Blockholder Heterogeneity, Multiple Blocks, and the Dance Between Blockholders*

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ABSTRACT

We study the determinants of blockholder presence in a sample of 129,532 blockholdings distributed over 47,614 U.S. publicly listed firms from 2001 to 2014. The mechanism governing the determinants of blockholder presence for all blockholders grouped together differs in substantive ways from the mechanisms governing each individual type of blockholder, suggesting substantial blockholder heterogeneity. These differences offer insights into the roles of different blockholders in corporate governance, and also into blockholders' underlying motivations and technologies. We find strong evidence suggesting that blockholder investment decisions are interdependent. Smaller blocks, particularly those of financial institutions, display substantial positive interdependence in the sense that the presence of one blockholder is associated with a greater than average likelihood of observing additional blockholders. Larger blocks, particularly those held by non-financial firms, display strong negative interdependence. This evidence for small and financial blocks is generally consistent with theories of blockholder governance through trading, while the evidence on other block interactions is better described by theories of monitoring and private benefits of control.

1. Introduction

The role of blockholders in corporate governance is an issue that has attracted much attention from financial economists. When corporate ownership is dispersed, a variety of firm governance problems can arise, as owners individually have little incentive to monitor managers. As Shleifer and Vishny (1986) illustrate, blockholders may ameliorate these problems by partially concentrating ownership in the hands of parties who have an economic incentive to involve themselves in monitoring management and participating in major corporate decisions (e.g., control contests). At the same time, blockholders may bring their own problems to firms, as their actions may at times negatively impact other shareholders, or managers (see Edmans (2013)).

While there is a substantial empirical literature examining the causes and consequences of blockholder presence, the picture is still far from complete. In particular, many studies focus on only certain specific types of blockholders, while others focus on a singular outcome or firm characteristic associated with blockholder presence. Collectively, this literature establishes blockholder presence is common, even in countries such as the U.S. that are widely considered to have relatively disperse ownership structures. Moreover, it is clear that blockholders appear in many flavors, shapes, and sizes, and that multiple blockholders frequently coexist in the same firm.

In this paper, we systematically examine questions related to blockholder heterogeneity and coexistence. In particular, we ask not only the traditional question of what types of firms have some type blockholder, but also the more nuanced questions of which types of firms have which types of blockholders and to what extent are blockholder participation decisions at a given firm interrelated. Our analysis contrasts with much of the prior literature in that we place

variables associated with block ownership on the left side of the regression equation. That is, we seek to understand the determinants of blockholder structure as a function of firm characteristics. While understanding the causal role of blockholders on firm outcomes is certainly a question of much interest, we believe that much can be learned about the underlying costs and benefits of block ownership, and the accompanying theories, by examining the equilibrium assignment of blockholders across firms and over time. Some aspects of our empirical analysis can be viewed as tests of existing theories of blockholders, while other aspects can be viewed as providing an empirical description in order to inform future theories.

Using a sample of 129,532 blockholdings distributed over 47,614 firm years for Compustat listed firms from 2001 to 2014, we confirm earlier evidence that most (91.6%) of public U.S. firms do have at least one party holding 5% or more of their stock. The presence of multiple blockholders at a given firm is a common outcome that has been increasing steadily over time, with the median sample firm having three blockholders. Financial institutions (e.g., mutual funds) are by far the largest group of blockholders, followed next by individuals and then by a group we call strategic investors, a category largely composed of hedge funds and private equity firms. The presence of this strategic investor group has grown quite substantially over time. Public firms and private firms represent smaller, but not inconsequential, blockholder groups.

We first examine whether the mechanism governing blockholder presence varies across blockholder types, a possibility we refer to as the *blockholder heterogeneity hypothesis*. Perhaps not surprisingly, we find support for this hypothesis in the form of notable differences in the determinants of the presence of different types of blockholders, suggesting that different types of blockholders often play different roles in firm governance. Grouped all together, blockholder

presence is less likely in firms with higher levels of idiosyncratic risk, higher growth opportunities as measured by Tobin's Q, and in larger firms. Overall, there is no significant relationship between R&D intensity and block presence. The size of block positions conditional on having a block generally respond in the same ways to the factors that govern blockholder presence, suggesting that circumstances that are conducive to establishing a block also tend to lead to the establishment of larger blocks.

The one variable that appears to display a similar role in predicting block positions for all blockholder types is Tobin's Q which in almost all cases is significantly negatively related to block presence. With respect to firm size, most blockholders groups display the aforementioned negative sensitivity to size, but financial blockholders avoid blocks in very small firms, so that these blockholders on average are more likely to be present as firm size grows. With regard to R&D, individual blockholders appear quite unlikely to hold blocks in R&D intensive firms, while strategic investors and financial firms display an enhanced likelihood of investing in these firms. When we group all blocks together, these two patterns appear to roughly cancel out.

Perhaps most interestingly, the overall negative relation between idiosyncratic risk and blockholdings we uncover appears to reflect the sharp aversion of financial institutions to establishing blocks in very risky firms. All other block groups appear to be either attracted to, or unconcerned with, idiosyncratic firm risk. This may explain some of the mixed evidence on idiosyncratic risk and ownership concentration in the past literature. Moreover, it suggests that non-financial blockholders provide a valuable monitoring role in risky environments in which the opportunity for managerial misbehavior is substantial, along the lines first hypothesized by Demsetz and Lehn (1985). The finding that financial institutions avoid riskier firms is consistent

with their participation in governance through exit and trading, rather than through monitoring and intervention.

We next examine whether blockholder participation decisions are related to the presence of other blockholders at the firm, a possibility we refer to generally as the *blockholder interdependence hypothesis*. These tests are motivated by the theoretical literature on multiple blockholders which identifies several channels through which blockholders may interact and jointly benefit or harm either each other or the firm as a whole. Some of these theories predict negative interdependence, beginning with the influential model of Zwiebel (1995) and the notion of blockholders "creating their own space." Other more recent theories suggest the possibility of positive interdependence in which the presence of multiple blockholders may serve to delicately manage the monitoring or trading incentives of owners in a way that is jointly beneficial (e.g., Edmans and Manso (2011), Dhillon and Rosetto (2015)).

We investigate this hypothesis by examining models in which the likelihood of observing one blockholder is a function of the presence other blockholders, along with a host of firm characteristics. Interestingly, when we focus on blockholdings that include many small blocks and/or financial blockholders, we find some evidence indicating positive blockholder interdependence. Since these blockholders are generally the least likely to become directly involved with governance, this evidence appears broadly consistent with theories that suggest the possibility of positive blockholder interdependence effects when multiple blocks serve a beneficial governance role through interrelated trading decisions. These findings on positive interdependence should be interpreted with some caution, as they could also reflect correlated trading styles that are not adequately controlled for in our empirical model, despite our best efforts.

When we turn to larger blocks (above 10% or 20%) and focus more on non-financial blockholders, we find strong evidence of negative blockholder interdependence, consistent with the theory and early evidence of Zwiebel (1995). The estimated magnitude of this relation is quite strong, with the presence of one blockholder in some models decreasing the likelihood of observing another blockholder by a factor of one third to one half. These findings are compelling, as any inadequately controlled for correlation in trading styles will tend to bias us against finding these patterns in the data. These negative interdependence findings are consistent with the general notion that free-rider problems, coordination issues, or conflicts of interest, tend to reduce the net benefits of multiple blocks coexisting, particularly in the case of large and non-financial blockholders.

To investigate further, we also attempt to disentangle which types of blocks tend to coexist more or less frequently. Here we find that most block types display negative interdependence, but a couple of block type pairs do display a positive relation. While the character of these results are nuanced, the general patterns of apparent repulsion and attraction across types can be rationalized using broad themes from existing theories along with observations on the likely technology describing each blockholder group.

After examining the overall correlations in blockholder participation decisions, we attempt to understand some of the dynamics that lead to these correlations by studying the exit and entry behavior of blockholders into firms. We detect relatively accelerated exit rates for blockholders from firms in which other blockholders are present, behavior that tends to lead to negative interdependence. However, we also find in some cases accelerated entry rates of blockholders into firms that already have blockholders, behavior that leads to positive interdependence. These exit dynamics tend to become stronger for larger blocks and non-

financial blocks, while the entry dynamics weaken for these blocks. Thus, it appears that many of the patterns we find in overall correlations reflect these changes in the overall strength of these two effects.

Taken as a whole, our evidence clarifies and updates much of the earlier evidence on blockholders viewed in isolation, while offering for the first time large-sample evidence on the circumstances that lead to the coexistence of multiple blocks at the same firm. Our evidence on blockholder heterogeneity suggests that specific theories about blockholders are often better at explaining the behavior of one specific group of blockholders, rather than all blockholders as a whole. This is not surprising, as the technological components that feature prominently in theories of blockholdings – e.g., monitoring skill, private benefits, risk tolerance, investment horizon, etc. – are likely to vary distinctly across blockholder groups. Our evidence on multiple blocks is broadly consistent with the idea that multiple block arrangements are a deliberate equilibrium outcome in which blockholders individual decisions are influenced by the participation decisions of others and the anticipated net benefits of a blockholder coexistence in the same firm.

The rest of the paper is organized as follows. In section 2 we review the literature on blockholders viewed in isolation, and blockholders as a portfolio, and then motivate our empirical strategy. In section 3 we describe our sample and present some initial summary statistics. In section 4 we consider the determinants of the presence of a blockholder and the size of their holdings without explicitly accounting for blockholder interactions. In section 5 we directly examine multiple blocks and the interrelated nature of blockholder participation decisions. Section 6 concludes.

2. Blockholder Structure

2.1 Blockholder presence

Edmans (2013) provides a comprehensive overview of the different theories of blockholder ownership. These theories explore the potential benefits and costs to having a shareholder with a substantial stake in the firm. Concentrated ownership is often posited to have various monitoring benefits (e.g., Shleifer and Vishny (1986), Winton (1993)), but these benefits come with potential offsetting costs including inefficient risk-sharing from a lack of diversification, diluted managerial incentives from over-monitoring (e.g., Burkart, Gromb, and Panunzi (1997), Pagano and Roell (1998)), and potential opportunistic behavior by the blockholder (e.g., Bennedsen and Wolfenzon (2000)).

If there are both costs and benefits to having blockholders, we would expect empirical outcomes to reflect this tradeoff.[1] Thus, we would expect any variable which proxies for relatively elevated net benefits of blockholdings to be associated with an elevated probability of observing these blockholdings. If one has a strong prior that a particular theory correctly describes blockholder formation, the empirical patterns in the data can be used to identify variables that proxy for the relevant benefits and costs. Conversely, if one has a strong prior that a variable suitably captures relevant factors described by the theory, empirical patterns in the data can be used to test the underlying theory.

While few studies systematically examine the determinants of blockholdings, a large number of studies have examined the determinants of inside ownership or ownership concentration in general. Since insiders with high ownership are one important type of

[1] As highlighted in several models of blockholdings, for example Edmans and Manso (2011), the exact outcome that is observed may depend on the timing of who has decision rights at various points in time. In general, we would expect net benefits to be at least partially reflected n observed outcomes, independent of these decision rights issues.

blockholder, and since concentrated ownership generally entails the presence of significant blockholders, these studies provide some evidence relevant for understanding blockholder presence. In an important early study, Demsetz and Lehn (1985) establish some basic facts about the cross-sectional determinants of ownership concentration in publicly traded U.S. firms. They uncover the particularly interesting finding that concentrated ownership is often associated with higher levels of firm risk, suggesting that the incentive or monitoring benefits of ownership outweigh the risk-bearing costs in highly risky environments. Subsequent authors have revisited and extended many of these findings, with a focus often on predicting changes in inside ownership over time rather than cross-sectional determinants (e.g., Himmelberg, Hubbard, and Palia (1999), Denis and Sarin (1999), Fahlenbrach and Stulz (2009), and Helwege, Pirinky, and Stulz (2007)).

The two papers that are most squarely focused on describing the presence of blockholders are the studies of Dlugosz, Fahlenbrach, Gompers, and Metrick (2006) and Holderness (2009). In a panel of large firms public U.S. spanning the later 1990s, Dlugosz, et. al. (2006) report that the median firm has 2 blockholders and that most blockholders are firm outsiders. In a random sample of 375 Compustat firms from 1995, Holderness reports that 96% have at least one 5% blockholder. These studies clearly establish that both single and multiple blockholding outcomes are common outcomes at publicly traded U.S. firms. Holderness (2009) also presents some preliminary evidence on the determinants of blockholder position presence and size. Whether his reported findings are evident in larger and more modern samples, and whether they differ for different types of blockholders, are unresolved questions that we will address in our analysis.

2.2 Blockholder heterogeneity

While many theories assume blockholders are a relatively homogeneous group, the data reveal that individuals, financial institutions, and operating companies all represent substantive portions of the blockholder population (see Cronquist and Fahlenbrach (2009) and Dou, Hope, Thomas, and Zou (2016)). There are reasons to expect that these different types of blockholders will play different roles in corporate governance. In particular, individuals who are associated with the firm may use ownership as an entrenchment device, while outside individuals and activists may serve in the traditional monitoring role emphasized by early theories of blockholders. As Edmans (2013) discusses, passive financial blockholders may play a role in governance primarily via the impact of their trading decisions on managerial incentives. Finally, corporate blockholders may use their ownership positions to strengthen or build product market relationships (see Allen and Phillips (2001) and Fee, Hadlock, and Thomas (2006)).

Despite this variaton in blockholder type, there is almost no systematic empirical evidence on whether similar mechanisms govern the decisions of these different types of investors to establish blockholdings in firms. If, as we would suspect, these blockholder groups have different objective functions and also different monitoring, trading, and information collection technologies, existing theories of blockholdings would suggest systematic differences in when and where these blockholders appear in firms. For example, theories that emphasize value-added monitoring by blockholders in certain types firms may be useful in explaining variation across firms in the presence of outside individual blocks and strategic investor blocks, but not generic financial blocks. Conversely, theories that emphasize the value of trading and exit decisions by blockholders may be more useful in explaining the presence of these financial blocks. One goal of our study is to use data on all blockholders together, along with each

individual blockholder group, to sort out these different roles that blockholders may play in firm governance.

2.3 Multiple blockholders

Several theories posit that blockholder activities cannot be viewed in isolation, as blockholders may condition their decisions on the anticipated or observed actions of other blockholders. These theories suggest that there are systematic reasons why some firms end up with multiple blockholders, rather than with one blockholder, or no blockholders at all. Some of these theories emphasize the general disadvantages of the multiple blockholder structure. In particular, when there is a concern about insufficient monitoring, the free rider problem associated with multiple blocks may tend to impede the formation of this ownership structure (e.g., Winton (1993)). In addition, as illustrated by Zwiebel (1995), multiple block structures may be a particularly inefficient way to allocate private benefits of control, in which case these structures will tend not to emerge in equilibrium.

It need not always be the case that multiple block structures have net disadvantages that impede their formation. Edmans and Manso (2011) make the interesting point that if blockholders primarily affect firm governance through their trading decisions, the presence of more blocks can lead to more intense competition to collect information, resulting in a net positive effect on managerial incentives via stock price signals. Along different lines, Dhillon and Rosetto (2015) posit that blockholders may efficiently monitor each other, thus leading to net gains compared to single blockholder structure. Models by Bloch and Hege (2003) and Gomes and Novaes (2006) also highlight the potentially important beneficial role of additional blockholders in limiting the opportunistic behavior of a lead blockholder.

While these theoretical discussions lead to some interesting predictions, we have almost no empirical understanding of which types of firms have multiple blocks, although several authors have observed that these ownership structures are fairly common. Several authors have shown that the presence of multiple blocks are systematically associated with certain firm outcomes (e.g., Faccio and Lang (2002), Maury and Pajuste (2005)), Laeven and Levine (2007), Attig, Guedhami, and Mishra (2008), and Cai, Hillier, and Wang (2015)). This evidence is interesting, in that it suggest that there are real economic consequences to the multiple block ownership structure, although most of these studies rely solely on foreign data and thus applicability to U.S. firms is unclear.

The existing empirical evidence that most directly considers the determinants of the multiple blockholder structure is reported by Zwiebel (1995) in support of his model. In particular, Zwiebel (1995) reports that the rate of multiple blockholdings in a small sample of firms from 1980 is lower than what would be expected if blockholder decisions were each made independently. This evidence suggests that there are tensions when multiple blockholders are present that tend to impede the formation of this ownership structure, a behavior that Zwiebel (1995) refers to as "creating space." To the best of our knowledge, this is the only existing evidence that systematically speaks to the economic considerations governing the formation of multiple block ownership structures. Certainly more evidence is called for given how frequently these structures appear and the various untested theories explaining their formation.

2.4 Empirical strategy

Our empirical goal is to understand the determinants of the composition of a firm's blockholder portfolio in the context of the theories discussed above. We divide this analysis into

three parts. First, we consider whether a firm has any blockholder or a blockholder of a certain type or position size. This allows us to ascertain which of the general theories of blockholders seems to be a useful characterization of the data, indirectly offering evidence on the potential costs and benefits of blockholder presence both in general and with regard to each blockholder type. Differences across blockholder types would provide evidence supporting the blockholder heterogeneity hypothesis. Second, we examine whether the presence of one blockholder is related to the likelihood of observing other blockholders to evaluate the positive and negative versions of the blockholder interdependence hypothesis.

To implement the first part of our analysis, we need to select empirical variables that measure some aspects of the theoretical predictors of blockholdings. Since much of the theory is vague on how to operationalize this investigation, we start with a set of variables that have been included in prior studies of the determinants of ownership. We then focus our attention on a subset of four variables that figure most prominently in the prior literature and/or appear to us to most cleanly measure an underlying factor of interest.

The first variable we select is idiosyncratic firm risk as measured by the standard deviation of a firm's market-adjusted stock returns. Several theories emphasize the potential benefits of blockholder monitoring/incentives in very risky environments. At the same time, the risk-bearing costs of holding a relatively large undiversified position in a risky firm may be quite high. Thus, we expect to observe a positive relation between risk and blockholdings only if blockholders serve as valuable monitors and if their risk-bearing costs are not too large.

The second variable we select is a firm's R&D intensity. When intangible investments are high, the negative incentive effects or disagreement costs between managers/insiders and blockholders emphasized in some models (e.g., Burkart, Gromb, and Panunzi (1997)) would

appear likely to be elevated. Thus, we expect R&D to exhibit a negative relation with blockholdings for blockholders that ex post may take actions that destroy ex ante incentives.

The third factor we consider is a firm's growth opportunities, as measured by Tobin's Q. The motivation for this variable is similar to the R&D variable. When growth opportunities are valuable, managerial/insider incentives are important to effectively fund and execute the firm's growth options. At the same time, the need to monitor managerial overspending or other agency problems would generally appear limited. Thus, a generally negative relation of Q and blockholdings may be expected.

In addition to the three factors identified above, we also focus on the role of firm size with blockholder presence. For wealth constrained or risk-averse blockholders, firm size should have a negative effect on blockholder presence and/or the percentage of ownership purchased. Many blockholders would appear to fit in this category, with the exception perhaps of public firm blockholders and financial institutions. If blockholders add value to firms via their trading activity and the feedback effect on stock prices (e.g., Edmans and Manso (2011), we might expect to observe more of these blockholders in larger firms in which trading costs are lower and the ability to hide behind liquidity traders may be larger. Certainly financial institutions would appear most likely to be characterized in this way.

When we turn to predicting the blockholder interactions, our general approach is to augment the baseline models predicting the presence of a blockholder at a firm with additional variables indicating whether the firm already has a blockholder of a certain type. This allows us to assess whether the likelihood of a blockholder appearing at firm is higher or lower than would otherwise be expected given the firm's characteristics. A positive (negative) coefficient is taken as an indication of positive (negative) blockholder interdependence. As we discuss in detail

later, there are some subtleties in conducting these tests, as for blockholders of the same type it is not immediately clear how to incorporate a given blockholder's appearance at the firm into either the dependent or independent variable of the model. We overcome this challenge by using a randomization device that assigns all blockholder-year observations into two equally likely bins, each of which are used separately in coding of the dependent and independent variables of some models. This approach allows us to treat similar blocks as if they are different, and thus permits a straightforward way to estimate whether blocks of the same type tend to cluster at the same firm at the same time (positive interdependence or attraction) or whether the reverse behavior is more common (negative interdependence or repulsion).

3. Sample construction and description

3.1 Sample selection

Our principal source of ownership data is the Factset ownership file. The Factset database includes all 5% ownership positions revealed in financial filings including proxy statements and 13-D/13-F/13-G filings. Thus, this database is a superset of data other published studies have assembled when using information from a single type of filing.[2] The data for active firms is straightforward to download from Factset, but our access to data on inactive firms required manual downloading of the ownership history of each firm. The Factset ownership files appear to be fairly comprehensive and uniform starting in 2001, and thus our sample includes all available observations from 2001 until 2014.

[2] Some recent unpublished studies have created similar datasets to the one we examine, albeit to address different questions, by using word scraping algorithms to extract information from filings and other sources. See, for example, Zhu (2015).

From these files, we construct a snapshot of each firm's ownership structure as of June 30th of each year. This timing assures that proxy statements for firms with traditional December fiscal year endings will have been released and incorporated into the subsequent June ownership listing. We match the Factset data with Compustat and CRSP by using various common identifiers in both samples, followed by hand checking of all cases in which there are differences in corporate names. We match all Compustat records for the most recent fiscal year ending that falls on or before June 30th with the associated June 30th ownership record. This assures that the firm characteristics that are used to predict blockholder structure do not post date the blockholder ownership information.

After restricting attention to observations in which the Compustat record is sufficiently complete so as to construct our various explanatory variables, the final sample is composed of 47,614 firm-years of data, with an average of over 3,400 firms per year. We report in Table 1 the mean and median size of sample firms as measured by book assets (inflation adjusted to 2014 and winsorized). These figures appear quite similar to what others have reported for broad Compustat-based samples over this period. The sample is slightly tilted towards larger than average Compustat firms, but much less so than samples that restrict attention to Execucomp firms or S&P 500 firms.

3.2 Categorizing Blockholders

After assembling the initial sample, we clean the blockholder data and consolidate together positions that are listed separately but are clearly related, for example two listings for individuals with the same last name or financial institutions that are both part of the same parent entity. All positions below 5% are dropped from the sample, as this is the minimum threshold

that is uniformly reported across all blockholder types. As we report in Table 1, the resulting sample has 129,532 blockholder-years of data.

After cleaning and consolidating the blockholdings, we attempt to assign blockholders to mutually exclusive categories. We start with the Factset categorization of the blockholder type. Factset uses a large number of categories, some with a very small number of blockholders. In addition, several of their categories appear to include a mix of substantively different types of blockholders. To organize this data in a practical way, we examine each of the specific blockholder categories and randomly select a small set of blockholders to test the accuracy of the blockholder type categorization. If a categorization appears accurate, we assume that block type is coded accurately. If a category appears to be inaccurate, or is overly vague for our purposes (e.g., "private company"), we code the block types using a variety of computer algorithms based on the blockholder name and, when this is insufficient, hand coding of the blockholder type from internet searches and directory listings. In the final sample, 48% of the blockholders were assigned to categories entirely via algorithms or Factset labels, with the remainder assigned using at least some hand coding.

After sorting through the data, several patterns emerge that lead us to grouping blocks into six broad mutually exclusive categories, plus a catch-all category of "other." In this categorization, we attempt to group blockholders that are likely to have similar economic motivations, monitoring skills, and investment strategies into common groups. Certainly a finer categorization is possible, but this comes at the cost of working with an unwieldy number of block types.[3]

[3] Other authors have grouped blocks into a small set of categories. For example, Cronquist and Fahlenbrach (2009) assign blocks to 9 categories and Dou, Hope, Thomas, and Zou (2016) use a similar categorization scheme to arrive at 8 categories. Our sample is much larger than those of these authors and our time period is more recent. However,

We categorize individual blockholders into two types, referred to as affiliated and unaffiliated individuals. The affiliated individual group is intended to capture owners who have a close attachment to the firm via a management or founding family role. We assign an individual position to this category if the individual's last name matches that of any individual listed in the top four executives of the firm at any point between 1990 and the observation year, using the Compustat executive name file (see Fee, Hadlock, and Pierce (2013)). All other individuals are assigned to the unaffiliated individual group. As we report in the first column of Table 1, 12.2% and 7.0% of all blockholdings are assigned to these two groups, respectively.

The third category we identify, public company blockholders, is a small (2.2% of all blocks) but potentially interesting group. Prior research suggests that these blocks are often formed as part of a product market relationship, but systematic evidence on their prevalence and determinants is largely unknown. We place in a fourth category private company blockholders, where we attempt to include in this private company group actual private operating companies, with purely financial entities or private investment vehicles assigned to other categories. This type of blockholder is less common than public company blockholders (1.6% vs. 2.2%). We suspect that these two types of positions may have similar economic features on some dimensions, but little is known or has been written about this blockholder category.

A large number of blockholders are described as private equity funds and/or hedge funds. It appears to us that each of these categories contain a wide variety of blockholders with different investment styles and degrees of activism/involvement in the firms in which they invest. Rather than attempt to sort out these varied styles, we place all of these blocks together into a single

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our sample confirms their evidence that generic financial firms are the largest blockholder category by a wide margin.

category that we refer to as strategic investors. The strategic investor group should include various pools of strategic equity capital that are intermediated in nature, but potentially more involved in monitoring and firm governance than traditional and more passive financial institutions. This is a large blockholder category, composing 12.7% of the sample of all blockholder-years.

The final distinct blockholder category is what we refer to as generic financial institutions. This is by the far the largest group (over 60% of the sample). Most of these blockholders are passive financial institutions and funds, but surely a subset are at least occasionally involved in firm governance or voting on major corporate matters. In addition, as several authors have illustrated, even passive financial blockholders may play an economically substantive role in a firm's decisions via their trading behavior. In what follows, we will often experiment with separating this group from the other blockholders, as their large number and passive style may cloud the picture when they are grouped together with all other blockholders.

Over 97.5% of all blocks can be placed in one of these mutually exclusive six categories. We place the remaining blocks in a category called "other." These blocks represent a variety of different special investors, with the most common being various non-profit entities, public pension funds, firm pension funds, and ESOPs. In what follows, we will include these blocks in models in which we are examining the presence of any blockholder within a broad group, but we will not investigate them as a separate category.

3.3 Description of Blockholder Prevalence and Positions

As we report in column 1 of Table 1, if we group all blockholders together, we find that 91.6% of all firms have at least one blockholder. This figure is slightly lower than what is

reported by Holderness (2009), but is consistent with figures reported by Cronqvist and Fahlenbrach (2009) and Dou, Hope, Thomas, and Zou (2016). Certainly, it appears that having at least one 5% blockholder is a very common phenomenon across broad cross sections of Compustat listed firms. As we report in the subsequent rows of the table, a majority of firms (73.4%) have more than one blockholder, and the median firm has three blockholders. The dynamics of the relationship between these multiple blockholders is an issue that we model below, but it is worth emphasizing here that these relationships are quite common. The final rows in column 1 of Table 1 report the median size of each block position. Affiliated individuals and public and private companies tend to hold larger percentage positions than the other blockholders.

In Table 1, we present statistics for the first and last year of the sample (columns 2 and 3), and for the smallest and largest quintile firms (columns 4 and 5). A couple of interesting patterns emerge from these comparisons. The likelihood that a firm has at least one block, and the likelihood of observing multiple blocks, both appear to have increased over time. This trend appears to reflect a sharp increase in strategic and financial blocks, a trend that is only partially offset by a decline in the presence of the other blockholder types.[4] As one might suspect, small firms are more likely to have a block of any type except for generic financial blockholders. Generic financial blockholders are much more likely to take positions in larger firms, so the overall likelihood of observing some blockholding, and also the likelihood of multiple blockholdings, are only slightly elevated for the smallest quintile firms.

[4] We have confirmed that the time trends in blockholder composition and presence at the firm-year level suggested by comparing the first and last year columns of Table 1 are confirmed in multivariate logit models pooled across all firms and years with a full set of explanatory variables (detailed below) and a year trend variable included to measure secular changes.

4. Determinants of Blockholdings

4.1 Predicting blockholder presence

We first model the determinants of whether a firm has a blockholder of any type. This serves as a benchmark when we consider differences between different blockholder types and the interdependence of blockholder investment decisions. The underlying theory is often vague on what variables will proxy for the considerations that may drive block ownership, as factors such as the costs or benefits of external monitoring can be hard to measure. Rather than taking a strong stand on which variables adequately represent the underlying theories, we borrow from the more well-developed prior empirical literature on the determinants of inside ownership to select variables that may also predict block ownership. We then interpret the coefficients on these variables in light of some of the underlying theoretical considerations regarding block ownership.

To select a baseline set of explanatory variables, we collect the variables used by Himmelberg, Hubbard, and Palia (1999) and Helwege, Pirinky, and Stulz (2007) in their studies of the determinants of inside ownership. In some cases, we condense related variables into a single variable and/or select an alternative definition that is more common or suitable for the question at hand. For all non-indicator variables except firm size, we standardize the explanatory variables by dividing by the sample standard deviation. This allows us to directly compare the magnitude of the estimated coefficients on the explanatory variables in common standardized units. The precise definition and construction of each variable is detailed in the appendix.

To predict whether a firm has a blockholder, we create dependent variables that assume a value of 1 when a firm has a blockholder (of any type or of a specific type) in a given year, and 0

otherwise. The explanatory variables include the variables identified in the procedure outlined above, along with individual year and 2-digit industry dummies. We estimate simple logit models and report the estimated marginal effects from the logit model holding all variables at their sample means. These effects are easier to interpret than the usual logit coefficients, and in all cases they agree with the underlying coefficients in both sign and significance level.[5]

We focus primarily on the role of four key explanatory variables in predicting the presence of blockholders. The first two, firm size and idiosyncratic risk, play a prominent role in most discussions of ownership. The second two, Tobin's Q and R&D intensity, capture the presence of growth opportunities and/or intangible assets of the firm, characteristics that may result in negative incentive consequences from the presence of blockholders and/or relatively limited benefits from blockholder monitoring.

The first column of Table 2 reports coefficient estimates from our baseline model predicting blockholder presence of any type at a firm in a given year. The coefficient on three of the four key variables are negative and significant, indicating that large firms, risky firms, and high Tobin's Q firms are relatively less likely to have a blockholder. The magnitudes on the coefficients of these variables range from -.008 to -.014, indicating a decrease in the likelihood of detecting a blockholder on the order of around 1% when these explanatory variables increase by one sample standard deviations (relative to an overall sample frequency of blockholder presence of 91.6%).

Turning to the economic interpretation of the negative signs on these coefficients, the negative coefficient on firm size is consistent with many prior studies that show that ownership

[5] These logit model marginal effects are in almost all cases also very similar in magnitude and significance to coefficients derived from the corresponding simple OLS linear probability model.

is generally less concentrated at larger firms. The negative coefficient on the idiosyncratic risk variable suggests that high risk bearing costs may limit blockholder participation in very risky firms. Finally, the significant negative coefficient on Tobin's Q suggests that monitoring is less needed/valued at high performing firms, or alternatively that block ownership is deleterious to the incentives that are needed for these types of firms to maximize the value of their promising growth opportunities.

4.2 Modeling the presence of specific block types

We next consider whether the empirical characterization above predicting the presence of any blockholder also describes the presence of each of the individual blockholder types. We estimate models that parallel our baseline model discussed above, but with a dependent variable indicating whether or not the firm has a block of a given type. The estimated marginal effects from these logit regression models, one for each of the six blockholder types, are presented in columns 2-7 of Table 2.

As the table illustrates, the coefficient on the firm size variable is negative and significant for four of the six blockholder types, echoing the overall relation discussed above. The coefficients on size for the two individual blockholders models are particularly large, suggesting a sharp negative sensitivity of individual block investing decisions to firm size, perhaps because of wealth constraints. For example, the coefficient for affiliated individual blockholders of -.081 indicates an 8.1% decrease in the likelihood of observing a blockholder of this type when firm size increases by one standard deviation from the mean, a very large effect relative to the unconditional likelihood of observing an unaffiliated individual blockholder of 27.4%. Interestingly, firm size appears to play no role in predicting the presence of public firm

blockholders, as the estimated effect is small in magnitude, positive, and insignificant. The coefficient on firm size in the financial blockholder regression (column 7) is positive and highly significant, indicating that financial institutions are more likely to take block positions in larger firms. This result appears to largely reflect financial institutions aversion to taking position in the smallest quintile firms, perhaps because of institutional constraints.

Turning next to the idiosyncratic risk variable, the estimated effect is positive for 5 of the 6 block categories and in three of these cases the effect is statistically significant. However, the coefficient is negative, large in magnitude (-.077), and highly significant, for the generic financial institution group. This aversion of financial institutions to firm risk appears to be the driving force behind the earlier documented negative relation between blockholder presence of any type and firm risk. The positive coefficients in many of these models for the other bockholder types are interesting, as they are consistent with some of the arguments and findings of Demsetz and Lehn (1985) and suggest that in many cases the monitoring or incentive benefits of concentrated ownership may outweigh the risk-bearing costs in highly risky environments. The unaffiliated individuals, who often may serve in an external monitoring role, appear particularly positively sensitive to the firm risk variable.

The Tobin's Q variable is negative and significant for all blockholders except public firm blockholders, for which the coefficient is small and insignificant. The R&D variable is also negative and significant for the individual and private company blockholders. The combined negative coefficients Q and R&D for three of the blockholder categories suggests that the presence of these blockholders may be deleterious to optimal incentive in high growth environments with substantial levels of intangible investment. Public firm blockholder presence appears unrelated to Q or R&D, perhaps because the natural tendency of these blockholders to

make equity investments in technology and growth offsets any counteracting incentive considerations.

While the strategic investors and generic financial blockholders are less likely to invest in high Q firms, they appear more likely to invest in high R&D firms. These effects are particularly large in the case if strategic investors, at least measured relative to their overall sample presence. We suspect that some of the Q relation may reflect stock selection rules that avoid glamour stocks, while some of the R&D effect may reflect the presence of venture capital funds within the strategic investor group.

Given the apparent differences in the mechanism governing generic financial blockholdings and the other blockholdings, we consider a model predicting the presence of any type of block except financial blockholders. The estimates from this model, presented in column 8 of Table 2, tell the story that we would expect given the findings in the earlier models. In particular, non-financial block ownership is positively related to risk and negatively related to firm size, Tobin's Q and R&D intensity. The magnitudes of all of these effects are also substantial when measured relative to an overall sample frequency of non-financial blockholder presence of 59.3%. If we further exclude affiliated individuals, thus predicting the presence of non-financial outsiders, the coefficients in column 9 indicate the same basic patterns, except the coefficient on R&D becomes small, positive, and insignificant. This flip in sign on the R&D coefficient reflects both the removal of inside individuals, who appear as a group particularly averse to establishing block positions in high R&D firms, and the resulting relative re-weighting on the strategic investor blockholders, a group that displays a high propensity to establish positions in high R&D firms.

Summarizing the evidence on block positions, we uncover many similarities, but also a few notable differences in the mechanism governing the establishment of different types of blocks. In our view, the most interesting variation across models is in the role of firm risk in predicting blockholder presence. In the case of all blockholders grouped together with the exception of generic financial blocks, the relation is sharply positive, while for generic financial blockholders, the relationship is sharply negative. Since risk figures prominently in several theories of blockholdings which emphasize monitoring, these differences suggest that financial blockholders play a significantly different monitoring role than others.

The second notable pattern is that public firms blockholders tend to respond little to many of the covariates that govern the behavior of other blockholders. For three of the four key explanatory variables the estimated effect in predicting blockholder presence is insignificant. Moreover, the overall model R^2 for these blockholders is the lowest of any of the specific blockholder types.

More generally, our evidence on predicting blockholder presence supports the blockholder heterogeneity hypothesis and suggests that grouping heterogeneous blockholders together will end up masking some substantive variation in the data. A satisfying theory or understanding of blockholdings will need to be able to explain/accommodate this variation across block types. Hopefully, future research will provide explanations that convincingly rationalize some of this documented heterogeneity.

It is worth noting that the estimates in Table 2 are pooled estimates and thus exploit both time series and cross-sectional variation. We suspect that much of the important variation is cross-sectional. While the logit model does not lend itself fixed-effects estimation, we have experimented with estimating corresponding OLS linear probability models that allow for firm

fixed effects. Of the 28 coefficients on the four key variables in Table 2 that are significant at the 5% level or better, we find that 16 are significant and of the same sign in these OLS models, and 2 are significant and opposite in sign.[6] This suggests that the cross-sectional variation in the data generally tells the same story as the within firm variation, but the agreement is not complete.

4.3 The size of block positions

A potential blockholder decides not only whether to establish a block position, but also the size of the position to establish. If there are costs to the firm or the blockholder of establishing larger blocks, it is possible that some of the factors that govern block presence play a different role in governing the size of any position that is established. To explore, we consider models predicting the size of blockholdings in a firm, aggregated together and measured in logarithmic form, as a function of the same set of explanatory variables identified earlier.

We present in Table 3 models of this type that exactly parallel the models predicting blockholder presence in Table 2. The dependent variable in each column measures the sum of the percentage of equity by all blockholders of the indicated type (or set of types), conditional on the firm having at least one blockholder of that type. Given the large number of coefficients in the table, we discuss only the cases in which the coefficients on one of the four key explanatory variables (size, risk, R&D, and Tobin's Q) are significant and of opposite sign when comparing the block size (Table 3) and block presence (Table 2) models.

Only two coefficients (out of 4 x 9 = 36) cross the threshold of having significant and opposite signs across the two tables/model types. This suggests that generally the mechanism

[6] These two differences are on the firm size coefficient in the all blocks model and the Q coefficient in the generic financial blocks model.

governing blockholder presence is similar to the mechanism governing the size of block positions. The two notable significant differences are first, in the case of unaffiliated individuals, the coefficient on Tobin's Q is negative and highly significant when predicting blockholder presence, but positive and marginally significant when predicting the size of blockholdings. Second, for generic financial blockholders, firm size is negatively related to position size but positively related to blockholder presence. This finding suggests that financial blockholders generally avoid the smallest firms, but once a firm crosses the threshold as a candidate investment, blockholders are constrained in their willingness or ability to invest heavily in (percentage terms) in the largest firms, thus resulting in smaller stakes on average.

5. Multiple Blockholders

5.1 The presence of multiple blocks

We now consider whether the multiple blockholder phenomenon is a distinct outcome or simply the expected probabilistic result of independent decisions by multiple individual blockholders. To characterize the data, we initially assign observations into mutually exclusive groups based on whether a firm has (a) no blocks, (b) one block, or (c) multiple blocks in a given year. If multiple blocks are simply the result of many independent decisions, factors governing the no blocks versus one block outcome should play a similar role in predicting the one versus multiple block outcome. If the presence of multiple blockholders is a special structure that is distinctly suboptimal or optimal for certain types of firms, it is possible that some firm characteristics are associated with an elevated likelihood of observing one block relative to observing both no blocks and multiple blocks.

In untabulated results, we have experimented with estimating multinomial logit models in which these three blockholder structures are predicted as a function of covariates used in our earlier logit models. We uncover no cases in which an explanatory variable significantly raises (or lowers) the probability of the one block category relative to both of the other categories. This conclusion holds when we group all blocks together to characterize blockholder numbers or, alternatively, when we consider individual blockholder types or subgroupings of types or blocks. Similar findings emerge if we group observations into three groups based on no blocks, a moderate (2 or 3) number of blocks, or many (4 or more) blocks.

This evidence suggests that the economic factors governing the independent component of individual blockholder investment decisions are sufficiently correlated that they will often empirically dwarf any counteracting influences arising from blockholder interaction considerations. Thus, we must use more refined tests that directly model possible blockholder interactions.

5.2 General blockholder interactions

To investigate blockholder interactions, we empirically model whether blockholder participation decisions are related to the presence of other blockholders. Our approach is to model whether a firm has a blockholder (in general or of a certain type or subgroup of types) as a function of our full set of explanatory variables, plus an indicator of whether the firm has other blockholders. For blockholders of different types, this analysis is straightforward, as we can model whether a firm has, for example, a financial blockholder, as a function of a full set of controls plus a non-financial blockholder indicator variable.

To investigate whether the presence of one blockholder is related to the presence of other blockholders in the same type or group, the analysis is less straightforward. The approach taken by Zwiebel (1995) is to derive the probability of observing different block structures assuming independent decisions by blockholders, and then to test whether the number of multiple block firms is higher or lower than predicted (he finds that it is lower). The limitation of this approach is that it requires reliance on an assumption that a given blockholder is equally likely to appear at any firm. While this may be reasonable in a homogeneous sample, clearly it will not hold in a large sample such as ours in which some firms (e.g., small firms) are predictably much more likely to attract blockholders.

To model the relation between blockholders of the same type appearing at the same firm while holding firm characteristics constant, we use a randomization procedure to assign each blockholder-year observation into two equally likely bins (the A bin and the B bin). We then categorize the dependent variable regarding block presence using information only on blocks that are assigned to the A bin, and the independent variables are coded using solely information on blocks that are in the B bin. This approach allows us to treat similar blocks as if they are different, and thus permits a straightforward way to estimate whether blocks of the same type tend to cluster at the same firm at the same time (attraction) or whether the reverse behavior is more common (repulsion).

This approach also clarifies why controlling for covariates that are related to block ownership is important. Without a rich set of covariates, it may appear that certain types of owners are clustering at the same firm because they are attracted to one another, when the underlying behavior is simply a reflection of the general propensity of blockholders to appear at

firms of a certain type.[7] Of course we cannot control for all relevant firm characteristics, some of which are unobserved. This suggests that our estimates will generally be biased towards finding a positive relation between the dependent variable (A blockholders of a given type) and independent variable (B blockholders) of a given type. Given this directional bias, any significant evidence of repulsion will be particularly compelling.

We first consider a model in which all blockholders are grouped together, similar to the treatment of Zwiebel (1995). We include all of the firm/industry/year control variables from the prior models, but omit these coefficient estimates from the table so that we can focus on the relation between blockholder presence and the likelihood of observing other blockholders. The dependent (independent) variable assumes a value of 1 if the firm has any A blockholder (B blockholder) of any type in the observation year.

As we report in the first row and column of Table 4, the estimated marginal effect (at the sample means) on the same blockholder dummy in this logit model is small and insignificant. Thus, grouping all blockholders together, we do not detect behavior consistent with Zwiebel's (1995) findings or model. When we add to the model an independent variable that measures the size of the largest block position (amongst B blockholders), the coefficient on the block size variable is negative and highly significant, indicating that *larger* block positions do tend to repel other blockholders. Zwiebel (1995) reports some preliminary evidence along these lines. The magnitudes here are informative, as they suggest that a firm with a B blockholder with a 20% position is 7.8% less likely to have an A blockholder compared to a firm in which a blockholder holds a smaller 10% position (calculated as -.78 x (.20-.10) = -.078). Since the blockholder

[7] As expected, when we estimate the models reported below without a full set of covariates, the data indicate a positive interdependence in blockholder participation decisions. Thus, conditioning on characteristics that tend to attract blockolders to a firm is essential to determine the directional sign of the interdependence of their decisions.

sample is artificially divided in half via a randomization, the overall relation is surely substantially higher than this estimate.[8]

We next consider a parallel analysis in which we consider more homogeneous sets of blockholders by considering separate models of financial blockholders, non-financial blockholders, outside blockholders (i.e., all blocks except affiliated insiders), and outside/nonfinancial blockholders. The figures in Panel A of Table 4 generally indicate attraction of blockholders to others of the same type. The one exception to the attraction finding is for the non-financial blockholder grouping, in which case the negative coefficient on the blockholder dummy in column 5 suggests a small negative relation. In all cases the position size coefficient is negative, indicating that large positions tend to decrease the likelihood of observing a blockholder of a similar type.

While the evidence in Panel A does not indicate a strong general repulsive effect of blockholders on the investment decisions of others, the data clearly suggest that large blockholders tend to inhibit the presence of other similar blockholders. To investigate, we present in Panel B parallel models with the alteration that an owner must have a 10% position to be coded as a blockholder, rather than 5%. In these models, the evidence for repulsion is much stronger. For all blocks grouped together, we find a negative and highly significant marginal effect. The estimated effect of -.090 in column 1 of Panel B implies that the presence of a 10% block in the B group lowers the likelihood of observing a 10% block in the A group by 9.0%. This effect appears large in a relative sense, as the overall percentage of sample firm-years in which we observe a 10% A block is 32.3%. In the case of the block subgroupings, the evidence

[8] It is difficult to make more precise statements about the true implied magnitude of the effect, as this requires an assessment of numerous conditional and joint probabilities. When we consider individual block categories below, we show that many estimated effects almost double in size when the A/B randomization is removed.

now suggests either a neutral effect (financial blocks, outside & nonfinancial blocks) or a negative/repulsive effect (nonfinancial blocks, outside blocks). As earlier, the effect of block size on the presence of blockholder presence continues to be negative, even after restricting attention to block size variation above the 10% ownership level.

In Panel C we repeat the same analysis using 20% blocks. Using this strict definition, we find evidence of significant blockholder repulsion for all groups and subgroups except for financial blocks, in which case the estimated relation is basically flat. The magnitudes of these estimate are quite large in a relative sense, as the estimated change in the probability of observing a block relative to the baseline sample rates of (large 20%) block presence are in many cases more than 50%. For example, in the case of all blocks, the presence of one large B blockholder appears to lower the likelihood of observing a large A blockholder by 5.1% (see row 1, column 1 of Panel C) relative to an overall sample large A blockholder presence rate of 9.5% (i.e. from 9.5% down to 4.4%).

Collecting this evidence, the case for blockholder interactions in which the presence of one blockholder tends to inhibit the presence of other blocks appears strongest when we consider larger blocks and/or non-financial blocks. Thus, it appears that Zwiebel's (1995) model, or theories with similar predictions about "creating space," do apply generally to larger blocks and nonfinancial blocks. This evidence is all the more convincing when accounting for the natural bias against detecting this result in the presence of correlated investment styles related to unobservable firm characteristics. The Zwiebel (1995) prediction does not appear to apply to small blocks in general or financial blocks of any size. This is consistent with the notion that these types of blockholders have positions or styles that do not lend themselves to interventional monitoring or the consumption of private benefits from their positions. Using the language of

Edmans (2013), the results are broadly consistent with what we would expect if these types of blocks affect governance through trading, rather than voice.

5.3 Specific blockholder interactions

We next consider the individual blockholder categories to see if certain pairs of blockholder types are particularly likely or unlikely to be observed, holding observable firm characteristics constant. For each of the six major block categories, we estimate a logit model predicting whether we observe a block of the indicated type as a function of indicator variables for each of the block types. We initially exclude the block type being predicted from the explanatory variable indicators, allowing us to avoid the use of A/B randomization bins. Later we include the type being predicted and use the randomization. The coefficients in this randomization model should be roughly half of the corresponding coefficients in the initial models, as we are effectively predicting whether the presence of a blockholder of given type is related to the likelihood of observing half of the blockholders of another type.

We report the results without (with) the randomization in Panel A (Panel B) of Table 5. Since there are a large number of coefficients, we focus on characterizing general trends/relations. Two broad relations are apparent in the Panel A coefficients. First, looking down column 1, we see that the coefficients on all of the non-individual blockholder types are negative and significant, indicating a negative relation between all non-individual blockholders and affiliated individual blockholders. The coefficients in row 1 tell the same story, with the dependent and independent variables exchanged. Thus, the evidence appears quite compelling that affiliated individuals generally repel non-individual blockholders (or vice-versa). The presence of affiliated and unaffiliated individual blockholders appear positively correlated in

these models, although this could reflect their parallel attraction to similar firms based on unobservable characteristics.

The second evident relation in Panel A of Table 5 is the negative relation between financial blockholders and all of the other blockholder types except strategic investors. All of the coefficients in final column and row of this Panel that correspond to these relations are negative and highly significant. Thus, it appears that financial blockholders generally avoid firms that have individual, public firm, and private firm blockholders (or vice-versa). The apparent positive relation between financial blocks and strategic investor blocks suggests that either these blocks are attracted to one another, or, alternatively, that they are jointly attracted to the same types of firms on dimensions that we cannot observe.

Turning to Panel B, as expected, the coefficients here tell the same story. The magnitudes here are of roughly half the corresponding Panel A magnitudes as we are predicting the presence of half of the population of blockholders (i.e., predicting the A blocks only). The diagonal figures in Panel B are the key addition, as they capture the relation between blockholders of the same type. The reported negative marginal effect in the affiliated individual model indicates that affiliated individuals tend to repel each other, while the other diagonal figures indicate a positive or neutral relation of the other blockholders with their own type. Again, given the suspected positive bias in these estimates, the negative relation between affiliated individuals is the most convincing.

Given our earlier findings of stronger evidence of blockholder repulsion when we consider larger blocks, we have repeated the Table 5 analysis for blocks that exceed the 10% ownership threshold and also the 20% threshold. These untabulated marginal effects, are generally consistent with what we report in Table 5, with a tendency for many of the estimated

effects to become more negative, suggesting more repulsion both across and within block types when we consider larger blockholders. In Panel C of Table 5 we report the diagonal elements only from these models, i.e., the estimated marginal effect of a B blockholder's presence of a given type on observing an A blockholder of the same type. In the 10% (20%) blockholder ownership model, in all cases except the strategic investors (in all cases) the estimated marginal effect of a blockholder on its own type is negative or insignificant. Taken as a whole this evidence echoes our earlier findings that larger blockholders tend to repel each other when considered as broader groups, where this finding also appears to extend to some of the individual ownership categories.

5.4 Blockholder exits

The correlations we document above can arise in three, non-mutually exclusive, ways. First, they may reflect the exit decisions of blockholders in which the decision of when to exit the firm is related to the firm's blockholder structure. Second, they may reflect the entry behavior of blockholders in the sense that the decision to establish a block may be systematically related to the presence of other blocks at the firm. Finally, they may reflect the vestiges of the initial ownership structure of firms. In this subsection, we consider the role of exit behavior in generating the correlations identified above, with the other potential channels explored later.

We model blockholder exits as a function of the firm-level explanatory variables from the earlier models and indicator variables for the presence of other blockholders at the firm. We also add to this model the firm's most recent fiscal-year market-adjusted annual return, as exit decisions may depend on recent performance. For brevity, we report only the coefficients on the blockholder variables. We estimate logit models and report the estimated marginal effect when

each blockholder indicator is varied from 0 to 1, holding all other model variables at their sample means. These models are estimated at the blockholder-year level.

To provide an initial picture, in column 1 of Table 6 we estimate a model for all blocks together. Thus, we predict whether a block of any type exits in a given year as function of whether there are any other blockholders present, along with the full set of control variables. The positive and highly significant estimated effect of .055 indicates that the presence of at least one other blockholder is associated with an increase in the probability of exit of about 5.5% in a given year. As we report in the final row of the table, the overall unconditional annual exit rate of all blocks is 28.0%, so the presence of another blockholder appears to display a fairly substantial relation with the exit rate measured in a relative sense. We obtain similar estimated magnitudes and significance levels in columns 2, 3, and 4 in which we (a) omit financial blockholders, (b) omit affiliated insiders, and (c) omit both of these categories. Thus, the evidence appears fairly compelling that blockholders are generally more likely to exit when other blockholders are also present in the firm.

Next we consider exits of each individual type of blockholder as a function of the presence of other blocks of each type. This allows us to examine whether certain block pairs coexist in a durable or fragile manner. Estimates for these models, one for each of the 6 blockholder categories, are reported in columns 5-10 of Table 6. There are many (6 x 6 = 36) coefficients in these models, but a few key points emerge from these findings. First, *none* of the coefficients are significantly negative. Thus, there is no evidence that any type of blockolder presence tends to be associated with a delayed exit decision of other blockholders. Second, affiliated individual blockholders tend to speed up the exit of others of the same type, consistent

with our earlier finding of a strong negative correlation in the participation decisions of affiliated individual blockholders.

The final key point that emerges from Table 6 is that all of the coefficients on the strategic investor and generic financial blockholder explanatory variables are positive and significant. This indicates that these blockholders tend to be associated with accelerated exit decisions of blockholders of all types, including their own. This accelerated exit behavior is consistent with many of the negative correlations in blockholder presence documented earlier. However, this accelerated exit evidence is not consistent with the earlier finding that strategic investor and generic financial blockholders tend to display a positive correlation in their participation decisions (both with their own group and with each other). Thus, the explanation for the positive correlation does not appear to lie in blockholders of these types remaining together in a firm for an abnormally long period, as the evidence suggests that the opposite actually occurs. Our analysis below will hopefully offer more insights on the underlying behavior.

As a robustness check, we have repeated the analysis in Table 6 defining blockholders as only those with a greater than 10% position in the firm. For this stricter definition of blockholders, the magnitudes of the estimated effects are generally larger in magnitude when measured relative to the lower unconditional exit rates of these larger blocks. However, the number of observations in these models is substantially smaller, and thus in many cases the statistical significance of the estimated effect falls. Notably, in the case of the general groupings of blockholders (columns 1 to 4 of Table 6), our finding of a positive and significant effect in all models continues to hold even when restricting attention to 10% or greater blockholders.

We have also experimented with including the size of the block in the Table 6 models. This is not our default choice, as we suspect that the presence of other blockholders may affect the size of block positions, and thus the partial effect after controlling for block size is likely to understate the total overall effect. When we add block size to the models in the first four columns of Table 6, the coefficient on block size is negative and highly significant. Not surprisingly, larger blockholders are much less likely to exit a firm. The coefficients on the variable indicating the presence of other blockholders continue to be positive and significant in all of these models (three at the 1% level, one at the 6% level), but the magnitude of the estimated effects are substantially smaller. Thus, it appears that the overall relations reported in Table 6 reflect both a channel through which blockholder presence is negatively related to position size, which in turn is related to higher exit rates, and an independent channel that is independent of this mechanism.

5.5 Blockholder entry

We next turn to blockholder entry decisions. This analysis parallels the prior analysis of exit decisions, except we conduct the analysis at the firm-year level. The dependent variable assumes a value of 1 if the firm obtains at least one new blockholder over the course of a fiscal year as a function of start of year firm characteristics. All control variables and model specifications are otherwise identical to the model of blockholder exits.

As we report in column 1 of Table 7, when we group all blockholders together, the presence of at least one blockholder is a significant positive predictor of new blockholder entry. The coefficient of .060, a 6% increase in entry rate, is substantial relative to the reported unconditional blockholder entry rate of 31.0%. If we restrict attention to non-financial blocks,

reported in the column 2 model, the coefficient remains positive and significant, but the magnitude is much smaller both in an absolute and a relative sense (marginal effect of .016 relative to an unconditional entry rate of .147). As we report in columns 3 and 4 of the table, the estimated effects for outside blocks (outside and nonfinancial blocks) are similar to the estimated effects for all blocks (all nonfinancial blocks).

These coefficients are interesting when compared to the corresponding coefficients in the blockholder exit model of Table 6. It appears that when blockholders are defined broadly, we find that blockholders both accelerate exit and attract entry by other blockholders. The net cross-sectional relations identified earlier must at least partially reflect these two counteracting influences. This evidence is consistent with blockholders directly conditioning their decisions on the presence of other blockholders. However, it is also consistent with blockholder presence being correlated with the unobserved relative costs of establishing and dissolving a block position, although these costs must be orthogonal to a fairly comprehensive set of control variables.

In untabulated results, we have experimented with estimating the column 1-4 entry models using 10%, rather than 5%, as the threshold for being considered a block. In these models, the estimated marginal effects of the blockholder variables vary in sign across models, are small in magnitude, and are in all cases statistically insignificant. Thus, it appears that any relation between the presence of blocks and blockholder entry reflects the behavior of relatively small blockholders.

Returning the default 5% blockholder definition, in columns 5-10 of Table 7 we consider entry behavior of each of the six key blockholder categories individual. Again, while there are too many coefficients to characterize individually, some interesting patterns do emerge. First,

affiliated insiders are associated with significantly less entry by their own type, while all other blockholders are associated with significantly more entry of their own type (see the diagonal coefficients in these columns). Affiliated individual blocks also are associated with less entry by strategic investors and generic financial blocks. Second, the presence of strategic investor or generic financial blockholders tends to be associated with more entry by the other. Finally, the presence of several of the other individual block types appears to inhibit the likely entry of a generic financial blockholder.

5.6 Initial ownership structure and synthesis of evidence

To complete the empirical picture, in untabulated results we have estimated the Table 5 models (i.e., the aggregated models of correlation in blockholder presence) using only the first year a firm appears in the sample. This allows us to ascertain the initial correlation patterns in block presence that subsequently evolves as described by the entry and exit behavior investigated above. While these samples are much smaller, the basic findings are similar in character to Table 5. In particular, evidence of blockholder repulsion is stronger for larger blocks and blockholder groupings that exclude financial blocks. In general, these models indicate a similar to slightly stronger repulsion of blockholders from each other in a firm's first sample year compared to the entire sample. In the case of all 5% and 10% blocks the estimates are quite similar to what we report in the first column of Table 5, while in the case of 20% blocks the estimated marginal effect is almost 50% larger than the reported Table 5 estimate (-.073 or -7.3% versus -.051 in Table 5).

Collecting all of the evidence, the data indicate that blockholders often do co-exist. Moreover, for some types of blockholders, particularly financial blockholders, the presence of

one blockholder is associated with a greater likelihood of observing other blockholders, holding a large set of firm characteristics constant. It is possible that this may reflect the attraction of these blockholders to each other. However, it may also reflect the joint attraction of certain blockholders, particularly small blocks, to certain types of firms based on unobservable (to the econometrician) firm characteristics. When we include small blockholders, the presence of multiple blockholders often appears to reflect a high rate of blockholder churn, in which blockholders display a high propensity to both enter and exit positions in the same firms. These counteracting forces often lead to a neutral sign on the overall correlation in blockholder participation decisions.

As blocks get larger and/or financial firms are excluded from the picture, the case for general blockholder repulsion becomes quite compelling. Blockholders with substantial positions (greater than 10%) appear to co-exist much less frequently than would be expected if their decisions were made independently. This pattern is evident when a firm first enters the sample, and it is reinforced by a relative acceleration in block exit rates when multiple blocks are presence. In the case of these larger blocks entry behavior does not appear to reinforce or undo this relation, as block presence appears to have a neutral role in predicting new block entry in the case of larger blocks.

6. Conclusion

We provide a comprehensive analysis of the determinants of the presence of blockholders in a large panel of publicly traded U.S. firms from 2001-2014. The mechanism governing the determinants of blockholder presence for all blockholders grouped together differs in substantive ways from the mechanisms governing each individual type of blockholder, suggesting substantial

blockholder heterogeneity. In particular, individual blocks are less likely to be observed in R&D intensive firms, while financial institutions and strategic investors (e.g., hedge funds, private equity firms) are more likely to be observed in these same firms. At the same time, higher levels of idiosyncratic risk are associated with a significantly reduced likelihood of a financial blockholding, but generally a greater likelihood of other blockholdings.

Interpreted in light of existing theories, these and other findings we report suggest that different types of blockolders play substantively different roles in corporate governance. Some of the patterns we uncover are consistent with blockholder governance through active monitoring, while others appear more consistent with theories of indirect blockholder governance through blockholder trading behavior. This is not surprising, as the technological components that feature prominently in theories of blockholdings – e.g., monitoring skill, private benefits, risk tolerance, trading costs, information collection abilities, etc. – almost surely vary across blockholder groups.

We present evidence that the presence of multiple blockholders at the same firm is a relatively common phenomenon and reflects a deliberate and special ownership structure in which owners condition their participation decisions on the presence of other blockholders, behavior we refer to as *blockholder interdependence*. In the case of small blocks and financial blocks, we find some evidence suggesting positive interdependence in which blockholders are more likely to hold a position in a firm if other blockholders are present. This evidence is consistent with some theories of multiple blockholders, particularly those that emphasize blockholder governance through trading decisions and/or the benefits of blockholder free riding.

In the case of larger and non-financial blocks, we find strong evidence of negative blockholder interdependence. These findings are consistent with the predictions of Zwiebel

(1995) and theories that emphasize the costs of having multiple blocks owing to blockholder free-rider problems, coordination issues, and conflicts of interest. More generally, our evidence on multiple blocks is broadly consistent with the idea that multiple block arrangements are a deliberate equilibrium outcome in which blockholders individual decisions are influenced by the participation decisions of others, with the anticipated net benefits of a given blockholder structure group depending on the exact mix of types blockholders coexisting within any given set.

In addition to offering insights on existing theories of blockholders viewed both individually and as an interrelated group, we present a large number of empirical facts characterizing general patterns in blockholder ownership in large pubic firms for a comprehensive sample of U.S. firms in a recent time period. We are hopeful that many of these facts may stimulate further thinking on the determinants of blockholdings and the role that blockholders may play in firm governance. At a macro level, there are broad time trends in blockholder ownership and composition that do not appear to follow immediately from existing theories. At a micro level, there are evident dynamics on when blockholders decide to enter and exit a firm that are also inadequately described by existing theories. These and related issues await future research.

Appendix

All of the explanatory variables in our analysis are constructed using Compustat or CRSP data for the most recent fiscal year that ends on or before the June 30th date for which we have an ownership snapshot of the firm's blockholders. All variables that are not ratios are inflation adjusted to 2014 dollars. Each variable is constructed using the procedure outlined in the table below. After constructing each variable, we standardize the variable by dividing by the sample standard deviation using all blockholder-year observations with non-missing values. This standardization eases in comparing coefficient magnitudes across variables and model.

Variable	**Definition/Construction**
Log of book assets	Logarithm of the firm's total assets
Idiosyncratic risk	We first calculate the standard deviation of the residuals in a regression of the firm's daily stock return against the CRSP value-weighted return over the course of the fiscal year. The logarithm of 1 plus the resulting standard deviation of these residuals is the risk measure. This variable is winsorized at the sample 1st and 99th percentiles.
Tobin's Q	(Total assets – book common equity + market common equity)/Total assets. This variable is winsorized at the sample 1st and 99th percentiles.
R&D/Assets	Annual R&D spending divided by year-end total assets. Missing R&D values assumed to be 0. This variable is winsorized at the values of 0 and 1.
Sales growth	Logarithm of (total sales in most recent year / total sales in preceding year). This variable is winsorized at the values of -1 and +1.
EBIT/Assets	The firm's annual earnings before interest and taxes divided by end of year total assets. This variable is winsorized at the values of -1 and +1.
Advertising/Assets	Annual advertising spending divided by year-end total assets. Missing advertising values assumed to be 0. This variable is winsorized at the values of 0 and 1.
Asset tangibility	Net property plant and equipment divided by end of year total book assets. This variable is winsorized at the values of 0 and 1.
Capex/Assets	The firm's annual capital expenditures divided by end of year total book assets. This variable is winsorized at the values of 0 and 1.
Book leverage	The sum of the firm's short-term plus long-term debt divided by end of year total book assets. This variable is winsorized at the values of 0 and 1.
Dividend payer dummy	Variable assumes a value of 1 if the firm paid cash dividends during the most recent year and 0 otherwise.
Abnormal stock return	The firm's buy-and-hold stock return over the most recent fiscal year minus the return on the CRSP value weighted index over this same period. This variable is winsorized at the sample 1st and 99th percentiles.

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Table 1: Sample Description

	All Years	2001	2014	Smallest Quintile Firms	Largest Quintile Firms
Number of firm-years	47,614	2,893	3,280	9,517	9,517
Mean (winsorized) firm book-assets in mil. 2014 $	8,663.1	6,423.4	11,210.5	53.7	40,225.1
Median firm book assets in mil. 2014 $	676.6	575.0	1,076.4	46.1	10,187.9
Number of block-years	129,532	6,350	10,179	23,229	18,598
Affiliated individual blocks as fraction of total	.122	.166	.077	.232	.060
Unaffiliated individual blocks as fraction of total	.070	.095	.044	.149	.029
Public company blocks as fraction of total	.022	.030	.017	.031	.025
Private company blocks as fraction of total	.016	.034	.008	.031	.011
Strategic investor blocks as fraction of total	.127	.072	.140	.195	.067
Generic financial blocks as fraction of total	.621	.569	.699	.346	.777
Other blocks as fraction of total	.023	.033	.015	.016	.031
Firm-years with at least 1 block	.916	.860	.956	.910	.831
Firm-years with at least 2 blocks	.734	.620	.811	.687	.578
Firm-years with at least 3 blocks	.511	.382	.602	.448	.322
Firm-years with at least 4 blocks	.305	.194	.387	.243	.143
Firm-years with at least one affiliated indiv. block	.274	.294	.211	.443	.111
Firm-years with at least one unaffiliated indiv. block	.152	.168	.114	.286	.049
Firm-years with at least one public company block	.057	.060	.051	.073	.046
Firm-years with at least one private company block	.041	.070	.023	.070	.021
Firm-years with at least one strategic investor block	.249	.130	.301	.321	.102
Firm-years with at least one generic financial block	.720	.633	.794	.490	.741
Median size of block: all blocks	.076	.083	.072	.085	.072
Median size of block: affiliated individual blocks	.109	.115	.105	.116	.109
Median size of block: unaffiliated individual blocks	.079	.084	.080	.078	.084
Median size of block: public company blocks	.128	.125	.162	.108	.166
Median size of block: private company blocks	.122	.117	.166	.121	.139
Median size of block: strategic investor blocks	.082	.088	.081	.084	.082
Median size of block: generic financial blocks	.071	.076	.068	.076	.069

Note.- The sample is composed of all block-years and corresponding firm-years for firms listed on Compustat and CRSP from 2001 to 2014 with ownership data available from Factset and nonmissing values for the explanatory variables used in later models. Ownership is measured as a percentage of all common shares as of June 30th of each year. Blocks are assigned to mutually exclusive categories using the procedure outlined in the text and appendix. All of the block (firm) statistics are calculated over the indicated population of block-years (firm-years). Size quintiles are defined using annual quintile breakpoints over the population of firms in the sample in a given year, with size measured using inflation-adjusted book assets as of the most recent fiscal year end.

Table 2: Determinants of Blockholder Presence

	Type of Blockholder Presence Predicted								
	Any	Affiliated Individual	Unaffiliated Individual	Public company	Private company	Strategic investor	Generic financial	All nonfincl	All outside nonfincl.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log of book assets	-.014***	-.081***	-.049***	.001	-.005***	-.028***	.038***	-.107***	-.072***
	(.001)	(.004)	(.002)	(.001)	(.001)	(.003)	(.004)	(.004)	(.004)
Idiosyncratic risk	-.008***	.004	.007***	.005***	.003***	.003	-.077***	.040***	.026***
	(.002)	(.004)	(.002)	(.001)	(.001)	(.003)	(.005)	(.007)	(.006)
Tobin's Q	-.013***	-.019***	-.018***	-.001	-.003***	-.034***	-.012***	-.055***	-.053***
	(.002)	(.005)	(.003)	(.002)	(.001)	(.004)	(.004)	(.006)	(.006)
R&D/Assets	-.002	-.043***	-.013***	.001	-.003*	.028***	.013**	-.022***	.009
	(.002)	(.007)	(.004)	(.002)	(.001)	(.005)	(.005)	(.007)	(.007)
Sales growth	-.004	-.003	-.004***	-.005***	-.003***	-.007***	.008***	-.011***	-.015***
	(.002)	(.002)	(.002)	(.001)	(.001)	(.002)	(.002)	(.003)	(.003)
EBITDA/Assets	.018***	.010*	.001	-.008***	-.005***	-.006	.029***	-.011	-.023***
	(.006)	(.006)	(.003)	(.002)	(.001)	(.004)	(.005)	(.008)	(.007)
Advertising/Assets	-.001	-.000	.001	.001	-.000	.001	.001	.007	.000
	(.002)	(.005)	(.003)	(.001)	(.001)	(.003)	(.004)	(.006)	(.005)
Asset Tangibility	-.006*	.013	.001	.001	.003	-.027***	-.021**	.015	-.008
	(.003)	(.009)	(.005)	(.003)	(.003)	(.007)	(.007)	(.010)	(.010)
Capex./Assets	.003	.019***	.000	-.001	-.001	.009**	.012***	.008	.000
	(.002)	(.005)	(.003)	(.002)	(.001)	(.004)	(.004)	(.006)	(.005)
Book leverage	.014***	.001	.014***	.001	.003**	.028***	-.006	.037***	.049***
	(.002)	(.006)	(.003)	(.002)	(.001)	(.004)	(.005)	(.006)	(.006)
Dividend dummy	-.015***	.035***	.008	-.011**	-.003	-.121***	-.053***	-.015	-.058***
	(.004)	(.011)	(.007)	(.005)	(.003)	(.008)	(.009)	(.012)	(.011)
Pseudo R^2	.124	.123	.108	.062	.089	.092	.118	.175	.088
Number of Obs.	47404	47589	47535	46909	47093	47598	47612	47612	47598

Note.- Each column reports the estimated marginal effect from a logit model estimated at the firm-year level for a dependent variable that assumes a value of 1 (0) if the firm has a blockholder of the indicated type as of the observation year. Marginal effects are calculated by setting all explanatory variables at their sample means. Robust standard errors clustered at the firm level are reported in parentheses under each estimate and are calculated using the delta method. Each model includes a full set of year and 2-digit industry dummy variables. All explanatory variables are calculated using CRSP or Compustat data for the fiscal year ending that immediately precedes the ownership observation date. The constructions of all of these variables are reported in the appendix and each variable is normalized by the variable's sample standard deviation. All blockholders are assigned to one of the six mutually exclusive categories indicated in the headings to column 2-7 or to an "other" category. The dependent variable in column 1 is based on whether the firm has any blockholder of any type (including other). The dependent variables in columns 2-7 are based on whether the firm has a blockholder of the specific indicated type. The dependent variable in column 8 (column 9) indicates whether the firm had any block holder except a generic financial (generic financial or affiliated individual) blockholder. The full sample includes 47,614 firm years and each model is estimated over the set of observations that are not dropped by the logit estimation procedure. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Table 3: Determinants of Size of Blockholdings

	Type of Blockholder Position Predicted								
	Any	Affiliated Individual	Unaffiliated Individual	Public company	Private company	Strategic investor	Generic financial	All nonfincl	All outside nonfincl.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log of book assets	-.016***	-.012***	-.001	.001	-.006	-.002	-.002***	-.014***	-.002
	(.001)	(.002)	(.001)	(.005)	(.005)	(.002)	(.001)	(.001)	(.001)
Idiosyncratic risk	-.000	.012***	.003*	.009	.020***	.011***	-.015***	.015***	.012***
	(.001)	(.003)	(.002)	(.006)	(.006)	(.002)	(.002)	(.002)	(.002)
Tobin's Q	-.009***	.002	.004*	.002	.003	-.004***	-.003**	-.002	-.002
	(.001)	(.002)	(.002)	(.005)	(.006)	(.002)	(.001)	(.002)	(.002)
R&D/Assets	-.009***	-.009***	-.008***	-.010**	-.011	.001	-.000	-.009***	-.004**
	(.001)	(.003)	(.002)	(.005)	(.008)	(.002)	(.002)	(.002)	(.002)
Sales growth	.001*	.004***	-.000	.004	.009***	-.000	.004***	-.001	-.001
	(.001)	(.001)	(.001)	(.002)	(.003)	(.001)	(.001)	(.001)	(.001)
EBIT/Assets	.002	.009***	-.002	.011**	.020***	-.002	.002	.002	-.004**
	(.002)	(.003)	(.002)	(.005)	(.006)	(.002)	(.002)	(.002)	(.002)
Advertising/Assets	.001	.003	-.003**	-.011**	.006	.002	-.001	.001	.000
	(.001)	(.002)	(.001)	(.004)	(.009)	(.002)	(.001)	(.002)	(.002)
Asset Tangibility	.005**	.006	.001	.019**	-.001	.002	.002	.006*	.005
	(.003)	(.005)	(.003)	(.009)	(.010)	(.003)	(.002)	(.003)	(.003)
Capex./Assets	.003*	.001	.003	-.001	-.004	-.000	-.001	.002	.000
	(.002)	(.003)	(.002)	(.005)	(.004)	(.002)	(.001)	(.002)	(.002)
Book leverage	.011***	.005*	.006***	-.005	.007	.011***	.004***	.011***	.009***
	(.002)	(.003)	(.002)	(.006)	(.007)	(.002)	(.001)	(.002)	(.002)
Dividend dummy	-.019***	.007	-.000	.041**	.023	-.018***	-.015***	-.003	-.010**
	(.003)	(.005)	(.004)	(.019)	(.018)	(.004)	(.003)	(.004)	(.004)
R^2	.132	.096	.080	.202	.208	.083	.059	.096	.067
Number of Obs.	43611	13043	7252	2693	1933	11839	34302	28559	21711

Note.- Each column reports coefficients for a linear regression model estimated at the firm-year level for a dependent variable that is set equal to the logarithm of the sum of all blockholdings of the indicated type, with .95 added to the ownership sum before taking logs so that the dependent variable for the firms with the smallest blockholdings (i.e., .05 or 5%) assumes a value of 0. Each regression only includes firm-years in which the firm has at least one blockholder of the indicated type in the column heading. Robust standard errors clustered at the firm level are reported in parentheses under the coefficient estimates. Each model includes a full set of year and 2-digit industry dummy variables. All explanatory variables are defined in the earlier tables of the appendix. All blockholders are assigned to one of the six mutually exclusive categories indicated in the headings to column 2-7 or to an "other" category. Blockholders are combined into larger groups in the models of column 1, 8, and 9 as described in the preceding table. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Table 4: Blockholder Interactions in the Cross Section

Panel A: Type of Blockholder Presence Predicted – All Blocks

	All	All	Financial	Financial	Non Financial	Non Financial	Outside	Outside	Outside & nonfinancial	Outside & nonfinancial
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Same blockholder dummy	.004	.008	.134***	.135***	-.021**	-.017**	.063***	.067***	.053***	.055***
	(.007)	(.007)	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.007)	(.007)
Largest position		-.780***		-.537***		-.739***		-.700***		-.495***
		(.026)		(.069)		(.041)		(.032)		(.043)
Sample rate of block presence	.729	.729	.522	.522	.381	.381	.659	.659	.255	.255

Panel B: Type of Blockholder Presence Predicted – 10 Percent Blocks

	All	All	Financial	Financial	Non Financial	Non Financial	Outside	Outside	Outside & nonfinancial	Outside & nonfinancial
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Same blockholder dummy	-.090***	-.096***	-.002	.004	-.060***	-.064***	-.027***	-.031***	.001	.002
	(.007)	(.007)	(.005)	(.006)	(.006)	(.006)	(.006)	(.006)	(.006)	(.006)
Largest position		-.649***		-.279***		-.443***		-.458***		-.307***
		(.037)		(.084)		(.033)		(.039)		(.036)
Sample rate of block presence	.323	.323	.155	.155	.193	.193	.244	.244	.105	.105

Panel C: Type of Blockholder Presence Predicted – 20 Percent Blocks

	All	All	Financial	Financial	Non Financial	Non Financial	Outside	Outside	Outside & nonfinancial	Outside & nonfinancial
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Same blockholder dummy	-.051***	-.059***	-.003	-.005	-.045***	-.051***	-.017***	-.025***	-.014***	-.018***
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.005)	(.004)	(.004)	(.004)
Largest position		-.176***		-.043**		-.131***		-.147		-.093***
		(.020)		(.018)		(.018)		(.022)		(.020)
Sample rate of block presence	.095	.095	.015	.015	.082	.082	.054	.054	.040	.040

Note.- This reported coefficients on the dummy variables are estimated marginal effects from a logit model when the indicated variable is increased from 0 to 1. The coefficients on the largest positon dummy are the estimated marginal effect when ownership as measured by the largest position by a B blockholder in the model is increased from its mean level. All model variables are set equal to their sample means in calculating these marginal effects. Robust standard errors clustered at the firm level are reported in parentheses under each estimate and are calculated using the delta method. Each model includes the full set of explanatory variables included in the Table 2 models (coefficients not reported). Each model is estimated over the set subset of the sample 47,614 firm-years that are not dropped in the process of the logit model estimation. Column (1) and (2) models predict the presence of any blockholder in the randomized A group (half the sample of blocks) as a function of the presence of any blockholder in the randomized B group (the other half). The subsequent columns present parallel model estimates in which we only consider blockholders of the indicated type in the coding of both the dependent and independent variable. Financial blocks include only generic financial blockholders, non-financial blocks include all other blocks, outside blocks include all blocks except affiliated inside blockholders, and outside & nonfinancial blocks are the intersection of the outside and nonfinancial groups. Panel A treats all blocks as blocks, while Panel B (Panel C) only considers a position to be a block if the owner holds at least 10% (20%) of the firm's shares. The sample rate of block presence is the fraction of firm-years in the estimated model in which the dependent variable is coded as a 1 rather than a 0. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Table 5: Blockholder Interactions in the Cross Section

Panel A – Predicting all blocks	Indiv affil	Indiv unaff	Public	Private	Strategic	Financial
	(1)	(2)	(3)	(4)	(5)	(6)
Indiv affil block dummy		.033***	-.020***	-.015***	-.065***	-.091***
		(.008)	(.004)	(.003)	(.008)	(.010)
Indiv unaff block dummy	.052***		-.010**	-.001	-.014	-.094***
	(.013)		(.004)	(.003)	(.009)	(.011)
Public block dummy	-.078***	-.018*		.005	.005	-.089***
	(.016)	(.011)		(.005)	(.015)	(.019)
Private block dummy	-.110***	-.002	.006		-.034**	-.129***
	(.016)	(.012)	(.008)		(.015)	(.023)
Strategic block dummy	-.062***	.002	.001	-.003		.051***
	(.008)	(.006)	(.005)	(.002)		(.008)
Financial block dummy	-.075***	-.037***	-.021***	-.019***	.063***	
	(.011)	(.007)	(.005)	(.004)	(.008)	
Sample rate of block presence	.274	.152	.057	.041	.249	.720

Panel B – Predicting A Blocks	Indiv affil	Indiv unaff	Public	Private	Strategic	Financial
Indiv affil block dummy	-.047***	.019***	-.010***	-.007***	-.027***	-.092***
	(.006)	(.004)	(.002)	(.001)	(.005)	(.009)
Indiv unaff block dummy	.025***	.032***	-.007***	.002	-.007	-.092***
	(.007)	(.007)	(.002)	(.002)	(.005)	(.010)
Public block dummy	-.039***	-.007	.004	.004	.001	-.092***
	(.009)	(.006)	(.005)	(.003)	(.008)	(.016)
Private block dummy	-.055***	-.003	.004	.009*	-.014	-.115***
	(.008)	(.007)	(.005)	(.004)	(.009)	(.019)
Strategic block dummy	-.031***	.002	-.001	-.002	.081***	.014*
	(.005)	(.003)	(.002)	(.001)	(.006)	(.008)
Financial block dummy	-.040***	-.018***	-.012***	-.007***	.031***	.120***
	(.006)	(.004)	(.003)	(.002)	(.004)	(.00)
Sample rate of block presence	.150	.083	.030	.021	.144	.522

Panel C – Predicting A blocks	Indiv affil	Indiv unaff	Public	Private	Strategic	Financial
Diagonal effects – 10% blocks	-.035***	.008	.001	.000	.017***	-.007
	(.004)	(.006)	(.005)	(.003)	(.005)	(.005)
Diagonal effects – 20% blocks	-.018***	-.000	-.006***	-.004***	.000	-.015***
	(.002)	(.004)	(.000)	(.001)	(.003)	(.003)

Note.- This reported coefficients are estimated marginal effects from a logit model when the indicated variable is increased from 0 to 1 with all other model variables are set equal to their sample means in calculating these marginal effects. Robust standard errors clustered at the firm level are reported in parentheses under each estimate and are calculated using the delta method. Each model includes the full set of explanatory variables included in the Table 2 models (coefficients not reported). Each model is estimated over the set subset of the sample 47,614 firm-years that are not dropped in the process of the logit model estimation. The dependent variable in each model assumes a value of 1 if the firm has at least one block of the indicated type. In Panel A all blocks are used in coding the dependent variable. In panels B and C only the blocks that are randomly assigned to the A bin (half of all blocks) are used to code the dependent variable. In these two panels the independent variable corresponding to the block type of the dependent variable is coded using information only from the B blocks (the other half of the randomization procedure). All explanatory variables for blocks other than the type in the dependent variable are coded using information on all blocks. Panel A and B are for models in which any 5% block is coded as a block. In Panel C we estimate models corresponding to Panel B but require that blocks be at least 10% (row 1 of the panel) or 20% (row 2 of the panel) in ownership position size. In Panel C we only report the estimated marginal effect of a given B type predicting the present of the same type of owner in the A bin (i.e., the diagonal effects in Panel B). The other estimated effects are omitted from this panel. The sample rate of block presence is the fraction of firm-years in the estimated model in which the dependent variable is coded as a 1 rather than a 0. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Table 6: Determinants of Blockholder Exits

	All blocks	Non-fincl.	Outside	Outside & Non-fincl.	Affiliated Individual (1)	Unaffiliated Individual (2)	Public company (3)	Private company (4)	Strategic investor (5)	Generic financial (6)
Any block dummy	.055***									
	(.004)									
Nonfinancial block dummy		.046***								
		(.006)								
Outside block dummy			.045***							
			(.004)							
Outside & non-fincl. block dummy				.050***						
				(.008)						
Affiliated individual dummy					.017***	.000	.037	.065**	-.004	-.003
					(.007)	(.011)	(.024)	(.028)	(.011)	(.005)
Unaffiliated individual dummy					.007	.017	.059**	.049*	.013	.015**
					(.007)	(.012)	(.025)	(.029)	(.013)	(.007)
Public company block dummy					.008	.006	-.010	.018	-.019	.006
					(.014)	(.023)	(.026)	(.037)	(.020)	(.011)
Private company block dummy					.054***	-.001	.018	.020	-.006	.000
					(.018)	(.020)	(.040)	(.031)	(.024)	(.013)
Strategic financial block dummy					.029***	.050***	.053***	.046*	.031***	.025***
					(.007)	(.012)	(.019)	(.024)	(.010)	(.005)
Generic financial block dummy					.021***	.038***	.050***	.086***	.052**	.019***
					(.006)	(.012)	(.016)	(.022)	(.011)	(.006)
Number of observations	116,812	44,915	102,150	30,253	14,621	8,330	2,593	1,933	14,564	71,893
Unconditional exit rate	.280	.235	.305	.295	.111	.229	.204	.241	.382	.309
Expected block duration	3.57	4.25	3.27	3.39	9.00	4.36	4.90	4.15	2.62	3.23

Note.- All models are estimated at the blockholder-year level over the set of blockholders of the indicated type. The reported coefficients are estimated marginal effects when the indicated variable is changed from 0 to 1 in a logit model predicting whether the blockholder leaves the firm during the observation year. All model variables are set equal to their sample means in calculating these marginal effects. Robust standard errors clustered at the firm level are reported in parentheses under each estimate and are calculated using the delta method. Each model includes the full set of explanatory variables from the Table 2 models plus the firm's most recent fiscal year market-adjusted stock return. The unconditional exit rate is the percentage of all blocks modeled in the column dependent variable that exit as fraction of all observation years. Expected block duration is the reciprocal of the exit rate as this is the expected time to failure of independent draws with probability of failure equal to the exit rate. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Table 7: Determinants of Blockholder Entries

	All blocks	Nonfincl. blocks	Outside	Outside & Non-fincl.	Affiliated Individual	Unaffiliated Individual	Public company	Private company	Strategic investor	Generic financial
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Any block dumy	.060***									
	(.009)									
Nonfinancial block dummy		.016***								
		(.004)								
Outside block dummy			.062***							
			(.008)							
Outside & non-fincl. block dummy				.015***						
				(.004)						
Affiliated individual dummy					-.008***	.001	-.000	-.000	-.019***	-.020***
					(.001)	(.001)	(.001)	(.001)	(.003)	(.005)
Unaffiliated individual dummy					.002	.009***	.001	-.000	.002	-.025***
					(.001)	(.002)	(.001)	(.001)	(.004)	(.007)
Public company block dummy					-.003**	-.001	.005**	-.002	-.000	-.005
					(.002)	(.002)	(.002)	(.002)	(.006)	(.010)
Private company block dummy					.001	.004	.002	.004***	-.005	-.033***
					(.002)	(.001)	(.002)	(.001)	(.006)	(.011)
Strategic financial block dummy					-.001	.004***	.003***	-.000	.047***	.025***
					(.001)	(.001)	(.001)	(.001)	(.004)	(.006)
Generic financial block dummy					-.002	-.001	-.002	-.002***	.032***	.097***
					(.001)	(.001)	(.001)	(.001)	(.003)	(.006)
Number of observations	43,056	43,043	43,043	43,043	42,565	42,536	40,787	40,738	43,043	43,056
Unconditional entry rate	.310	.147	.306	.136	.022	.033	.010	.007	.098	.271

Note.- All models are estimated at the firm-year level over the set of all firm-years with sufficient data to estimate the reported model. The reported coefficients are estimated marginal effects when the indicated variable is changed from 0 to 1 in a logit model predicting whether at least one new blockholder of the indicated type enter the firm during the observation year. All model variables are set equal to their sample means in calculating these marginal effects. Robust standard errors clustered at the firm level are reported in parentheses under each estimate and are calculated using the delta method. Each model includes the full set of explanatory variables from the Table 2 models plus the firm's most recent fiscal year market-adjusted stock return. The unconditional entry rate is the percentage of firm-years in the model for which the dependent variable is coded as a 1. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level