

IPO underpricing and outside blockholdings

Laura Casares Field, Dennis P. Sheehan*

Finance Department, Smeal College of Business, Penn State University, State College, PA 16802, USA

Abstract

Recent papers have proposed a link between underpricing of an initial public offering (IPO) and the resulting ownership structure of the firm. Brennan and Franks [J. Financ. Econ. 45 (1997) 391] hypothesize that IPO managers want to discourage new blockholdings to reduce the likelihood of being monitored. They show that underpricing encourages oversubscription, allowing discrimination against large blockholders. Conversely, Stoughton and Zechner [J. Financ. Econ. 49 (1998) 45] hypothesize that managers underprice to encourage investment by blockholders who provide monitoring services. We find that the link between underpricing and ownership structure is weak. Most firms have outside blocks in place at the IPO and retain them afterwards. In terms of acquiring new blockholders, there is no difference between firms that underprice and those that do not.

© 2003 Elsevier B.V. All rights reserved.

JEL classification: G30; G32; G34

Keywords: Initial public offerings; Underpricing; Blockholdings

1. Introduction

When firms go public, the original owners face a choice of what fraction of the firm to sell. They also have some control over to whom the shares will be sold. Both of these decisions will have an effect on the value of the firm. Starting with [Jensen and Meckling \(1976\)](#), it has long been recognized that agency problems potentially arise when the original owner sells a fraction of the firm to outsiders.

A firm doing an initial public offering (IPO) is arguably in the best position to determine the ownership structure of the firm. If the original owners feel that a particular ownership structure is important, at the time of the IPO they can influence the ownership structure in a way that maximizes value for them.

* Corresponding author. Tel.: +1-814-863-0486.

E-mail addresses: lcf4@psu.edu (L.C. Field), dps6@psu.edu (D.P. Sheehan).

Recently, several theories have proposed that the pricing of the IPO could be a crucial determinant of the eventual ownership structure of the firm. Brennan and Franks (1997) argue that the firm's management values control; to retain control, management underprices new shares to create excess demand. This excess demand allows them to ration the shares, allocating them to many small investors and thereby increasing the cost for new blockholders to accumulate large stakes. As a consequence, monitoring of the firm is reduced.

In contrast to this reduced monitoring hypothesis, Stoughton and Zechner (1998) provide a model in which IPO firms underprice their shares to increase the potential for monitoring. They argue that managers want large block shareholders in order to provide assurances to the market that managers are maximizing firm value. To induce these large block shareholders to bear the costs of monitoring, shares are underpriced at the time of the IPO.

In this paper, we test these hypotheses. We find that underpricing has little or no discernible effect on outside blockholdings. If the effect is there, it appears to be negative, which is supportive of Brennan and Franks, but the effect is neither reliable nor large. At least in the United States, entrepreneurs should look for other avenues to influence the likelihood of outside blockholders. The more important determinants of the presence of blockholders are (i) the fraction of the firm sold at the IPO, (ii) the presence of outside blockholders before the IPO, (iii) the presence of venture capitalists before the IPO, and (iv) the size of the firm.

The next section of the paper discusses the two theories of underpricing and describes our tests of those theories. Section 3 reviews the sample selection process and Section 4 of the paper presents our results. We conclude in Section 5.

2. Hypotheses and tests

Firms that go public face many choices. Of these choices, the pricing decision has received the most attention.¹ Clearly, there are other important decisions to be made, including the ownership structure of the firm. Several recent papers have proposed a novel link between these two decision variables. Brennan and Franks (1997) and Stoughton and Zechner (1998) each propose that when the initial owners of the firm decide to go public, they consider the effect that the price will have on the post-IPO ownership of the firm. In particular, the two papers propose a link between blockholder ownership and whether the firm underprices the stock.

Brennan and Franks argue that managers underprice their firms at the IPO because they value the private benefits of control and, therefore, want to discourage acquisition by blockholders who would monitor them. In the Brennan and Franks model, underpricing induces oversubscription, which allows the firm to discriminate against large blockholders in the allocation of shares. Their principal hypothesis is that "the greater the degree of underpricing, the smaller the blockholdings of outsiders."

¹ For a review of this literature, see Ritter (1998).

Brennan and Franks provide evidence in the U.K. IPO market that underpricing does induce oversubscription and the resulting discrimination in the allocation of shares limits the ability of new shareholders to purchase large blocks. Further, they find that firms with greater underpricing at the IPO have fewer outside blockholdings even years after the IPO. Their sample is small, however, with only 43 U.K. firms to test their hypotheses. Evidence from the U.S. that supports their theory can be found in a recent paper by [Smart and Zutter \(in press\)](#). The authors analyze firms that go public with dual share classes. The dual class structure is often used to keep control in the hands of the founders or controlling family by doing the IPO with shares that have restricted voting rights. With no worries about retaining control, the firms have no need to underprice according to the Brennan and Franks theory. Smart and Zutter find that dual class firms are indeed less underpriced than other IPOs.

[Stoughton and Zechner \(1998\)](#) argue exactly the opposite point from Brennan and Franks, claiming that managers desire large blockholders precisely because of the monitoring services they provide. Because the interests of shareholders and managers are not perfectly congruent, shareholders are suspicious of managers taking their companies public. To overcome these concerns, managers at IPO firms underprice their shares to encourage a large shareholder to invest in the firm and provide monitoring services. The underpricing is necessary to induce large shareholders to invest the resources necessary to produce information to monitor the firm.

Clearly, these two theories provide dramatically different predictions about the existence of outside blockholdings in an IPO firm. Both, however, do assert a link between the pricing of the IPO and the extent of outside blockholdings in the firm. To test these theories, we first focus on the magnitude of blockholdings at the IPO and one year after the IPO. Next, we investigate whether new blockholdings are acquired in the year after the IPO.

For both theories, the existence of a large block shareholder at the IPO should matter. For Brennan and Franks, an existing outside blockholder means that avoiding outside monitoring is already difficult or impossible unless the outside blockholder is selling out at the IPO. If the block will remain in place, the benefits from underpricing to avoid further block formation are at least reduced and perhaps eliminated. For Stoughton and Zechner, the existence of a block similarly reduces the incentive to underprice. If there is already a monitoring blockholder in place, there may be no need to attract new blockholders to the firm. Thus, our first test simply asks whether there is any association between the decision to underprice and the existence of a blockholder when the firm goes public.

Similarly, both theories suggest that the presence of blockholders following the IPO should be influenced by whether the firm underprices when it goes public. Again, however, these predictions will be opposed. Under the Brennan and Franks hypothesis, firms that underprice should have a smaller tendency to have blocks after the IPO; under Stoughton and Zechner, that tendency should be larger. We examine the first proxy statement following the IPO to determine whether blockholders are present and ask whether this presence is associated with the decision to underprice.

Taking these tests one step further, we ask whether the number and magnitude of blockholdings are associated with underpricing. It could be the case that the existence of blockholders does not vary across firms by whether they underpriced. But perhaps the

number of blockholders in the firm or the magnitude of the percentage owned by blockholders could vary systematically with whether the offer was underpriced.

Finally, we refine the above tests to focus on the acquisition of new blockholders. The theories proposed are not specific about whether the underpricing is designed to affect the behavior of current blockholders or potential new blockholders. If it is the latter, then testing whether blockholders are present versus whether there was underpricing may miss the point. Underpricing could be designed to either encourage or discourage new blockholders from buying into the firm, depending on whether Brennan and Franks or Stoughton and Zechner are correct. We therefore analyze whether the existence of new blockholders buying into the firm after the IPO is related to the magnitude of initial returns.

The tests just described are all univariate tests. It is quite likely, however, that common characteristics affect both block ownership and underpricing. We therefore estimate several multiple regression models to control for firm and offer characteristics. Unfortunately, we have no well-developed theory of what determines ownership of the firm. Even less do we understand the determinants of outside block ownership. Despite this lack of a complete theory of ownership, previous researchers have proposed and estimated models of ownership. We follow the lead of Demsetz and Lehn (1985) and Himmelberg et al. (1999) and regress ownership on firm size, volatility of returns, leverage, operating expenses, tangible assets, and industry dummy variables. To these variables, we add underpricing to see if the association between ownership and underpricing holds up after controlling for other factors.

3. Data and descriptive statistics

The data are taken from firms that went public in the years 1988–1992. A total of 1072 firms went public in this time period that met the following criteria: domestic firm, offer price larger than US\$1.00, and not a REIT or closed-end fund. We eliminate 56 firms because their dual class shares make ownership percentages difficult to calculate. An additional 53 financial institutions are eliminated; nearly all of these are mutual to stock conversions which makes calculating ownership before the IPO impossible. Ten firms are eliminated because they did not survive to issue a proxy statement after the IPO. The final sample is 953 firms.

Information on stock prices and returns is gathered from the Center for Research in Security Prices (CRSP) daily master files. We use the first closing price on CRSP to measure underpricing as the percentage change from the offer price to the close [(offer price – closing price)/closing price]. For 98% of the firms, the first closing price is either the claimed issue day or the following day. Accounting data come from Compustat.

To test the two models, ideally we would like to know what ownership is immediately before going public and then immediately after going public. With respect to the former, we can use the prospectus to measure the holdings of the pre-IPO shareholders.² With

² We ignore the overallocation option when calculating ownership percentages at the IPO.

respect to the latter, it is difficult if not impossible to determine outside block ownership immediately after the IPO. The best we can do is to use the first proxy statement following the IPO. For most firms, the first proxy is in the year following the IPO; for 13% of the firms, the first proxy is missing so we use the next available proxy statement.³

The emphasis in Brennan and Franks and Stoughton and Zechner is on outside blockholders, that is, entities not associated with the firm who own 5% or more of the firm's stock. We follow this emphasis and concentrate on what we call "corporate" blockholders who arguably are in the best position to monitor management. Corporate blockholders include venture capitalists, private investment companies, LBO sponsors, carve-out parents, insurance companies, pension funds, banks, suppliers, and any other business entities, but exclude individuals and trusts held on behalf of individuals. We follow each corporate blockholder through time, keeping track of changes in ownership for each specific corporate investor.

By following corporate blockholders from the IPO through to the first proxy, we can see which blockholders leave and if new blockholders enter after the IPO. Working with proxy data does not allow us, however, to know exactly when a new blockholder comes into the firm. We can only observe if a particular corporate blockholder is present when the firm goes public and then observe whether that blockholder is still listed at the time of the first proxy or whether any new blockholders are now listed. It is also possible that we miss some blockholders this way; they would be ones who bought after the IPO and sold before the first proxy statement. Given the focus on monitoring, however, blockholders who disappear within a year are not relevant.

Although we have the most complete data on corporate blockholders, we also measure ownership in a variety of other ways. We collect data on the number of outside blockholders, which includes both individual and nonindividual outside blockholders, and the holdings of such blockholders. We also determine when any blockholder has a seat on the board of directors, on the presumption that such blockholders are in the best position to monitor management. In several places, we follow Brennan and Franks and analyze the ratio of blockholdings to total outside ownership, which is a crude measure of ownership concentration.

Table 1 presents descriptive statistics for our sample of firms. The median firm is selling US\$23 million worth of stock at its IPO and will have a market value of equity immediately after the offering of US\$81 million. The fraction of shares offered in the IPO is about 32–33% of the total shares outstanding after the issue. Most of that consists of new shares sold by the firm; a much smaller fraction is shares sold by existing shareholders. The initial return averages 11%, with a median of 6%. These figures are consistent with those reported by Ritter and Welch (2002) for the early 1990s. As reported by Ritter and Welch, average IPO underpricing rose from 7.4% in the 1980s, to 11.2% in the early 1990s, to 18.1% in the mid-1990s, until it hit astronomical levels averaging 65.0% in 1999 and 2000, then fell back to 14.0% in 2001. For our sample, about 72% of

³ Although the incidence of new blockholdings post-IPO is lower when we omit firms for which the first proxy statement is unavailable (and for which we've used the proxy statement from the second post-IPO year), the main results of the paper are not materially different when these firms are omitted from the analysis.

Table 1

Descriptive statistics for a sample of 953 initial public offerings, 1988–1992

	Minimum	Median	Mean	Maximum
Market value of equity (millions of dollars)	US\$6	US\$81	US\$165	US\$3825
Value of IPO (millions of dollars)	US\$2	US\$23	US\$46	US\$1200
Fraction of shares offered	0.05	0.32	0.33	1.00
Fraction of shares offered by firm	0.0	0.26	0.27	1.00
Fraction of shares offered by insiders	0.0	0.0	0.05	0.98
Offer price	US\$1.00	US\$11.00	US\$11.07	US\$30.00
First closing price	US\$1.08	US\$11.50	US\$12.29	US\$32.38
Initial return	– 17%	6%	11%	106%

Market value of equity is shares outstanding times closing price on the first day of trading; value of IPO is number of shares sold in the IPO times offer price; fraction of shares offered is relative to shares outstanding after the offer; initial return is the return from the offer price to the closing price on the first day of trading.

the firms are underpriced, 11% are overpriced, and the remainder are priced to equal the first closing price.

4. Results

4.1. Blockholdings at the IPO and one year later

Both theories we consider are concerned with the concentration of ownership. In particular, it is the existence of blockholders that motivates both Brennan and Franks and Stoughton and Zechner. Blockholders have the incentive and perhaps the information necessary for them to monitor management, which is perceived as a cost in the Brennan and Franks case and a benefit in the Stoughton and Zechner case. Because the basic facts about blockholders in IPO firms are unknown, we start by providing descriptive statistics on the number and extent of blockholdings.

In Table 2, we consider four different measures of blockholdings. The first is outside blocks, which is defined as the ownership of anyone not employed by the firm who holds 5% or more of the stock; the second category is corporate blockholders, which is composed of all blockholders who are not individuals. The next two categories replicate the first two but add the condition that the blockholder must also be a member of the board of directors.

As Table 2 shows, having blockholders is the norm for IPO firms. When firms go public, 83% of them have some kind of outside blockholder, and 71% of them have a corporate blockholder. Thus, more than two-thirds of the firms have a blockholder such as an outside firm or a venture capitalist who is likely to have the ability and the interest in monitoring the management of the newly public firm. Indeed, if we look at representatives on the board, almost three-quarters of the firms have an outside blockholder who has a fiduciary duty to monitor management.

If we look one year after the IPO, we find that the extent of blockholdings does not change significantly. It is still the case that 83% of the firms have an outside blockholder. The percentage of firms with a corporate blockholder increases from 71% to 75%. The

Table 2

Number and percentage of firms with blockholders for a sample of 953 initial public offerings, 1988–1992

	All firms		Firms that underprice	
	Number	Percent (%)	Number	Percent (%)
Sample size—total	953	100	683	72
<i>At the IPO</i>				
Has an outside blockholder	789	83	566	59
Has a corporate blockholder	673	71	472	50
Has an outside blockholder on Board	704	74	501	53
Has a corporate blockholder on the Board	615	65	431	45
<i>Following the IPO</i>				
Has an outside blockholder	791	83	565	59
Has a corporate blockholder	711	75	498	52
Has an outside blockholder on Board	631	66	439	46
Has a corporate blockholder on the Board	537	56	365	38

An outside blockholder is any non-employee shareholder who owns 5% or more of the stock; a corporate blockholder is any nonindividual outside shareholder who owns 5% or more of the stock. There are 683 underpriced firms and 270 firms priced at or above the market.

composition of the blockholders changes, however, with blockholders who have board seats being replaced by blockholders without board seats. The percentage of outside blockholders with a board seat falls from about 74% to about 66%; the percentage of corporate blockholders with board seats falls by a similar amount.

In a sense, these figures reveal that concerns about the frequency of blockholdings may be misplaced. If managers are worried about keeping blockholders out, most of them have already lost that battle before the IPO; and if managers are interested in attracting blockholders, most of them have already won that battle. This is not the whole story of course, because blockholders differ in their interest and ability to monitor management and because we might want to probe more deeply the firms that do not have blockholders. Nonetheless, the raw data suggest that the existence of blockholders in newly public firms is so common as to be a nonissue.

The prevalence of blockholders does not prove that firms eschew underpricing as a method of influencing ownership. To examine whether such a link exists, we start by computing some conditional probabilities. If managers want to either discourage or encourage blockholders with underpricing, the prior existence of a blockholder ought to affect that proclivity. Thus, under either the Brennan and Franks or the Stoughton and Zechner models, the probability of underpricing ought to be smaller if there is already a block in place. The numbers in Table 2 allow us to calculate the following unconditional and conditional probabilities:

Pr(underpricing)	0.72
Pr(underpricing an outside blockholder exists at IPO)	0.72
Pr(underpricing a corporate blockholder exists at IPO)	0.70
Pr(underpricing an outside blockholder on the board exists at IPO)	0.71
Pr(underpricing a corporate blockholder on the board exists at IPO)	0.70

The conditional probabilities are almost equal to the unconditional probability, indicating that the two characteristics are independent. A chi-square test of this hypothesis fails to reject the null hypothesis of independence in all cases.⁴

One year after the IPO, we can calculate the reverse conditional probability. That is, if either theory applies, we ought to find that the existence of blockholders one year after the IPO is affected by whether they underpriced. This is admittedly a crude test because we are not measuring the number of blockholders or the magnitude of their holdings, but as a place to start, it seems reasonable.

Once again, the numbers in Table 2 allow us to calculate the following unconditional and conditional probabilities one year after the IPO:

Pr(outside blockholder)	0.83
Pr(outside blockholder underpricing)	0.83
Pr(corporate blockholder)	0.75
Pr(corporate blockholder underpricing)	0.73
Pr(outside blockholder on the board)	0.66
Pr(outside blockholder on the board underpricing)	0.64
Pr(corporate blockholder on the board)	0.56
Pr(corporate blockholder on the board underpricing)	0.53

For all except the first category, there is a difference between the unconditional and the conditional probabilities. A test of association between the two characteristics shows that they are not independent at normal significance levels (p -values are less than 0.05). Underpricing is associated with a smaller incidence of blockholdings one year after the IPO, a finding that is consistent with Brennan and Franks. The magnitude of the effect appears small, however, and given that underpricing can be costly, the payoff looks trivial.

Tests of association are weak because they ignore the magnitudes involved. It's possible that either the number of blockholders or their percentage holdings change dramatically without affecting the frequency of their existence. To address this concern, we calculate the average number of blockholders and their average percentage ownership in Tables 3A and 3B, classifying firms by whether they underprice or not.

In Table 3A, we consider the state of affairs at the IPO, with the presumption that firms which underprice ought to have a different ownership structure than those that do not. As the table demonstrates, the number of the various kinds of blockholders is negligibly different across the two kinds of firms, while the percentage ownership numbers are generally smaller for firms that underprice. Using a standard t -test for the hypothesis that

⁴ Because the magnitude of underpricing may be important, we replicate our analyses for firms with underpricing of at least 5%. For Table 2, we find that the magnitude of blockholdings is almost identical for the 495 firms with underpricing of at least 5% as it is for the 683 firms experiencing any underpricing at all.

Table 3A

Average number of blockholders and total percentage ownership of those blockholders at the IPO, classified by whether the firm underpriced for a sample of 953 initial public offerings, 1988–1992

	Firms that underprice	Firms that price at or above market	<i>p</i> -value
<i>Outside blocks</i>			
Average number	2.0	1.8	0.15
Total percentage holdings	30%	32%	0.32
<i>Corporate blocks</i>			
Average number	1.5	1.5	0.64
Total percentage holdings	26%	30%	0.02
<i>Outside blocks with Board seats</i>			
Average number	1.3	1.2	0.26
Total percentage holdings	23%	25%	0.17
<i>Corporate blocks with Board seats</i>			
Average number	1.1	1.0	0.61
Total percentage holdings	22%	26%	0.02
Total outside ownership	75%	77%	0.35
Ratio of corporate ownership to all outside	30%	40%	0.00

An outside blockholder is any non-employee shareholder who owns 5% or more of the stock; a corporate blockholder is any nonindividual outside shareholder who owns 5% or more of the stock; outside ownership are all shares not owned by executives of the firm. There are 683 underpriced firms and 270 firms priced at or above the market.

the means are the same, we reject the hypothesis in the case of percentage holdings by corporate blockholders.⁵

Two additional measures of ownership concentration are reported in the table. The percentage of the firm owned by outside shareholders, which is calculated as one minus the percentage owned by officers, is virtually the same for firms that underprice and those that do not. The ratio of corporate blockholdings to all outside shareholdings is a measure that Brennan and Franks use to estimate ownership concentration. In line with the ownership percentages, concentration is smaller in firms that underprice. The measure of concentration for corporate blockholdings is significantly smaller.

The results in Table 3A are consistent with both Brennan and Franks and Stoughton and Zechner. If ownership and underpricing are related, we expect underpriced firms to look different than nonunderpriced firms. Once again, however, the differences are small, and, even when statistically significant, may not have much impact on managers. If firms already have one to two blockholders in place who own 25–30% of the firm, the ability of managers to escape monitoring, or their interest in encouraging even more monitoring, could easily be issues of secondary importance.

⁵ We also compare firms which underprice by at least 5% to those with no underpricing. In Table 3A, we find a significant difference in the average number of outside blocks at the IPO (2.1 versus 1.8, with a *p*-value of 0.03). There are no other significant differences in the results of this paper whether we stratify the sample by any underpricing at all, or by underpricing of at least 5%.

In Table 3B, we report the same figures but calculated a year after the IPO. If underpricing at the time of the IPO has any effect, blockholdings ought to shrink or expand depending on whether Brennan and Franks or Stoughton and Zechner are correct. Here, the results are more strongly supportive of Brennan and Franks. The differences in blockholdings between firms that underprice and those that do not underprice increases. The percentage ownership of outside blockholders decreases from 30% to 27% for firms that underprice, while it remains constant at 32% for firms that do not. Moreover, the number of blockholders remains constant (at 2.0) for firms that underprice, but increases from 1.8 to 2.1 for firms that do not. Similarly, the percentage ownership of corporate blockholders decreases from 26% to 24% for firms that underprice, but remains constant at 30% for firms that do not. The number of corporate blockholders increases from 1.5 to 1.6 for firms that underprice, while the increase for firms that do not underprice is larger, from 1.5 to 1.8. Finally, the concentration of corporate blockholdings falls from 30% to 29% for firms that underprice but rises from 40% to 41% in firms that do not underprice.

An interesting pattern emerges in Table 3B: the number of blockholders is constant or rises, but the number of blockholders with board seats falls. Either the pre-IPO blockholders surrender their seats, or they are supplemented or replaced by new blockholders who do not get board seats when they purchase a block. It is likely that some combination of both is occurring and is probably related to the presence of venture capitalists at the IPO.

Table 3B

Average number of blockholders and total percentage ownership of those blockholders following the IPO, classified by whether the firm underpriced for a sample of 953 initial public offerings, 1988–1992

	Firms that underprice	Firms that price at or above market	<i>p</i> -value
<i>Outside blocks</i>			
Average number	2.0	2.1	0.70
Total percentage holdings	27%	32%	<0.01
<i>Corporate blocks</i>			
Average number	1.6	1.8	0.11
Total percentage holdings	24%	30%	<0.01
<i>Outside blocks with Board seats</i>			
Average number	1.0	1.0	0.30
Total percentage holdings	18%	23%	<0.01
<i>Corporate blocks with Board seats</i>			
Average number	0.8	0.9	0.08
Total percentage holdings	17%	23%	<0.01
Total outside ownership	78%	79%	0.59
Ratio of corporate ownership to all outside	29%	41%	<0.01

An outside blockholder is any non-employee shareholder who owns 5% or more of the stock; a corporate blockholder is any nonindividual outside shareholder who owns 5% or more of the stock; outside ownership are all shares not owned by executives of the firm. There are 683 underpriced firms and 270 firms priced at or above the market.

As has been shown in the literature on venture-backed IPOs, venture capitalists tend to hold large blocks of shares, frequently have board seats, and they tend to sell (or distribute) shares at the end of the lockup period. Baker and Gompers (2001) show that, for venture-backed firms, almost a third of the board of directors at the time of the IPO consists of venture capitalists. Frye (2002) shows that the percentage of venture capitalists on the board of directors falls by 7% in the first two years after the IPO, and that shareholdings by venture-capitalists drop by 8% over the same period. Cao et al. (2002) examine insider sales around the unlock date and show that venture capitalists who have representation on the board of directors account for only 7% of all insiders reporting sales, yet these venture capitalists account for 30% of all reported insiders sales, in terms of dollar value sold. Thus, our findings in Tables 3A and 3B seem consistent with venture capitalists (who tend to have board seats) starting to exit after lockup expiration, and new blockholders coming in after the IPO tending not to serve on the board of directors.

4.2. New blockholders and existing blocks

In the analysis so far, we have not specifically examined whether the blockholders are new. Both Brennan and Franks and Stoughton and Zechner could be taken to imply only something about the formation of new blocks. To see whether new blockholders are different from existing ones, we examine the proxy one year after the IPO and record as a new blockholder any entity owning 5% who did not appear in the IPO prospectus.

Looking at Table 4, we can see that the formation of new blocks is a fairly common phenomenon. More than a third of the firms, 37% of them, end up with a new blockholder within a year of the IPO. Notice, however, that new blocks that also have a seat on the board

Table 4

Frequency, number, and ownership of new corporate blockholders in the year after the IPO for a sample of 953 initial public offerings, 1988–1992

Panel A: Frequency of new blockholders

	All firms		Firms that underprice	
	Number	Percent (%)	Number	Percent (%)
Has a new blockholder	354	37	253	37
Has a new blockholder with Board seat	39	4	25	4

Panel B: Number of new blockholders and percentage ownership

	Firms that underprice	Firms that price at or above market	<i>p</i> -value
New blockholders			
Average number	0.6	0.6	0.59
Percentage holdings	5.2%	5.8%	0.33

A new blockholder is someone who becomes a blockholder following the IPO but who was not there at the IPO. Panel A contains the results for the frequency of new blockholders. Panel B contains the results on the average number of new blockholders and percentage ownership of those new blockholders after the firm went public, classified by whether the firm underpriced. There are 683 underpriced firms and 270 firms priced at or above the market.

of directors are uncommon. Within a year of the IPO, only 4% of the firms in the sample get a new blockholder who has a board seat. Since total blockholder ownership is not rising over time, it appears that pre-IPO blockholders with board seats are exiting the firm after the IPO to be replaced by blockholders who are more passive. This result seems to be at odds with the Stoughton and Zechner motivation that managers want active blockholders.

For the 354 firms that get a new blockholder, the initial return at the IPO is 10.4%; for the 599 firms that do not have any new blocks, the initial return is 11.6%. The result is consistent with Brennan and Franks: more underpricing inhibits the formation of blocks following the IPO. But the difference in initial returns is not statistically large, as a standard *t*-test yields a *p*-value of 0.27. If we subdivide the firms that have new blockholders into those that receive board seats versus those that do not, we find that the initial return for the former is 9.9% and for the latter is 10.4%. This is again supportive of Brennan and Franks, but as before, the difference between these initial returns is not statistically different from zero (*p*-value = 0.85).

Although the differences in initial returns are small, we can still ask whether underpricing has any effect on block formation. Table 4 allows us to compute the conditional probability of a new block given underpricing, a figure that turns out to be 0.37, which is the same as the unconditional probability. As before, underpricing has no association with block formation, and a chi-square test of the hypothesis of independence fails to reject the null hypothesis (*p*-value of 0.93). Similar results are obtained when we look at new blocks with board seats: unconditional and conditional probabilities are the same at 4%.

If we turn our attention from association to magnitudes, the results are similar. In Table 4, the number of new blockholders and the percentage ownership of those new blockholders are given for firms that underprice versus those that do not. The number of new outside blockholders and their percentage ownership are similar across the two classes of firms: both sets of firms get less than one new blockholder who owns about 5% of the firm. Firms that underprice have the same experience with new blockholders as the firms that don't.⁶

An argument could be made that both Brennan and Franks and Stoughton and Zechner are more appropriate for firms that do not have a block in place when they go public. Managers of firms that already have blocks may have little influence over whether the current blockholders stay or leave. But underpricing at the IPO could determine whether blocks will get formed in those firms where none exists at the IPO. In Table 5, we segment the data by the prior existence of a blockholder and ask whether underpricing now has an effect.

For the firms without a block in place, the probability of acquiring a new block after the IPO is 27% (75/280). Given that the firm underpriced, the probability of acquiring a new block is 27% (58/211). The similarity in probabilities is consistent with earlier results: underpricing seems to have little or no effect. A formal test of the association between

⁶ When we omit the 13% of our sample for which the first proxy statement is unavailable (and for which we've used the proxy statement from the second post-IPO year), we find a significant difference in the accumulation of new blockholdings for firms that underprice versus those that do not. Excluding these firms, we find that 4.2% of firms that underprice get a new blockholder, versus 5.6% for firms that do not underprice (*p*-value for the difference is 0.03). Thus, excluding firms for which we have no proxy statement available for the first year, we find that the accumulation of new blocks is lower for firms that underprice, a finding consistent with the Brennan and Franks story.

Table 5

Number and percentage of firms with blockholders classified by whether a block is in place at the time of the IPO for a sample of 953 initial public offerings, 1988–1992

	All firms		Firms that underprice	
	Number	Percent (%)	Number	Percent (%)
Has a corporate block in place	673	71	472	50
Gets a new corporate blockholder	279	29	195	20
No corporate block in place	280	29	211	22
Gets a new corporate blockholder	75	8	58	6

An outside blockholder is any non-employee shareholder who owns 5% or more of the stock; a corporate blockholder is any nonindividual outside shareholder who owns 5% or more of the stock. There are 683 underpriced firms and 270 firms priced at or above the market.

underpricing and new block formation given that no block was in place fails to reject the hypothesis of independence (p -value = 0.60).

Table 5 also allows us to calculate the probability of the formation of a new block given that a block exists at the IPO. This probability, at 41%, is substantially larger than the 27% found for firms without a pre-IPO blockholder. Apparently, the existence of blocks at the IPO makes it easier to form a new block following the IPO, presumably because the pre-IPO blockholders sell their holdings during the year. Managers who want to influence the formation of blocks might be better advised to concentrate on how many pre-IPO blockholders are likely to sell.

Fig. 1 displays a breakdown of the initial returns by whether there is a corporate blockholder at the IPO and whether a new corporate block is formed following the IPO.

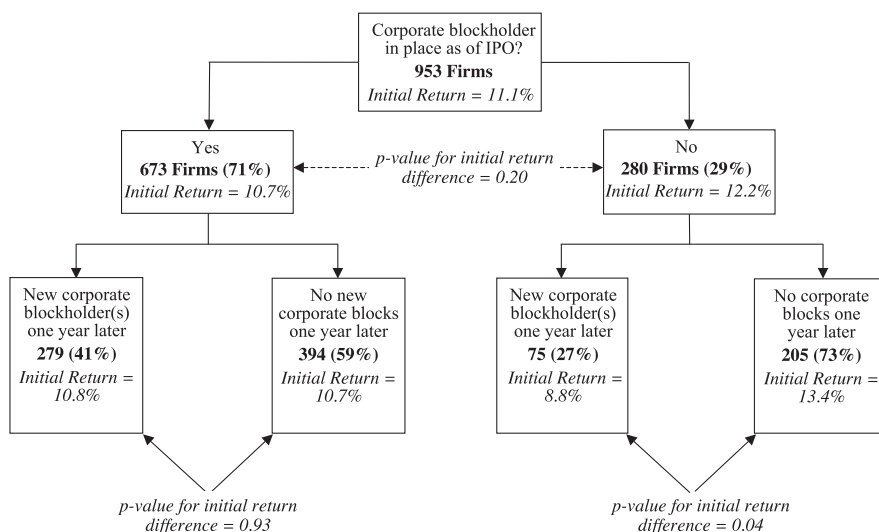


Fig. 1. Average initial return for a sample of 953 initial public offerings, 1988–1992, classified by whether a blockholder exists at the IPO and one year later. Initial return is measured from the offer price to the first closing price; p -values are for testing the hypothesis that differences in initial returns between groups are zero.

The initial returns are supportive of Brennan and Franks, but as before, the differences are not always significant. The one case where they are significantly different is for the firms that do not have a corporate blockholder at the IPO. For these firms, the average initial return is 8.8% for firms that acquire a new blockholder versus 13.4% for firms that are still without a corporate block one year after the IPO. The p -value for a test of equal means is 0.04, which is consistent with the Brennan and Franks hypothesis of a significant negative effect of underpricing on block formation.

4.3. Models for ownership and block formation

The evidence presented so far indicates that the association between underpricing and the subsequent ownership of blocks is weak at best. In this section, we extend the analysis by estimating regression models for blockholdings and the probability of gaining new blockholders following the IPO. This serves two purposes: first, to see whether the univariate results presented above are altered when additional variables are considered and second, to provide a quantitative estimate of the effect of underpricing.

There is no well-developed theory that explains the ownership structure of the firm, let alone a theory that explains outside blockholdings. We follow [Demsetz and Lehn \(1985\)](#) and [Himmelberg et al. \(1999\)](#) in specifying our regression models. Ownership is a function of firm size as measured by market value of equity, firm volatility as measured by the standard deviation of returns in the year after the IPO, and the debt ratio as measured by the ratio of total debt to assets. Additional variables that are proxies for agency costs include the ratio of property, plant, and equipment to total assets and the ratio of research and development expenditures and advertising expenses to sales. For many firms, Compustat reports a “negligible value” code, particularly for the research and development and advertising expense variables. To avoid deleting those firms, we set the value to zero and then add a dummy variable that equals one when the firm’s value is set to zero.

We include variables related to the IPO itself: dummy variables to indicate whether the firm is a reverse LBO, a carve-out, or has venture capital involvement. To control for possible differences in the incentive to sell by the first proxy statement, we include the cumulative abnormal return on the stock up to the unlock day. This is the firm’s compounded return from the IPO to the unlock date minus the return on the CRSP value weighted index over the same interval. Most unlock dates are 180 days after the IPO (for details, see [Field and Hanka, 2001](#)). Finally, we add the initial return of course, which is the variable of interest.

Brennan and Franks predict that the blockholdings of outsiders will be smaller the greater the initial return; Stoughton and Zechner predict the opposite effect. We measure outside blockholdings in two ways: first, simply as the percentage of shares held by all corporate blockholders and second, as the ratio of corporate blockholdings to all outside holdings, which is the way Brennan and Franks do it. In [Table 6](#), we present the results for these two models.

The regressions produce results that are in line with previous work (Demsetz and Lehn and Himmelberg et al.). Firm size and firm volatility have the expected signs and are statistically significant; larger firms and more volatile firms have larger outside blockholdings. Firms that are more highly levered also have larger block ownership. The three

Table 6

Regression of corporate block ownership following the IPO on underpricing and control variables for a sample of 863 IPOs, 1988–1992

Variable	Percent ownership of corporate blockholders	Ratio of corporate ownership to all outside ownership
Initial return	– 0.064 (0.15)	– 0.116 (0.19)
Standard deviation of returns	1.539 (<0.01)	1.200 (0.08)
Log of market value of equity	0.025 (<0.01)	0.021 (0.08)
Cumulative return to lockup date	– 0.032 (0.02)	– 0.025 (0.37)
Venture capital dummy	0.116 (<0.01)	0.111 (<0.01)
LBO dummy	0.152 (<0.01)	0.170 (<0.01)
Carve-out dummy	0.458 (<0.01)	0.604 (<0.01)
Ratio of fixed assets to total assets	– 0.016 (0.62)	– 0.011 (0.87)
Fixed asset ratio dummy	0.102 (0.07)	0.112 (0.32)
Ratio of R&D and advertising expenses to sales	0.001 (0.01)	0.001 (0.15)
Expense ratio dummy	0.004 (0.78)	– 0.019 (0.51)
Ratio of total debt to assets	0.095 (<0.01)	0.227 (<0.01)
Debt ratio dummy	0.001 (0.98)	0.019 (0.63)
Intercept	– 0.051 (0.22)	– 0.020 (0.81)
Adjusted R^2	0.39	0.21

Variables are measured at the date of the proxy following the IPO, usually one year later. Corporate blockholders are nonindividual owners of 5% or more of the common stock. Initial return is the first day return; standard deviation of returns is measured over the year following the IPO; cumulative return is the compounded return from the first price to the end of the lockup period; venture capital, LBO, and carve-out dummies equal one if the condition is true, zero otherwise; fixed assets is net property, plant, and equipment; the dummy variables for the accounting ratios are set to one when the accounting variable is set to zero because Compustat records a “negligible” value; p -values for the null hypothesis of zero are in parentheses.

IPO dummy variables (reverse LBOs, carve-outs, and venture-backed IPOs) are all highly significant; this is not surprising given that each of them represents shareholders who are usually blockholders.

The variable of interest, the initial return, has a negative sign in both regressions, consistent with the prediction of Brennan and Franks. But the coefficient is economically small and statistically insignificant. There is some evidence that blockholders are more likely to cash out when returns following the IPO are large, as the coefficient on the cumulative return from the first price to the lockup is negative and significant in the corporate blockholder regression. The relation appears to be tenuous however, as it disappears in the regression using the ratio of corporate blockholders to outside ownership and also disappears in the logit models we estimate next. In any case, even if original blockholders are more likely to cash out if they have a large return following the IPO, their behavior is unaffected by whether the deal was underpriced to begin with.

Our results are in contrast with the results reported in Brennan and Franks; however, their regression model consists of a single explanatory variable, the initial return, and it seems likely this variable is proxying for other omitted variables. Indeed, when we run such a regression, we get results similar to the ones in Brennan and Franks. It is only when we control for other variables that the effect of initial return becomes insignificant. As a robustness check, the regressions were estimated leaving out any firms with negligible

values for the accounting variables; we also re-estimated the regressions deleting the reverse LBOs and the carve-outs. In all cases, underpricing never enters the regression in a statistically significant way.

Models for the level or concentration of outside blockholdings may not be entirely convincing because we are unsure of their specification. To see whether the results are robust, we try a different approach, which is to estimate logit models for whether the firm acquires a new blockholder following the IPO. Although the specification of the logit model is also uncertain, obtaining similar results would bolster the previous conclusions.

Our dependent variable is an indicator variable which takes the value one if there is a new corporate blockholder by the time of the first proxy after the IPO and zero otherwise. A new corporate blockholder is defined as any nonindividual entity who is a 5% blockholder but was not listed in the prospectus at the time of the IPO. We model the probability of getting a new corporate blockholder as a function of the initial return, firm size, the percentage of shares offered at the IPO, the standard deviation of returns in the year after the IPO, and the cumulative return to the unlock date. We add four dummy variables that equal one when (1) there is an outside blockholder in place at the IPO, (2) the IPO is venture-backed, (3) the IPO is a reverse LBO, and (4) the IPO is a carve-out.

Table 7 contains the results of the logit model estimation. The second column gives the point estimates and the p -values from a chi-square test; the third column gives the odds ratio estimates (which are e^{β}). The model variables are significant in explaining the outcome variable, as the p -value of the likelihood ratio test is less than 0.01. The only variables that are statistically different from zero, however, are the percentage of shares offered at the IPO, the size of the firm, the presence of an outside blockholder at the IPO,

Table 7

Logit regression of the incidence of new corporate blockholdings in the year following the IPO on initial return and control variables for a sample of 943 IPOs

Variable	All IPOs	Odds ratio
Initial return	− 0.037 (0.94)	0.96
Percentage of firm sold at IPO	0.065 (<0.01)	1.07
Standard deviation of returns	0.029 (0.65)	1.03
Log of market value of equity	0.360 (<0.01)	1.43
Cumulative return to lockup date	− 0.034 (0.84)	0.97
Dummy variable for presence of outside block at IPO	0.867 (<0.01)	2.38
Dummy variable for venture-capital backing	0.677 (<0.01)	1.97
Dummy variable for reverse LBO	0.141 (0.47)	1.15
Dummy variable for equity carve-out	0.310 (0.26)	1.36
Intercept	− 5.48 (<0.01)	
Pseudo R^2	0.16	
Likelihood ratio statistic p -value	<0.01	

Variables are measured at the date of the proxy following the IPO, usually one year later. Corporate blockholders are nonindividual owners of 5% or more of the common stock. Initial return is the first day return; standard deviation of returns is measured over the year following the IPO; cumulative return is the compounded return from the first price to the end of the lockup period; presence of a block at the IPO, venture capital, reverse LBO, and carve-out dummies equal one if the condition is true, zero otherwise; p -values for the null hypothesis of zero are in parentheses.

and whether the firm has venture capital backing. The initial return has no discernible effect on the probability of getting a new blockholder.

If entrepreneurs want to influence the probability of new blockholders buying into the firm, the odds ratios give us an indication of which variables have the largest effect on that probability. The presence of an outside blockholder at the IPO increases the odds of a new blockholder by about 2.4 times. The presence of a venture capitalist at the IPO increases the odds of a new blockholder by about 2.0 times versus not having a venture capitalist. For a continuous variable like market value of the firm, we can calculate the percent change in the odds ratio for each one unit change in the variable [which is $100(e^{\beta} - 1)$]. For market value, the percentage change in the odds ratio is 43%; whereas for initial return it is only -4% . Thus, the probability of getting a new blockholder is nearly independent of whether the firm underprices at the IPO.

The results we obtain here and earlier are more consistent with Brennan and Franks than Stoughton and Zechner. The effect of underpricing appears to be generally negative, so that more underpricing leads to less outside block ownership following the IPO. But the magnitude of the effect is small at best and nonexistent at worst. Any influence of underpricing on the eventual blockholders of the firm is swamped by other variables such as firm size, the percentage of the firm sold at the IPO, the presence of an outside blockholder at the IPO, and the presence of a venture capitalist.

5. Conclusions

In this paper, we analyze whether there is any relation between underpricing when a firm goes public and the subsequent outside block ownership of the firm's stock. Two recent papers arrive at opposite conclusions, with Brennan and Franks arguing that underpricing is used to avoid outside blockholders and Stoughton and Zechner arguing that it is used to encourage them.

We show that having blockholders in place *before the IPO* is the norm for most firms. In fact, 83% of all firms have an outside blockholder in place even before going public. Moreover, nearly three-quarters of all firms conducting IPOs have an outside blockholder with representation on the board of directors. These figures suggest that concerns about the frequency of blockholdings may be misplaced. If, as suggested by Brennan and Franks, managers are concerned about keeping blockholders out, most have already lost that battle even before the IPO. If, as suggested by Stoughton and Zechner, managers are interested in attracting blockholders, most of them have already won that battle before the IPO.

Moreover, our analysis reveals that underpricing has little or no effect on outside block ownership. There is almost no association between the existence of a blockholder and underpricing. This is true whether we examine all blockholders or only new ones and whether the firm has a blockholder in place or not. In regression models where block ownership is the dependent variable, the coefficient on initial return is not reliably different from zero; in logit models to predict whether a new blockholder enters the firm after the IPO, initial return again has no explanatory power.

Judging by our results, underpricing is simply not a powerful lever with which to influence the firm's outside blockholdings. Although the sign of underpricing goes in the

direction that Brennan and Franks suggest, the magnitude of the effect appears to be so small that relying on it to influence block ownership is misplaced. Managers who want to alter the probability of getting an outside blockholder need to look to what percentage of the firm they sell at the IPO, whether they have venture capitalists or other blockholders in place before the IPO that are likely to sell out during the first year, and the size of the firm. Of these variables, only the first is directly under the control of the management at the time of the IPO. The other two are determined before the IPO when the entrepreneur decides whether to seek venture capital or other funding, and after the IPO when the firm is either successful and grows or is not.

Acknowledgements

We thank Audra Boone and Jennifer Juergens for excellent research assistance. We also thank David Denis (the editor), Gordon Hanka, Michelle Lowry, Harold Mulherin, and Kent Womack for helpful comments, as well as seminar participants at Dartmouth College, the 2001 FMA meetings, Penn State University, the University of Washington, and the Yale SOM Conference on Young Firms. An early version of this paper was circulated under the title, “Underpricing in IPOs: Control, Monitoring, or Liquidity?”

References

- Baker, M., Gompers P., 2001. The determinants of board structure at the initial public offering. Working paper. Harvard University.
- Brennan, M., Franks, J., 1997. Underpricing, ownership and control in initial public offerings of equity securities in the UK. *Journal of Financial Economics* 45, 391–414.
- Cao, C., Field, L., Hanka, G., 2002. Does insider trading impair market liquidity? Evidence from IPO lockup expirations. Working paper. Penn State University.
- Demsetz, H., Lehn, K., 1985. The structure of corporate ownership: causes and consequences. *Journal of Political Economy* 93, 1155–1177.
- Field, L., Hanka, G., 2001. The expiration of IPO share lockups. *Journal of Finance* 56, 471–500.
- Frye, M., 2002. The evolution of corporate governance: evidence from initial public offerings. Working paper. University of Central Florida.
- Himmelberg, C., Hubbard, R.G., Palia, D., 1999. Understanding the determinants of managerial ownership and the link between ownership and performance. *Journal of Financial Economics* 53, 353–384.
- Jensen, M., Meckling, W., 1976. Theory of the firm: managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 3, 305–360.
- Ritter, J., 1998. Initial public offerings. *Contemporary Finance Digest* 2, 5–30.
- Ritter, J., Welch, I., 2002. A review of IPO activity, pricing, and allocations. *Journal of Finance* 57, 1795–1828.
- Smart, S., Zutter, C., 2003. Control as a motivation for underpricing: a comparison of dual- and single-class IPOs. *Journal of Financial Economics* (in press).
- Stoughton, N., Zechner, J., 1998. IPO-mechanisms, monitoring and ownership structure. *Journal of Financial Economics* 49, 45–78.