OWNERSHIP STRUCTURE IN U.S. CORPORATIONS

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ABSTRACT

Ownership Structure in U.S. Corporations

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Very little is known about the ownership structures of American corporations and even less about the influence different ownership structures have on a blockholder's power in the firm. In this paper, we aim to fill these gaps in the literature. First, we provide a comprehensive description of ownership structures of US firms. Second, we show that due to differences in ownership structures, blockholders with similar ownership stakes may have a significantly different influence in the firm. Third, we develop a measure of the influence of the ownership structure on a blockholder's power and show that an average blockholder can lose as much as 12% of his potential power due to the presence and size of the ownership stakes of other blockholders. Fourth, we show that this influence of ownership structure varies systematically with a blockholder's rank and identity, with the second and non-family manager blockholders experiencing the largest loss of power.

With my deepest gratitude,

I thank and dedicate this dissertation to my Mom and Dad:

Fereshteh & M.Hossein

To my Maryam

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1. Introduction

Very little is known about the ownership structures of American corporations. In fact, until recently the dominant paradigm was that there are few blockholders present in US firms (see, e.g., Holderness, 2009; Gadhoum, Lang, and Young, 2005). Even less is known about the influence of different ownership structures on a blockholder's power in the firm.[1] In this paper, we aim to fill these gaps in the literature. First, we provide a comprehensive description of ownership structures of American corporations.[2] Second, we show that, due to differences in ownership structures, blockholders with similar ownership stakes may have a significantly different power in the firm. Third, we show that the influence of ownership structure on a blockholder's power varies systematically with her rank and identity.

Consider the following three examples from our sample. First, on March 22, 1999, Qwest Communications International Inc., an S&P500-listed telecommunications company, had two blockholders. The company's founder, Philip F. Anschutz, owned 45.7% of the outstanding shares and FMR Corp (Fidelity Management and Research Corp), owned 6.2%. Second, as of May 15, 2003, the ownership structure of eLinear Inc. (information technology solutions provider founded in 1995) was as follows: Kevan M. Casey, President of the company, owned 45%; Tommy Allen, Senior Vice President and Director, 45%, and Jon V. Ludwig, CEO and Chairman of the board, 6% of the shares. Third, as of March 8, 1996, General Dynamics, an S&P500-listed aerospace and defense company, had the following five blockholders. The Crown and Goodman families owned 12.9% of the outstanding shares, FMR Corp – 9%, Warren E. Buffett and affiliates – 7.7%, Delaware Management Holdings, Inc – 5.6%, and The Northern Trust Company, acting as the trustee of the General Dynamics Corporation Savings and Stock Investment Plan, – 9.5%.

The above examples highlight some of the variation in the ownership structures of our sample firms. First, we find a large variation in the number of blockholders across firms – from

[1] Throughout the paper we will use the terms power and influence interchangeably.
[2] Our definition of ownership structure includes two dimensions – the number of blockholders present in a firm and the size of their ownership stakes.

firms with no blockholders to firms with ten blockholders. Second, we show that, even after controlling for the number of blockholders, there is a large variation in the ownership stakes of various blockholders. These variations in the ownership structure have a direct and significant influence on the power wielded by a blockholder in a firm.

Intuitively, the power of a particular blockholder depends upon two factors: (1) the size of her ownership stake and (2) ownership structure (i.e., the presence of other blockholders and the size of their ownership stakes). While power generally increases with the level of ownership, the ownership structure can either mitigate or magnify this influence. Compare, for example, the case of Mr. Anschutz with that of Mr. Casey in the Qwest Communications and eLinear examples, respectively. Both of them hold ownership stakes of similar size. Yet, it is clear that the power wielded by Mr. Anschutz is quite different from that wielded by Mr. Casey, due to the presence and size of the blocks held by Mr. Allen and Mr. Ludwig.

In this paper, we use Shapley values (Milnor and Shapley, 1978) to measure the power wielded by each blockholder. In the Qwest Communications example, the founder's ownership stake of 45.7% translates into power of 82.9%, while the FMR Corp's 6.2% ownership stake yields only 0.8% power. This reflects the fact that the founder's stake will, in most situations, have the dominant influence on the outcome of voting and therefore the influence of FMR Corp on the outcome will be minimal. In the eLinear Inc example, all three blockholders have equal power of 33.3% because any two of them can form a majority coalition. In this case, Mr. Casey and Mr. Allen lose from the ownership structure – their 45% ownership stakes translate into only 33.3% power. Mr. Ludwig, the CEO of the firm, on the other hand, is the gainer from this – his 6% stake translates into 33.3% power. Finally, the ownership structure described in the General Dynamics example leads to a distribution of power commensurate with the ownership stakes held by the blockholders. In particular, the power in this example ranges from 5.6% for Delaware Management Holdings, Inc to 14.2% for the Crown and Goodman families. To summarize, depending on the ownership structure, a particular individual may have either larger or smaller

power than warranted by her ownership stake.

To identify the gainers and losers from the ownership structure, we introduce a new measure of the influence of ownership structure on power. In particular, for each blockholder in our sample, we calculate a Shapley value, assuming she is the only blockholder in the firm. This value, which we denote as the "benchmark Shapley value", describes the power a blockholder would have based on just her ownership stake. The difference between actual and benchmark Shapley values, which we refer to as "loss of power", measures a blockholder's gain or loss of power due to the presence and ownership stakes of other blockholders. [3]

The earlier examples highlight two aspects of the loss of power we document in the paper. The first is related to a blockholder's rank (based on the size of their ownership stake). The largest blockholders tend to experience a smaller loss of power, as compared to their lower-ranked counterparts. The rank of shareholders below the largest also has a significant influence on the loss of power. The reason for this becomes clear when comparing the Qwest Communications and eLinear examples. The smallest blockholders in both examples hold approximately equal ownership stakes in their respective firms. Their power, however, varies significantly. FMR Corp, the second blockholder in the Qwest Communications example, has almost no power, while the ownership stake of CEO, the third blockholder in the eLinear example, becomes pivotal. This pattern – a significantly larger loss of power for the second blockholders as compared to their lower ranked counterparts – also holds for our sample firms in general.

The second aspect is related to the identity of the blockholder.[4] Most corporate blockholders tend to hold relatively small blocks and are usually present in firms that are

[3] We chose to use the term *loss of power* because for most blockholders in our samples the difference between actual and benchmark Shapley values is negative. Only about 2% of blockholders gain from other blockholders' presence and their ownership stakes.

[4] Two reasons for the potential differences in the loss of power between individual and corporate blockholders are liquidity and diversification considerations. We will discuss these considerations in detail in Section 3.

characterized by the absence of an exceptionally large block (e.g., Delaware Management Holdings in the General Dynamics example). The power they wield is therefore commensurate with their ownership stake, implying a small loss of power. In contrast, individual blockholders have far larger variation in the size of their holdings, ranging from the 45.7% block owned by Philip F. Anschutz to the 6% block owned by Jon V. Ludwig. Individual blockholders are also more likely to be present in a variety of ownership positions in a firm. They can be present as major (dominant) blockholders (like Mr. Anschutz in the Qwest example), as coequal blockholders (like Mr. Buffett in the General Dynamics example), or as minor blockholders (like Mr. Ludwig in the eLinear example). This variation in ownership stakes and ownership structures (e.g., the presence of a large blockholder) results in a larger variation in the loss of power experienced by the individual blockholders as compared to corporate ones. Once again, this pattern is representative of the broader sample, suggesting that the identity of the blockholder, corporate or individual, is related to the power they wield.[5]

Our paper contributes to several streams of literature. First is the literature on ownership structure of US firms.[6] Until recently, the dominant paradigm regarding the ownership structure of US firms was that majority of them have dispersed ownership. This paradigm, which has recently been challenged by Holderness (2009), seems to be an outcome of two facts. First, most of the studies on US firms have focused almost exclusively on the large index-listed firms. It is, therefore, not surprising that such studies have found very few blockholders in the US firms. Second, the focus of the ownership structure literature (and ownership literature in general) has been on insider ownership. This has meant that the main focus has been on individual blockholders and very little is known about corporate blockholders.[7] In this paper, we attempt to

[5] Note that our objective here is not to explain why or how blockholders of a particular identity gain or lose power. Our objective is more modest – to identify blockholders who gain and lose from the presence and ownership stakes of other blockholders.
[6] See Cheffins and Bank (2009) for an excellent survey of this literature.
[7] The existing literature on the presence (and influence) of institutional shareholders has mostly treated them as a unified block (see, e.g., McConnell and Servaes, 1990; Kim and Lu, 2011).

remedy these two biases by looking at two widely different, hand-collected samples of US firms – newly-public and S&P500-listed ones – and by looking at all blockholders.[8] Further, since our samples are hand-collected, they do not suffer from many of the problems documented by Dlugosz, Fahlenbrach, Gompers, and Metrick (2006) that are inherent in the off-the-shelf databases.

Another feature of the ownership structure literature has been its focus on the largest (the controlling) shareholder or on the aggregate blockholder (insider) ownership. Only recently have researchers started looking at blockholders beyond the largest and at their role and importance in the firm.[9] We contribute to this literature by providing a detailed description of the number of blockholders as well as their ownership stakes and identity for our two samples of US firms.[10]

We also contribute to the literature on the differences between ownership and power. A number of studies recognize this difference and use Shapley value to capture the voting power of a particular blockholder (see, e.g., Eckbo and Verma, 1994; Baker and Gompers, 1999). Other studies in finance use Shapley value as a measure of dispersion between the ownership stakes of the largest and the second largest blockholders (see, e.g., Laeven and Levine, 2008; Maury and Pajuste, 2005), or as a probability of a control contest (see, e.g., Nenova, 2003; Zingales, 1994). To our knowledge, this is the first paper to explicitly study the difference between ownership and power. We link this difference to the ownership structure and show that it is related to the rank and identity of the blockholder.

The rest of the paper is organized as follows. Section 2 describes the data used in this study. Section 3 provides the empirical tests and discusses the results. Section 4 concludes.

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[8] Our approach allows us to identify all corporate blockholders, not just the institutional ones found in the Thompson 13F database.

[9] Using European data, Laeven and Levine (2009) show that firms with a multiple blockholders have a higher value relative to other firms. Konijn, Kräussl, and Lucas (2011) show that the dispersion of blockholder ownership stakes has a significant influence on firm value.

[10] Dlugosz, Fahlenbrach, Gompers, and Metrick (2006) report both the number of blockholders and their identity for their subsample of Execucomp firms.

2. Data and sample selection

2.1. Sample selection

To provide a comprehensive view of the ownership structures of American firms, we use two different samples of publicly-traded US firms – the newly public and the S&P 500-listed firms. These two samples represent two opposite ends of the spectrum with the first representing small and young firms and the second large and mature firms. The sample of newly public firms is obtained as follows. We start with all US IPOs of common equity between 1993 and 1996, obtained from the SDC/Platinum New Issues database.[11] We eliminate REITs, closed-end funds, unit offerings, equity carve-outs, financial firms (those with SIC codes between 6000 and 6999), utilities, foreign firms, leveraged buyouts, and roll-ups. We also eliminate firms which are not found in the Center for Research in Security Prices (CRSP) or COMPUSTAT databases. Finally, we remove firms for which there is a discrepancy between the first date of trading provided by CRSP and SDC. We are left with a total of 1,448 firms.

We then follow these firms for up to 12 years after the IPO or until delisting, whichever comes first. Panel A of Table 1 reports the distribution of our newly-public firm sample by post-IPO year. Of the 1,448 firms at the time of IPO, 389 survive until the 12th listing anniversary. Our total sample consists of 11,179 firm-year observations with available ownership data.

Our second sample consists of firms listed in the S&P500 index. We start with a list of S&P500 constituents as of December 31, 1992. We then eliminate utilities as well as financial and foreign firms. This leaves us with a sample of 395 firms, which we then track for up to 16 years or until delisting, whichever is earlier. Our total sample of S&P500 firms consists of 4,884 firm-year observations with available ownership data. Panel B of Table 1 shows the distribution of these observations over time.

[11] Our choice of 1993 to 1996 IPOs as the basis of our sample is motivated by two considerations. First, availability of pre-1993 IPO prospectuses on Thomson Research, our source of pre-Edgar filings, is limited. Second, to ensure that we have a sufficiently long (post-IPO) time-series, we choose to limit our sample to firms that went public before 1997.

Panel A of Table 2 describes characteristics of our sample firms. In terms of firm size, our median newly-public firm is between 25th and 50th percentile of all Compustat- and CRSP-listed firms. This holds true for all three measures of firm size – market capitalization, total assets, and sales. S&P500 firms, on the other hand, are close to the 95th percentile. In terms of growth opportunities (as measured by CapEx/Sales and R&D/Sales), median firms of both samples fall in the 2nd quartile. Newly-public firms are also in the 2nd quartile based on leverage and asset tangibility, while the S&P500-listed ones are in the 3rd quartile.

2.2. Blockholders and ownership

We define a blockholder as any entity owning more than 5% voting rights as reported in the proxy statements.[12] We classify each blockholder as either individual or corporate. We classify a blockholder as an individual if shares are either held directly by her or by an organization controlled by her (or members of her family). All other blockholders are classified as corporate.

For each individual blockholder, we collect data on ownership stake, involvement in the management and governance of the firm, and status as a founder or a member of the founding family. We identify founders of newly-public sample firms (and their family members) using information in the management and ownership sections of IPO prospectuses and subsequent proxy statements. Founders of the S&P500 sample firms, their descendants, and family members are identified using Hoover's Company Profiles and company websites. We treat ownership stakes held by all family members as one block.[13] We also further sub-classify each individual non-family blockholder based on her involvement in the management of the firm. Following governance literature, we consider an individual blockholder involved (not involved) in the management of the firm to be a management (an outside) blockholder.

[12] Securities and Exchange Commission (SEC) regulations require the disclosure of ownership positions of (1) all officers and directors and (2) all shareholders holding more than 5% of any class of shares.
[13] Ownership stakes of family members are added together even if their individual ownership stakes fall below 5% of voting rights.

To classify corporate blockholders, we first try to identify them in CRSP, Thomson 13F, and VentureXpert databases, or in various issues of *Pratt's Guide to Venture Capital Resources*. If a blockholder could not be found in either of these sources, we use *Factiva* and general internet searches by the blockholder's name. Based on the information collected, we classify corporate blockholders into the following categories. A corporate blockholder is classified as a financial institution if it operates in a financial industry. A corporate blockholder is classified as a manufacturing corporation if it belongs to a non-financial industry. Venture capital or private equity blockholders are those who are found in either VentureXpert database or in *Pratt's Guide*. Employee stock ownership plans (ESOPs) are those identified as such in the proxy statements. Corporate blockholders that do not belong to any of the groups discussed above are classified as "other".[14]

3. Empirical tests and results

3.1. Ownership structure

Panel B of Table 2 provides summary statistics on the number of blockholders and their total ownership in our sample firms. In the newly public sample, the maximum number of blockholders is ten, with the mean (median) of 2.98 (3). The corresponding number for the S&P500 sample is nine, with the mean (median) of 1.90 (2). The mean (median) total blockholder ownership in the newly public sample is 43.45% (43.2%), while in the S&P500 sample it is 20.24% (17.55%). These percentages are similar to those reported in prior studies. For example, the total blockholder ownership in our newly-public firm sample is similar to that reported by Holderness (2009) in his study of a random sample of publicly traded US firms. A similar blockholder ownership for the index-listed firms has been reported by, among others, Dlugosz, Fahlenbrach, Gompers, and Metrick (2006).

In Panel C of Table 2, we report summary statistics at the firm-year-blockholder level. In

[14] This category represents 4.55% (4.57%) of corporate blockholders in the newly-public (S&P500) sample.

the newly-public sample, about 39% (61%) of all blockholders are individuals (corporations) who own, on average, 20.1% (10.9%) of the firm. Median ownership stakes of the individual and corporate blockholders are 12.4% and 8.2%, respectively. In the S&P500 sample, by contrast, almost 15% (85%) of the blockholders are individuals (corporations) who own, on average, 21.5% (9%) of the firm. Median ownership stakes of the individual and corporate blockholders are 13.1% and 7.6%, respectively.

Overall, two main patterns emerge from Table 2. First, as far as the number of blockholders is concerned, individual blockholders tend to dominate in the newly-public firms, while corporate blockholders tend to dominate in the S&P500-listed firms. Further, if individual blockholders are present, they tend to have larger ownership stakes as compared to corporate blockholders. This is true for both samples. It should, however, be noted that in an *average* S&P500 firm, individual blockholders hold markedly lower ownership stakes as compared to corporate blockholders. In other words, it is only conditional on individual blockholder presence that they own a larger ownership stake.

In Table 3 we describe the ownership structure of the newly public and S&P500-listed firms along two dimensions – the number of blockholders and the size of ownership stakes of various blockholders. Panel A (B) describes ownership structure of newly-public (S&P500) firms. As can be seen from the second columns of both panels of Table 3, blockholders are far less prevalent in the S&P500 firms. In the newly-public sample, 2.3% of firm-years do not have any blockholder, while the same is true for as many as 19% of S&P500 firms. Further, there is a significant variation in the number of blockholders in each sample of firms. Firms with more than three blockholders account for around a third of newly-public firms in our sample, but only for about an eighth of S&P500 sample firms.

The largest blockholder, if present, controls, on average, 26% (15%) of the votes in a newly-public (S&P500) firm. Not surprisingly, the ownership stake of the largest blockholder declines with the presence of additional blockholders. This decline, however, is more pronounced

for the newly-public firms. For the S&P500 firms, the ownership stake of the largest blockholder remains remarkably stable for firms with three or more blockholders. Such a stability of the ownership stakes is also present for blockholders other than the largest. In particular, their ownership stakes have a tendency to increase with the number of blockholders present in the firm. For example, the average ownership of the blockholders ranked third increases from 7.4% to 9.1% in the newly public sample and from 6.4 to 8.7% in the S&P500 sample.

There is also a significant degree of variation in the ownership stakes of blockholders even when keeping the number of blockholders constant. For example, the size of the second blockholder's ownership stake in the newly-public firms with two blockholders ranges from 5% to 49.2%. The corresponding range for the S&P500 firms is 5% to 27.3%. A similar variation is present in firms with more than two blockholders, but the range is smaller.

As alluded to in the introduction, various blockholders are likely to have different preferences, which may lead them to choose different ownership stakes and different ownership structures. This suggests that the identity of a blockholder might be another important dimension of ownership structure. We describe the identity of blockholders in Table 4. In Panel A, we describe the identity of blockholders in the newly public firms. Almost a half of all individual blockholders in the newly public sample are founding families, while the remainder are managers and outsiders in almost equal proportions. A majority of the individual blockholders hold ownership stakes between 5% and 15%, with the exception of founding families who are also present in significant numbers in higher ownership brackets. The dominant types of corporate blockholders in the newly public firms are financial institutions (62.2%), venture capitalists (24.1%), and manufacturing firms (8.8%). A striking difference between the three types of blockholders emerges when comparing their ownership stakes. In particular, financial institutions rarely hold ownership stakes above 25%, while manufacturing firms and venture capitalists do hold stakes in this range.

As can be seen from Panel B of Table 4, families represent 67.8% of all individual

blockholders in the S&P500 firms, while outsiders account for 23.9%. Managers, on the other hand, are rarely present as blockholders in the S&P500 firms – they represent only 8.3% of all individual blockholders. The distribution of ownership stakes held by various blockholders is similar to that observed for the newly public firms – families are present in all ownership brackets while the ownership stakes of managers and outsiders are rarely above 25%. The dominant types of corporate blockholders in the S&P500 firms are financial institutions (86.6%) and ESOPs (7%). While the ownership stakes of financial institutions in the S&P500 firms are, as in the case of newly public firms, mostly below 15%, a sizable fraction of ESOPs hold shares above this level.

Overall, three main conclusions emerge from the above discussion. First, there is a large variation in the number of blockholders in both samples. Second, there is a large variation in the ownership stake of blockholders even after controlling for the number of blockholders. Third, we find a significant variation in the identity of individual blockholders, both across the ownership brackets as well as across the two samples.

3.2. Shapley value

Our findings of a significant variation in the number of blockholders and the size of their ownership stakes described above suggest that the ownership stake of a particular blockholder may not be a good measure of the actual power she has in the firm. Obviously, the extent of a blockholder's influence in a firm is hardly observable. To formally capture this influence, we need a measure that captures two factors: (1) the size of the blockholder's ownership stake, and (2) the presence and size of other blockholders' ownership stakes. Shapley and Shubik (1954) provides such an *a priori* measure of power for each blockholder in a decision making body. In this paper, we use the oceanic formulation of Shapley value developed by Milnor and Shapley (1978). (For a detailed discussion on the calculation of Shapley values please refer to Appendix B.)

Shapley value calculation transforms the voting rights of a player into the capacity of that particular player to change the outcome of a voting session. In other words, the power of a particular player is defined as the percentage of times she casts the decisive vote. The oceanic formulation of Shapley value used in this paper also allows us to account for the widely-held portion of the voting rights. For example, a 10% blockholder has a Shapley value of 11.1% when the other 90% of voting rights are widely-held. The same 10% blockholder has Shapley value of 33.3% when there are two other blockholders with 45% stakes each.

3.3. Shapley value and ownership

We now analyze the relationship between Shapley value and blockholder ownership. Table 5 reports the Shapley value for blockholders in both samples controlling for the level of ownership. In the newly-public sample, the minimum Shapley value for ownership levels of less than 40% is zero while the maximum Shapley value starts from 33% and after a small decline moves up to 66%. Small Shapley values are for minority blockholders in the presence of a very large (majority) blockholder, similar to the Qwest Communications Inc example. Maximum Shapley values at small ownership levels are minority blockholders that become pivotal between two large blockholders, similar to the eLinear Inc example. The range of Shapley values for a particular level of ownership is increasing, up to ownership levels close to 50%. In particular, for our sample firms an ownership level of 5% implies possible Shapley values between zero and 33%. Note that the nonlinear relationship between ownership and Shapley value is first exponential (for ownership stakes of less than 50%) and then becomes a flat line at 100%, since a blockholder with more than 50% ownership stake has complete control regardless of her exact ownership stake (i.e., such blockholders have Shapley value equal to one). This nonlinear relationship is illustrated in Figure 1. Examination of the S&P500 sample reveals a similar pattern, which is illustrated in Figure 2.

The relationship between Shapley value and ownership stake reported in Table 5 is

consistent with our initial conjecture that variation in the ownership structure leads to a significant variation in the power of a particular blockholder, even when controlling for her level of ownership. In other words, there are blockholders who have power higher than that warranted by the size of their ownership stake and there are blockholders who have significantly less power than warranted by their ownership stake. This leads us to the question we address in the remainder of this section – who gains and who loses from the ownership structure? To answer this question, we need a measure that captures the influence of the ownership structure on a blockholder's power. We develop such a measure in the next subsection.

3.4. Benchmark Shapley value, ownership, and loss of power

As described above, we measure the loss of power (LP) as the difference between actual and benchmark Shapley values. Before proceeding, we would like to note two issues concerning our measure of the loss of power. First, the magnitude of the loss of power depends upon the level of the blockholder's ownership. By construction, the maximum loss of power at a particular level of ownership is equal to the benchmark Shapley value at that level. This implies that the maximum loss of power is increasing with the level of ownership. To reflect this dependency, we control for the level of blockholder's ownership in all of the subsequent tests. Second, also by construction, the loss of power for firms with only one blockholder is zero. This implies that inclusion of firms with a lone blockholder would bias downward our estimates of the loss of power. Therefore, from now on we will focus only on firms with at least two blockholders (i.e., the firms with non-zero loss of power).

Panels A and B of Table 6 summarizes the loss of power for the newly-public and S&P500 samples, respectively.[15] Several patterns emerge from Table 6. First, both the mean and the median LP are negative for all levels of ownership suggesting that most blockholders lose

[15] For the sake of brevity, from now on we will report all the univariate tests using five different ownership brackets. The results are qualitatively unchanged when we split the ownership into the 18 different brackets used in Table 5.

power due to the presence and the size of ownership stakes of other blockholders. This is not surprising since we have defined our benchmark based on the absence of additional blockholders, which intuitively translates into less competition and thus greater power for the blockholder in question. Second, both the mean and the median loss of power are statistically significantly different from zero for both samples for all ownership brackets. Third, the loss of power accounts for approximately 13.2% (4.8%) of the benchmark Shapley value for the newly public (S&P500) firms. This implies that, on average, the presence and ownership stakes of other blockholders reduce a blockholder's potential power by this percentage. Fourth, LP is decreasing until ownership reaches 50%.[16] Fifth, blockholders who gain from ownership structure (i.e., those with positive LP) are those that own between 5% and 25% of a firm. Beyond 25% ownership the maximum LP is zero, indicating that none of blockholders gains from ownership structure after this level of ownership. Sixth, a comparison of loss of power between the two samples reveals that blockholders in the S&P500 firms lose less power as compared to their newly-public counterparts. In unreported tests, we find that the mean and median loss of power in the newly-public firms is statistically significantly greater than that in their S&P500-listed counterparts for all ownership brackets. This might be due to the smaller number and total ownership of blockholders in the S&P500 firms.

3.5. Loss of power and rank

In this section, we examine the influence of the blockholder's rank on her loss of power. We start by examining this influence in a univariate setting. For the sake of brevity, we combine third largest blockholders and those ranked below into a single group. The results of the tests of differences in the loss of power for blockholders of different ranks are provided in Table 7. The results for the newly public firms, reported in Panel A, suggests that second blockholders

[16] Note that, by construction, loss of power is zero for any ownership stake above 50% because such blockholders always have a Shapley value of one and the presence of additional blockholders has no influence on their power.

experience a significantly higher loss of power, compared to both the first as well as the lower-ranked blockholders. The average difference in the loss of power between the first and second blockholders ranges from 1.7% for the blockholders in the 5% to 15% ownership bracket to 33% in the 35% to 50% bracket. All differences are statistically significant at the 1% level. We also find that blockholders ranked third and below experience a larger loss of power relative to the first blockholders, but smaller relative to the second blockholders. Again, all differences are statistically significant at the 1% level.[17] Similar patterns also hold for the S&P500 firms (see Panel B of Table 7).

We now examine the influence of a blockholder's rank on her loss of power in a multivariate setting. In particular, we estimate the following regression equation:

$$\begin{aligned} Loss\ of\ power_i = {} & \alpha_0 + \alpha_1 Second_i + \alpha_2 Third_i + \beta_1 * Own5to25_i + \beta_2 Own5to25_i * Second_i + \\ & + \beta_3 Own5to25_i * Third_i + \beta_4 * Own25to50_i + \beta_5 Own25to50_i * Second_i \\ & + \beta_6 Own25to50_i * Third_i + \varepsilon_i \end{aligned} \quad (1)$$

Following Morck, Shleifer, and Vishny (1998), we use a breakpoint at 25% ownership.[18] *Own5to25* is equal to the blockholder ownership if the ownership is below 25% or equal to 25% if the ownership is above 25%. *Own25to50* is equal to zero if the ownership is below 25%, equal to ownership minus 25% if the ownership is between 25% and 50%, or equal to 50% if the ownership is above 50%. As discussed earlier, loss of power for blockholders with ownership stakes above 50% is, by definition, zero. Thus, for this ownership range, LP does not vary with ownership and therefore, for all subsequent tests, we will use only observations with ownership less than 50%. As before, we also exclude all observations for which the loss of power is zero (i.e., firm-years with only one blockholder). We use two rank-related variables. *Second* is a dummy variable that takes on a value of one if the blockholder is ranked second in a particular

[17] The significantly greater loss of power experienced by the second blockholders means that they lose more of their potential power. If an average largest blockholder loses 5.2% of her benchmark Shapley value, the second blockholders, on average, lose 23% of their potential power (results not reported). Blockholders ranked third and below lose, on average, 12.1% of their potential power.

[18] We have also used breakpoints at 20%, 30%, and 35% ownership stakes. The results are qualitatively unchanged in these alternative specifications.

firm-year, and zero otherwise. Likewise, *Third* is a dummy that takes on a value of one if the blockholder is ranked below the second in a particular firm-year, and zero otherwise. If, as predicted, second blockholders are associated with a larger loss of power, we would expect the coefficient estimates of *Own5to25*Second* and *Own25to50*Second* to be negative.

The results of the estimation of Eq. (1) are reported in columns (1) of Panels A and B of Table 8 for the newly-public and S&P500 firms, respectively. For the largest blockholder, consistent with the results of the univariate tests reported in Table 6, we find a negative relationship between the ownership stake of a blockholder and her loss of power. The coefficient estimates of *Own5to25* and *Own25to50* are negative and statistically significant for both samples. The magnitude of the coefficient estimates of *Own25to50* is smaller than that of *Own5to25* suggesting a non-linear relationship between the ownership and loss of power. This negative relationship between the loss of power and a blockholder's ownership stake is even more pronounced for the second-largest blockholders. In particular, we find that the coefficient estimates of *Own5to25*Second* and *Own25to50*Second* are negative and statistically significant for both samples. Overall, our results suggest that the second blockholders indeed lose significantly more than do the largest.

Differences between mean and median loss of power reported in Table 6 implies that the distribution of LP is skewed. This suggests a possibility that our results may be driven by outliers. To address this potential concern, we exclude observations for which Shapley value is zero. Since, by construction, these are the observations that have the highest loss of power for each ownership range, by excluding them we are removing some of the extreme observations. We re-estimate Eq. (1) using this reduced sample. The results are reported in columns (2) of both panels of Table 8 for the newly-public and S&P500 firms. The results are qualitatively similar, but the adjusted R-squares are higher than those reported in columns (1) of Panels A and B of Table 8.

It can be argued that our results might be influenced by the following two biases. First, since firms with relatively more blockholders are over-represented in our dataset, they may

unduly influence our results. Second, due to the panel nature of our dataset, it is likely that a certain degree of autocorrelation exists between multiple observations of the same blockholder over different years. This, in turn, may lead to inflated t-statistics. We address these potential concerns by clustering standard errors at the firm level, as suggested by Petersen (2008). Columns (3) of Panels A and B of Table 8 report the coefficient estimates and the adjusted t-statistics. As expected, the adjustment reduces the significance of some of the coefficient estimates but does not qualitatively change our results.

So far we have focused only on the influence of ownership and identity on the loss of power. It is possible, however, that firm-specific characteristics, such as firm size, leverage, and asset tangibility, are also related to ownership structure. For example, large firms are less likely to have large blockholders, ceteris paribus. Firms with more tangible assets may find it easier to fund the new projects using debt rather than equity (Myers, 1977). Higher extent of debt financing will lead to a lower dilution and therefore larger ownership stakes in such a firm. Such differences in the ownership structure, in turn, can influence the loss of power. In columns (4) of Panels A and B of Table 8, we report the results of the re-estimation of Eq. (1) with firm-specific control variables. Overall, the inclusion of the firm-specific variables does not qualitatively change either the significance or the magnitude of the estimated coefficients of interest.

Finally, our main results presented so far have been based on a piecewise linear OLS specification. We have re-estimated Eq. (1) using a quadratic specification. The results are reported in columns (5) of Panels A and B of Table 8 for the newly-public and S&P500 samples, respectively. Our conclusions remain qualitatively unchanged in this alternative specification. In particular, we find that the second blockholders lose more power, as compared to the largest ones, for almost the entire ownership range.[19]

[19] Note that the inflection points implied by the results reported in columns (1) and (2) of Panel A of Table 11 are 9.7% and 7%, respectively.

3.6. Loss of power and identity

The identity of a blockholder can also have a significant influence on the loss of power. In particular, there are two important dimensions along which individual and corporate blockholders are likely to be different when it comes to the sensitivity to the loss of power. The first of these is related to portfolio diversification. A majority of corporate blockholders are subject to a limit on how much of a firm's equity they can own.[20] As a result, they are effectively limited in their ability to hold an undiversified portfolio. Individual blockholders are, in general, not subject to such restrictions and therefore able to trade-off any potential costs arising from an undiversified portfolio with any benefits accruing from higher power (i.e. lower loss of power). To put it differently, due to the existence of this trade-off, individual investors are likely to be more sensitive to a loss of power as compared to corporate blockholders. This implies that individual blockholders will have a smaller loss of power, relative to corporate blockholders.

The second dimension pertains to the liquidity of the portfolio firm's stock. Corporate blockholders are more likely to have a short-term focus relative to individual blockholders.[21] This implies that corporate blockholders are more sensitive to the costs associated with an illiquid block (see Bodie, Kane, and Marcus, 2010). Longer holding periods of individual blockholders, on the other hand, make them less sensitive to the illiquidity. Since the presence of a large blockholder impedes liquidity of a firm's stock (see, e.g., Brockman, Chung, and Yan, 2009), corporate blockholders are less likely to acquire equity stakes in such firms. By definition, an increase in the ownership stake of the largest blockholder results in lower power of all other blockholders. Therefore, a smaller size of the largest block, *ceteris paribus*, implies a lower loss

[20] There are external limits to the percentage of a portfolio company's shares certain corporate blockholders can own. For example, the prudent man rule (or its more modern form, the prudent investor rule) as implemented in the Employee Retirement Income Security Act of 1974 requires pension plans to diversify their assets. As specified in the Investment Company Act of 1940, in order to be considered diversified, at least three-fourths of a corporate blockholder's portfolio must be invested such that he does not own more than 10% of the securities of a particular firm.

[21] This has been suggested by, among others, Graves and Waddock (1990) and Coffee (1991). We confirm this to be the case for our sample firms. In particular, holding period for an average individual blockholder in our sample is 6.5 years, while for corporate blockholders it is only 2.2 years.

of power for corporate blockholders. This suggests that due to liquidity considerations corporate blockholders will have a smaller loss of power, relative to individual blockholders.

The relative importance of the diversification and liquidity effects over various levels of blockholder ownership is an empirical matter. We are not aware of any study, either theoretical or empirical, that has examined the relationship between blockholder identity and the loss of power. Our aim here is to provide preliminary evidence on this relationship.

In Table 9, we examine the differences in the loss of power between individual and corporate blockholders in a univariate setting. The results for the newly public firms, reported in Panel A, suggests that for ownership stakes below 35%, the individual blockholders experience a significantly larger loss of power as compared to the corporate ones. The mean and median differences are statistically significant at the 1% level for all but one test. The smaller loss of power experienced by the corporate blockholders in this ownership range is consistent with the notion that such blockholders, for diversification and liquidity reasons discussed above, tend to hold small stakes and avoid firms with a large individual blockholder.

For ownership stakes above 35%, however, corporate blockholders experience a significantly larger loss of power. The results for the S&P500 firms, reported in Panel B of Table 9, are qualitatively similar, but the small sample sizes for corporate blockholders with ownership stakes above 25% make the results less reliable. In this ownership range our findings are consistent with the need for higher power as a compensation for the higher costs arising from an individual blockholder's undiversified portfolio.[22]

We now examine the differences in the loss of power between individual and corporate blockholders using the following regressions specification:

[22] Note also that, as reported in Table 4, the identity of corporate blockholders with the intermediate levels of ownership is significantly different from that of blockholders with low levels of ownership. In particular, there are very few financial institutions with intermediate levels of ownership. The motivation of, for example, manufacturing corporations is likely to be different from that of financial institutions. Manufacturing corporations may acquire a block in a firm to secure more favorable transfer pricing or to ensure access to a new technology it needs, while a financial corporation is unlikely to have such interests.

$$Loss\ of\ power_i = \alpha_0 + \alpha_1 * Identity_i + \beta_1 * Own5to25_i + \beta_2 * Own5to25_i * Identity_i + \beta_3 * Own25to50_i + \beta_4 * Own25to50_i * Identity_i + \varepsilon_i \quad (2)$$

The results of the estimation of Eq. (2) are reported in columns (1) and (8) of Panel A of Table 10 for the newly-public and S&P500 firms, respectively. We find that the coefficient estimates of *Own5to25*ID* are negative and statistically significant for both samples. This suggests that, for a given level of ownership, individual blockholders lose more power as compared to corporate blockholders. The coefficient estimate of *Own25to50*ID*, however, is positive and statistically significant for both samples. This suggests that, at intermediate levels of ownership, individual blockholders tend to lose less power relative to corporate blockholders.

We further examine if our conclusions regarding the influence of a blockholder's identity on her loss of power hold for various types of individual and corporate blockholders. We first compare the relationship between ownership and loss of power for each type of individual blockholder (family, managers, and outsiders) with that for all corporate blockholders. The results of these comparisons are reported in columns (2) to (4) and (9) to (11) of Panel A of Table 10 for the newly public and S&P500 samples, respectively.[23] We find that all coefficient estimates of *Own5to25*ID* are positive and statistically significant, except for outsiders in the S&P500 sample (column (11)). The coefficient estimates of *Own25to50*ID* are all positive and significant, expect for managers in the newly public firms. Overall, the results for different types of individual blockholders are mostly consistent with those reported in columns (1) and (8) of Panel A.

We now compare the relationship between ownership and the loss of power for each type of corporate blockholder (financial institutions, manufacturing firms, private equity firms (in the newly public sample), and ESOPs (in the S&P500 sample)) with that for all individual blockholders. The results are reported in columns (5) to (7) and (12) to (14) of Panel A of Table 10 for the newly public and S&P500 samples, respectively. We find that all coefficient estimates

[23] We do not interpret the coefficient estimates that have been estimated from fewer than 30 observations (as disclosed in Table 4).

of *Own5to25*ID* are positive and statistically significant. The coefficient estimates of *Own25to50*ID* for manufacturing and private equity firms in the newly public sample are both negative, but it is significant only for the former. Overall, the results are generally consistent across different types of corporate blockholders.

Overall, we find that a blockholder's identity has a significant influence on the relationship between her ownership stake and the loss of power, with individual (corporate) blockholders losing more power at low (intermediate) levels of ownership. These general patterns also hold for most types of individual and corporate blockholders. While there appear to be differences between types of blockholders, examination of their significance and the underlying reasons behind them are beyond the scope of the paper.

As before, we also test the robustness of our results to the exclusion of observations with zero Shapley values, to clustering of observations, to additional firm-specific control variables, and to the use of a quadratic specification. [24] The results of these tests, reported in Panel B of Table 10, are qualitatively similar to those reported in Panel A of Table 10.

4. Discussion and conclusions

Although blockholder ownership has been considered an important element of corporate governance, very few researchers have directly examined the prevalence and implications of blockholder presence in US firms. In this paper, we start by showing that US firms have a wide spectrum of ownership structures – from firms with no blockholders to firms with ten blockholders and from firms with total blockholder ownership of 5% to 99.7%. We then go beyond looking at the ownership stake of blockholders and specifically address the difference between ownership and power. In particular, we show that the above variation in the ownership structure leads to a large variation in the power a particular blockholder has in the firm. For

[24] For the sake of brevity, we report only the results of robustness tests based on the specifications reported in columns (1) and (8) of Panel A of Table 10. The results of other specifications are similar and are available from the authors upon request.

example, a 5% blockholder can have a power anywhere between zero and 33%, depending on the presence and ownership of other blockholders in the firm.

We then develop a measure of the influence the ownership structure has on a blockholder's power and show that an average blockholder loses up to 12.5% of his potential power due to the presence and ownership stakes of other blockholders. Finally, we show that the loss of power varies systematically with two observable blockholder characteristics – rank and identity. In particular, we identify groups of blockholders that are more likely to lose power, such as second blockholders and non-family managers.

Our paper has several important implications for the field of corporate governance. First, the significant loss of power documented in this paper suggests a need to look beyond the ownership stakes of various blockholders (or groups thereof). This is especially important as a large body of research in finance has tended to view ownership and power as synonymous. For example, a central issue in the extensive literature on the relationship between ownership and firm value is that of entrenchment – the point at which a blockholder gains sufficient power to be able to extract rents or otherwise expropriate minority shareholders. Intuitively, entrenchment depends on power of which, as we have shown, ownership is but an imperfect proxy.

Second, our findings provide future researchers with a better idea of the limitations of the assumption that ownership is equal to power. In particular, it suggests specific cases when the difference between ownership and power is likely to be especially pronounced. This difference, and therefore, the need to control for it, will be more pronounced for studies looking at the entrenchment of a single blockholder (e.g., a firm's CEO as opposed to a group of blockholders, such as firm insiders), especially if the blockholder is not the largest one in the firm and is not a founder or a member of founding family. Further, the need to distinguish between ownership and power is likely to be more important for studies that use either a random sample or that of smaller and younger firms.

Third, our findings may provide a better understanding of the driving forces behind the

results of the recent studies documenting the influence of both the number of blockholders and the dispersion of their ownership stakes on firm value. In particular, our findings suggest an intuitive interpretation of the prior results: that dispersion and the number of blockholders are but two factors that influence a blockholder's power.

Fourth, our findings of a significant influence of a blockholder's identity on the loss of power suggest fruitful avenues for future research that may provide new insights into the uniqueness of some blockholders. For example, the growing literature on family ownership (see, e.g., Anderson and Reeb, 2003; and Villalonga and Amit, 2006) is built on the assumption that family blockholders are unique in the disproportionate amount of power they wield in a firm. The preliminary evidence reported in this paper suggests that their unique influence could be driven by the ownership structure differences between family and non-family firms as reflected in a lower loss of power experienced by the family blockholders.

Finally, several caveats are in order: our treatment of blockholders does not take into account the potential alliances between blockholders, nor do we think that such consideration is viable. The purpose of this work is to merely distinguish between the power and ownership and to shed light on any systematic patterns in the difference between the two. Moreover, in the absence of much research specifically addressing blockholder ownership and power, we largely confine ourselves to describing the nature of blockholder ownership and power. As a result, any investigation into the genesis of the ownership and power structures that we observe falls beyond the scope of this paper.

Appendix A
Variable description

Variable	Description
Own5to25	Equal to blockholder ownership if the ownership is below 25% or equal to 25% if the ownership is above 25%.
Own25to50	Equal to zero if the ownership is below 25%, equal to ownership minus 25% if the ownership is between 25% and 50%, or equal to 50% if the ownership is above 50%.
Own	Equal to the blockholder ownership.
Own^2	Equal to the blockholder ownership squared.
Ind	A dummy variable that is equal to one for individual blockholders.
Family	A dummy variable that is equal to one for individual blockholders with family connections to the founder of the firm.
Mangmt	A dummy variable that is equal to one for individual blockholders that are managers in the firm
Outsider	A dummy variable that is equal to one for individual blockholders that are neither family nor managers of the firm
Corp	A dummy variable that is equal to one for corporate blockholders.
Manuf	A dummy variable that is equal to one for public or private corporate blockholders in non-finance industries.
ESOP	A dummy variable that is equal to one for corporate blockholders that are identified as Employee Stock Ownership Plan in the proxy statement.
Fin Inst	A dummy variable that is equal to one for corporate blockholders in financial industries.
PE	A dummy variable that is equal to one for private equity or venture capital corporate blockholders.
Second	A dummy variable that is equal to one for the second-largest blockholder in the firm
Third	A dummy variable that is equal to one for a blockholder ranked below second in the firm (i.e. third, fourth, etc. blockholders)
Market Capitalization	Total number of shares outstanding multiplied by the closing price of the year.
LnAssets	Natural logarithm of the book value of assets (data 6)
Sales	Total turnover/sales.
PPE/Assets	Total property, plant, and equipment (data 8) divided by the book value of assets (data 6)
Debt/Assets	The book value of debt (data 9 + data 34) divided by the book value of assets (data 6)
CapEx/Sale	Capital expenditure divided by total sales.
R&D/Sale	Research and development divided by total sales.

Appendix B
Shapley value calculations

Let *N* be a finite set of major players and *v(S)* be a voting game where *S* denotes a set of players supporting the resolution (also called coalition) and *w(S)* denotes their total votes. Let *n* represents the number of major players in the game, and *s* represents the number of major players in coalition *S*. Let *c* be the cut-off votes required to pass the resolution; we define the game as,

$$v(S) = \begin{cases} 0 & if\ \ w(S) < c \\ 1 & if\ \ w(S) \geq c \end{cases}$$

Player *i*, who is not a part of coalition *S*, is said to be decisive if $c - w_i < w(S) < c$. The power of player *i* is then defined by Shapiro and Shapley (1978) as the of the total number of times player *i* becomes decisive in different ordering of players, or mathematically,

$$\varphi_i = \sum_{S \subseteq N - \{i\}} \frac{n!\ \ (n-s-1)!}{n!}\ [v(S \cup \{i\}) - v(S)]$$

Milnor and Shapley (1978) extends this definition to the limiting case of a set of major players, *N* as before, and a continuum of non-atomic minor players, with a total weight of $\theta = 1 - \sum_{i \in N} w_i$. The power of each major player is defined by,

$$\varphi_i = \sum_{S \subseteq N - \{i\}} \int_{t_1}^{t_2} x_i^s (1 - x_i)^{n-s-1} dx_i$$

where $t_1 = \langle c - w(S)/\theta \rangle$, and $t_2 = \langle c - w(S \cup \{i\})/\theta \rangle$ such that

$$\langle x \rangle = median\ \ of\ \ (0, x, 1) = \begin{cases} 0 & if\ x \leq 0 \\ x & if\ \ 0 \leq x \leq 1 \\ 1 & if\ x \geq 1 \end{cases}$$

The power of minor players is then given by $\Phi = 1 - \sum_{i \in N} \varphi_i$.

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Figures

Figure 1 - Shapley value vs. ownership in the newly-public sample

The mean Shapley value is calculated for each 5% ownership bracket. Mean, maximum, and minimum values are based on those reported in Table 5. Deviations of the mean Shapley value from the 45-degree line represent differences between power and ownership.

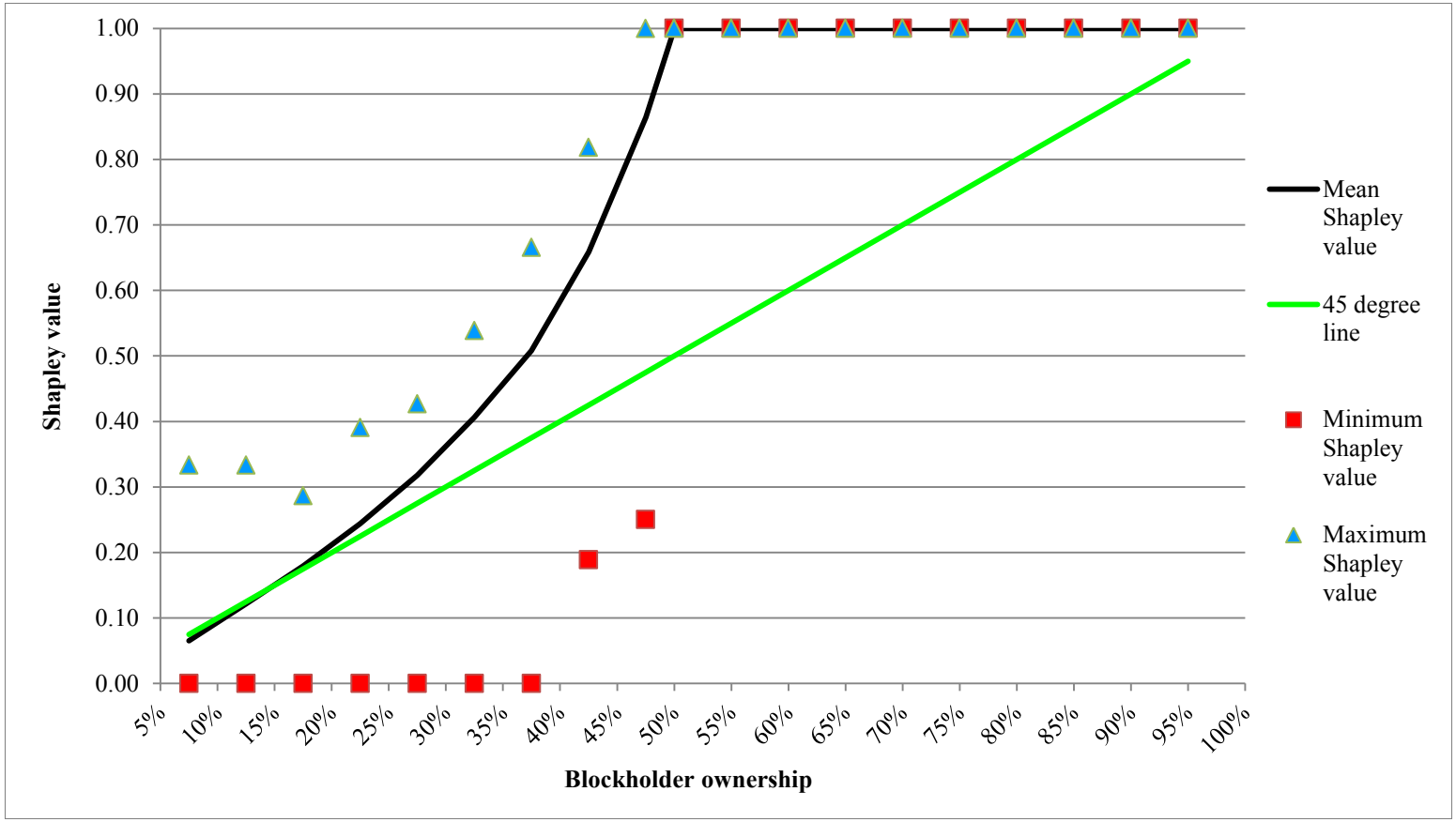
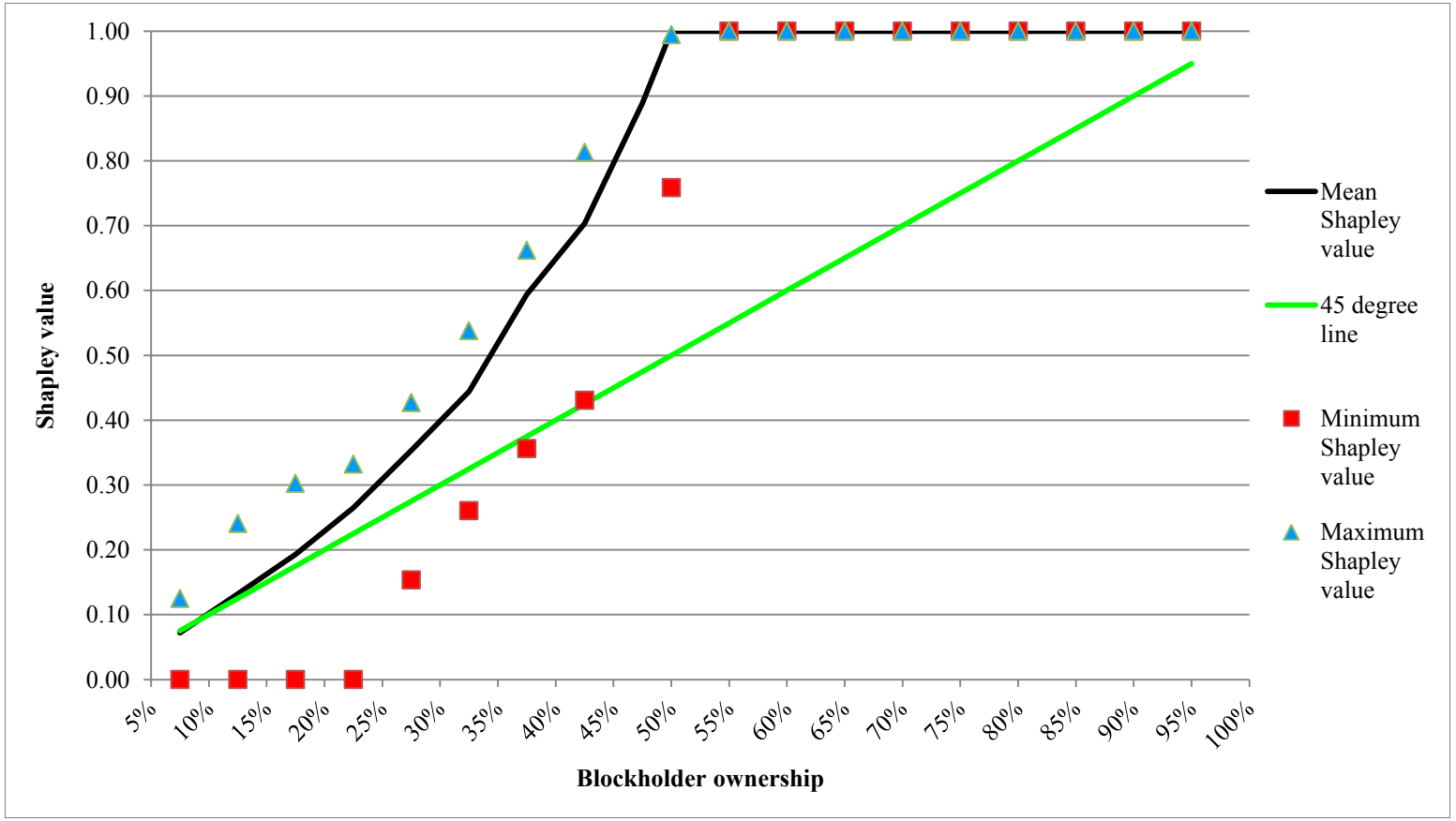


Figure 2 - Shapley value vs. ownership in the S&P500 sample

The mean Shapley value is calculated for each 5% ownership bracket. Mean, maximum, and minimum values are based on those reported in Table 5. Deviations of the mean Shapley value from the 45-degree line represent differences between power and ownership.



Tables

Table 1 - Sample selection and distribution of newly public and S&P500 firms by year
The newly public firm sample consists of all US firms that went public between 1993 and 1996, obtained from the SDC/Platinum New Issues database. We eliminate REITs, closed-end funds, unit offerings, equity carve-outs, financial firms (those with SIC codes between 6000 and 6999), utilities, foreign firms, leveraged buyouts, and roll-ups. We also eliminate firms which are not found in the Center for Research in Security Prices (CRSP) or COMPUSTAT databases. Finally, we remove firms for which there is a discrepancy between the first date of trading provided by CRSP and SDC. We are left with a total of 1,448 firms. These firms are then followed for up to 12 years after the IPO or until delisting, whichever comes first. The sample of the S&P500-listed firms consists of the index constituents as of December 31, 1992, tracked for up to 16 years or delisting, whichever is earlier. We eliminate financial and foreign firms, as well as utilities. This leaves us with a sample 395 firms.

Panel A: Distribution of firm-years with available ownership data by post-IPO year for the newly public sample

	Post-IPO year												
IPO	1	2	3	4	5	6	7	8	9	10	11	12	Total
1,448	1,431	1,303	1,172	1,024	894	746	688	596	553	496	439	389	11,179

Panel B: Distribution of firm-years with available ownership data by year for the S&P500 sample

	Year															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
289[25]	375	370	357	352	344	326	307	292	283	280	278	276	262	253	240	4,884

[25] SEC EDGAR provides corporate filings beginning in 1993; however, the coverage for 1993 is limited.

Table 2 - Sample characteristics

Panel A provides description of our sample firms by firm-year. All variables are as defined in the Appendix. The last two columns of Panel A report summary statistics for all of the Compustat- and CRSP-listed firms. Panel B reports the number of blockholders and their total ownership. In Panel B, firm-years with no blockholders are counted as having zero blockholder ownership. Panel C provides description of blockholder presence and ownership, based on their identity.

Panel A: Firm characteristics

	Newly-public firms	S&P500 firms	Compustat	
	Mean (Median)	Mean (Median)	Mean (Median)	75th percentile (25th percentile)
Market Capitalization	552.70 (116.21)	11,548.33 (4,084.50)	2,722.24 (298.98)	1,141.62 (78.22)
Total Assets	351.38 (90.74)	11,696.18 (4,436.96)	2,416.58 (256.86)	1,155.80 (61.91)
Sales	336.79 (88.70)	11,124.63 (4,844.75)	1,899.05 (241.04)	1,030.60 (52.76)
CapEx / Sales	0.177 (0.045)	0.058 (0.041)	0.133 (0.047)	0.107 (0.023)
R&D / Sales	0.601 (0.004)	0.024 (0.005)	0.617 (0.051)	0.169 (0.008)
Debt / Assets	0.207 (0.103)	0.256 (0.245)	0.238 (0.199)	0.365 (0.025)
PPE / Assets	0.225 (0.145)	0.320 (0.275)	0.303 (0.224)	0.461 (0.098)

Panel B: Number of blockholders and their total ownership per firm-year

		Newly-public firms	S&P500 firms
Number of blockholders	Maximum	10.00	9.00
	75th percentile	4.00	3.00
	Mean	2.98	1.90
	Median	3.00	2.00
	25th percentile	2.00	1.00
Total blockholder ownership	75th percentile	59.60%	29.39%
	Mean	43.45%	20.24%
	Median	43.20%	17.55%
	25th percentile	26.80%	6.43%

Panel C: Blockholder characteristics

		Newly-public firms	S&P500 firms
Individual blockholders	N	13,083	1,353
	Percentage	(38.69%)	14.51%
Individual ownership	Mean	20.07%	20.48%
	Median	(12.40%)	13.06%
Corporate blockholders	N	20,730	7,970
	Percentage	(61.31%)	85.49%
Corporate ownership	Mean	10.91%	8.96%
	Median	(8.20%)	7.60%
Total blockholders	N	33,813	9,323

Table 3 - Ownership structure of newly-public firms and S&P500 firms

Each firm-year is categorized based on the number of blockholders. The number of firm-years in each category as well as the corresponding percentage (out of the overall sample) is reported in the first column. The mean, median, and range of blockholder ownership for each rank are reported next. Last row reports the mean and median blockholder ownership for each rank.

Panel A: Ownership structure of newly-public firms

	N		1st blockholder	2nd blockholder	3rd blockholder	4th blockholder	5th blockholder	≥6th blockholder
No block	257 (2.30%)							
One block	1,956 (17.50%)	Mean	40.13%					
		Median	(37.50%)					
		Range	[5% - 99.72%]					
Two blocks	2,586 (23.13%)	Mean	28.89%	10.25%				
		Median	(24.10%)	(7.70%)				
		Range	[5% - 92%]	[5% - 49.23%]				
Three blocks	2,402 (21.49%)	Mean	24.20%	11.42%	7.38%			
		Median	(20.20%)	(9.47%)	(6.35%)			
		Range	[5.2% - 78.02%]	[5% - 45%]	[5% - 23.60%]			
Four blocks	1,889 (16.90%)	Mean	20.09%	11.64%	8.52%	6.58%		
		Median	(16.80%)	(10.20%)	(7.56%)	(5.95%)		
		Range	[5.2% - 68%]	[5.1% - 36%]	[5% - 21.7%]	[5% - 16.9%]		
Five blocks	1,142 (10.22%)	Mean	18.40%	11.56%	8.98%	7.17%	5.94%	
		Median	(15.30%)	(10.30%)	(8.29%)	(6.70%)	(5.60%)	
		Range	[5.7% - 65.07%]	[5.4% - 38.4%]	[5% - 22.85%]	[5% - 18.9%]	[5% - 14%]	
Six or more	947 (8.47%)	Mean	17.04%	11.30%	9.10%	7.73%	6.74%	5.88%[26]
		Median	(14.70%)	(10.60%)	(8.80%)	(7.34%)	(6.42%)	(5.64%)
		Range	[6.6% - 61.8%]	[5.7% - 32.3%]	[5.3% - 21.8%]	[5.05% - 17.3%]	[5% - 14.8%]	[5% - 12.5%]
Total	11,179	N	10,922	8,967	6,379	3,978	2,089	1,478
		Percent	(97.70%)	(80.21%)	(57.06%)	(35.58%)	(18.69%)	(13.22%)
		Mean	26.23%	11.13%	8.26%	7.02%	6.30%	5.88%
		Median	(19.00%)	(9.60%)	(7.49%)	(6.50%)	(5.97%)	(5.64%)

[26] The mean, median, and range reported are based on 1478 blockholders in 947 firm-years that have more than six blockholders.

Panel B: Ownership structure of S&P500 firms

	N		1st blockholder	2nd blockholder	3rd blockholder	4th blockholder	5th blockholder	≥6th blockholder
No block	929 (19.02%)							
One block	1,184 (24.24%)	Mean	17.49%					
		Median	(9.26%)					
		Range	[5% - 87.13%]					
Two blocks	1,269 (25.98%)	Mean	14.66%	7.56%				
		Median	(11.11%)	(6.55%)				
		Range	[5.07% - 73.73%]	[5% - 27.30%]				
Three blocks	805 (16.48%)	Mean	12.77%	8.50%	6.41%			
		Median	(11.10%)	(7.72%)	(5.90%)			
		Range	[5.46% - 62.19%]	[5.02% - 33.39%]	[5% - 15.51%]			
Four blocks	431 (8.82%)	Mean	13.40%	9.01%	7.18%	6.00%		
		Median	(12.46%)	(8.42%)	(6.71%)	(5.67%)		
		Range	[5.99% - 64.08%]	[5.16% - 22.03%]	[5.02% - 18.25%]	[5% - 10.11%]		
Five blocks	172 (3.52%)	Mean	13.21%	9.49%	7.94%	6.76%	5.73%	
		Median	(12.16%)	(8.91%)	(7.77%)	(6.44%)	(5.46%)	
		Range	[6.79% - 55.63%]	[5.56% - 17.45%]	[5.43% - 13.72%]	[5.04% - 13.31%]	[5% - 8.72%]	
Six or more	94 (1.92%)	Mean	13.71%	10.33%	8.70%	7.58%	6.43%	5.78%[27]
		Median	(12.87%)	(9.99%)	(8.37%)	(7.33%)	(6.24%)	(5.48%)
		Range	[7% - 30.32%]	[6.41% - 16.04%]	[5.74% - 14.02%]	[5.28% - 14.02%]	[5.17% - 12.81%]	[5.01% - 10.5%]
Total	4,884	N	3,955	2,771	1,502	697	266	132
		Percent	(80.98%)	(56.74%)	(30.75%)	(14.27%)	(5.45%)	(2.70%)
		Mean	14.90%	8.27%	6.95%	6.40%	5.98%	5.78%
		Median	(10.97%)	(7.47%)	(6.45%)	(5.97%)	(5.66%)	(5.48%)

[27] The mean, median, and range reported are based on 132 blockholders in 94 firm-years that have more than six blockholders.

Table 4 - Blockholder identity and ownership

The table reports the distribution of various types of blockholders by the level of their ownership. The percentages in the first five rows (reported in brackets) are calculated based on the total number of observations in each column. The percentages reported in the last row are based on the total sample. Family blockholders are founders and members of their families. Management (Mangmt) blockholders are non-family blockholders who are officers of the firm. Outside blockholders are non-family blockholders who are not officers of the firm. Financial institutional (FinIns) blockholders are those operating in a financial industry. Manufacturing (Manuf) blockholders are corporate blockholders that belong to a non-financial industry. Employee stock ownership plan (ESOP) blockholders are those identified as such in the proxy statements. Private equity (PE) blockholders are those found in either VentureXpert database or in *Pratt's guide*. Corporate blockholders that do not belong to any of the other four groups are classified as "other".

Panel A: Blockholder ownership and identity in newly-public firms

	Individual				Corporate					
Ownership	Total	Family	Mangmt	Outsider	Total	Fin Ins	Manuf	ESOP	PE	Other
5 – 15%	7,525 (57.52%)	2,750 (42.09%)	2,071 (64.44%)	2,704 (81.06%)	17,717 (85.47%)	12,212 (94.64%)	1,247 (68.71%)	40 (58.82%)	3,644 (72.88%)	574 (60.81%)
15 – 25%	2,316 (17.70%)	1,320 (20.21%)	616 (19.17%)	380 (11.39%)	1,836 (8.86%)	668 (5.18%)	287 (15.81%)	8 (11.76%)	727 (14.54%)	146 (15.47%)
25 – 35%	1,050 (8.03%)	706 (10.81%)	243 (7.56%)	101 (3.03%)	569 (2.74%)	20 (0.16%)	131 (7.22%)	8 (11.76%)	292 (5.84%)	118 (12.50%)
35 – 50%	910 (6.96%)	699 (10.70%)	111 (3.45%)	100 (3.00%)	380 (1.83%)	1 (0.01%)	95 (5.23%)	7 (10.29%)	225 (4.50%)	52 (5.51%)
50 – 100%	1,282 (9.80%)	1,058 (16.19%)	173 (5.38%)	51 (1.53%)	228 (1.10%)	2 (0.02%)	55 (3.03%)	5 (7.35%)	112 (2.24%)	54 (5.72%)
Total	13,083	6,533 (49.94%)	3,214 (24.57%)	3,336 (25.50%)	20,730	12,903 (62.24%)	1,815 (8.76%)	68 (0.33%)	5,000 (24.12%)	944 (4.55%)

Panel B: Blockholder ownership and identity in S&P500 firms

	Individual				Corporate				
Ownership	Total	Family	Mangmt	Outsider	Total	Fin Ins	Manuf	ESOP	Other
5 – 15%	761 (56.25%)	446 (48.64%)	73 (64.60%)	242 (74.92%)	7,492 (94.00%)	6,706 (97.19%)	95 (65.52%)	419 (74.69%)	272 (74.73%)
15 – 25%	261 (19.29%)	187 (20.39%)	11 (9.73%)	63 (19.50%)	380 (4.77%)	194 (2.81%)	21 (14.48%)	131 (23.35%)	34 (9.34%)
25 – 35%	90 (6.65%)	79 (8.62%)	6 (5.31%)	5 (1.55%)	52 (0.65%)	0 (0.00%)	13 (8.97%)	7 (1.25%)	32 (8.79%)
35 – 50%	110 (8.13%)	101 (11.01%)	7 (6.19%)	2 (0.62%)	21 (0.26%)	0 (0.00%)	15 (10.34%)	2 (0.36%)	4 (1.10%)
50 – 100%	131 (9.68%)	104 (11.34%)	16 (14.16%)	11 (3.41%)	25 (0.31%)	0 (0.00%)	1 (0.69%)	2 (0.36%)	22 (6.04%)
Total	1,353	917 (67.78%)	113 (8.35%)	323 (23.87%)	7,970	6,900 (86.57%)	145 (1.82%)	561 (7.04%)	364 (4.57%)

Table 5 - Shapley value and blockholder ownership
Blockholders are categorized based on their ownership stake in the firm and the mean, median, and range of their Shapley values are reported for each sample.

	Newly-public firms					S&P500 firms				
Ownership range	N	Mean	Median	Minimum	Maximum	N	Mean	Median	Minimum	Maximum
5 – 10%	18,930	6.54%	6.54%	0.00%	33.33%	6,342	7.20%	6.89%	0.00%	12.51%
10 – 15%	6,312	12.16%	12.41%	0.00%	33.33%	1,911	13.22%	13.15%	0.00%	24.07%
15 – 20%	2,577	17.94%	18.69%	0.00%	28.65%	498	19.34%	19.61%	0.00%	30.25%
20 – 25%	1,575	24.41%	25.39%	0.00%	39.04%	143	26.49%	27.28%	0.00%	33.20%
25 – 30%	994	31.78%	33.22%	0.00%	42.65%	80	35.31%	36.50%	15.35%	42.68%
30 – 35%	625	40.54%	43.19%	0.00%	53.61%	62	44.41%	46.35%	26.03%	53.80%
35 – 40%	497	50.77%	54.08%	0.00%	66.56%	44	59.35%	60.75%	35.64%	66.19%
40 – 45%	395	65.93%	68.05%	18.86%	81.55%	63	70.59%	69.01%	43.05%	81.34%
45 – 50%	398	85.96%	87.50%	25.00%	100.00%	24	88.91%	87.95%	75.85%	99.45%
50 – 55%	329	100.00%	100.00%	100.00%	100.00%	26	100.00%	100.00%	100.00%	100.00%
55 – 60%	296	100.00%	100.00%	100.00%	100.00%	14	100.00%	100.00%	100.00%	100.00%
60 – 65%	278	100.00%	100.00%	100.00%	100.00%	13	100.00%	100.00%	100.00%	100.00%
65 – 70%	146	100.00%	100.00%	100.00%	100.00%	37	100.00%	100.00%	100.00%	100.00%
70 – 75%	128	100.00%	100.00%	100.00%	100.00%	22	100.00%	100.00%	100.00%	100.00%
75 – 80%	81	100.00%	100.00%	100.00%	100.00%	26	100.00%	100.00%	100.00%	100.00%
80 – 85%	55	100.00%	100.00%	100.00%	100.00%	13	100.00%	100.00%	100.00%	100.00%
85 – 90%	65	100.00%	100.00%	100.00%	100.00%	5	100.00%	100.00%	100.00%	100.00%
≥ 90%	132	100.00%	100.00%	100.00%	100.00%	0				

Table 6 - Shapley value and the loss of power

For each ownership range, the means of Shapley and benchmark Shapley values are reported. For each blockholder, the benchmark Shapley value is calculated assuming that the particular blockholder is the only one in the firm. Loss of power is calculated as the difference between the actual and benchmark Shapley values. Observations for blockholders who are the only ones in a given firm-year are excluded. The last column reports the mean ratio of the loss of power to the benchmark Shapley value for each ownership range. The results of *t*-tests of the differences of mean from zero and nonparametric Wilcoxon tests of differences in medians from zero are reported. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Loss of power in newly-public firms

	Shapley value			Loss of power						
Ownership range	N	Actual	Benchmark	Minimum	25th Percentile	Mean	Median	75th Percentile	Maximum	% Loss
5 – 15%	24,589	7.90%	9.08%	-17.51%	-0.98%	-1.18%***	-0.45%***	-0.22%	26.95%	-13.22%
15 – 25%	3,985	20.24%	23.73%	-32.18%	-3.51%	-3.49%***	-1.71%***	-0.85%	7.64%	-14.65%
25 – 35%	1,497	34.61%	41.48%	-52.44%	-9.99%	-6.88%***	-3.60%***	-1.70%	-0.19%	-16.48%
35 – 50%	1,055	63.96%	72.69%	-71.97%	-10.58%	-8.74%***	-4.49%***	-1.92%	0.00%	-12.86%
50 – 100%	731	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-
Total										-13.24%

Panel B: Loss of power in S&P500 firms

	Shapley value			Loss of power						
Ownership range	N	Actual	Benchmark	Minimum	25th Percentile	Mean	Median	75th Percentile	Maximum	% Loss
5 – 15%	7,389	8.53%	8.94%	-14.52%	-0.38%	-0.40%***	-0.20%***	-0.10%	11.25%	-4.57%
15 – 25%	544	20.39%	22.15%	-25.58%	-1.32%	-1.76%***	-0.69%***	-0.31%	11.89%	-7.59%
25 – 35%	90	37.48%	42.59%	-27.44%	-4.93%	-5.11%***	-1.19%***	-0.60%	-0.22%	-11.94%
35 – 50%	63	71.08%	75.04%	-30.53%	-4.66%	-3.96%***	-2.34%***	-1.03%	-0.09%	-5.58%
50 – 100%	53	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-
Total										-4.83%

Table 7 - Summary statistics of the loss of power by blockholder rank

Mean and median loss of power for each ownership bracket is calculated based on all blockholders of particular rank in that ownership bracket. Ranks below the second are treated as a group. The results of *t*-tests of differences in means and nonparametric Wilcoxon tests of differences in medians are reported in the parentheses. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Loss of power by rank in newly-public firms

	First (F)			Second (S)			Third (T)			Difference					
	N	Mean	Median	N	Mean	Median	N	Mean	Median	ΔMean (F - S)	ΔMedian (F - S)	ΔMean (F - T)	ΔMedian (F - T)	ΔMean (S - T)	ΔMedian (S - T)
5 – 15%	3,582	-0.31%	-0.23%	7,369	-2.04%	-0.63%	13,638	-0.95%	-0.47%	1.73%***	0.40%***	0.64%***	0.23%***	-1.09%***	-0.16%***
										(32.48)	(41.02)	(21.68)	(41.13)	(-32.20)	(-14.83)
15 – 25%	2,391	-1.39%	-1.06%	1,308	-7.49%	-4.36%	286	-2.74%	-2.10%	6.10%***	3.30%***	1.35%***	1.04%***	-4.75%***	-2.26%***
										(40.70)	(40.45)	(11.93)	(9.73)	(-10.80)	(-12.54)
25 – 35%	1,249	-4.71%	-2.92%	248	-17.78%	-15.87%	0	-	-	13.07%***	12.96%***	-	-	-	-
										(31.03)	(20.52)	-	-	-	-
35 – 50%	1,013	-7.43%	-4.15%	42	-40.27%	-37.11%	0	-	-	32.84%***	32.96%***	-	-	-	-
										(22.29)	(10.53)	-	-	-	-
50 – 100%	731	0.00%	0.00%	0	-	-	0	-	-	-	-	-	-	-	-
										-	-	-	-	-	-
Total	8,966	-1.99%	-0.57%	8,967	-3.45%	-0.93%	13,924	-0.98%	-0.48%	1.46%***	0.36%***	-1.01%***	-0.09%***	-2.47%***	-0.45%***
										(18.76)	(23.66)	(-23.86)	(-4.77)	(-45.76)	(-32.34)

Panel B: Loss of power by rank in S&P500 firms

	First (F)			Second (S)			Third (T)			Difference					
	N	Mean	Median	N	Mean	Median	N	Mean	Median	ΔMean (F - S)	ΔMedian (F - S)	ΔMean (F - T)	ΔMedian (F - T)	ΔMean (S - T)	ΔMedian (S - T)
5 – 15%	2,109	-0.19%	-0.13%	2,685	-0.58%	-0.20%	2,595	-0.40%	-0.26%	0.39%***	0.08%***	0.21%***	0.14%***	-0.18%***	0.06%***
										(11.93)	(16.06)	(12.42)	(26.37)	(-5.65)	(8.69)
15 – 25%	467	-0.74%	-0.58%	75	-8.27%	-2.43%	2	5.31%	5.31%	7.53%***	1.85%***	-6.05%***	-5.89%	-13.58%**	-7.74%**
										(17.54)	(12.79)	(-10.84)	(-0.37)	(-2.07)	(-2.32)
25 – 35%	79	-3.21%	-1.11%	11	-18.73%	-17.13%	0	-	-	15.52%***	16.02%***	-	-	-	-
										(9.60)	(5.05)	-	-	-	-
35 – 50%	63	-3.96%	-2.34%	0	-	-	0	-	-	-	-	-	-	-	-
										-	-	-	-	-	-
50 – 100%	53	0.00%	0.00%	0	-	-	0	-	-	-	-	-	-	-	-
										-	-	-	-	-	-
Total	2,771	-0.45%	-0.16%	2,771	-0.86%	-0.21%	2,597	-0.39%	-0.26%	0.41%***	0.05%***	-0.06%*	0.10%***	-0.47%***	0.05%***
										(7.05)	(8.41)	(-1.94)	(15.28)	(-8.52)	(6.55)

Table 8 - Loss of power and blockholder rank

The dependent variable, LP, is the loss of power calculated for each blockholder. All observations with ownership greater than 50% are excluded. Columns (1) to (5) of Panel A report results for the newly-public firm samples, while those in Panel B report those for the S&P500 firm sample. Columns (1) of both panels, report the results estimated using a piecewise linear OLS regression with a 25% breakpoint. Samples in columns (2) of both panels exclude observations with Shapley value of zero. Columns (3) report the result of the estimations of OLS regressions with standard errors clustered by firm. Columns (4) report the results of the estimation of Eq. (1) with additional, firm-specific control variables. Columns (5) report the results of the estimation of a quadratic specification of Eq. (1). All variables are as defined in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Loss of power in newly-public firms

	(1)	(2)	(3)	(4)	(5)
Own5to25	-0.2037***	-0.2040***	-0.2037***	-0.1985***	
	(-30.07)	(-34.53)	(-16.72)	(-28.02)	
Own5to25 * Second	-0.2738***	-0.2620***	-0.2738***	-0.2782***	
	(-27.42)	(-29.49)	(-9.57)	(-26.85)	
Own5to25 * Third	0.0403***	0.0433***	0.0402	0.0341**	
	(3.10)	(3.80)	(1.56)	(2.53)	
Own25to50	-0.2350***	-0.2349***	-0.2350***	-0.2343***	
	(-31.66)	(-36.29)	(-7.46)	(-30.40)	
Own25to50 * Second	-2.0666***	-2.0389***	-2.0666***	-2.0753***	
	(-65.43)	(-72.54)	(-20.40)	(-63.35)	
Second	0.0017	0.0078***	0.0017	0.0024	-0.0544***
	(1.19)	(6.23)	(0.58)	(1.62)	(-25.09)
Third	-0.0176***	-0.0160***	-0.0176***	-0.0166***	-0.0195***
	(-12.49)	(-12.90)	(-7.92)	(-11.33)	(-7.19)
LnAssets				0.0000	
				(0.27)	
PPE/Assets				-0.0096***	
				(-10.30)	
Debt/Assets				-0.0018***	
				(-5.20)	
CapEx/Sales				0.0000	
				(-0.52)	
R&D/Sales				0.0000	
				(1.09)	
Own					-0.2410***
					(-16.55)
Own * Second					0.6934***
					(26.88)
Own * Third					0.0225
					(0.45)
Own^2					0.0448
					(1.58)
Own^2 * Second					-3.5728***
					(-51.85)
Own^2 * Third					0.2293
					(0.97)
Constant	0.0198***	0.0199***	0.0198***	0.0213***	0.0241***
	(17.70)	(20.35)	(13.59)	(16.08)	(15.44)
Observations	31,126	29,991	31,126	28,743	31,126
Adjusted R^2	43.08%	48.05%		43.54%	43.56%

Panel B: Loss of power in S&P500 firms

	(1)	(2)	(3)	(4)	(5)
Own5to25	-0.0818***	-0.0818***	-0.0818***	-0.0823***	
	(-11.65)	(-15.16)	(-4.69)	(-11.16)	
Own5to25 * Second	-0.3491***	-0.2195***	-0.3491**	-0.3512***	
	(-28.11)	(-22.30)	(-2.55)	(-27.22)	
Own5to25 * Third	-0.0063	-0.0145	-0.0063	-0.0036	
	(-0.31)	(-0.94)	(-0.13)	(-0.17)	
Own25to50	-0.1623***	-0.1623***	-0.1623***	-0.1704***	
	(-13.60)	(-17.70)	(-3.27)	(-13.63)	
Own25to50 * Second	-1.9152***	-2.3292***	-1.9152***	-1.8889***	
	(-17.49)	(-27.57)	(-4.27)	(-17.07)	
Second	0.0209***	0.0123***	0.0209**	0.0211***	-0.0231***
	(16.60)	(12.48)	(2.05)	(16.12)	(-11.42)
Third	-0.0045***	-0.0036***	-0.0045	-0.0045***	0.0023
	(-2.87)	(-3.00)	(-1.26)	(-2.74)	(0.53)
LnAssets				0.0003**	
				(1.97)	
PPE/Assets				0.0004	
				(0.40)	
Debt/Assets				-0.0012	
				(-0.96)	
CapEx/Sales				0.0015	
				(0.44)	
R&D/Sales				0.0098**	
				(2.44)	
Own					-0.0515***
					(-3.67)
Own * Second					0.5596***
					(17.20)
Own * Third					-0.1753*
					(-1.65)
Own^2					-0.1328***
					(-4.25)
Own^2 * Second					-4.0352***
					(-33.25)
Own^2 * Third					0.9942
					(1.54)
Constant	0.0064***	0.0064***	0.0064***	0.0038**	0.0049***
	(7.22)	(9.40)	(3.51)	(2.46)	(3.98)
Observations	8,086	8,019	8,086	7,621	8,086
Adjusted R^2	30.76%	34.93%		31.44%	38.47%

Table 9 - Summary statistics of the loss of power by blockholder identity

Blockholders are categorized based on their identity as either individual or corporate. A blockholder is classified as an individual if shares are either held directly by her or by an organization controlled by her (or members of the family). All other blockholders are classified as corporate. Mean and median loss of power for each ownership bracket is calculated based on all blockholders of particular identity in that ownership bracket. The results of *t*-tests of differences in means and nonparametric Wilcoxon tests of differences in medians are reported in the parentheses. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Loss of power by identity in newly-public firms

	Individual (I)			Corporate (C)			Difference			
	N	Mean	Median	N	Mean	Median	ΔMean (I - C)	T-stat	ΔMedian (I - C)	Z-stat
5 – 15%	7,284	-1.36%	-0.51%	17,305	-1.11%	-0.43%	-0.25%***	(-7.98)	-0.08%***	(-10.64)
15 – 25%	2,201	-3.68%	-1.83%	1,784	-3.25%	-1.56%	-0.43%***	(-2.58)	-0.27%***	(-4.69)
25 – 35%	957	-7.23%	-3.98%	540	-6.25%	-3.12%	-0.98%**	(-2.35)	-0.86%***	(-3.55)
35 – 50%	735	-8.16%	-4.12%	320	-10.07%	-5.46%	1.91%**	(2.52)	1.34%***	(3.01)
50 – 100%	608	0.00%	0.00%	123	0.00%	0.00%	-	-	-	-
Total	11,785	-2.62%	-0.79%	20,072	-1.57%	-0.49%	-1.05%***	(-21.55)	-0.29%***	(-22.60)

Panel B: Loss of power by identity in S&P500 firms

	Individual (I)			Corporate (C)			Difference			
	N	Mean	Median	N	Mean	Median	ΔMean (I - C)	T-stat	ΔMedian (I - C)	Z-stat
5 – 15%	646	-0.89%	-0.24%	6,743	-0.36%	-0.20%	-0.53%***	(-12.80)	-0.04%***	(-5.69)
15 – 25%	212	-3.01%	-0.76%	332	-0.95%	-0.65%	-2.06%***	(-5.54)	-0.11%***	(-2.91)
25 – 35%	67	-6.44%	-1.38%	23	-1.22%	-1.11%	-5.22%***	(-3.17)	-0.27%*	(-1.90)
35 – 50%	43	-4.02%	-2.03%	20	-3.83%	-2.53%	-0.19%	(-0.14)	0.49%	(1.23)
50 – 100%	47	0.00%	0.00%	6	0.00%	0.00%	-	-	-	-
Total	1,015	-1.79%	-0.36%	7,124	-0.40%	-0.21%	-1.39%***	(-23.29)	-0.15%***	(-12.75)

Table 10 - Loss of power and individual blockholder identity

The dependent variable, LP, is the loss of power calculated for each blockholder. All models in Panel A are estimated using a piecewise linear OLS regression with a 25% breakpoint. All observations with ownership greater than 50% are excluded. Columns (1) to (7) of Panel A report results for the newly-public firm samples, while those in columns (8) to (14) report those for the S&P500 firm sample. Samples used in columns (2) to (4) and (9) to (11) of Panel A include all corporate blockholders and the type of individual blockholder indicated at the top of the column. Samples used in columns (5) to (7) and (12) to (14) of Panel A include all individual blockholders and the type of corporate blockholder indicated at the top of the column. Columns (1) to (4) of Panel B report results for the newly-public firm samples, while those in columns (5) to (8) of Panel B report those for the S&P500 firm sample. Samples in columns (1) and (5) of Panel B exclude observations with Shapley value of zero. Columns (2) and (6) of Panel B report the result of the estimations of OLS regressions with standard errors clustered by firm. Columns (3) and (7) report the results of the estimation of Eq. (2) with additional, firm-specific control variables. Columns (4) and (8) of Panel B report the results of the estimation of a quadratic specification of Eq. (2). All variables are as defined in the Appendix. Heteroskedasticity-adjusted (White) standard errors are used in calculation of t-statistics that are reported in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Main tests

	Newly-public sample							S&P500 sample						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Ind	Family	Mangmt	Outsider	Fin Ins	Manuf	PE	Ind	Family	Mangmt	Outsider	Fin Ins	Manuf	ESOP
Own5to25	-0.1936***	-0.1936***	-0.1936***	-0.1936***	-0.2619***	-0.2619***	-0.2619***	-0.0534***	-0.0534***	-0.0534***	-0.0534***	-0.2226***	-0.2226***	-0.2226***
	(-31.59)	(-32.51)	(-34.58)	(-36.63)	(-44.18)	(-33.88)	(-37.68)	(-8.78)	(-10.02)	(-14.26)	(-14.07)	(-21.85)	(-9.50)	(-10.94)
Own5to25 * ID	-0.0683***	-0.0600***	-0.1053***	-0.0914***	0.1085***	0.0767***	0.0328**	-0.1692***	-0.2148***	-0.3306***	0.0110	0.1675***	0.1822**	0.1736***
	(-7.84)	(-5.67)	(-8.47)	(-6.95)	(9.54)	(3.42)	(2.40)	(-14.65)	(-17.57)	(-17.58)	(0.85)	(13.21)	(2.00)	(4.30)
Own25to50	-0.3377***	-0.3377***	-0.3377***	-0.3377***	-0.1295***	-0.1295***	-0.1295***	-0.1139***	-0.1139***	-0.1139***	-0.1139***	-0.0186	-0.0186	-0.0186
	(-24.42)	(-25.13)	(-26.73)	(-28.31)	(-13.95)	(-10.70)	(-11.90)	(-5.72)	(-6.53)	(-9.29)	(-9.17)	(-1.07)	(-0.46)	(-0.53)
Own25to50 * ID	0.2082***	0.2178***	0.0290	0.1652***	-0.1697	-0.4409***	-0.0140	0.0954***	0.1896***	0.2389***	-1.6714***	-	-0.1379	0.0409
	(12.33)	(12.47)	(1.05)	(6.01)	(-0.96)	(-11.75)	(-0.58)	(3.66)	(7.96)	(6.15)	(-33.49)	-	(-1.35)	(0.35)
Constant	0.0045***	0.0045***	0.0045***	0.0045***	0.0086***	0.0086***	0.0086***	0.0007	0.0007	0.0007**	0.0007**	0.0100***	0.0100***	0.0100***
	(6.97)	(7.18)	(7.63)	(8.09)	(10.87)	(8.33)	(9.27)	(1.27)	(1.45)	(2.06)	(2.03)	(7.47)	(3.25)	(3.74)
ID_Dummy	0.0041***	0.0079***	0.0036**	0.0042***	-0.0078***	-0.0051*	0.0011	0.0093***	0.0185***	0.0053**	-0.0088***	-0.0091***	-0.0136	-0.0099**
	(3.95)	(5.46)	(2.31)	(2.93)	(-6.55)	(-1.79)	(0.61)	(6.62)	(11.46)	(2.34)	(-5.85)	(-6.10)	(-1.31)	(-1.99)
Observations	31,126	25,018	22,852	23,154	23,740	12,879	15,943	8,086	7,720	7,211	7,391	7,206	1,082	1,420
Adjusted R^2	19.49%	18.79%	20.16%	18.59%	18.51%	19.43%	19.69%	16.13%	14.86%	20.70%	24.56%	15.97%	11.42%	13.29%

Panel B: Robustness tests

	Newly-public sample				S&P500 sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Own5to25	-0.1827***	-0.1936***	-0.1909***		-0.0526***	-0.0534***	-0.0528***	
	(-33.30)	(-12.14)	(-29.75)		(-11.06)	(-6.97)	(-8.35)	
Own5to25 * Ind	-0.0869***	-0.0683***	-0.0691***		-0.1235***	-0.1692	-0.1830***	
	(-11.14)	(-2.95)	(-7.62)		(-13.44)	(-1.53)	(-15.12)	
Own25to50	-0.3486***	-0.3377***	-0.3376***		-0.1171***	-0.1139**	-0.1227***	
	(-28.43)	(-4.22)	(-23.32)		(-7.53)	(-2.03)	(-5.78)	
Own25to50 * Ind	0.2034***	0.2082***	0.2111***		0.0256	0.0954	0.1075***	
	(13.59)	(2.85)	(12.00)		(1.25)	(0.69)	(3.92)	
Constant	0.0065***	0.0045***	0.0063***	0.0004	0.0010**	0.0007	-0.0034**	-0.0006
	(11.26)	(3.35)	(6.27)	(0.37)	(2.35)	(1.05)	(-2.37)	(-0.77)
Ind	0.0068***	0.0041**	0.0044***	0.0135***	0.0080***	0.0093	0.0106***	0.0156***
	(7.26)	(1.98)	(4.02)	(9.07)	(7.11)	(0.98)	(7.17)	(7.89)
LnAssets			0.0002				0.0004**	
			(1.55)				(2.46)	
PPE/Assets			-0.0127***				0.0016	
			(-11.50)				(1.32)	
Debt/Assets			-0.0021***				-0.0014	
			(-5.03)				(-1.07)	
CapEx/Sales			0.0000				0.0036	
			(-0.89)				(0.99)	
R&D/Sales			0.0000				0.0191***	
			(1.62)				(4.32)	
Own				-0.1156***				-0.0262**
				(-8.64)				(-2.12)
Own * Ind				-0.2373***				-0.2930***
				(-12.57)				(-11.92)
Own^2				-0.3005***				-0.1190***
				(-9.02)				(-3.21)
Own^2 * Ind				0.6147***				0.5048***
				(13.90)				(8.34)
Observations	29,991	31,126	28,743	31,126	8,019	8,086	7,621	8,086
Adjusted R^2	24.54%		19.95%	19.60%	18.73%		17.27%	16.06%