads to companies backed by young VCs being more underpriced. Since taking firms public is critical for young venture capitalists in terms of future fundraising and establishing reputation, they are willing to bear the cost of underpricing. Gompers and Lerner (1997) also question the certification hypothesis and show that the magnitude of the difference in underpricing between venture-backed and non-venture-backed firms is sensitive to the choice of

estimation method period and methodology. Lee and Wahal (2004) also support grandstanding hypothesis, and find that, after addressing the endogeneity issue over the entire sample period from 1980 to 2000, VC-backed IPOs exhibit significantly greater underpricing than do non-VC backed ones. Bradley and Jordan (2002) also found that VC-backed firms are more underpriced during 1990-1999, but the differences vanish after controlling for industry, listing exchange, and underwriter reputation. Bruton et al. (2010) doubt the monitoring hypothesis. They argue that retained ownership by venture capitalists may not mitigate the potential of agency problems since they do not focus on monitoring the firm after IPO, which leads to a negative impact of their retained ownership on performance.

2.3. The advantages and disadvantages of celebrity insiders

Hayward, Rindova, and Pollock (2004) suggest that the “CEO celebrity” are created by journalists, because the latter tend to over-attribute a firm’s action and performance to its CEO, rather than to broader organizational or environmental factors. CEOs who believe in the over-attribution in the press are likely to become overconfident about their ability and judgement, and may stick to the strategy that brought them fame. Such CEOs may rely too much on strategy that made them famous and may therefore become reluctant to change.

Lovelace, Bundy, Hambrick, and Pollock (2018) also find that celebrity CEOs tend to persist in their behavior, which creates major vulnerabilities for their organizations when external or internal circumstances change. As a result, CEO celebrity can bring negative organization outcomes, and thus harm investors, employees and other stakeholders. Finally, Quigley and Hambrick (2015) propose an explanation of the dramatic increase in attributions of CEO significance. They use multiple performance measures and find that the increasing attribution of executive significance is due to the significant increase in the influence of individual chief executives on company outcomes. Accordingly, CEOs have become pivotal drivers of firm performance.

3. Hypothesis development

We examine the influence of blockholder presence on IPO underpricing. Venture capitalists at the time of the IPO may be considered short-term shareholders. Venture capital funds are structured as limited partnership to raise fund and make investments (Lee and Wahal, 2004). After a set number of years (usually ten), VC firms have to liquidate their investment and return money to their investors. The VCs therefore have a strong motivation to exit the investments after IPO in order to distribute assets to the limited partner investors and to establish a track record needed to raise further funds (Gompers 1996; Brav and Gompers, 2003).

The individual blockholders, on the other hand, are likely to remain with the firm well beyond the IPO and the venture capitalist exit. This especially applies to the founders who are most likely to be long-term blockholders. Presence of such blockholders can have two potential influences on the IPO underpricing. First, they can increase the level of asymmetric information about the firm. Insiders, especially the founders, may not have enough knowledge and skills to manage the firm. Also, insiders in the newly public firms may also have power in excess of that implied by their ownership stakes allowing them to become entrenched more easily as compared to their more mature counterparts.¹ Finally, a firm at that stage of life cycle does not yet have a reputation on its own and has to rely on that of its founder. As indicated earlier, the theoretical literature has considered the level of asymmetric information to be the most important determinant of the IPO underpricing. To the extent that the above three factors are likely to lead to a higher level of asymmetric information, we expect to see a higher level of IPO underpricing for firms with individual blockholders.

Second, individual blockholders can also attract interest and hype from IPO investors due to their celebrity status. The celebrity status of CEOs, founders, and other firm insiders has grown over the last

¹ Post-IPO exit by venture capitalists also leaves founders less monitored, especially those with intermediate levels of ownership (see Paeglis and Veeren, 2013).

few decades.² Zachary (1997) argues that media presence has become an increasingly important part of a CEO's job. The celebrity status of a CEO can be used to attract prospective new employees (Zachary, 1997) and to “increase stock price, enhance a firm’s image, and improve the morale of employees and other stakeholders” (Edwards, 2014). Further, creation of a “personal brand” is becoming an increasingly important part of being a successful entrepreneur (Pofeldt, 2019; and Ray, 2019). Ray (2019) argues that to be successful, entrepreneurs have to be ready to use social media to build up their “personal brand”.

In recent years, founders, insiders, and early investors of startups also have joined the celebrity ranks. The names of the following insiders of some of our sample firms speak for themselves: Jack Dorsey of Twitter, Inc, Mark Zuckerberg of Facebook, Inc, and Elon Musk of Tesla, Inc.³ While sometimes controversial, they have attained a nation- (if not world-) wide name recognition. Retail IPO investors seem to be attracted by the “extreme bias toward optimism” (Cooper, Woo, and Dunkelberg, 1988:106) exhibited by founders. Such investors have few, if any, dealings with entrepreneurs and therefore are unlikely to “discount” the overly optimistic view presented by the founders and enforced by the pro-entrepreneurship bias common in the popular business press. Further, the success and celebrity status has been largely linked to the insiders of the firms backed by the venture capitalists.

Media attention and celebrity status of individual blockholders can influence the IPO underpricing in two ways. First, an over-optimism by the institutional investors, who participate in the roadshow and are most likely receiving the allocations at the offer price, would be reflected through the offer price revision during the roadshow and the resulting partial adjustment phenomenon (Hanley, 1993). Second, an over-optimism by the retail investors, who are more likely to buy shares on the first day of trading, is more likely to be reflected through an increased demand on the first day of trading (and thus be independent of /in addition to that created by the partial adjustment phenomenon).⁴

² For an in-depth analysis of causes and consequences of celebrity CEOs, see Hayward, Rindova, and Pollock (2004).

³ See <https://www.cnet.com/news/tesla-motors-founders-now-there-are-five/> for why E. Musk, strictly speaking, is not Tesla founder.

⁴ Institutional investors are less likely to be subject to the hype biases / overoptimism (see, e.g., Verma and Verma, 2008, who find that institutional investors are more rational than their individual counterparts).

To summarize, we expect firms with individual blockholders to have a higher level of IPO underpricing (relative to their counterparts without individual blockholders) – either because of the higher level of asymmetric information or because of the higher level of over-optimism by the potential IPO investors. Formally, our Hypothesis 1 is as follows:

H1: Firms with individual blockholders will be associated with higher IPO underpricing.

The above two potential explanations for the higher underpricing of firms with individual blockholders have different implications for the information generated during the roadshow, as reflected in the offer price revision between the middle of the initial filing range and the final offer price. In the case of individual blockholders increasing the level of asymmetric information, we expect there to be either a reduction (no change) in the offer price as a result of a roadshow if the underwriters have not (have) priced in the potential negative effects of an individual blockholder's presence. If, on the other hand, firms with individual blockholders attract interest and hype from IPO investors (and are therefore subject to a higher level of overoptimism), we expect there to be an upward revision (no change) in the offer price as a result of a roadshow if the underwriters have not (have) priced in the potential positive effects of the individual blockholders presence. Formally, these two competing hypotheses can be summarized as follows:

H2A: If the higher underpricing of firms with individual blockholders is driven by the higher level of asymmetric information about such firms, there will be a reduction (no change) in the offer price during the roadshow.

H2B: If the higher underpricing of firms with individual blockholders is driven by overoptimism about such firms, there will be an increase (no change) in the offer price during the roadshow.

The difference between a VC-backed firm and a one with no corporate blockholders is that, for the latter, IPO is the first time investors observe the valuation of the firm's shares. For the former, there are implied valuations from the VC financing rounds, which give some indications of the fair value of the firm's shares. Frequently, such valuations are used by the press to judge whether certain insiders of the

prospective IPO will obtain the billionaire status. In other words, the presence of pre-IPO valuations provides financial press an earlier and more reliable access to the estimates of the value of the insiders' shares, making it easier for the financial press to make insiders into celebrities. To the extent that individual blockholders in VC-backed firms are more likely to have a higher name recognition and are more likely to have a celebrity status, we hypothesize that such blockholders will attract more interest from the potential IPO investors. This will result in a higher level of overoptimism about the firm and therefore a higher offer price revision during the roadshow. Formally, our third hypothesis is as follows:

H3: VC-backed firms with individual blockholders are more likely to experience higher offer price revision during the roadshow.

Finally, we expect the information revealed during the roadshow and the celebrity status of the firm's insiders to have a positive influence on the IPO underpricing. Controlling for these two factors, we expect no significant differences in IPO underpricing between firms with and without individual blockholders, if the main reason for higher underpricing of firms with individual blockholders is the additional interest and hype from the potential IPO investors. Formally, our fourth and final hypothesis is as follows:

H4: There will be no significant differences in IPO underpricing between firms with and without individual blockholders, after controlling for the information revealed during the roadshow and the celebrity status of the firm's insiders; this effect should be more pronounced for firms with VCs as the largest corporate blockholder

4. Data and sample selection

4.1. Sample selection

We obtained a list of all common equity US IPOs issued between 2005 and 2018 from SDC/Platinum New Issue database, eliminating financials (SIC between 6000 and 6999), unit offerings, and foreign firms. This left us with a sample of 1,122 firms. Then, based on the information contained in the prospectus, we eliminated offering of non-common equity (mostly LLC units), unit offerings

(consisting of common shares and warrants), equity carve-outs, foreign firms (misclassified by the SDC), offering of companies that had undergone leveraged buyouts and bankruptcy in the past, seasoned equity offerings, rights and best efforts offerings, as well as those trading on OTC and those going public using the open-IPO method. We also eliminated firms which are not included in the CRSP and COMPUSTAT databases. This leave us with a sample of 985 firms. Panel A of Table 1 includes the detailed information of the screening process while Panel B shows the sample distribution by year.

The closing price on the first day of trading is obtained from CRSP. Original high and low filing price, total assets, founding year as well as the ownership stakes of all blockholders are obtained from prospectus in EDGAR. We rank the underwriter reputation following the method described in Loughran and Ritter (2004).

Table 2 reports full sample summary statistics for the variables used in this paper. During our sample period, IPO underpricing was, on average (median), 15.9% (8.5%). The final offer price, on average, was 4.3% lower than the middle of the initial filing range.

We define a blockholder as an entity controlling more than 5% of the voting rights in the firm. Individual blockholders are those that hold the shares directly or through a fully-controlled corporate entity. All other blockholders are classified as corporate blockholders. We further use information in the IPO prospectus to classify individual blockholders into three types: family, non-family insiders, and outsiders. An individual blockholder is classified as family if the individual (or her family) was involved in the founding of the firm.⁵ An individual blockholder is classified as a non-family insider (outsider) if he or she is (is not) involved in the management of the firm and is not a member of the founding family. Corporate blockholders are classified into two types – venture capitalists (VC) and non-venture capitalists (non-VC). VCs are corporate blockholder listed in the *Pratt's guide to private equity and venture capital sources*. All other corporate blockholders are classified as non-venture capitalists.

⁵ We treat multiple family members as a group and therefore add their ownership stakes.

4.2. Ownership structure of US IPOs

We describe the ownerships structure along the two dimensions – the presence and identity of blockholders. In Table 3 we have classified our sample based on the identity of the largest blockholders -- individual and corporate. Individual blockholders appear in 51.9% of firms going public. Families represent 61.5% of the largest individual blockholder, with non-family insiders and outsiders representing 21.1% and 17.4%, respectively. Families also control a higher percentage of voting rights, as compared to the other two types of individual blockholders – 23.1% as compared to 17.5 and 17.7%. There is also a significant variation in the ownership stakes of the largest individual blockholders depending on the presence, if any, of the corporate blockholders. Ownership stakes of the largest individual blockholders are the highest in firms with no corporate blockholders, followed by those with non-venture capitalists as the largest corporate blockholder. The largest individual blockholders, on average, hold the lowest ownership stakes in firms with venture capitalists as the largest corporate blockholder.

Corporate blockholders are present in 90.3% of firms. Almost two-thirds (64.6%) of the largest corporate blockholders are venture capitalists, who, on average, control 23.8% of IPO firm's voting rights. Non-venture capitalists as the largest corporate blockholders hold slightly higher ownership stakes – 27.8%, on average. The difference in the ownership stakes between VC and non-VC corporate blockholders is driven mainly by significantly higher holdings of non-VC blockholders in firms without individual blockholders (36% versus 24.5%). Firms with corporate blockholders are less likely to have individual blockholders – about 55% (47%) of VC-backed (non-VC-backed) firms have no individual blockholders. Firms with non-VC as the largest corporate blockholder have a slightly higher prevalence of families and non-family insiders as the largest individual blockholders.

5. Empirical tests and results

5.1. Univariate tests regarding the IPO underpricing

To examine the influence of the ownership structure on the IPO underpricing, we split the sample into twelve categories as discussed above. The results are reported in Table 4. The first row of Table 4 reports IPO underpricing for subsamples based on the corporate blockholder presence, if any, irrespective of the presence of individual blockholders. While the firms with VCs as the largest corporate blockholder had a somewhat higher underpricing (both in terms of the mean and median), the differences with firms without corporate blockholders were not statistically significant.⁶

The first column of Table 4 reports IPO underpricing for subsamples based on the individual blockholder presence, if any, irrespective of the presence of corporate blockholders. We find that firms with individual blockholders had a significantly higher underpricing than did those without individual blockholders. These differences were most pronounced and most significant (at the 1% level) for family and outsider firms with mean (median) differences of 7% (9.5%) and 7.9% (8%), respectively. Non-family insider firms also had higher IPO underpricing than did their counterparts without individual blockholders, but only the median difference of 7% was statistically significant.

We then examine IPO underpricing for various subsamples based on the presence, if any, of the individual and corporate blockholders. We find that differences in IPO underpricing between firms with and without individual blockholders documented above are driven by venture-backed-firms. For these firms, the differences between family (outsider) firms and their counterparts without individual blockholders are 10.4% (14%). The median differences are 14.7% and 12.5%, respectively. All of these are statistically significant at the 1% level. Venture-backed non-family insider firms also had higher IPO underpricing than did their counterparts without individual blockholders with the mean difference of 5.9% (significant at the 10% level) and the median difference of 12.7% (significant at the 1% level).

Finally, we find that family firms with venture capitalists as the largest corporate blockholder had by 9.2% (12.8%) higher IPO underpricing than did family firms without corporate blockholders. The difference is statistically significant at the 5% level for the mean and 1% for the median. We also find that

⁶ In unreported results, we find that the mean (median) difference in IPO underpricing between venture-backed and non-venture-backed firms was marginally significant (insignificant) at the 10% level.

non-VC-backed non-family insider firms had significantly lower underpricing than did non-family firms without corporate blockholders. This result, however, should be taken with a grain of salt, given the small number of non-family insider firms without corporate blockholders.

Overall, our results suggest that firms with individual blockholders are more underpriced than those without individual blockholders. At this point, however, we are not able to distinguish between the two competing reasons – higher level of asymmetric information about such firms or higher celebrity status and attention from IPO investors. To distinguish between them, we now examine the univariate differences in the offer price revision during the roadshow.

5.2. Univariate tests regarding the offer price revision

To examine the influence of the ownership structure on the offer price revision, we again split the sample into twelve categories discussed above. The results are reported in Table 5. We find that corporate blockholder backed firms without individual blockholders experienced the most significant negative offer price adjustment between the middle of the initial filing range and the final offer price. Non-VC backed non-family insider firms also experienced a significant downward revision in the offer price as did family firms with no corporate blockholders (the results for this sub-sample, however, are less significant). In contrast, family VC-backed firms have the only positive (median) offer price revision, albeit marginally so, with the corresponding values for the VC-backed non-family insider and outsider firms being zero. Overall, this leads to statistically significant differences in the offer price revisions between VC-backed firms with no individual blockholders and those with either type of the individual blockholder.

Overall our results suggest that (relatively speaking) VC-backed firms with individual blockholders had a more positive reception during the roadshow than did their counterparts without the individual blockholders. This difference in the market feedback between the two types of firms is likely to have led to a decreased (an increased) demand from the retail investors for the VC-backed firms without

(with) individual blockholders, which, in turn, have led to the observed differences in the underpricing documented above.⁷

5.3. IPO underpricing and the presence of blockholders

We now examine the relationship between IPO underpricing and the presence of individual blockholders in firms with different corporate blockholders, if any. We do so by estimating the following regression equation:

$$\text{Underpricing}_i = \gamma_0 + \gamma_1 \text{Family}_i + \gamma_2 \text{Non-Family}_i + \gamma_3 \text{Outsider}_i + \sum_{k=1}^n \alpha_k \text{Controls}_{ki} + \varepsilon_i \quad (1)$$

The dependent variable is defined as the percentage change between the final offer price and the closing price on the first day of trading. All control variables are as defined in Appendix A. The results, reported in Table 6, indicate that there is a positive and statistically significant relationship between IPO underpricing and individual blockholder presence in VC-backed firms (see column 2). The effect is most pronounced for firms in which the largest individual blockholder is an outsider followed by those with the family as the largest individual blockholder. The presence of these types of individual blockholders increase IPO underpricing by 13% and 7.9%, respectively, relative to the VC-backed firms with no individual blockholders. For firms with a non-VC as the largest corporate blockholder as well as those without any corporate blockholder, we fail to find any significant influence of individual blockholders' presence on IPO underpricing (relative to the firms with no individual blockholders).⁸

⁷ Our findings suggest that underwriters consistently overestimate the initial filing range for firms without individual blockholders. We conjecture that this may be due to the potential litigation risk. In particular, an upward offer price revision may expose the entities involved (firm, its insiders, underwriters, and pre-IPO corporate investors, if any) to a potential litigation if such a revision is seen as taking advantage of the market overvaluation. It may be, therefore, more prudent for the underwriters and insiders to overestimate the initial filing range and then adjust the final offer price downward (as opposed to underestimating / correctly estimating the initial filing range and then adjusting the final offer price upward).

⁸ The significant coefficient estimate for non-family insider firms with no corporate blockholders is, as alluded to earlier, likely due to the rather small size of that subsample.

We now examine the influence of the corporate blockholder presence on IPO underpricing in firms with the four types of individual blockholders – none, family, non-family, and outsiders.

The results are reported in Table 7. We find that none of the coefficient estimates for VC and non-VC dummies are significant with the exception of the non-VC dummy in non-family firms (column 3). The magnitude and the significance of the coefficient estimate, however, should be taken with a grain of salt due to the small sample size of the comparison group.

Overall, our results confirm Hypothesis 1 that firms with individual blockholder are associated with higher IPO underpricing than are firms without any individual blockholders, with the influence being most pronounced for venture-backed firms. Why would individual blockholders and venture capitalists consistently leave money on the table? VCs are repeat players in the IPO market. Their reputation is of crucial importance in successfully assisting the portfolio companies in going public. Because of this, venture capitalists have little incentive to go for the highest possible offer price if it means taking full advantage of the (hyped-up) celebrity status of individual blockholders. Further, VCs seldom sell their shares in the IPO, and therefore do not directly benefit from a higher offer price. A higher offer price, however, would potentially expose the firm going public to a shareholder litigation should the hype about the firm turn out to be short-lived (see Walker, Turtle, Pukthuanthong and Thiengtham, 2015). Such a litigation would certainly have negative influence on the VC reputation (see, Liu, Paeglis, and Walker, 2006).

Individual blockholders are also subject to the same litigation risk considerations and therefore have lower incentives to increase the offer price to reflect the potentially hyped up valuation. Further, IPO offer price is an implied benchmark for the performance of a newly public firm for a considerable time after the IPO.⁹ Thus, there could be a negative press effect from being below the offer price for extended periods of time, implying the company is a bad investment. To summarize, it is likely that the benefits

⁹ Perhaps the best example of this Facebook, Inc. The final offer price on May 12, 2012 was set at \$38. The closing price on the first day of trading was \$38.27. After that the stock price dropped below the offer price and stayed there until August 2013. When the stock price finally exceeded the IPO offer price, the media noted that “a full year later, the social network seemed to still be having a hard time shaking off the bad rap” (Van Grove, 2013).

from a higher offer price may be far lower than the associated costs in terms of loss of reputation (for both the individual blockholders and venture capitalists) and potential litigation costs.

5.4. Offer price revision and the presence of blockholders

We now examine the relationship between the offer price revision and the presence of individual blockholders for firms with different corporate blockholders to gain additional insights into the causes of higher underpricing of firms with individual blockholders documented above. We do so by estimating the following regression equation:

$$\begin{aligned} \text{Offer price revision}_i = & \Phi_o + \Phi_1 \text{Family}_i + \Phi_2 \text{Non-Family}_i + \Phi_3 \text{Outsider}_i \\ & + \sum_{k=1}^n \alpha_k \text{Controls}_{ki} + \varepsilon_i \end{aligned} \quad (2)$$

The dependent variable is defined as the percentage change from the middle of the initial filing range to the final offer price. The results are reported in Table 8. In firms with a VC as the largest corporate blockholder, all three types of the largest individual blockholders are positively and statistically significantly related to the offer price revision during the roadshow. The effect is the most pronounced in firms with non-family insiders as the largest individual blockholders (7.9% increase relative to the firms with no individual blockholders), followed by the firms in which the family is the largest individual blockholder (6.7% increase).

In firms with a non-VC largest corporate blockholder, only those with family or an outsider as the largest individual blockholder are associated with a higher offer price revision. Both of these types of firms have by 4.9% higher offer price revisions, as compared to the firms with a non-VC as the largest corporate blockholder and no individual blockholders. Finally, in firms without a corporate blockholder, we do not find any significant differences in the offer price revision between firms without individual blockholders and those with either of the three types of individual blockholders.

Overall, we find that in firms with corporate blockholders (of either type), the presence of individual blockholders are likely to attract interest from the potential IPO investors and therefore lead to an upward adjustment to the offer price during the roadshow.

We then examine the influence of the corporate blockholder presence on the offer price revision in firms with different kinds of largest individual blockholder. The results are reported in Table 9. The coefficient estimates of VC and Non-VC dummies are not significant in any of the columns. This implies that the presence of corporate blockholders doesn't affect the offer price revisions for firms with either type of the largest individual blockholder.

5.5. Dollar wealth of the largest individual blockholder, offer price revision, and IPO underpricing

We use the dollar wealth of the largest individual blockholder as a proxy for the extent of the celebrity status of the firm's largest individual blockholder. We argue that the higher the dollar wealth of the largest individual blockholder, the higher the likelihood that such a blockholder will be a celebrity entrepreneur, attracting attention of media and potential IPO investors (especially the retail ones).¹⁰

We now examine the influence of the dollar value of the largest individual blockholder's wealth on the offer price revision. We do so by estimating the following regression equation

$$\begin{aligned} \text{Offer price revision}_i = & \Phi_0 + \Phi_1 \text{Family}_i + \Phi_2 \text{Non-Family}_i + \Phi_3 \text{Outsider}_i + \\ & \delta_1 \text{Dollar wealth}_i + \delta_2 \text{Dollar wealth}_i * \text{Non-Family}_i + \delta_3 \text{Dollar wealth}_i * \text{Outsider}_i \quad (3) \\ & + \sum_{k=1}^n \alpha_k \text{Controls}_{ki} + \varepsilon_i \end{aligned}$$

To allow for the dollar wealth of the largest individual blockholder to have a different influence on the offer price revision for various types of the individual blockholders, we introduce the two interactive dummy variables – *dollar wealth * non-family* and *dollar wealth * outsider*.

In Table 10 we report the results for the subsamples based on the presence, if any, of the corporate blockholders. We find that the dollar wealth of the largest individual blockholder has a positive

¹⁰ See Stupples and Pendleton (2020) for a recent example.

influence on the offer price revision, but only for venture-backed firms. The coefficient estimate in column 2 is positive and statistically significant at the 10% level. We also find that the influence of the dollar wealth on the offer price revision for outsider firms is significantly lower than that in the case of family firms. More importantly, *family* and *non-family* dummy variables are no longer significant. This indicates that, after controlling for the dollar wealth of the largest individual blockholder, the differences in the offer price revisions between firms with no individual blockholders and those with family or non-family insiders as the largest individual blockholders are no longer significant. This suggests that the significant differences reported in Table 8 were mostly driven by firms with large dollar wealth of the largest individual blockholder, which are most likely to attract the attention of financial press and IPO investors. The results for firms with no corporate blockholders or those with a non-VC as the largest corporate blockholder remain insignificant, indicating that the positive effect of higher dollar wealth of the largest individual blockholder is mostly pronounced in venture-backed firms.

In Table 11 we repeat the above analysis for the subsamples of firms by the type of the largest individual blockholder. We find that the dollar wealth of the largest individual blockholder does not have a significant influence on the offer price revision for either of the four subsamples. Also, the coefficient estimates on *VC* and *non-VC* dummy variables remain insignificant. Overall, our results suggest that the media attention and celebrity status of the largest individual blockholder (as proxied by her dollar wealth), explain the differences in the offer price revisions documented above.

We now examine the influence of the presence of individual blockholders on IPO underpricing, controlling for both the offer price revision as well as for the dollar wealth of the largest individual blockholder. The results are reported in Table 12. We find that the dollar wealth of the largest individual blockholder had a positive and statistically significant influence on the IPO underpricing of firms with a VC as the largest corporate blockholder. The magnitude of the impact was also economically significant – a one standard deviation increase in the dollar wealth of the largest individual blockholder (as reported in Table 2) increased the IPO underpricing by 19.75%. Further, we find that the coefficient estimates on the

individual blockholder dummies are now negative and statistically significant. This implies that, after controlling for the partial adjustment and the dollar wealth of the largest individual blockholder, the underpricing of the firms with a VC as the largest blockholder and with an individual blockholder (irrespective of the type) was lower than that of their counterparts without individual blockholders.

For the firms with a non-VC as the largest corporate blockholder, we find that the dollar wealth had a negative and marginally significant influence on the IPO underpricing. At the same time, the coefficient estimate on *family* remained positive and statistically significant, suggesting that the attention attracted by such firms does not explain the higher underpricing experienced by them. Finally, for firms with no corporate blockholders we do not find any significant differences between various types of individual blockholders. The coefficient estimate on the *dollar wealth* is insignificant as well. Overall, our findings are consistent with the conjecture that the celebrity status is most likely attributed to the individual blockholders in venture-backed firms.

In Table 13, we examine the influence of the presence of corporate blockholders on IPO underpricing, controlling for both the offer price revision as well as for the dollar wealth of the largest individual blockholder. We find that the dollar wealth of the largest individual blockholder had a positive and significant influence on the IPO underpricing only for the firms with family as the largest individual blockholder. For the other three subsamples the influence was not statistically significant. We also find that the coefficient estimate on *non-VC* in column 3 was negative and statistically significant. This indicates that, even after controlling for the offer price revision and the dollar wealth of the largest individual blockholder, among firms with non-family insiders as the largest individual blockholder those with a non-VC as the largest corporate blockholder had lower IPO underpricing than did firms without any corporate blockholder.

6. Conclusions

We examine the influence of ownership structure on the underpricing of initial public offerings (IPOs) in the US. While the existing literature has largely focused either on founders or venture capitalists,

we show that the ownership structure of US IPOs is more complex and cannot be adequately characterized by these two types of blockholders. We find that the influence of blockholders on underpricing is not unidimensional – the positive influence of individual blockholders (venture capital backing) on underpricing is present only in the venture-backed firms (those with individual blockholders). We also find that such firms experience insignificant offer price revision, suggesting that their higher underpricing is not driven by negative information revealed during the roadshow. Further, we find that our measure of the largest individual blockholder’s celebrity status (his or her dollar wealth) is positively related to both the offer price revision and the IPO underpricing for venture-backed firms with individual blockholders. More importantly, the difference in underpricing between VC-backed firms with individual blockholders and those without is no longer significant once we control for the celebrity status of individual blockholders.

Our paper has implication for the broader IPO literature. Consider the literature on the influence of VCs on underpricing, which has reported conflicting results – the early studies showed that venture-backed IPOs are less underpriced, while the more recent ones have found the opposite result. Our findings suggest that the higher underpricing of VC-backed firms may not be driven by the venture capitalists themselves but rather by the celebrity status of individual blockholders of such firms.

References

- Barry, C. B., Muscarella, C. J., Peavy III, J. W., Vetsuypens, M. R., 1990. The role of venture capital in the creation of public companies: evidence from the going public process. *Journal of Financial Economics* 27 (2), 447-471.
- Benveniste, L. M., Spindt, P. A., 1989. How investment bankers determine the offer price and allocation of new issues. *Journal of Financial Economics* 24 (2), 343-361.
- Bradley, D. J., Jordan, B. D., 2002. Partial adjustment to public information and IPO underpricing. *Journal of Financial and Quantitative Analysis* 37 (4), 595-616.
- Brav, A., and Gompers, P., 2003. The role of lock-ups in initial public offerings. *The Review of Financial Studies* 16 (1), 1-29.
- Bruton, G. D., Chahine, S., Filatotchev, I., 2009. Founders, private equity investors, and underpricing in entrepreneurial IPOs. *Entrepreneurship Theory and Practice* 33 (4), 909-928.
- Bruton, G., Filatotchev, I., Chahine, S., Wright, M., 2010. Governance, ownership structure and performance of IPO firms: The impact of different types of private equity investors and institutional environments. *Strategic Management Journal* 31 (5), 491-509.
- Chandler, J. A., Payne, G. T., Moore, C., Brigham, K. H., 2019. Family involvement signals in initial public offerings. *Journal of Family Business Strategy* 10 (1), 8-16.
- Chemmanur, T. J., 1993. The pricing of initial public offerings: a dynamic model with information production. *Journal of Finance* 48 (1), 285-304.
- Chemmanur, T. J., Loutskina E., 2006. The role of venture capital backing in initial public offerings: certification, screening, or market power? EFA 2005 Moscow Meetings Paper.
- Cooper, A. C., Woo, C. Y., Dunkelberg, W. C., 1988. Entrepreneurs' perceived chances for success. *Journal of Business Venturing* 3 (2), 97-108.
- Dolvin, S. D., Pyles, M. K., 2006. Venture capitalist quality and IPO certification. *Venture Capital* 8 (4), 353-371.
- Edwards, J., 2014. Mastering Strategic Management – 1st Canadian Edition, *BCcampus*. Retrieve from <https://opentextbc.ca/strategicmanagement/>
- Fattoum, A., Delmar, F., 2012. Founder Status, Defensive Mechanisms and IPO Underpricing. In a Zacharakis (ed.), *Frontiers of Entrepreneurship Research 2012*.
- Fattoum, A., Delmar, F., Wright, M., 2018. The best of both worlds: Can founder-CEOs overcome the rich versus king dilemma after IPO? *Strategic Management Journal* 39 (13), 3382-3407.
- Gompers, P. A., 1996. Grandstanding in the venture capital industry. *Journal of Financial Economics* 42 (1), 133-156.
- Gompers, P. A., Lerner, J., 1997. Risk and reward in private equity investments: The challenge of performance assessment. *Journal of Private Equity* 1 (2), 5-12.
- Hanley, K. W., 1993. The underpricing of initial public offerings and the partial adjustment phenomenon. *Journal of Financial Economics* 34 (2), 231-250.
- Hayward, M. L. A., Rindova, V. P., Pollock, T. G., 2004. Believing one's own press: the causes and consequences of CEO celebrity. *Strategic Management Journal* 25 (7), 637 – 653.
- He, L., 2008. Do founders matter? A study of executive compensation, governance structure and firm performance. *Journal of Business Venturing* 23 (3), 257-279.
- Jain, B. A., Kini, O., 1995. Venture capitalist participation and the post-issue operating performance of IPO firms. *Managerial and Decision Economics* 16 (6), 593-606.
- Kaplan S. N., Stromberg P., 2001. Venture capitalists as principals: contracting, screening and monitoring. *American Economic Reviews* 91 (2), Papers and Proceedings, 426-430.
- Lee P.M., Wahal, S., 2004. Grandstanding, certification and the underpricing of venture capital backed IPOs. *Journal of Financial Economics* 73 (7), 375-407.
- Liu, X., Paeglis, I., Walker, T., 2006. Causes and consequences of venture capitalist litigation. *The Journal of Private Equity* 9 (4), 59-75.

- Loughran, T., Ritter, J., 2004. Why has IPO underpricing changed over time? *Financial Management* 33 (3), 5-37.
- Lovelace, J. B., Bundy, J., Hambrick, D. C., Pollock, T. G., 2018. The shackles of CEO celebrity: sociocognitive and behavioral role constraints on "Star" leaders. *Academy of Management Review*, 43 (3), 419-444.
- Meggison, W. L., Weiss, K. A., 1991. Venture capitalist certification in IPOs. *Journal of Finance* 46 (3), 879-903.
- Paeglis, I., Tirtiroglu, D., 2006. Founding family: an asset or a liability? Evidence from IPOs. Working paper.
- Paeglis, I., Veeren, P., 2013. Speed and consequences of venture capitalist post-IPO exit. *Journal of Corporate Finance* 22 , 104-123.
- Pierce, J. L., Kostova, T., Dirks, K. T., 2001. Towards a theory of psychological ownership in organizations. *Academy of Management Review* 26 (2), 298–310.
- Pofeldt, E., 2019. A crash course in becoming a celebrity CEO. *Forbes*. Retrieved from <https://www.forbes.com/sites/elainepofeldt/2019/04/30/a-crash-course-in-becoming-a-celebrity-ceo/#174f8831cb5c>
- Quigley, T. J., Hambrick, D. C., 2015. Has the “CEO effect” increased in recent decades? A new explanation for the great rise in America’s attention to corporate leaders. *Strategic Management Journal* 36 (6), 821-830.
- Ray, R., 2019. The celebrity CEO: How entrepreneurs can thrive by building a community and a strong personal brand paperback. *Indigo River Publishing*
- Stupples, B., Pendleton, D., 2020. ZoomInfo duo become billionaires with stock doubling since IPO. Retrieved from <https://news.bloomberglaw.com/corporate-governance/zoominfo-duo-become-billionaires-with-stock-doubling-since-ipo>
- Van Grove, J., 2013. Facebook finally close above IPO price. *c|net*. Retrieved from <https://www.cnet.com/news/facebook-finally-closes-above-ipo-price/>
- Verma, R., Verma, P., 2008. Are survey forecasts of individual and institutional investor sentiments rational? *International Review of Financial Analysis* 17 (5), 1139-1155.
- Walker, T., Turtle, H. J., Pukthuanthong, K., Thiengtham, D., 2015. Legal opportunism, litigation risk, and IPO underpricing. *Journal of Business Research* 68 (2), 326-340.
- Welch, I., 1989. Seasoned offerings, imitation costs, and the underpricing of initial public offerings. *Journal of Finance* 44 (2), 421-449.
- Zachary, P., 1997. Recluses No More: Once Anonymous, American CEOs Gain A Celebrity Status – Mixture of Money, Power And Mythology Creates ‘A Cult of Personality’ – Europe Prefers Real Royalty. *Wall Street Journal*, Europe; Brussels 04 Sep 1997: 1.

Appendix

Variable	Definition
Underpricing	The percentage change from the offer price to the market price at the end of the stock's first trading day
Offer price revision	The percentage change in the final offer price from the middle of the initial filing range
Dollar wealth	The natural logarithm of one plus the dollar value of the ownership stake of the largest individual blockholder (at the final offer price)
Family	A dummy variable that takes on a value of one if the largest individual blockholder is the founding family, and zero otherwise
Non-family insider	A dummy variable that takes on a value of one if the largest individual blockholder is a non-family insider, and zero otherwise; an insider is defined as any individual (or a family member thereof) who is involved in the management of the firm
Outsider	A dummy variable that takes on a value of one if the largest individual blockholder is outsider, and zero otherwise; an outsider is defined as any individual (or a family member thereof) who is not involved in the management of the firm
VC	A dummy variable that takes on a value of one if the largest corporate blockholder is a venture capitalist, and zero otherwise
Non-VC	A dummy variable that takes on a value of one if the largest corporate blockholder is a non-venture capitalist, and zero otherwise
Firm size	The natural logarithm of the book value of total assets, as reported in the prospectus
Firm age	The number of years between the year of incorporation or start of the operations (whichever comes earlier) and the time of IPO
Tech dummy	A dummy variable that takes on the value of one if the firm belongs to a technology industry as defined by Loughran and Ritter (2004), and zero otherwise
Underwriter reputation	The lead underwriter rank based on Jay Ritter's updated database – 2015.

Table 1 Sample screening and the number of IPOs by year

Panel A: Sample screening of US IPOs issued between 2005 and 2018 from SDC/Platinum New Issue database

Initial sample	1122
<i>less</i>	
Former LBOs and bankruptcy	36
SEOs	12
LLC units	7
Best efforts	15
Carve-outs	3
Foreign firms	24
Rights offering	1
Unit offerings	34
Firms not in Compustat/CRSP	2
OTC trading	2
Open-IPO	1
Final sample	985

Panel B: Number of IPOs by year

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
N of IPOs	103	101	117	16	32	59	52	53	78	110	62	52	69	81

Table 2 Summary statistics

The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. *Underpricing* and *Offer price revision* are winsorized at the 1st and 99th percentiles.

	Mean	Median	St dev
Underpricing	0.159	0.085	0.247
Offer price revision	-0.043	0.000	0.173
Dollar wealth	9.330	15.667	8.978
Family	0.319	0.000	0.466
Non-family insider	0.110	0.000	0.313
Outsider	0.090	0.000	0.287
VC	0.583	1.000	0.493
Non-VC	0.320	0.000	0.467
Firm size	5.116	4.933	1.268
Firm age	2.293	2.197	0.797
Tech dummy	0.359	0.000	0.480
Underwriter reputation	8.014	9.001	1.625

Table 3 Ownership structure of US initial public offerings

Numbers are ownership of the largest individual blockholder; numbers in parentheses are the ownership of the largest corporate blockholder; numbers in [] are the number of observations. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix.

Largest block	Full		No corporate		VC		Non-VC	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Full			0.398 (0) [96]	0.352 (0) [96]	0.068 (0.238) [574]	0 (0.196) [574]	0.096 (0.278) [315]	0.054 (0.210) [315]
No individual	0 (0.277) [474]	0 (0.209) [474]	0 (0) [9]	0 (0) [9]	0 (0.245) [316]	0 (0.191) [316]	0 (0.360) [149]	0 (0.313) [149]
Family	0.231 (0.170) [314]	0.147 (0.160) [314]	0.447 (0) [62]	0.415 (0) [62]	0.164 (0.223) [155]	0.115 (0.201) [155]	0.199 (0.194) [97]	0.137 (0.148) [97]
Non-Family	0.175 (0.231) [108]	0.100 (0.190) [108]	0.566 (0) [7]	0.488 (0) [7]	0.133 (0.264) [57]	0.084 (0.212) [57]	0.169 (0.225) [44]	0.115 (0.174) [44]
Outsider	0.177 (0.164) [89]	0.115 (0.140) [89]	0.362 (0) [18]	0.329 (0) [18]	0.129 (0.208) [46]	0.095 (0.175) [46]	0.132 (0.202) [25]	0.109 (0.184) [25]

Table 4 Univariate tests of IPO underpricing by the type of blockholders

The mean (median) of IPO underpricing, defined as the percentage change from the offer price to the market price at the end of the stock's first trading day, and [number of observations] for the sample and each subsample are presented below. Underpricing is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. The results of t-tests of differences in means and nonparametric Wilcoxon signed rank tests of differences in medians are reported. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Full	No corporate	VC	Non-VC	VC less No corp	Non-VC less No corp
Full	0.159 (0.085) [985]	0.150 (0.082) [96]	0.171 (0.102) [574]	0.138 (0.068) [315]	0.021 (0.020)	-0.011 (-0.014)
No individual	0.126 (0.055) [474]	0.137 (0.107) [9]	0.126 (0.046) [316]	0.125 (0.061) [149]	-0.011 (-0.061)	-0.012 (-0.046)
Family	0.196 (0.150) [314]	0.138 (0.065) [62]	0.230 (0.193) [155]	0.179 (0.079) [97]	0.092** (0.128)***	0.041 (0.014)
Non-family insider	0.154 (0.126) [108]	0.283 (0.408) [7]	0.185 (0.172) [57]	0.095 (0.050) [44]	-0.098 (-0.235)	-0.188** (-0.358)*
Outsider	0.205 (0.135) [89]	0.144 (0.069) [18]	0.266 (0.171) [46]	0.137 (0.125) [25]	0.122 (0.102)*	-0.007 (0.056)
Family less No individual	0.070*** (0.095)***	0.001 (-0.041)	0.104*** (0.147)***	0.054* (0.018)		
Non-family less No individual	0.029 (0.070)**	0.146 (0.301)	0.059* (0.127)***	-0.030 (-0.011)		
Outsider less No individual	0.079*** (0.080)***	0.007 (-0.037)	0.140*** (0.125)***	0.012 (0.064)		

Table 5 Univariate tests of the offer price revision during the roadshow by the types of blockholders

The mean (median) of offer price revision, defined as the percentage change in the final offer price from the middle of the initial filing range, and [number of observations] for the sample and each subsample are presented below. Offer price revision is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. The results of t-tests of differences in means and nonparametric Wilcoxon signed rank tests of differences in medians are reported. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Full	No corporate	VC	Non-VC	VC less No corp	Non-VC less No corp
Full	-0.043*** (0.000)*** [985]	-0.037** (0.000) [96]	-0.043*** (0.000)*** [574]	-0.044*** (0.000)*** [315]	-0.006 (0.000)	-0.007 (0.000)
No individual	-0.072*** (0.000)*** [474]	-0.005 (0.000) [9]	-0.082*** (-0.025)*** [316]	-0.055*** (0.000)*** [149]	-0.076 (-0.025)	-0.049 (0.000)
Family	-0.013 (0.000) [314]	-0.052** (-0.057)* [62]	0.010 (0.056)* [155]	-0.024* (0.000) [97]	0.062** (0.113)**	0.027 (0.057)
Non-family insider	-0.025* (0.000) [108]	-0.018 (0.067) [7]	0.003 (0.000) [57]	-0.063*** (-0.065)*** [44]	0.021 (-0.067)	-0.044 (-0.131)
Outsider	-0.019 (0.000) [89]	-0.010 (0.000) [18]	-0.018 (0.000) [46]	-0.027 (0.000) [25]	-0.008 (0.000)	-0.017 (0.000)
Family less No individual	0.059*** (0.000)***	-0.046 (-0.057)	0.092*** (0.080)***	0.030 (0.000)		
Non-family less No individual	0.047** (0.000)*	-0.013 (0.067)	0.085*** (0.025)***	-0.008 (-0.065)		
Outsider less No individual	0.053** (0.000)**	-0.005 (0.000)	0.064** (0.025)**	0.027 (0.000)		

Table 6 IPO underpricing by the type of corporate blockholder

The dependent variable is IPO underpricing, defined as the percentage change from the offer price to the market price at the end of the stock's first trading day. Column 1, 2, and 3 present the results for the subsample with no corporate blockholder, VC is the largest corporate blockholder, and the largest corporate blockholder is a non-VC, respectively. Family is a dummy variable that takes on a value of one if the largest individual blockholder is the founding family, and zero otherwise. Non-family insider (outsider) is a dummy variable that takes on a value of one if the largest individual blockholder is (outsider) a non-family insider, and zero otherwise. Underpricing is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	No corporate	VC	Non-VC
Family	0.099 (1.38)	0.079 (3.07)***	0.053 (1.56)
Non-family insider	0.227 (2.25)**	0.064 (1.92)*	-0.025 (0.66)
Outsider	0.061 (0.67)	0.130 (3.09)***	0.027 (0.64)
Firm size	-0.041 (1.63)	0.014 (1.54)	-0.022 (2.23)**
Firm age	0.037 (1.48)	-0.022 (1.56)	0.022 (1.79)*
Tech dummy	0.103 (1.60)	0.084 (3.81)***	0.020 (0.62)
Underwriter reputation	0.043 (2.35)**	0.015 (1.40)	0.033 (4.00)***
Constant	-0.068 (0.66)	-0.151 (1.67)*	-0.117 (1.57)
R^2	0.30	0.14	0.16
N	96	574	315

Table 7 IPO underpricing by the type of individual blockholder

The dependent variable is IPO underpricing, defined as the percentage change from the offer price to the market price at the end of the stock's first trading day. Column 1, 2, 3, and 4 present the results for the subsample with no individual blockholder, family as the largest individual blockholder, non-family insider as the largest individual blockholder and outsider as the largest individual blockholder, respectively. VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a venture capitalist, and zero otherwise. Non-VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a non-venture capitalist, and zero otherwise. Underpricing is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	No individual	Family	Non-family	Outsider
VC	-0.035 (0.56)	-0.013 (0.31)	-0.108 (1.23)	0.011 (0.12)
Non-VC	-0.022 (0.33)	0.003 (0.08)	-0.205 (2.67)***	-0.034 (0.38)
Firm size	-0.003 (0.33)	-0.009 (0.66)	0.017 (0.58)	-0.008 (0.36)
Firm age	0.010 (0.94)	0.009 (0.49)	0.030 (1.17)	0.015 (0.33)
Tech dummy	0.052 (2.18)**	0.092 (2.70)***	0.051 (1.11)	0.040 (0.68)
Underwriter reputation	0.017 (1.94)*	0.035 (3.36)***	0.004 (0.20)	0.039 (2.44)**
Constant	-0.075 (0.84)	-0.103 (1.17)	0.048 (0.35)	-0.111 (0.78)
R^2	0.09	0.17	0.27	0.21
N	474	314	108	89

Table 8 Offer price revision by the type of corporate blockholder

The dependent variable is offer price revision, defined as the percentage change in the final offer price from the initial filing range. Column 1, 2, and 3 present the results for the subsample with no corporate blockholder, VC is the largest corporate blockholder, and the largest corporate blockholder is a non-VC, respectively. Family is a dummy variable that takes on a value of one if the largest individual blockholder is the founding family, and zero otherwise. Non-family insider (outsider) is a dummy variable that takes on a value of one if the largest individual blockholder is (outsider) a non-family insider, and zero otherwise. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. Offer price revision is winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	No corporate	VC	Non-VC
Family	0.031 (0.58)	0.067 (4.13)***	0.049 (2.37)**
Non-family insider	0.081 (0.96)	0.079 (3.75)***	0.026 (1.00)
Outsider	0.082 (1.29)	0.050 (1.92)*	0.049 (1.89)*
Firm size	0.014 (0.80)	0.035 (4.91)***	0.017 (2.19)**
Firm age	0.009 (0.48)	-0.024 (2.26)**	-0.012 (1.39)
Tech dummy	0.054 (1.31)	0.075 (5.04)***	0.026 (1.33)
Underwriter reputation	0.018 (1.65)	0.017 (2.16)**	0.010 (1.87)*
Constant	-0.206 (1.97)*	-0.413 (5.59)***	-0.192 (3.96)***
R^2	0.30	0.21	0.14
N	96	574	315

Table 9 Offer price revision by the type of individual blockholder

The dependent variable is offer price revision, defined as the percentage change in the final offer price from the initial filing range. Column 1, 2, 3, and 4 present the results for the subsample with no individual blockholder, family as the largest individual blockholder, non-family insider as the largest individual blockholder and outsider as the largest individual blockholder, respectively. VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a venture capitalist, and zero otherwise. Non-VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a non-venture capitalist, and zero otherwise. Offer price revision is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	No individual	Family	Non-family	Outsider
VC	-0.073 (1.14)	0.008 (0.31)	0.012 (0.14)	-0.081 (1.38)
Non-VC	-0.054 (0.84)	0.007 (0.26)	-0.040 (0.51)	-0.050 (0.89)
Firm size	0.030 (3.80)***	0.027 (3.29)***	0.002 (0.11)	0.005 (0.37)
Firm age	-0.011 (1.21)	-0.018 (1.62)	-0.003 (0.16)	-0.029 (1.49)
Tech dummy	0.072 (4.02)***	0.060 (3.22)***	0.023 (0.80)	0.031 (0.93)
Underwriter reputation	0.011 (1.41)	0.009 (1.54)	0.030 (2.28)**	0.020 (1.54)
Constant	-0.255 (2.83)***	-0.159 (2.90)***	-0.232 (1.67)*	-0.103 (1.25)
R^2	0.16	0.18	0.27	0.25
N	474	314	108	89

Table 10 Offer price revision by the type of corporate blockholder, controlling for the dollar wealth of the largest individual blockholder

The dependent variable is offer price revision, defined as the percentage change in the final offer price from the initial filing range. Column 1, 2, and 3 present the results for the subsample with no corporate blockholder, VC as the largest corporate blockholder, and the largest corporate blockholder is a non-VC, respectively. Family is a dummy variable that takes on a value of one if the largest individual blockholder is the founding family, and zero otherwise. Non-family insider (outsider) is a dummy variable that takes on a value of one if the largest individual blockholder is (outsider) a non-family insider, and zero otherwise. Offer price revision is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	No corporate	VC	Non-VC
Family	-0.267 (0.64)	-0.120 (1.15)	0.041 (0.83)
Non-family insider	-0.959 (0.89)	-0.102 (0.52)	-0.100 (0.40)
Outsider	-0.157 (0.27)	0.130 (1.89)*	-0.101 (0.56)
Firm size	0.004 (0.18)	0.032 (4.41)***	0.016 (2.04)**
Firm age	0.009 (0.44)	-0.022 (2.06)**	-0.011 (1.32)
Tech dummy	0.056 (1.30)	0.074 (4.96)***	0.026 (1.32)
Underwriter reputation	0.014 (1.13)	0.017 (2.12)**	0.009 (1.69)*
Dollar wealth	0.015 (0.71)	0.010 (1.87)*	0.000 (0.15)
Dollar wealth*non-family	0.040 (0.72)	-0.000 (0.01)	0.007 (0.47)
Dollar wealth*outsider	-0.003 (0.11)	-0.015 (2.19)**	0.008 (0.82)
Constant	-0.109 (0.70)	-0.400 (5.32)***	-0.183 (3.50)***
R^2	0.31	0.21	0.14
N	96	574	315

Table 11 Offer price revision by the type of individual blockholder, controlling for the dollar wealth of the largest individual blockholder

The dependent variable is offer price revision, defined as the percentage change in the final offer price from the initial filing range. Column 1, 2, 3, and 4 present the results for the subsample with no individual blockholder, family as the largest individual blockholder, non-family insider as the largest individual blockholder and outsider as the largest individual blockholder, respectively. VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a venture capitalist, and zero otherwise. Non-VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a non-venture capitalist, and zero otherwise. Offer price revision is winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	No individual	Family	Non-family	Outsider
VC	-0.073 (1.14)	-0.210 (0.72)	-0.861 (0.77)	-0.117 (0.20)
Non-VC	-0.054 (0.84)	0.160 (0.55)	-0.709 (0.61)	-0.074 (0.18)
Firm size	0.030 (3.80)***	0.009 (0.72)	-0.010 (0.53)	0.003 (0.18)
Firm age	-0.011 (1.21)	-0.016 (1.44)	0.003 (0.17)	-0.029 (1.26)
Tech dummy	0.072 (4.02)***	0.057 (3.02)***	0.012 (0.41)	0.028 (0.80)
Underwriter reputation	0.011 (1.41)	0.009 (1.66)*	0.033 (2.44)**	0.019 (1.20)
Dollar wealth		0.019 (1.21)	-0.023 (0.41)	0.002 (0.05)
Dollar wealth*VC		0.013 (0.81)	0.050 (0.85)	0.002 (0.07)
Dollar wealth*non-VC		-0.008 (0.50)	0.038 (0.61)	0.002 (0.07)
Constant	-0.255 (2.83)***	-0.437 (1.60)	0.226 (0.21)	-0.118 (0.25)
R ²	0.16	0.20	0.29	0.25
N	474	314	108	89

Table 12 IPO underpricing by the type of corporate blockholder, controlling for the dollar wealth of the largest individual blockholder

The dependent variable is IPO underpricing, defined as the percentage change from the offer price to the market price at the end of the stock's first trading day. Column 1, 2, and 3 present the results for the subsample with no corporate blockholder, VC is the largest corporate blockholder, and the largest corporate blockholder is a non-VC, respectively. Family is a dummy variable that takes on a value of one if the largest individual blockholder is the founding family, and zero otherwise. Non-family insider (outsider) is a dummy variable that takes on a value of one if the largest individual blockholder is (outsider) a non-family insider, and zero otherwise. Underpricing and offer price revision are winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	No corporate	VC	Non-VC
Family	0.291 (0.60)	-0.360 (2.14)**	0.153 (1.91)*
Non-family insider	0.401 (0.81)	-0.375 (2.26)**	0.089 (1.09)
Outsider	0.231 (0.48)	-0.285 (1.76)*	0.122 (1.49)
Firm size	-0.041 (1.38)	-0.014 (1.48)	-0.033 (3.56)***
Firm age	0.033 (1.37)	-0.006 (0.44)	0.031 (2.84)***
Tech dummy	0.078 (1.31)	0.036 (1.76)*	-0.000 (0.01)
Underwriter reputation	0.037 (2.11)**	0.003 (0.35)	0.028 (3.86)***
Offer price revision	0.434 (3.11)***	0.592 (10.54)***	0.737 (9.07)***
Dollar wealth	-0.011 (0.42)	0.022 (2.38)**	-0.008 (1.73)*
Constant	-0.035 (0.20)	0.141 (1.54)	0.007 (0.10)
R ²	0.38	0.30	0.35
N	96	574	315

Table 13 IPO underpricing by the type of corporate blockholder, controlling for the dollar wealth of the largest individual blockholder

The dependent variable is IPO underpricing, defined as the percentage change from the offer price to the market price at the end of the stock's first trading day. Column 1, 2, 3, and 4 present the results for the subsample with no individual blockholder, family as the largest individual blockholder, non-family insider as the largest individual blockholder and outsider as the largest individual blockholder, respectively. VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a venture capitalist, and zero otherwise. Non-VC is a dummy variable that takes on a value of one if the largest corporate blockholder is a non-venture capitalist, and zero otherwise. Underpricing and offer price revision are winsorized at the 1st and 99th percentiles. The sample consists of 985 initial public offerings between 2005 and 2018. All variables are as described in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	No individual	Family	Non-family	Outsider
VC	0.007 (0.12)	0.015 (0.36)	-0.115 (1.41)	0.092 (0.95)
Non-VC	0.014 (0.24)	0.023 (0.60)	-0.176 (2.40)**	0.018 (0.21)
Firm size	-0.021 (2.88)***	-0.062 (3.94)***	0.016 (0.54)	-0.021 (0.94)
Firm age	0.016 (1.78)*	0.023 (1.33)	0.032 (1.57)	0.036 (0.82)
Tech dummy	0.009 (0.44)	0.048 (1.54)	0.035 (0.81)	0.009 (0.16)
Underwriter reputation	0.011 (1.35)	0.027 (2.80)***	-0.017 (0.94)	0.022 (1.39)
Offer price revision	0.578 (10.20)***	0.662 (7.79)***	0.695 (5.44)***	0.594 (2.83)***
Dollar wealth	-0.007 (1.36)	0.047 (3.15)***	0.001 (0.03)	0.016 (1.55)
Constant	0.070 (0.84)	-0.676 (3.00)***	0.201 (0.66)	-0.257 (1.48)
R^2	0.28	0.34	0.44	0.33
N	474	314	108	89