Institutional Investor Cliques and Governance

Alan D. Crane

Jones Graduate School of Business
Rice University

Andrew Koch

Katz Graduate School of Business
University of Pittsburgh

Sébastien Michenaud

Driehaus College of Business
DePaul University

Abstract

In network theory, coordination is more likely to occur in highly interconnected groups ("cliques"). We identify cliques in the network of institutional investors. We find that cliques are associated with better monitoring through shareholder voting, consistent with the view that coordination overcomes the free-riding problem of dispersed ownership and facilitates governance via voice. Some cliques specialize in specific corporate policy objectives and ownership by these cliques predicts future payout and M&A activity. We document a trade-off in the governance effects of coordination. Consistent with theory, ownership by cliques decreases governance via the threat of exit.

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Email addresses: alan.d.crane@rice.edu (Alan D. Crane), awkoch@pitt.edu (Andrew Koch), smichena@depaul.edu (Sébastien Michenaud)

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1. Introduction

The incentives and ability of owners to engage in costly monitoring are important for understanding the governance role of shareholders (Shleifer and Vishny, 1986). Prior literature often treats owners as independent actors working in isolation even though recent evidence suggests owners may, in fact, interact (Edmans and Holderness, 2016; McCahery et al., 2016). For example, investors may share information (e.g., Shiller and Pound, 1989; Hong et al., 2005; Stein, 2008) or coordinate implicitly (Brav, Dasgupta, and Mathews, 2014). Recent anecdotal evidence suggests that some owners explicitly work in concert to affect firm outcomes.[1] For the purposes of governance, such coordinated groups can effectively act as single blocks of ownership.

In this paper, we examine the relationship between ownership structure and firm governance, taking into account investor interactions. We empirically identify groups of investors that are likely to be working together to influence the firms they own. We then examine how the presence of these coordinating owners relates to governance. Our results support a more complex view of the relation between ownership structure, coordination, and governance. Shareholder coordination increases governance via "voice" by overcoming the free-riding problem, consistent with Shleifer and Vishny (1986). At the same time, coordination weakens governance via threat of exit as predicted in Edmans and Manso (2011).

To identify coordinating groups in a firm's ownership structure, we turn to recent work in networks. Theoretical and experimental research in networks supports the view that coordination in a network is associated with complete subgraphs, known as "cliques" (e.g., Cassar, 2007; Siegel, 2009; Rand et al., 2011). Intuitively, these cliques capture groups of network members that are closely connected to all of the other members of that group. Using

[1] See, for example, *Top US financial groups hold secret summits on long-termism* (Foley and McLannahan, 2016), *Mondelez Stake Brings Ackman Into Orbit of Food Investing Giants* (Das, 2015), and *Activist Investors Secret Ally: Big Mutual Funds* (Benoit and Grind, 2015).

these insights and techniques borrowed from graph theory, we identify investor cliques in the network of institutional ownership, where network connections are driven by common equity ownership positions. We find that there are roughly 20 of these cliques each year. The top institutional clique in each firm has a 13% stake on average. Coordinated groups, in total, own close to 30%.

Overall, we find that approximately 35% of institutional investors are members of a clique and membership is persistent. Institutions that belong to cliques are most likely to be dedicated investors and least likely to be quasi-indexers (as classified by Bushee, 1998). Clique members tend to be neither large nor small in terms of assets under management, and on average they hold large stakes in firms. They are unlikely to be pension funds, which are traditionally thought of as activists (Smith, 1996; Carleton et al., 1998). Moreover, institutions within the same clique tend be more similar to each other than they are to institutions outside of their clique across a variety of institutional characteristics.

We document that the nature of institutional ownership has been profoundly transformed over the last thirty years in a way consistent with substitution toward coordinated ownership. Despite the increase in overall levels of institutional ownership, the concentration of institutional investor holdings, as measured by the ownership of the top shareholders, has decreased significantly over the sample period. The median stake of a given institutional owner in a firm in recent periods is roughly five times smaller than it was in the early 1980's. At the same time, we find that ownership by institutional investor cliques has increased significantly over the past three decades. Therefore, while institutional ownership has become more dispersed, many of these owners are now more connected to one another.

To examine the relation between ownership by cliques and governance by voice, we study shareholder voting on management proposals as this is a direct form of investor engagement (McCahery et al., 2016). We expect clique members to vote together, and in particular, against proposals that are not in shareholders' interests. We find evidence consistent with

this, even after controlling for other characteristics of ownership structure, including the overall level of institutional ownership, ownership by blockholders, ownership concentration, and ownership by different types of institutions (quasi-indexers, transient, etc.). Identification of a causal relationship between cliques and voting is difficult because ownership cliques may endogenously choose to invest in firms as a function of the value of the governance they can provide. To address the issue, we use the mutual fund scandal of the early 2000's as a shock that provides plausibly exogenous variation in clique ownership. This scandal resulted in significant outflows from and closures of certain institutions which impacted connections within the network of institutional investors. Using this shock, we find that, when ownership by cliques is high, shareholders vote against management more frequently. This effect is more pronounced for proposals that appear to be against shareholders' interests.

Anecdotal evidence suggests that some institutions focus on specific value-enhancing corporate policies, rather than broadly improving governance across all dimensions.[2] Therefore, we examine the relation between policy outcomes and clique ownership when cliques "specialize" in a particular policy item. We focus on four outcomes: the initiation of dividends, the initiation of repurchases, mergers and acquisitions, and divestitures. We find evidence of clique specialization and that the presence of these specialized cliques has predictive power for future firm policies. For example, a firm is 5% more likely to initiate a dividend within a year in which it is owned by a clique that specializes in dividend payouts relative to firms that are not. We find similar results for firms owned by cliques that specialize in acquisitions and divestitures.

One particular concern with our measure of coordination is that institutions in the same clique may not work together to govern, but instead act independently based on similar

[2]For example, Icahn Capital LP often focuses its activism on payout policies. Moreover, institutions that attend the Shareholder's Rights Project clinic may have a particular goal of declassifying boards. Or similarly, the Council for Institutional Investors most recent campaign focuses on majority versus plurality voting standards.

information (the correlated effects problem as in Manski, 1993). We rule out this alternative by examining governance via the "threat of exit". The ability to coordinate should facilitate governance via direct intervention (voice) because coordination helps overcome free-riding. However, instead of intervening, owners may take the "wall street walk", the threat of which acts as a governance mechanism (Admati and Pfleiderer, 2009; Edmans, 2009). Importantly, coordination among shareholders can have a negative effect for this type of governance. Edmans and Manso (2011) show that the free rider problem strengthens the threat of exit, and concordantly, coordination among shareholders mitigates this form of governance. This is because the threat of exit is strongest when owners are independently and aggressively trading, impounding their information into the price. The predicted effect of coordination on the threat of exit helps us distinguish between the effects of coordination and independent but correlated actions due to common information. If clique ownership captures coordination, then we expect the threat of exit to be weaker where clique ownership is high, whereas if it captures correlated information, this threat should be stronger because independent investors receiving the same signal will exit simultaneously.

Following Bharath et al. (2013) and Edmans et al. (2013), we use a shock to liquidity to identify the impact of the threat of exit on governance. We find that the threat of exit is weaker when clique ownership is high, even after controlling for ownership structure and other firm characteristics. We also find that clique ownership is lower among firms with myopic managers, where the threat of exit is likely to be particularly effective (Edmans, 2009). Overall, our results are consistent with coordination among institutional investors facilitating governance by voice and mitigating governance by exit. They also lend support to the view that we are identifying coordinating groups rather than independent investors with correlated information.

Our paper contributes to several strands of research. Evidence in prior literature supports the view that shareholders coordinate. Shiller and Pound (1989) find that fund managers'

portfolio choices are made in part based on information gleaned from communicating with other investors. More broadly, Hong, Kubik, and Stein (2005) and Cohen, Frazzini, and Malloy (2008) find evidence that familiarity due to geographic proximity or education facilitate better communication.[3] There is evidence that formal coordination mechanisms, such as the United Shareholders Association (USA) or ISS (see Gillan and Starks (2000) and Bethel and Gillan (2002)) can impact voting outcomes. We provide evidence that coordination can arise endogenously between investors.[4]

Our paper is related to but distinct from three contemporaneous working papers on coordination and governance. Artiga González and Calluzzo (2016) examine activist campaigns and find that campaign success is positively correlated with the number of activists. Appel et al. (2016) also examine activist campaigns and find that the presence of passive investors does not alter the frequency of activist campaigns, but does change the type of campaigns against firms. Huang (2014) finds that firms have higher values when the firm's owners are geographically proximate or have highly correlated portfolios. All papers are consistent with the view that there are important interaction effects between owners. We differ from these papers in several important ways. Rather than examine characteristics of the firm or campaign of interest, we identify sets of institutions that are likely to be working together in any firm that they own or will own in the future. We address the problem that coordination is unobservable by using network measures that are specifically associated with coordination, and by exploiting a theoretical tension in the governance literature. Most importantly, our main conclusions differ. Governance is not strictly improved by coordination because of the trade-off between voice and exit.

[3]While there is substantial empirical and anecdotal evidence of shareholder coordination, there are questions about the legality of such activities. We discuss this briefly in Section 2.

[4]There is evidence of endogenous coordination between *firms* as a result of having the same owner (e.g., Azar et al., 2015; Panayides and Thomas, 2016). This is distinct from coordination between *owners* in a given firm.

Finally, our results contribute to the recent literature on governance through exit versus voice. Both Bharath et al. (2013) and Edmans et al. (2013) provide empirical evidence supporting the view that blockholders govern through the threat of exit. Kandel et al. (2011) show that small investors also govern through the threat of exit because they trade together without agreeing to do so (what they term "unintentional coordination"). We believe we are the first to empirically document the trade-off between exit and voice as a function of coordination between shareholders, consistent with theory (Edmans and Manso, 2011). Moreover, ownership cliques form where the threat of exit is, ex ante, less effective. Overall, our results provide an alternative picture of the importance of institutional investors in the ownership structure through their ability to mobilize their peers to intervene in the firm's decisions.

Our paper proceeds as follows. Section 2 motivates our measure of coordination in the context of a network. Section 3 describes our data. Sections 4 and 5 describe our tests and findings and Section 6 concludes.

2. Identifying Coordination in a Network

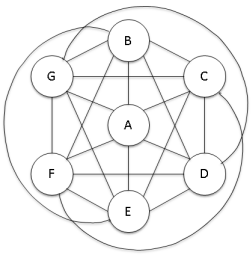
We represent institutions as nodes in a network with connections between them defined by their common holdings in the fourth quarter of each calendar year. Specifically, we deem a connection to exist between two investors if each owned a large stake (at least 5%) in the same firm at the end of the prior year, as these institutions are likely to have interacted in the past. This is supported by the findings of Shiller and Pound (1989) and Hong et al. (2005) who show that common holdings are likely to be correlated with prior interactions between the institutions. We then follow the experimental and theoretical work on coordination in networks. This literature shows that coordination in a network is associated with complete

subgraphs.[5] A complete subgraph is a subset of nodes in which a connection exists between every pair of nodes. In network theory, the term for a set of nodes that belong to a complete subgraph is a "clique". Thus, our goal is to identify cliques of institutional investors.

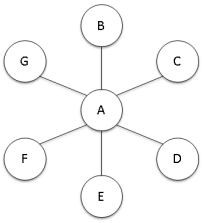
In social networks, a clique exists if a certain individual's friends are also friends with each other. In our settings, a given institution belongs to a clique if all of the institutions it is connected to are also connected to each other. In Figure 1 below, Institution A has the same network connections in the examples given in both Panel (a) and Panel (b). However, A belongs to a clique (that includes all other nodes) only in the left subgraph, despite the fact that A's connections are the same across the two examples. This makes intuitive sense as a proxy for coordination. Information can move more easily from all nodes in a clique to all other nodes in the left subgraph. In Panel (b), information must move through A, the central node in the network, to other members of the network. Coordination is therefore made more difficult by the lack of interconnectedness among the other institutions in the network.

Figure 1: Examples of sub-graphs

(a) Clique



(b) Not a clique



One advantage of our approach to identifying sets of investors that are likely to coordinate

[5]For evidence on coordination in networks and the relation to complete subgraphs, see, for example, Cassar (2007); Rand et al. (2011); Siegel (2009).

with each other is that it is supported by recent research in networks. Moreover, we estimate our measure of coordination from the entire network of overlapping ownership positions. This includes more information about institutional relationships relative to other measures that identify co-ownership only in the firm of interest (e.g., Appel et al., 2016; Artiga González and Calluzzo, 2016). This is important because investors in a given clique are likely to be connected through a variety of different firms. Institutions 1 and 2 might be connected through a common large stake in Microsoft, and Institutions 2 and 3 might each have a large stake in Google. Institutions 1, 2 and 3 will therefore belong to a clique if institutions 1 and 3 have a common large stake in any firm. In this case, we treat the ownership of these three institutions in any firm that they own as being owned by that clique.

Exact identification of cliques in a network is a difficult computing problem which cannot be feasibly solved given the size and complexity of the network of institutional investors.[6] However, network theorists have developed a variety of algorithms to approximate solutions to the problem of identifying cliques. We use the most recent and arguably best performing of these algorithms, the Louvain algorithm, developed in Blondel et al. (2008).

Intuitively, the algorithm determines how to partition the graph such that the density of connections on one side of the partition are highest relative to the density on the other side. It does this with respect to each node such that if there are 3,000 institutions, the network is partitioned 3,000 times. Then, if any two institutions have not been separated by any of the partitions, those institutions are combined into a single node. This process is repeated until no nodes are combined. The output is an assignment of each institution either to a specific clique or to no clique at all. The number and size of cliques is determined by the data and algorithm. The algorithm is static in that each cross section (based on reported

[6]The "clique problem" is what is termed an NP complete problem. It is easy to check whether a group of nodes is in a clique, but actually identifying all cliques in a network results in computing time that increases in non-polynomial (NP) time as a function of the network size. As a result, this cannot be feasibly computed for a network our size.

holdings at the end of the year) is treated independently.[7]

While our proxy is motivated directly from network theory, we still face the same challenge inherent in the literature; coordination is not observable, so validating such a measure is difficult. One concern of particular importance is that it is difficult to distinguish institutions acting similarly via coordination from institutions acting independently, but similarly, simply because they have similar information sets ("correlated effects" in Manski (1993)).[8]

We address this concern by relying on prior theoretical work on governance that makes differing predictions depending on whether owners are coordinating or acting similarly but independently due to correlated signals. Edmans and Manso (2011) show that coordination among blockholders reduces the threat of exit, while blockholders with overlapping holdings that *are not* coordinating actually improve that threat. We find that our measure is consistent with the former. We discuss these tests in detail in Section 4.

An additional concern regarding our measure of coordination relates to the underlying legality of such activities. Coordination may be tacit as in Brav et al. (2014), it may entail formal arrangements (e.g., the Council of Institutional Investors), or it may result from informal conversations as in Shiller and Pound (1989). The legality of such coordination arrangements is murky. McCahery et al. (2016) find that institutions consider the legal implications of coordination and yet still interact. They can ensure legality of their actions by simply jointly filing a 13D should their joint ownership cross the 5% threshold. Perhaps not surprisingly, we find that the tendency to file joint 13D's is seven times greater for members of cliques relative to non-members.

However, not all governance-related actions require joint filings, even if a group is working

[7]In the Appendix we provide results that use a cluster coefficient as an alternative way of identifying coordination in a network. An institution's cluster coefficient reflects the likelihood that it belongs to a clique, but does not identify cliques themselves.

[8]This same problem affects much of the literature on peer effects. Managers with educational ties might make similar investment decisions today because they are actively communicating and working together, or they may act independently but in similar ways as a result of their correlated training.

together and owns more than 5%. For example, after 1992, institutions are specifically allowed to communicate during a proxy contest about their voting intentions without the need to file jointly. Moreover, recent legal rulings have pointed out that other interactions beyond voting communications do not require joint disclosures of interest.[9] This is supported by a recent number of anecdotes of investors coordinating, even in the absence of joint ownership disclosures (see, for example, recent news articles by Foley and McLannahan (2016), Das (2015), and Benoit and Grind (2015)). Therefore, relying on joint filings alone will underestimate coordinated investor efforts.

3. Data

We obtain institutional ownership data from Thomson-Reuters 13F database. To generate annual, calendar year-end holdings data, we first filter out cases in which the manager reports multiple positions in the same stock on the same report date and use only the holdings with the latest filing date. We split adjust reported holdings if the split occurs between the report date and filing date.[10] Following Griffin and Xu (2009), we carry holdings forward one quarter if an institution is missing a single reporting period. Finally we retain the holdings reported closest to the end of each calendar year for each institution if the report date is no earlier than October (or July in the case of a reporting gap).

We merge these annual holdings with share prices and shares outstanding in December of each year from CRSP. This results in 62,821,424 institution-stock-year observations over the period 1980-2013. From these data we construct annual bi-partite graphs (B_t), NxM matrices of institution-firm relationships where a one indicates that institution n has a position in firm m in the fourth calendar quarter of that year, and zero otherwise. We

[9] See, for example, the ruling in *CSX v. Children's Investment Fund Management*, "[t]he Rule does not encompass all 'concerted action' with an aim to change a target firm's policies."

[10] Thomson Reuters adjusts the number of shares held for splits that occur after the report date. To recover the number of shares held at the report date, we undo this adjustment using the CRSP share adjustment factor.

can also adjust the weights of these relationships by replacing the zero or one with either the portfolio weight of the relationship or the ownership weight of the position (i.e., the percentage the institution owns of the firm.) We create a standard adjacency representation of the graph $A = B_t * B_t'$, setting the diagonal to zero. This represents the relationships between each institution in the graph where the off-diagonal elements indicate a weighted or unweighted connection between two institutions. From this network representation, we estimate cliques within the network using the Louvain algorithm of Blondel et al. (2008) discussed above.

We define connections between two nodes based on common large ownership stakes. Our primary clique measure is based on connections defined as common block (5% or more of the firm's shares) positions. This measure simplifies the network, helping the algorithm to converge. This results in membership lists, in which each institution is either assigned to a specific clique or to no clique at all.[11]

We then aggregate institutional ownership by cliques for each firm-year using the fraction of the firm owned by each institution. The extent to which a given firm's ownership is made up of institutional cliques is:

$$Clique\ Ownership_{j,t} = \sum_{i}^{N} \lambda_{i,t} \mathbb{1}(Clique\ Institution_{i,t}) \tag{1}$$

where $\lambda_{i,t}$ is institution i's percent holdings in firm j at time t and $Clique\ Institution_{i,t}$ is a dummy variable set to one if institution i belongs to a clique at time t. In addition to the aggregate ownership by cliques for each firm, we measure the concentration of clique ownership in a firm. $Clique\ Herfindahl_{j,t}$ takes the total fraction owned by each clique present in firm j, squares them and then sums them. Last, we compute the total ownership

[11] One drawback is that any individual institution working with a group of others may specifically avoid accumulating a block position. For robustness, we lower the ownership threshold to 1% and use only the 50 largest positions for each institution (to avoid high network complexity). Our conclusions are unchanged under this specification. Results are available from the authors on request.

in each firm of only the single clique with the largest ownership stake in the firm, *Clique Own. Top 1*$_{j,t}$. Note that investors do not need to be blockholders of the firm of interest to be included in its clique ownership. The 5% common ownership stake that identifies a connection between institutions can be in any firm. As a result, our aggregation of clique ownership is not simply a sum of blockholders' ownership in a given firm.

As an alternate measure, we calculate a cluster coefficient for each institution-year. A cluster coefficient is designed to reflect how close a node's neighbors are to being a clique. The primary benefit of this alternative measure is that it is easily calculable and adaptive to a wide variety of assumptions regarding what constitutes a connection. Our findings are robust to this alternate measure and to a variety of weighting schemes in the network. These results are presented in the Internet Appendix. The primary drawback of this alternative measure is that it cannot distinguish the clique to which each institution belongs. Therefore we focus on the more detailed output from the Louvain algorithm.

Our sample consists of clique membership lists that cover 59,648 institution-year observations (including institution-years that are not assigned to a clique) from 1980-2013. After requiring data on institutional 'type', we have 51,699 observations. We aggregate clique and non-clique ownership to the firm-level and merge with Compustat and CRSP. After requiring lagged book equity from Compustat and lagged returns from CRSP, and removing firms with institutional ownership over 100%, we have 218,351 firm-year observations. In some tests we use voting data from ISS for the period 2003-2013.

4. Results

We present summary statistics for institution-level observations in Table 1. The average institution in our sample has 17.6 billion in assets under management and 1,137 stocks in their portfolio. Seventy four percent of our sample institutions are investment companies, 12% are banks, and the remaining are split between insurance companies, pensions, endowments,

and unidentified (miscellaneous).

In Table 2 we examine the characteristics of institutions that belong to cliques. We regress *Clique institution* on lagged institutional characteristics in a linear probability model with time-effects and standard errors clustered at the institution-level. The point estimates on assets under management (AUM) are negative and insignificant, indicating that there is no relation between portfolio size and the tendency to belong to a clique. It is therefore not the case that large investors that tend to have common overlapping positions with many others (e.g. Blackrock or Vanguard) are more likely to belong to cliques. This may be because a clique requires all pairwise connections to exist between all others, and large investors may simply be connected to too many others for a clique to exist. Controlling for AUM, clique members tend to have more positions and own larger positions in firms, on average. Most institution types are more likely to belong to cliques relative to pensions (the omitted type), a potentially interesting result given that pensions are traditionally thought of as activist investors. Institutions that belong to cliques are most likely to be dedicated investors and least likely to be quasi-indexers (as classified by Bushee, 1998).

In addition to measuring differences between clique and non-clique members, we also examine if institutions within the same specific clique tend to have similar characteristics to each other. We compute the standard deviation across the full sample for each year and report the average cross-sectional standard deviation in the first column of Table 3. We then compute the standard deviation within each clique in each year, and report the average of these standard deviations in the second column. The within-clique standard deviation is smaller than the full sample for most institutional characteristics. This is particularly true for institutional type indicators, e.g., endowments work with other endowments, etc. This is suggestive of coordination, as investors of the same type may be more likely to interact.

Explicitly identifying coordination within these groups is one of the main empirical challenges that we face. This is difficult to do in a systematic way, which is why we rely on the

theoretical predictions in Edmans and Manso (2011). However, we find that our cliques are consistent with some of the anecdotal evidence. For example, a *Wall Street Journal* article describes a history of managers at Trian, Berkshire Hathaway, Pershing Square, and 3G working together to influence the firms they own (Das, 2015). In our estimation, Trian first enters a clique in 2009. In this same year, Berkshire Hathaway and Pershing Square are also in that clique. Berkshire and Trian remain in the same clique for the next three years.[12] Supporting this, as mentioned earlier, we find that clique members tend to file 13D's and 13G's jointly more frequently than non-clique institutions.

Table 4 presents summary statistics at the firm level. Panel A summarizes the full sample, and Panel B splits the sample into quartiles based on *Clique Ownership*. *Clique Ownership* is 0.29 for the average firm. There is substantial variation; the inter-quartile range is 0.03 - 0.63. *Clique Ownership* is also related to other ownership structure variables. *Clique Ownership* is high when the level of institutional ownership is high, but also when the concentration is low. This is suggestive of a possible substitution effect between ownership concentration and ownership by cliques, similar to the aggregate results presented in Figure 2, where we plot the average institutional ownership concentration (defined as in Hartzell and Starks, 2003) each year. While total institutional ownership has gone up dramatically over this period, so too has the number of institutions. As a result, the average position size of the top institutional owners in each firm has dropped dramatically over time. We contrast this with the ownership by cliques. *Clique Ownership* has risen substantially over this same time period.

Regarding the concentration of clique ownership, *Clique Herfindahl* is 0.06 on average. The clique with the largest aggregate position in the firm (*Clique Own. - Top 1*) owns 13% of the firm on average. If members of this clique are, in fact, acting as one, this is a substantial

[12] 3G, a Brazilian hedge fund, is not in any cliques in any years, perhaps not surprising because it reports only a handful of positions with the SEC each year.

blockholding, one that has so far been overlooked in the governance literature.

4.1. Clique Ownership and Shareholder Voting

Shareholder voting is a natural setting in which to examine the relation between shareholder coordination and governance. Voting is ultimately the way in which shareholders exercise their control rights. McCahery et al. (2016) find that institutions view voting as an engagement mechanism that directly affects governance. Consistent with this, results in Gillan and Starks (2000) suggest that coordinated voting can impact governance outcomes. Matvos and Ostrovsky (2010) document that mutual funds are more likely to vote against management when other funds are more likely to vote against management. On the other hand, there is evidence that institutional investors vary substantially on how they vote, even within the same mutual fund family (Morgan et al. (2011)). In this section we examine if voting is a function of the presence of ownership cliques.

Prior literature has shown that activist governance is associated with more votes in favor of governance proposals often opposed by managers (Gillan and Starks, 2000). If this is true, and if members in a clique work together to provide governance through voting, then we expect high clique ownership to be associated with more votes against management. This unconditional prediction ignores the possibility that management may adjust the quality of proposals put forth as a function of the presence of governing owners. Rather, we expect that members of a clique should vote in the same direction, in favor of good proposals and against bad ones. This does not rely on assumptions regarding the average quality of management proposals.

The voting data include only the total votes for and against each item, not details on each owner's voting, so it is not possible to directly examine clique members' voting. However, we can examine if the pooled distribution of voting outcomes varies with the presence of cliques. In particular, all else equal, voting outcomes (e.g., the percent of shares voting against the item) in the tails of the distribution should be more likely to occur when ownership by

cliques is high relative to when cliques are not present in the firm. Therefore, as a first look at whether or not cliques vote together, we examine the distribution of voting outcomes separately for firms above and below the median *Clique Ownership*. The mean fraction of shares voting against management proposals is 6.36% for firms with ownership by cliques above the median, compared to 5.35% for firms with low clique ownership. We also find that the standard deviation of voting outcomes is bigger for firms with high clique ownership (12.52% vs. 11.31% within firms with low clique ownership).[13] This is consistent with the prediction that members of a clique vote in the same direction.

These simple statistics ignore important differences across firms that may be correlated with voting outcomes and clique presence. In Table 5 we use a fixed effects regression to examine whether voting outcomes are a function of the extent to which the firm is owned by cliques. Our dependent variable is bounded between zero and one, so we may face a censoring problem of some latent voting outcome. Our conclusions are unchanged when we estimate the effect using a Tobit model. However, due to the non-linear nature of the Tobit model, under this specification we cannot include firm fixed effects. We also control for a variety of ownership characteristics included in prior literature, including several measures of ownership structure. This ensures that the effects we measure related to clique ownership are different from total institutional ownership, blockholder ownership, index-type institution ownership, etc. All explanatory variables are measured the year before the election event.

Not all management proposals should fail, and in many cases informed and coordinated investors may help high quality proposals to pass. We proxy for the quality of the proposal in two ways. To proxy for low quality proposals, we use proposals that ISS has recommended against. ISS recommendations are a standard proxy for quality in the literature (e.g., Bethel and Gillan, 2002; Morgan et al., 2006; Cai et al., 2009; Cotter et al., 2009; Morgan et al.,

[13]We also find that interquartile range is statistically significantly larger as a function of clique ownership, even controlling for firm and ownership characteristics.

2011). We present results using this proxy for bad management proposals, *Bad Proposal*$_{ISS}$, in Panel A. In Panel B, we proxy for good proposals, *Good Proposal*$_{DK2007}$, based on six items identified in Davis and Kim (2007) (and used in Morgan et al. (2011)) as having the most significant positive impact on shareholder value. These include proposals for: (1) declassifying the board, (2) establishing cumulative voting, (3) establishing an independent chairman of the board, (4) repealing shareholder rights plans (poison pills), (5) giving shareholders voice on golden parachutes, and (6) expensing stock options.

In Panel A, we find that our proxy for coordinated ownership is related to voting outcomes. Specifically, we find that when ISS agrees with management, i.e. proposal quality is likely to be good, coordinated ownership is associated with a decrease in the number of votes against, suggesting that the coordinated ownership helps facilitate the passage of these proposals. This is true for director elections (columns 1, 3, and 5) and other ballot items (columns 2, 4, and 6). The direction of this effect is consistent across all three proxies for coordinated ownership (ownership level of the cliques, the Herfindahl of clique ownership, and the ownership of the top clique) and for both director elections and agenda items not related to director elections. It is statistically significant in five of the six specifications. We find the opposite effect when ISS recommends against management's position. In all specifications, coordinated ownership is associated with a significant increase in the votes against management for poor proposals. Interestingly, the effect is asymmetric. Coordinated ownership has a bigger effect on vote outcomes when ISS recommends against a proposal. The economic magnitudes of these effects are large. From column 1, firms with *Clique Ownership* one standard deviation above the mean have 6.2 percentage points more votes against management when ISS recommends against. This is economically large compared to the average percentage of votes against management of 5.8%.

The concentration of clique ownership is also strongly related to votes against. A firm with *Clique Herfindahl* one standard deviation above the mean is associated with 24 percent-

age points more votes against management in director elections when ISS also recommends against (column three), roughly five times the unconditional average. The economic effect of ownership by the clique with the largest position in the firm (column 5) is similar to that of *Clique Ownership*.

In Panel B, we present results using our proxy for high proposal quality. We do not present results from director elections separately as this proxy applies only to other agenda items. In general, we find results consistent with Panel A. Unconditionally, high clique ownership is associated with more votes in favor of management (negative point estimates imply fewer votes against). This is not surprising. Our good proposals are those identified in Davis and Kim (2007) as having the most significant positive impact on value. This does not necessarily mean that all other proposals are, on average, bad. What is important in this specification is that the point estimate on the interaction between our measures or clique ownership and $Good\ Proposal_{DK2007}$ are all robustly negative and significant. This means that when proposals are particularly good, high clique ownership is associated with fewer votes against the proposals.

In general, our findings are consistent with an interpretation that ownership by cliques is associated with stronger governance through shareholder voting. It is important to note that all specifications in this regression include firm- and year-fixed effects, as well as controls for many ownership structure and firm characteristics. Therefore, for these results to be driven by unobserved firm or ownership characteristics, such factors would have to be time-varying and unrelated to standard measures of ownership structure such as the level of institutional ownership, the number of blockholders, the ownership of the top five institutions, etc. While this is possible, the alternative explanations are not obvious.

An additional concern is reverse causality. Large ownership stakes by cliques may form endogenously in expectation of future improvements in governance through voting. Moreover, managers may adjust the quality of their proposals as a function of their ownership.

It is difficult to understand how these considerations would bias the coefficients in our tests. Any given firm's clique ownership is determined by a complicated network of connections through other firms and institutions. This entire network would need to endogenously structure itself with respect to voting expectations in the given firm. To better understand the direction of causality, we examine shocks to the network itself.

4.1.1. Exogenous Changes to the Network

To address both the omitted variable and reverse causality problems, we use a plausibly exogenous shock to the network and the resulting firm-level changes in *Clique Ownership*. We use the mutual fund scandal in 2003 as an exogenous shock to the network. Twenty fund families were implicated in a late trading scandal due to what has been argued to be, at least to some extent, random prosecutions (Zitzewitz (2009)).[14] The prosecuted institutions experienced large outflows and were forced to sell assets. A number of them went out of business or were acquired by other institutions as a result. These changes in ownership allocations began in 2003 and lasted through 2005. We use these changes as exogenous variation in the network.

The network also changed over the same period for reasons unrelated to the prosecutions. Therefore, we first identify the investors who were not themselves implicated in the scandal, but were connected to scandal institutions. Specifically, for each institution we proxy for an individual institution's exposure to a specific scandal fund by identifying if they have overlapping holdings. We then aggregate this indicator of exposure across all scandal funds resulting in a single measure reflecting the institution's exposure to the scandal as a whole. Using this as a type of continuous treatment identifier, we distinguish network changes resulting from the scandal from those that did not using an instrumental variables framework. We then aggregate the treatment identifier to the firm-level such that treatment firms are

[14]Even if such prosecutions were not wholly random, they are unlikely to be related to the relationship between the equilibrium network of ownership across all institutions and voting outcomes in the future.

those owned to a high degree by institutions that are highly connected to institutions implicated in the scandal. Since one of our main variables of interest is the interaction between clique ownership and proposal quality, we also instrument for this interaction using scandal exposure interacted with ISS recommendations.

We find that institutions with stronger exposure to the scandal institutions experienced a decrease in the likelihood of being in a clique during 2003-2005. We argue this is exogenous as the scandal funds are not likely to be dropping out of cliques as a result of future voting outcomes in specific firms. As a result of this decrease in the exposed institutions' probability of being a clique, firms that these institutions owned experienced an exogenous decrease in *Clique Ownership*. In Table 6 we exploit this variation and show a difference in voting against management after (*Post*) the scandal for firms with exogenously lower clique ownership (*Treatment*). Columns one and two correspond to columns one and two of Table 5 Panel A. Column three corresponds to column one of Table 5, Panel B.

Consistent with prior results, the interaction between *Clique Ownership* and ISS recommending against management is positively related to voting against management. One difference in these results from Table 5 is that when using exogenous variation, *Clique Ownership* is unconditionally positively related to voting against management. These results are consistent with ownership cliques causing more voting against management. This is true not only for director elections, but also for other management proposals, and all proposals combined. In column three, we show that using the IV framework firms with high clique ownership vote against good proposals less. This is an economically large effect that is significant at the 11% level.

There is evidence in the literature that institutions may vote in ways that do not maximize shareholder value, either due to private benefits or myopia. While Del Guercio and Hawkins (1999) and Davis and Kim (2007) suggest conflicts of interest are not a problem generally, Butler and Gurun (2012) show that coordination in voting can arise when fund managers

and CEOs share educational ties, leading to a better flow of information between owners and managers but resulting in arguably worse governance outcomes as a result of a *quid pro quo* in CEO pay. On balance, we believe our results are consistent with improvements in governance. In general, conflict of interest alternatives would result in more votes in favor of management, which we do not find. Given that cliques vote against management more when proposals are bad according to ISS, our result is consistent with cliques leading to better governance, unless ISS is also systematically biased in the same direction as these conflicts. Further, clique ownership is not dominated by short-term investors and therefore the results are inconsistent with the institutional myopia alternative in Bushee (2001).

4.2. The Specialization of Cliques

Anecdotal evidence suggests that some groups of investors may coordinate and specialize in governing to achieve specific corporate actions. This may be because they share similar views on governance, or because some institutions may be subject to prudent investor rules and have preferences for certain policies, like payout. We select several firm outcome variables that have been associated with activist governance. We examine the extent to which each institution owns firms that i) initiate a dividend, ii) initiate a repurchase, iii) divest either through a spin-off or by selling the entire firm and iv) do not make acquisitions. We identify dividend and repurchase activity from CRSP and Compustat and divestitures and acquisitions from SDC.

We create indicator variables for each of these four outcomes, and aggregate these for each institution based on its holdings. For example, if $d_{i,t}$ is an indicator set to one if firm i initiates a dividend in year t, then an institution's tendency to own firms that initiate dividends in period t is represented by $\sum \lambda_{i,t} d_{i,t}$, where $\lambda_{i,t}$ is the institution's portfolio weight in stock i at time t. We do the same for the other three outcome variables.

After generating these institution-year measures, we then compute medians across all institutions within each clique in each year, resulting in measures of the extent to which

each individual clique tends to be associated with these firm outcomes. We plot these yearly clique characteristics in Figure 3. Each red dash represents the median characteristic of a unique clique. The blue diamond indicates the median for all institutions that do not belong to a clique. For example, in Panel (a) of Figure 3, the blue diamond in the year 2000 indicates that among institutions that do not belong to a clique, the median institution has a little over 1% of its portfolio in firms that initiated a dividend during that year. The red dashes indicate that all but one of the individual cliques have a larger fraction of their ownership in firms that initiated dividends.

There are two observations worth noting from these figures. First, there is considerable variation across cliques in their tendencies to own firms that exhibit these characteristics. Second, it is clear that for both dividends and acquisitions, clique ownership differs on average from non-clique ownership. Panel (a) shows that the firms owned by cliques are much more likely to initiate dividends compared to firms owned by institutions that are not members of cliques. Similarly, in Panel (d), it is clear that most cliques own firms that do not make acquisitions compared to firms owned by institutions that do not belong to cliques. These findings are consistent with cliques either improving agency problems through governance, or choosing firms that, in the future, exhibit behavior consistent with a reduction in agency problems.

Next we test if the cliques that tend to be strongly associated with, for example, initiating firm payouts in one period, are the same cliques associated with initiating firm payouts in subsequent periods. We first define a specialized clique as any clique in the top (or bottom, in the case of making acquisitions) quartile along a given corporate outcome in a given year. For instance, cliques that specialize in initiating dividends are represented by the red dashes that are in the top quartile in a given year in Panel (a) of Figure 3. Similarly, cliques that specialize in preventing empire-building acquisitions are represented by the red dashes in the bottom quartile in a given year in Panel (d).

Then, we examine institution-level transition probabilities and present these results in Table 7. We find significant persistence in clique membership. Ninety percent of institutions that do not belong to a clique in year t also do not belong in year $t+1$. This is highly significant compared to the overall average non-clique membership of 65%. Among institutions that belong to a clique, we distinguish membership in a specialized clique from others. We find significant persistence in these roles as well. For example, a firm that belongs to a clique in year t that specializes in initiating dividends belongs to no clique 20% of the time, a non-specialized clique 62% of the time, and a clique that specializes in initiating dividends 18% of the time. These are highly statistically significant relative to a null based on the unconditional sample average in each group. Economically, the likelihood that a firm remains in a specialized clique from one year to the next is roughly twice what would be expected due to chance.

Last, we examine if the presence of specialized cliques has predictive power for future firm outcomes associated with activist governance. For each firm, we measure the total fraction owned by specialized cliques separately for dividends (Dividend Clique Ownership), repurchases (Repurchase Clique Ownership), acquisitions (Anti-acquisition Clique Ownership), and divestitures (Divestiture Clique). We then examine future policy outcomes as functions of lagged ownership by specialized cliques.

Table 8 presents estimates of the effect of ownership of specialized cliques on future dividend initiations, repurchase initiations, acquisitions, and divestitures respectively. In these regressions, we continue to include overall ownership by coordinating investors (*Clique Ownership*). Generally, we find that ownership by the specific type of clique is associated with changes in the firm policy along that dimension in the next period. For example, the first column estimates the effect of clique ownership at t on dividend initiations at $t+1$. We see that the probability of initiating a dividend is increasing in the ownership of the dividend cliques in the year before. The overall effect is economically small. A one standard deviation

increase in Dividend Clique Ownership is associated with a less than 1% absolute increase in the probability of dividend initiation. However, this represents an increase of 4% over the unconditional probability of initiation.

We see little evidence that clique ownership by institutions is related to repurchases. However, we find that ownership by anti-acquisition cliques is related to a lower probability of future acquisitions, and that ownership by cliques that specialize in divestitures is related to a higher probability of divestitures going forward. However, results in column 4 indicate that dividend and anti-acquisition cliques also avoid firms that conduct divestitures. We cannot distinguish whether these results are picking up the fact that specialized cliques are better at forecasting future policy changes or whether they are actually causing those changes. Both interpretations may be of interest, as each suggests that clique ownership has important implications for understanding firm policies as a function of ownership.

4.3. Exit vs. Voice: Distinguishing Coordination from Independent Correlated Actions

Our results so far are consistent with clique members coordinating to facilitate governance in the firms they own. An alternative interpretation is that clique members are acting independently, but give the appearance of coordinating, e.g., vote together, because they have independently acquired correlated information. We address this type of reflection problem by exploiting the theoretical predictions on governance via "voice" versus "exit".

Coordination can help owners share monitoring costs, mitigating free-riding. As such, in a typical setting of governance by "voice" (e.g., voting) the ability to coordinate facilitates governance. However, Edmans and Manso (2011) show that the free rider problem actually helps governance through the threat of exit. By alleviating free-riding, coordination among owners weakens the threat of exit. This is because the threat of exit is strongest when owners are independently and aggressively trading, impounding their information into the price. Importantly, if owners acted as informed, independent traders (as in the independent correlated information version of the reflection problem), the threat of exit should be strong.

Table 9 examines the threat of exit as function of the presence of ownership cliques. Following Bharath et al. (2013) and similar to the approach of Edmans et al. (2013), we examine changes in firm value around decimalization. To test for evidence of governance via threat of exit, Bharath et al. (2013) examine if the value of firms with blockholders responds differently to liquidity shocks than that of firms without blockholders. A single owner trading a large position will influence the price greatly, thus providing greater governance ex ante through the threat of exit. Identification comes through the liquidity shock because greater liquidity also increases the productivity of governance via threat of exit.

We confirm the results in Bharath et al. (2013) in our sample. Results in columns 2, 4 and 6 indicate that firm value increased around decimalization more for firms with blockholders relative to those without. Economically, the effect we estimate is similar to that estimated in Bharath et al. (2013). After controlling for this effect of blockholdings, we also interact decimalization with *Clique Ownership* and find the opposite effect. A one standard deviation increase in *Clique Ownership* (interacted with decimalization) results in a drop in q of about 0.5. The economic magnitude is roughly equivalent, but of the opposite sign, to that of ownership by blockholders.

Columns 3 through 6 use measures of the concentration of clique ownership. We find similar results for the Herfindahl measure, and the ownership of the single largest clique in the firm. Under the same identifying assumptions as Bharath et al. (2013), this result suggests that cliques weaken the threat of exit. This is consistent with the view that members in cliques are coordinating, and do not simply have common information sets.

4.4. Which Firms do Cliques Own in Equilibrium?

Our results suggest that coordinated investors are better able to govern by voice, but face a cost in that they cannot efficiently govern by threat of exit. In equilibrium, we expect coordinating investors to own firms in which the relative productivity of governance by voice is high, and they should avoid owning firms in which the relative productivity of governance

by exit is low.

To examine this, we distinguish firms in which the threat of exit is particularly important from those where it is not. Edmans (2009) show that the threat of exit as a governing device is strongest when management assigns a high weight to the short term stock price. Following Edmans et al. (2013) we measure managerial myopia using soon-to-vest stock options, which proxies for exogenous variation in managerial myopia.[15] To complement this, we also proxy for managerial myopia using CEO age.

In Table 10, we regress *Clique Ownership* on measures of myopia and firm controls. Results show that the presence of coordinated investors is weakest among firms with myopic managers. This holds for all three measures of clique ownership. Our results are consistent with ownership endogenously adjusting such that in equilibrium investors hold firms in which their marginal productivity of governance is highest. This provides additional support to the interpretation that clique members are working together, and do not simply have correlated information.

5. Robustness

Institutions that are working together may purposefully avoid owning large stakes individually. Therefore, we repeat the construction of clique identification and core analysis after defining connections in the network using only positions that are greater than 1% and less than 5%. In these unreported results, we find effects that are qualitatively consistent with those using blockholdings.

Further, we also repeat analysis using a cluster coefficient instead of the Louvain algorithm. Cluster coefficients are easy to compute and easily adaptable to several different definitions of connections between institutions. The primary drawback of a cluster coefficient is that, while it reflects the likelihood that an investor belongs to a clique, it does

[15]For these tests we require data from ExecuComp that is available from 2006 forward.

not identify the clique to which the investor belongs. We repeat our core analysis using a cluster coefficient and a variety of definitions for connections. Consistent with our main specifications, we find that clustered ownership facilitates voice and mitigates the threat of exit. The results using the cluster coefficient are presented in the Internet Appendix.

6. Conclusion

Using a novel measure of ownership coordination derived from the theory of economic networks, we show that firms with high levels of ownership by cliques of institutional investors experience more direct intervention in the form of votes against management. Using a plausibly exogenous shock to the network of institutional investors, we find that this relationship between coordination among institutional investors and governance is likely causal. Furthermore, we identify institutional cliques that specialize in governing through specific corporate actions (payout, divestitures, acquisitions). These cliques are highly persistent over time and the presence of these specialized cliques predicts future firm outcomes.

To distinguish a coordination interpretation of our results from one of correlated signals, we test how clique ownership relates to the threat of exit. Theory suggests that coordination by diffuse shareholders of the firm should improve governance by voice but also reduce governance by exit. We find that ownership cliques mitigate the threat of exit. This is consistent with the view that cliques reflect coordination among owners.

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Appendix A: Variable Definitions

Variable	Definition
Clique Ownership$_{j,t}$	$\sum_{i}^{N} \lambda_{i,t} \mathbb{1}(Clique\ Institution_{i,t})$, where $lambda_{i,t}$ is institution i's ownership in firm j at time t.
Clique Herfindahl$_{j,t}$	$\sum_{i}^{N} \lambda_{i,t}^{2} \mathbb{1}(Clique\ Institution_{i,t})$, where $lambda_{i,t}$ is institution i's ownership in firm j at time t.
Clique Ownership - Top 1$_{j,t}$	Equal to the Clique Ownership of only institutions in the clique with most total ownership.
Annual Stock Return	Compounded monthly CRSP returns for the 12 months prior to the reporting period.
AUM	Assets under management computed as the dollar value of reported holdings using December end CRSP prices.
Average Holding Size	Average holding size is the percent of the firms market value owned by the institution averaged over all positions in the institutions portfolio .
Bad Proposal$_{ISS}$	An indicator equal to one if ISS recommends a vote against management's recommendation.
Book Equity	Compustat variables ceq+txdb, minus preferred stock, which equals Compustat pstkrv or pstkl or upstk in that order, based on data availability.
Dedicated	Indicator equal to one if the institution is classified as a dedicated investor as in Bushee (1998).
Good Proposal$_{DK2007}$	Following Davis and Kim (2007), an indicator equal to one if the proposals is for: (1) declassifying the board, (2) establishing cumulative voting, (3) establishing an independent chairman of the board, (4) repealing shareholder rights plans (poison pills), (5) giving shareholders voice on golden parachutes and, (6) expensing stock options.
Institutional Ownership	Number of shares owned by institutions (per Thomson-Reuters 13f) as a percent of total shares outstanding.
IO Concentration	The ownership of the top five institutional owners as a percentage of total institutional ownership.
ln(Market to Book)	The natural log of Compustat variables ((prcc_c*cshpri)+(dlc+dltt)+pstkl-txditc)/at)
ln(Size)	The natural of Compustat variables prcc_c*cshpri.
Ownership of Top 5	The ownership of the top five institutional owners.
Number of Blockholders	Firm level calculation of the number of positions that are at least 5% of the firm.
Number of Large Owners	Count of the number of institutional owners with positions greater than 2% of the firm's value.
Number of Stocks in Owners Portfolio	Calculated as the average of the number of stocks held by the institutions that own the firm.
Quasi-Indexer	Indicator equal to one if the institution is classified as a quasi-indexer investor as in Bushee (1998).
Transient	Indicator equal to one if the institution is classified as a transient investor as in Bushee (1998).

Figure 2: Institutional Ownership Concentration and Ownership by Cliques Over Time
This figure presents the time series of cross sectional means of the concentration of institutional ownership and the fraction of firms owned by cliques. *Inst. Concentration* and *Ownership by Cliques* are defined in Section 3.

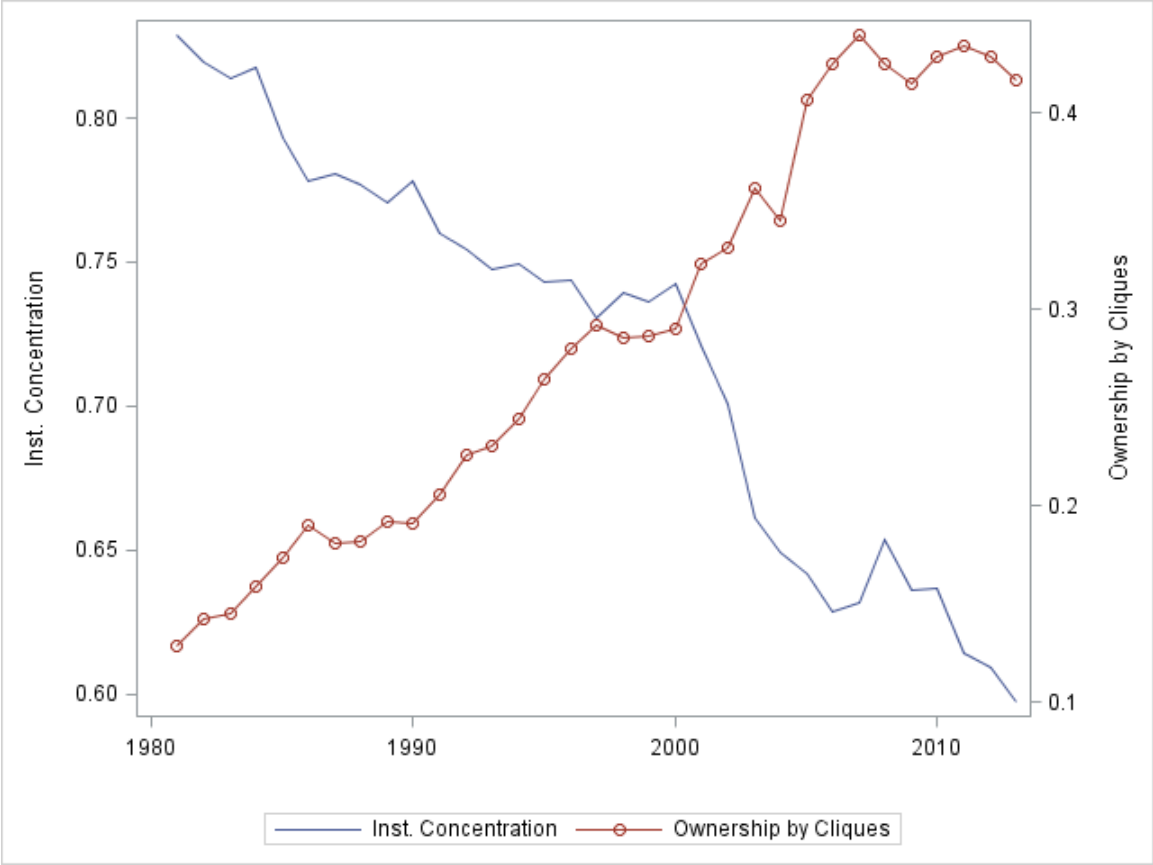
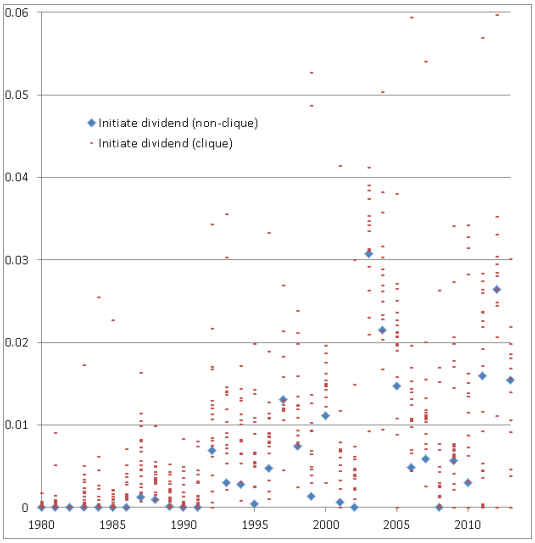


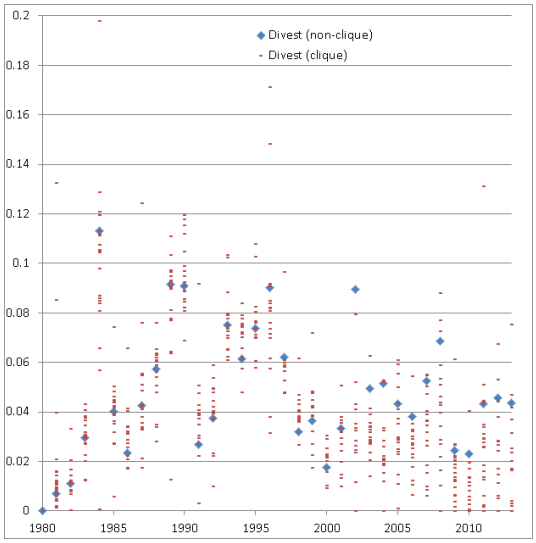
Figure 3: Characteristics of cliques over time

Each figure plots the median clique characteristic for each clique (red dash) for each year, as well as the median characteristic of institutions that do not belong to a clique (blue diamond). In Panel a, the y-axis indicates the fraction of an institution's portfolio that is in firms that initiated a dividend. Each dash represents the median insitution in that clique and that year. Similarly, each blue diamond represents the median institution that does not belong to a unique clique. Panel b plots institutions' tendencies to own firms that initiate repurchases. Panel c plots the tendency to own firms that initiate divestures, and Panel d plots firm acquisitions.

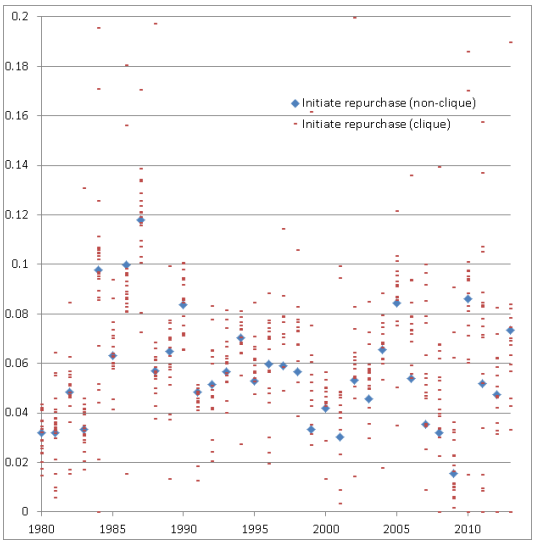
(a) Initiate Dividends



(c) Divest



(b) Initiate Repurchases



(d) Acquire

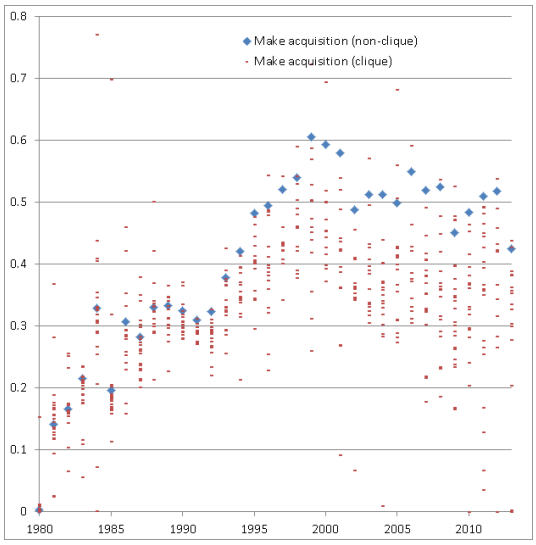


Table 1: Summary Statistics Institution-level

This table presents summary statistics on institution-year observations from 1980-2013. All variables are constructed using calendar year-end holdings of each institution reported by Thomson Reuters. *In a Clique* is a dummy variable equal to one if an institution is in a clique and zero otherwise. Institutional types (Bank, Insurance Company, Public Pension, Endowment, and Miscellaneous) are indicator variables. All other variables are defined in Appendix A.

	Mean	Median	Std. Dev	10th	90th
In a Clique	0.36	0.00	0.48	0.00	1.00
Assets Under Management (2013 $ Mil.)	17567.62	1898.24	99720.38	394.98	26439.53
Number of Positions	1136.76	461.00	2143.02	118.00	2572.00
Average Holding Size	0.01	0.00	0.02	0.00	0.01
Investment Company	0.74	1.00	0.44	0.00	1.00
Bank	0.12	0.00	0.33	0.00	1.00
Insurance Company	0.04	0.00	0.20	0.00	0.00
Corporate Pensions	0.02	0.00	0.14	0.00	0.00
Public Pensions	0.01	0.00	0.10	0.00	0.00
Endowments	0.01	0.00	0.09	0.00	0.00
Miscellaneous	0.06	0.00	0.23	0.00	0.00
Observations	53178				

Table 2: Characteristics of Institutions in Cliques

This table presents a linear probability model of the probability that a given institution is in a clique. The sample is institution-year observations from 1981-2012 and is constructed using calendar year-end holdings of each institution reported by Thomson Reuters. All independent variables are lagged. AUM is the total market value of the institution's holdings in millions. A position is determined to be a blockholding if it is at least 5% of the firm. Average percent of firm owned is the percent of the firm's market value owned by the institution averaged over all positions in the institution's portfolio. Dedicated and Transient are indicator variables defined by Bushee (1998). Year effects are included but not reported. Standard errors are clustered by institution and reported in parenthesis with significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	In a Clique	In a Clique	In a Clique
AUM	-0.049	-0.073	-0.050
	(0.11)	(0.12)	(0.12)
Number of Positions	0.048***	0.049***	0.049***
	(0.00)	(0.00)	(0.00)
Number of Large Positions	0.978*	1.004*	0.938*
	(0.51)	(0.52)	(0.50)
Average Holding Size	9.560***	10.452***	9.606***
	(1.05)	(0.97)	(1.06)
Dedicated Institutions	0.156***		0.157***
	(0.03)		(0.03)
Transient Institutions	0.088***		0.084***
	(0.01)		(0.01)
Investment Company		0.138***	0.118***
		(0.03)	(0.03)
Insurance Company		0.115***	0.106***
		(0.04)	(0.04)
Bank		0.125***	0.123***
		(0.03)	(0.03)
Endowments		0.046	0.027
		(0.08)	(0.08)
Miscellaneous		0.110***	0.089**
		(0.04)	(0.04)
Constant	0.298***	0.205***	0.191***
	(0.02)	(0.04)	(0.04)
Observations	51699	51699	51699
Year Effects	Yes	Yes	Yes

Table 3: Similarity of Institutional Characteristics within Cliques

This table presents cross-sectional standard deviations of institutional characteristics for the full cross-section and within each clique. Data are institution-year observations from 1980-2013. All variables are constructed using calendar year-end holdings of each institution reported by Thomson Reuters. Assets under management is the total market value of the institution's holdings in millions in 2013 dollars. Average holding size is the percent of the firm's market value owned by the institution averaged over all positions in the institution's portfolio. Dedicated and Transient are indicator variables defined by Bushee (1998).

	Across All Firms	Within Each Clique
Assets Under Management	55357	47509
Number of Positions	1840	1781
Average Holdings Size	0.024	0.024
Investment Company	0.471	0.404
Bank	0.336	0.278
Insurance Company	0.208	0.161
Corporate Pensions	0.152	0.087
Public Pensions	0.104	0.046
Endowments	0.097	0.034
Miscellaneous	0.170	0.105

Table 4: Summary Statistics Firm-level

This table presents summary statistics on firm-year observations from 1980-2013. Panel A summarizes the full sample. Panel B splits the sample into quartiles of *Clique Ownership* sorted by year. Variable definitions are given in Appendix Table A.

Panel A: Full sample

	Mean	Median	Std. Dev	10th	90th
Clique Ownership	0.29	0.21	0.29	0.01	0.69
Clique Herfindahl	0.06	0.01	0.89	0.00	0.12
Cliques Own. - Top 1.	0.13	0.09	0.17	0.01	0.30
IO Concentration	0.72	0.76	0.25	0.36	1.00
Institutional Ownership	0.33	0.25	0.32	0.01	0.78
Number of Stocks	536.25	318.60	614.29	15.60	1427.77
Number of Blockholders	1.24	1.00	1.53	0.00	3.00
Dedicated	0.04	0.01	0.08	0.00	0.13
Quasi-Indexer	0.20	0.14	0.21	0.01	0.49
Transient	0.08	0.04	0.11	0.00	0.22
Assets of Owners (2013 $ Mil.)	30856.07	6811.88	50430.55	140.99	106501.89
Assets (2013 $)	7252.78	319.07	66592.60	23.08	7196.38
Book Leverage	0.17	0.11	0.22	0.00	0.43
Ln(Market to Book)	0.48	0.48	1.16	-0.63	1.74
Observations	218352				

Panel B: Subsample averages by quartiles of Clique Ownership

	Q1	Q3	Q4	Q4
Clique Ownership	0.03	0.15	0.35	0.63
Clique Herfindahl	0.00	0.01	0.04	0.17
Cliques Own. - Top 1.	0.02	0.08	0.15	0.27
IO Concentration	0.93	0.81	0.63	0.50
Institutional Ownership	0.04	0.18	0.40	0.71
Number of Stocks	71.53	317.71	670.71	1085.26
Number of Blockholders	0.07	0.70	1.53	2.65
Dedicated	0.00	0.02	0.05	0.10
Quasi-Indexer	0.02	0.11	0.25	0.43
Transient	0.01	0.04	0.10	0.17
Assets of Owners (2013 $ Mil.)	2655.53	14944.78	39192.41	66644.50
Assets (2013 $)	1761.27	4130.15	10593.23	10481.73
Book Leverage	0.15	0.16	0.17	0.19
Ln(Market to Book)	0.53	0.41	0.48	0.52

Table 5: Clique Ownership and Shareholder Voting

The dependent variable is the percentage of votes against management's recommendation. Panel A presents results using ISS recommendations as the measure for proposal quality. The measure of coordinated ownership is *Clique Ownership* in columns 1 and 2, *Clique Herfindahl* in columns 3 and 4, and *Clique Own. Top 1* in columns 5 and 6. The variables are defined in Appendix Table A. Columns 1, 3, and 5 use the sample of director election ballot items proposed by management. The remaining columns use all other ballot items proposed by management. Panel B presents results using proposal quality as in Davis and Kim (2007). Ownership variables are measured as of December of the year prior to the year of the shareholder meeting. Market-to-book is measured at the most recent fiscal year end prior to the meeting. Stock returns and firm size are measured at the month prior to the meeting. Numbers of blockholders, institutional owners, and stocks in the owners portfolio are reported per 1,000 for ease of interpretation. All regressions include year and firm effects. Standard errors are clustered by firm with standard errors reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Panel A: Proposal Quality Based on ISS Recommendations

	(1) Per. Votes Against	(2) Per. Votes Against	(3) Per. Votes Against	(4) Per. Votes Against	(5) Per. Votes Against	(6) Per. Votes Against
Clique Ownership$_{t-1}$	-0.072***	-0.014				
	(0.02)	(0.02)				
Clique Ownership$_{t-1}$ × Bad Proposal $_{ISS}$	0.213***	0.171***				
	(0.01)	(0.01)				
Clique Herfindahl$_{t-1}$			-0.062***	-0.069***		
			(0.02)	(0.01)		
Clique Herfindahl$_{t-1}$ × Bad Proposal $_{ISS}$			0.273***	0.201***		
			(0.06)	(0.04)		
Cliques Own. - Top 1$_{t-1}$					-0.029***	-0.036***
					(0.01)	(0.01)
Cliques Own. - Top 1$_{t-1}$ × Bad Proposal $_{ISS}$					0.244***	0.111***
					(0.03)	(0.02)
ISS against Mgmt	0.016***	0.069***	0.103***	0.143***	0.075***	0.137***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Institutional Ownership$_{t-1}$	0.073***	0.041**	0.042***	0.057***	0.036***	0.055***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Dedicated$_{t-1}$	0.012	0.001	0.009	0.001	0.010	-0.000
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Transient$_{t-1}$	-0.025***	-0.002	-0.022***	-0.008	-0.019**	-0.007
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Num. of Stocks in Owners' Portfolio$_{t-1}$	0.011***	0.004	0.012***	0.003	0.012***	0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of Inst. Owners$_{t-1}$	-0.008	0.028**	-0.008	0.025*	-0.006	0.026*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Own. of Top 5 $_{t-1}$	-0.050***	-0.036***	-0.040***	-0.018	-0.050***	-0.020
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Num. of Blockholder$_{t-1}$	0.001***	-0.000	0.001**	-0.000	0.001**	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market to Book (bps) $_{t-1}$	-0.001	0.002***	-0.001	0.002***	-0.002	0.002***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln(Size)$_{t-1}$	-0.004***	-0.007***	-0.004***	-0.007***	-0.004***	-0.007***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Assets of Owners ($Tril.) $_{t-1}$	-0.035	0.008	-0.055**	-0.002	-0.047*	-0.002
	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
Observations	128091	45142	128091	45142	128060	45129
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes
Meeting Type	All	All	All	All	All	All
Vote Type	Director	Non Director	Director	Non Director	Director	Non Director

Panel B: Proposal Quality Based on Davis and Kim (2007) Classification

	(1) Per. Votes Against	(2) Per. Votes Against	(3) Per. Votes Against
Clique Ownership$_{t-1}$	0.010		
	(0.02)		
Clique Ownership$_{t-1}$ × Good Proposal $_{DK2007}$	-0.030***		
	(0.00)		
Clique Herfindahl$_{t-1}$		-0.048***	
		(0.01)	
Clique Herfindahl$_{t-1}$ × Good Proposal $_{DK2007}$		-0.130***	
		(0.02)	
Cliques Own. - Top 1$_{t-1}$			-0.024***
			(0.01)
Cliques Own. - Top 1$_{t-1}$ × Good Proposal $_{DK2007}$			-0.059***
			(0.01)
ISS against Mgmt	0.161***	0.161***	0.161***
	(0.00)	(0.00)	(0.00)
Institutional Ownership$_{t-1}$	0.040**	0.059***	0.057***
	(0.02)	(0.01)	(0.01)
Dedicated$_{t-1}$	0.003	0.001	0.001
	(0.01)	(0.01)	(0.01)
Transient$_{t-1}$	-0.003	-0.009	-0.008
	(0.01)	(0.01)	(0.01)
Num. of Stocks in Owners' Portfolio$_{t-1}$	0.005	0.003	0.004
	(0.00)	(0.00)	(0.00)
Number of Inst. Owners$_{t-1}$	0.029**	0.025*	0.027**
	(0.01)	(0.01)	(0.01)
Own. of Top 5 $_{t-1}$	-0.030**	-0.016	-0.017
	(0.01)	(0.01)	(0.01)
Num. of Blockholder$_{t-1}$	-0.001	-0.000	-0.000
	(0.00)	(0.00)	(0.00)
Market to Book (bps) $_{t-1}$	0.002***	0.002***	0.002***
	(0.00)	(0.00)	(0.00)
Ln(Size)$_{t-1}$	-0.007***	-0.007***	-0.007***
	(0.00)	(0.00)	(0.00)
Assets of Owners ($Tril.) $_{t-1}$	-0.009	-0.008	-0.010
	(0.03)	(0.03)	(0.03)
Observations	45142	45142	45129
Year Effects	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes
Meeting Type	All	All	All
Vote Type	Non Director	Non Director	Non Director

Table 6: Clique Ownership and Shareholder Voting: Exogenous Network Shocks

Treatment firms are those owned to a high degree by institutions whose network was affected by the mutual fund late trading scandal in 2003. The top row presents the estimate of the main effect from the first stage where the instrument is an indicator for scandal exposed firms (*Treatment*) interacted with the period after the scandal (*Post*). We also instrument for the interaction of clique ownership and ISS using the interaction of $Treatment \times Post$ with ISS. First stage estimates of the interaction term are suppressed for space. Results from the second stage are presented below. Column 1 uses the sample of director election ballot items proposed by management. Column 2 uses all other ballot items proposed by management. Column 3 uses a measure of proposal quality from Davis and Kim (2007) and presents results for the non-director election sample. Numbers of blockholders, institutional owners, and stocks in the owners portfolio are reported per 1,000 for ease of interpretation. All regressions include year and firm effects. Standard errors are clustered by firm with standard errors reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	(1) Clique Own.	(2) Clique Own.	(3) Clique Own.
First Stage: Main Effect			
Treatment × Post	-1.918***	-2.016***	-2.016***
	(0.41)	(0.47)	(0.47)
	Votes Against	Votes Against	Votes Against
Second Stage			
$\widehat{\text{Clique Ownership}}_{t-1}$	0.728***	1.681***	4.273**
	(0.28)	(0.61)	(1.92)
$\widehat{\text{Clique Ownership}_{t-1} \times \text{Bad Proposal}}_{ISS}$	0.082***	0.238***	
	(0.01)	(0.05)	
$\widehat{\text{Clique Ownership}_{t-1} \times \text{Good Proposal}}_{DK2007}$			-4.641
			(2.95)
ISS against Mgmt	0.010**	0.090***	0.181***
	(0.00)	(0.02)	(0.01)
Scandal Fund IO	-0.110*	-0.270*	-0.972*
	(0.06)	(0.16)	(0.54)
Institutional Ownership_{t-1}	-0.534**	-1.238***	-3.101**
	(0.22)	(0.47)	(1.42)
Dedicated_{t-1}	-0.098**	-0.126	-0.624
	(0.05)	(0.12)	(0.49)
Transient_{t-1}	0.071*	0.198*	0.580**
	(0.04)	(0.10)	(0.29)
Num. of Stocks in Owners' Portfolio_{t-1}	-0.036***	-0.054	-0.143
	(0.01)	(0.04)	(0.13)
Number of $\text{Inst. Owners}_{t-1}$	0.022	0.001	0.745
	(0.07)	(0.13)	(0.72)
Own. of Top 5 $_{t-1}$	-0.172***	-0.421***	-0.914**
	(0.05)	(0.14)	(0.39)
Num. of Blockholder_{t-1}	-0.003	-0.007	-0.019
	(0.00)	(0.00)	(0.02)
Market to Book (bps) $_{t-1}$	-0.000	0.015***	0.032**
	(0.00)	(0.00)	(0.01)
Ln(Size)_{t-1}	-0.003	-0.003	-0.053
	(0.00)	(0.01)	(0.04)
Stock Return over Previous Year	0.003	0.007	0.034*
	(0.00)	(0.01)	(0.02)
Assets of Owners ($Tril.)$_{t-1}$	0.433***	0.572	1.689
	(0.13)	(0.35)	(1.34)
Observations	19507	4582	4582
First Stage F-stat	7.126	7.114	1.857
Year Effects	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes
Meeting Type	All	All	All
Vote Type	Director	Non Director	Non Director

Table 7: Transition Probabilities: Membership in Specialized Cliques

This table presents transition probabilities describing the evolution of clique membership over time. For example, the first row indicates that 90% of managers that belonged to no clique at $t-1$ will also not belong to a clique in t, and that 2% of these managers will belong to a clique that specializes in initiating dividends. All transition probabilities are statistically significantly different at the 1% level from the null that the clique membership at t is independent of membership at $t-1$.

	Initiate dividends		
	No Clique$_t$	Clique$_t$	"Specialized" Clique$_t$
No Clique$_{t-1}$	0.90	0.08	0.02
Clique$_{t-1}$	0.20	0.68	0.12
Specialized Clique$_{t-1}$	0.20	0.62	0.18

	Initiate repurchases		
	No Clique$_t$	Clique$_t$	"Specialized" Clique$_t$
No Clique$_{t-1}$	0.90	0.08	0.02
Clique$_{t-1}$	0.21	0.63	0.16
Specialized Clique$_{t-1}$	0.19	0.62	0.19

	Divestitures		
	No Clique$_t$	Clique$_t$	"Specialized" Clique$_t$
No Clique$_{t-1}$	0.90	0.07	0.02
Clique$_{t-1}$	0.20	0.66	0.14
Specialized Clique$_{t-1}$	0.22	0.58	0.20

	Anti-Acquisitions		
	No Clique$_t$	Clique$_t$	"Specialized" Clique$_t$
No Clique$_{t-1}$	0.90	0.09	0.01
Clique$_{t-1}$	0.21	0.71	0.09
Specialized Clique$_{t-1}$	0.21	0.67	0.15

Table 8: Specialized Cliques and Future Firm Outcomes

The dependent variables are dividend initiations, repurchase initiations, acquisitions, and divestitures measured at $t + 1$. Dividend, repurchase, anti-empire building, and divestiture clique ownership measures ownership by those particular specialized cliques at t. Control variables as in Table 5 are included but suppressed for space. All regressions include year and firm effects. Standard errors are clustered by firm with standard errors reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	(1) Dividend Initiation $_{t+1}$	(2) Repurchase Initiation $_{t+1}$	(3) Acquisition $_{t+1}$	(4) Divestiture $_{t+1}$
Dividend Clique Ownership	0.015*	0.015	0.014	-0.017*
	(0.01)	(0.02)	(0.02)	(0.01)
Repurchase Clique Ownerhsip	-0.008	-0.009	-0.007	-0.005
	(0.01)	(0.01)	(0.01)	(0.01)
Anti-Acquisition Clique Ownership	0.004	-0.005	-0.029*	-0.022***
	(0.01)	(0.01)	(0.01)	(0.01)
Divestiture Clique Ownership	-0.007	-0.008	-0.013	0.018**
	(0.01)	(0.01)	(0.01)	(0.01)
Clique Ownership	0.012	-0.039	-0.083*	-0.018
	(0.02)	(0.04)	(0.04)	(0.02)
Institutional Ownership	-0.017	0.076**	0.131***	0.010
	(0.02)	(0.03)	(0.04)	(0.02)
Observations	129382	104354	130000	130000
Year Effects	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes

Table 9: Cliques and Governance by Exit: The Effect of Decimalization on Value

This table presents a difference-in-difference estimation of the effect decimalization on the relation between firm value and ownership cliques. The dependent variable is Tobin's q as defined in Appendix A. The main variable of interest is the interaction of *Decimalization* and one of the three measures of ownership by cliques; *Clique Ownership*, *Clique Herfindahl*, and *Clique Own. - Top 1*. This regression is estimated on years 2000 and 2002 (2001 is the year of treatment and is excluded). Firm-fixed effects are included. Standard errors are clustered by firm with standard errors reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	(1) q	(2) q	(3) q	(4) q	(5) q	(6) q
Clique Ownership $_{t-1}$	1.476	2.294**				
	(1.12)	(1.12)				
Decimalization × Clique Ownership $_{t-1}$	-0.687***	-1.842***				
	(0.19)	(0.28)				
Clique Herfindahl $_{t-1}$			2.783***	4.845***		
			(0.71)	(1.12)		
Decimalization × Clique Herfindahl $_{t-1}$			-1.040**	-4.291***		
			(0.50)	(1.04)		
Cliques Own. - Top 1 $_{t-1}$					2.300***	4.199***
					(0.63)	(0.79)
Decimalization × Cliques Own. - Top 1 $_{t-1}$					-0.757**	-4.456***
					(0.38)	(0.83)
Ownership by Blocks$_{t-1}$	0.557	-1.360	-0.660	-2.021**	-0.206	-2.248**
	(0.76)	(0.83)	(0.76)	(0.87)	(0.83)	(0.96)
Decimalization × Ownership by Blocks$_{t-1}$		2.686***		2.181***		3.396***
		(0.39)		(0.48)		(0.57)
Decimalization	-0.196**	-0.176*	-0.387***	-0.503***	-0.352***	-0.225**
	(0.09)	(0.09)	(0.06)	(0.07)	(0.09)	(0.09)
Ln(Market Cap)$_{t-1}$	-0.486***	-0.462***	-0.495***	-0.484***	-0.503***	-0.492***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Number of Block Holders$_{t-1}$	-0.058	-0.033	0.017	0.035	-0.023	0.001
	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Book Leverage$_{t-1}$	-0.067	0.001	-0.109	-0.075	0.019	0.100
	(1.08)	(1.07)	(1.08)	(1.07)	(1.09)	(1.09)
Inst. Ownership$_{t-1}$	-1.807*	-1.697	-1.459***	-1.433***	-1.361***	-1.166**
	(1.06)	(1.05)	(0.54)	(0.54)	(0.52)	(0.53)
Annual Stock Return$_{t-1}$	0.353***	0.338***	0.355***	0.347***	0.354***	0.344***
	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)	(0.05)
CapEx$_{t-1}$	-0.000	0.000	-0.000	-0.000	-0.000	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Dividend Payer$_{t-1}$	0.308*	0.306	0.314*	0.312*	0.302	0.284
	(0.19)	(0.19)	(0.18)	(0.19)	(0.19)	(0.19)
Observations	7765	7765	7765	7765	7736	7736
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes
r-squared	0.127	0.136	0.126	0.130	0.126	0.133

Table 10: Characteristics of Firms with Coordinated Ownership

This table presents a regression of the determinants of *Clique Ownership* as a function of managerial myopia. *Myopia-Options* is the measure of managerial myopia as defined in Edmans et al. (2013). *Myopia-CEO age* is the age of the CEO (measured per 10 years). Year-fixed effects are included. Standard errors are clustered by firm with standard errors reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	(1) Clique Ownership	(2) Clique Ownership	(3) Clique Herfindahl	(4) Clique Herfindahl	(5) Top Cliques Own.	(6) Top Cliques Own.
Myopia - Options$_{t-1}$	-0.098***		-0.031***		-0.046**	
	(0.03)		(0.01)		(0.02)	
Myopia - CEO's Age		-0.004*		-0.002***		-0.002**
		(0.00)		(0.00)		(0.00)
Ln(Market Cap)$_{t-1}$	0.036***	0.036***	0.009***	0.007***	0.014***	0.012***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln(Market to Book)$_{t-1}$	0.003	0.006**	0.003*	0.002***	0.005*	0.002
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Dividend Payer$_{t-1}$	-0.022***	-0.021***	-0.004*	-0.002**	-0.004	-0.001
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Number of Block Holders$_{t-1}$	0.021***	0.023***	-0.007*	-0.005***	-0.007*	-0.008***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Block Ownership$_{t-1}$	0.337***	0.426***	0.304***	0.278***	0.378***	0.414***
	(0.04)	(0.03)	(0.05)	(0.02)	(0.05)	(0.02)
Annual Stock Return	0.008**	0.017***	-0.001	0.001	-0.003*	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	6234	21420	6234	21420	6233	21418
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes
r-squared	0.558	0.572	0.519	0.535	0.487	0.496

Internet Appendix to
Institutional Investor Cliques and Governance

This Internet Appendix presents results for an alternative measure of coordinated ownership. The cluster coefficient of each institution measures the propensity of that institution to be in a clique.

IA.1. Description of Alternative Measure

For each institution, the clustering measure for a given year, following Barrat et al. (2004), is given by:

$$Cluster_i^w = \frac{1}{(\sum_{j \in N_i} w_{ij} a_{ij})(k_i - 1)} \sum_{j,k \in N_i} \frac{w_{ij} + w_{ik}}{2} a_{ij} a_{ik} a_{jk} \tag{IA.1}$$

where a_{ij} is equal to one if there is edge (at least one overlapping ownership position) between institutions i and j, w_{ij} is the importance weight of that connection (defined in a number of ways), N_i represents the set of institutions in the neighborhood of i (all institutions with at least one overlapping positions with institution i), and k_i is the total possible number of connections between institutions in N_i. Therefore, this measure considers not only whether a connection between an institution-pair exists, but also the strength of the connection.

The cluster coefficient, $Cluster_i^w$, is bounded [0,1]. Therefore we use the logit transformation to identify clustered institutions, proxying for the extent to which a given institution belongs to a clique.

$$Clustered\ \ institution_{i,t} = ln(\tfrac{Cluster_{i,t}^w}{1 - Cluster_{i,t}^w}). \tag{IA.2}$$

We then aggregate this measure to the firm level:

$$Cluster\ Ownership_{j,t} = \sum_{i}^{N} \lambda_{i,t} Clustered\ \ institution_{i,t} \tag{IA.3}$$

where $\lambda_{i,t}$ is institution i's percent holdings in firm j at time t.

IA.2. List of Exhibits

We present the following results:

1. Table IA 1 presents summary statistics of institutions by quartile of *Clustered institution*.
2. Table IA 2 presents regressions of *Clustered institution* on institutional characteristics.
3. Table IA 3 presents summary statistics of firm-level observations by quartile of *Clustered Ownership*.
4. Table IA 4 presents regressions of voting outcomes as a function of *Cluster Ownership*. This table is analogous to Table 5 of the paper.
5. Table IA 5 examines the threat of exit as a function of *Cluster Ownership*. This table is analogous to Table 9 of the paper.
6. Table IA 6 examines the firm characteristics associated with *Cluster Ownership*. This table is analogous to Table 10 of the paper.

Table IA 1: Summary Statistics Institution-level: Subsample averages by quartile of *Clustered Institution*

This table presents summary statistics on institution-year observations from 1980-2013. All variables are constructed using calendar year-end holdings of each institution reported by Thomson Reuters. Assets under management is the total market value of the institution's holdings in millions in 2013 dollars. Number of large positions is the number of ownership stakes that are at least 5% of the firm. Average holding size is the percent of the firm's market value owned by the institution averaged over all positions in the institution's portfolio. Dedicated and Transient are indicator variables defined by Bushee (1998). Panel A summarizes the full sample. Panel B splits the sample into quartiles of *clustered institution* sorted by year.

	Q1	Q3	Q4	Q4
Clustered Institution	1.70	2.41	2.83	3.64
Assets Under Management (2013 $ Mil.)	55379.17	7280.82	3753.24	2879.74
Number of Positions	3216.84	723.08	357.39	175.64
Number of Large Positions	13.71	2.50	1.65	1.65
Average Holding Size	0.00	0.00	0.00	0.01
Investment Company	0.62	0.76	0.78	0.81
Insurance Company	0.06	0.04	0.03	0.04
Bank	0.21	0.13	0.09	0.04

Table IA 2: Characteristics of Clustered Institutions

This table presents an OLS estimation of the descriptors of connected institutions. The sample is institution-year observations from 1981-2012 and is constructed using calendar year-end holdings of each institution reported by Thomson Reuters. Column 1 estimates the characteristics of clustered ownership. Column 2 estimates the characteristics of central ownership. All independent variables are lagged. AUM is the total market value of the institution's holdings in millions. A position is determined to be a blockholding if it is at least 5% of the firm. Average percent of firm owned is the percent of the firm's market value owned by the institution averaged over all positions in the institution's portfolio. Dedicated and Transient are indicator variables defined by Bushee (1998). Year effects are included but not reported. Standard errors are clustered by firm with t-statistics reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Cluster Ownership	Cluster Ownership	Cluster Ownership
Assets Under Management (2013 $)	6.50e-13**	6.62e-13***	6.63e-13**
	(2.49)	(2.62)	(2.55)
Number of Positions	-0.000173***	-0.000168***	-0.000167***
	(-20.31)	(-19.63)	(-19.45)
Number of Large Positions	-0.000813	-0.000893	-0.000962
	(-0.96)	(-1.09)	(-1.15)
Average Holding Size	9.451***	9.906***	9.089***
	(8.93)	(10.72)	(8.75)
Dedicated Institutions	0.117**		0.129**
	(2.19)		(2.43)
Transient Institutions	0.0180		-0.00551
	(1.20)		(-0.35)
Investment Company		0.0515	0.0557
		(1.25)	(1.35)
Insurance Company		0.0200	0.0160
		(0.35)	(0.29)
Bank		-0.103**	-0.107**
		(-2.39)	(-2.49)
Endowments		0.136*	0.128
		(1.65)	(1.55)
Miscellaneous		0.129***	0.130***
		(2.67)	(2.70)
Constant	4.033***	4.057***	4.048***
	(139.79)	(80.52)	(81.17)
Observations	51693	51693	51693
Year Effects	Yes	Yes	Yes

Table IA 3: Summary Statistics Firm-level: Subsample averages by quartiles of *Cluster Ownership*

This table presents summary statistics on firm-year observations from 1980-2013. Panel A summarizes the full sample. Panel B splits the sample into quartiles of *Cluster Ownership* sorted by year.

	Q1	Q3	Q4	Q4
Cluster Ownership	0.06	0.35	0.82	1.55
Assets 2013 $	1962.10	4081.29	10371.08	9628.51
Book Leverage	0.15	0.16	0.17	0.19
Ln(Market to Book)	0.44	0.36	0.44	0.52
Institutional Ownership	0.03	0.18	0.40	0.70
Number of Stocks	78.29	337.63	682.00	1026.02
Number of Blockholders	0.06	0.71	1.56	2.57
Dedicated	0.00	0.02	0.05	0.10
Quasi-Indexer	0.02	0.11	0.25	0.42
Transient	0.01	0.04	0.09	0.17
Average Assets of Owners	2.65e+09	1.44e+10	3.55e+10	5.31e+10

Table IA 4: Cluster Ownership and Governance by Voice: Evidence from Shareholder Votes

This table presents estimates from a conditional logit specification. In column one, the dependent variable is one if the agenda item was sponsored by a non-management owner, zero if sponsored by management. In columns two through four, the dependent variable is one if the vote outcome is opposite management's recommendation. In the last two columsn, the dependent variable is the percentage of votes against management's recommendation. In Panel A, the independent variable of interest is *Cluster Ownership*, which measures the extent to which the firm's ownership is clustered. In Panel B, we use an indicator variable, High Cluster Own., which equals one if *Cluster Ownership* is above the median. Ownership variables are measured as of December of the year prior to the year of the shareholder meeting. Market-to-book is measured at the most recent fiscal year end prior to the meeting. Stock returns and firm size are measured at the month prior to the meeting. All independent variables are standardized. All regressions include year and firm effects. Standard errors are clustered by firm with t-statistics reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Owner Sponsored	Vote against Mgmt.	Vote against Mgmt.	Vote against Mgmt.	Per. Votes Against	Per. Votes Against
Cluster Ownership$_{t-1}$	1.205***	0.238	-3.932***	1.757**	-0.0152***	-0.00589
	(2.78)	(0.31)	(-3.28)	(1.99)	(-3.26)	(-1.01)
Cluster Ownership$_{t-1}$ × ISS against Mgmt					0.0523***	0.0658***
					(10.89)	(10.91)
Institutional Ownership$_{t-1}$	-2.040*	-1.334	9.159***	-5.015**	0.0536***	0.0427***
	(-1.88)	(-0.65)	(2.86)	(-2.09)	(4.28)	(2.72)
Dedicated$_{t-1}$	0.929	-0.711	-1.175	-0.433	0.0188*	0.0114
	(1.31)	(-0.78)	(-0.51)	(-0.53)	(1.75)	(0.97)
Transient$_{t-1}$	-1.772**	1.165	-0.699	1.399**	-0.0145*	0.00389
	(-2.46)	(1.43)	(-0.43)	(2.03)	(-1.87)	(0.40)
Num. of Stocks in Owners' Portfolio$_{t-1}$	0.000810***	-0.000545	-0.00205**	-0.000125	0.00000979***	0.00000565
	(3.09)	(-1.49)	(-2.39)	(-0.38)	(3.30)	(1.49)
Number of Inst. Owners$_{t-1}$	0.000295	0.00254**	0.00774**	0.000718	-0.00000242	0.0000206
	(0.98)	(2.44)	(2.25)	(0.97)	(-0.15)	(1.23)
Own. of Top 5 $_{t-1}$	0.217	-0.502	2.707	-1.818*	-0.0442***	-0.0345***
	(0.27)	(-0.45)	(1.06)	(-1.75)	(-4.39)	(-2.91)
Num. of Blockholder$_{t-1}$	0.0139	0.0562	0.0706	0.0570	0.000570	-0.000602
	(0.43)	(1.22)	(0.70)	(1.35)	(1.23)	(-1.08)
Market to Book$_{t-1}$	0.00000552***	0.00000115	-0.000537*	0.0000495	-0.000000102**	-0.000000576***
	(7.26)	(0.02)	(-1.78)	(0.13)	(-2.48)	(-23.84)
Ln(Size)$_{t-1}$	-0.00707	-0.655***	-1.568***	-0.265**	-0.00494***	-0.00717***
	(-0.09)	(-5.91)	(-7.11)	(-2.50)	(-4.06)	(-5.11)
Assets of Owners $_{t-1}$	-3.50e-12	1.41e-11***	1.56e-11***	1.31e-11***	-6.16e-14**	-2.82e-14
	(-1.56)	(4.91)	(2.61)	(4.39)	(-2.29)	(-0.78)
ISS against Mgmt					0.0701***	0.0903***
					(15.43)	(15.70)
Observations	65911	150261	17117	39890	125640	42844
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Meeting Type	All	All	All	All	All	All
Vote Type	All	All	Director	Non Director	Director	Non Director

Table IA 5: Cluster Ownership and Governance by Exit: The Effect of Decimalization on Value

This table presents a difference-in-difference estimation of the effect decimalization on the relation between firm value and ownership cliques. The dependent variable is Tobin's q as defined in Appendix A. The main variable of interest is the interaction of *Decimalization* and *Cluster ownership*. This regression is estimated on years 2000 and 2002 (2001 is the year of treatment and is excluded). Firm-fixed effects are included. Standard errors are clustered by firm with t-statistics reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	q	q	q	q
Cluster Ownership $_{t-1}$	0.948**	1.092***		
	(2.29)	(2.64)		
Decimalization × Cluster Ownership $_{t-1}$	-0.297***	-0.653***		
	(-4.23)	(-6.70)		
High Coord. Own. $_{t-1}$			-0.205	-0.0759
			(-1.14)	(-0.42)
Decimalization × High Coord. Own. $_{t-1}$			-0.438***	-0.695***
			(-4.68)	(-6.12)
Ownership by Blocks$_{t-1}$	0.602	-0.872	0.677	-0.362
	(0.94)	(-1.28)	(1.08)	(-0.53)
Decimalization × Ownership by Blocks$_{t-1}$		2.010***		1.411***
		(6.45)		(5.20)
Decimalization	-0.175**	-0.166**	-0.148**	-0.195**
	(-2.16)	(-2.06)	(-1.99)	(-2.56)
Ln(Market Cap)$_{t-1}$	-0.438***	-0.421***	-0.426***	-0.424***
	(-5.21)	(-5.04)	(-5.21)	(-5.20)
Number of Block Holders$_{t-1}$	-0.0627	-0.0416	-0.0597	-0.0445
	(-1.12)	(-0.75)	(-1.07)	(-0.79)
Book Leverage$_{t-1}$	-0.0488	0.0207	-0.0619	-0.0253
	(-0.05)	(0.02)	(-0.06)	(-0.03)
Inst. Ownership$_{t-1}$	-2.481**	-2.144**	-0.416	-0.242
	(-2.45)	(-2.11)	(-0.88)	(-0.50)
Annual Stock Return$_{t-1}$	0.364***	0.355***	0.367***	0.363***
	(6.58)	(6.52)	(6.65)	(6.63)
CapEx$_{t-1}$	-0.0000951	-0.0000461	-0.0000825	-0.0000434
	(-1.34)	(-0.69)	(-1.14)	(-0.62)
Dividend Payer$_{t-1}$	0.298*	0.301*	0.295*	0.293*
	(1.73)	(1.74)	(1.71)	(1.71)
Observations	8664	8664	8664	8664
Firm Effects	Yes	Yes	Yes	Yes
r-squared	0.128	0.134	0.131	0.135

Table IA 6: Characteristics of Firms with Cluster Ownership

This table presents a regression of the determinants of firm-level clustered ownership as a function of managerial myopia. The dependent variable is *Cluster ownership*. *Myopia-Options* is the measure of managerial myopia as defined in Edmans et al. (2013). *Myopia - CEO age* is the age of the CEO. Year-fixed effects are included. Standard errors are clustered by firm with t-statistics reported in parenthesis and significance represented according to: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

	Cluster Ownership	Cluster Ownership
Myopia - Options$_{t-1}$	-0.103**	
	(-2.11)	
Myopia - CEO's Age		-0.000751
		(-1.61)
Ln(Market Cap)$_{t-1}$	0.0572***	0.0667***
	(9.77)	(16.24)
Ln(Market to Book)$_{t-1}$	0.0188**	0.0211***
	(2.21)	(3.53)
Dividend Payer$_{t-1}$	-0.0658***	-0.0544***
	(-4.86)	(-5.79)
Number of Block Holders$_{t-1}$	-0.000929	0.0217***
	(-0.09)	(3.64)
Block Ownership$_{t-1}$	1.025***	1.141***
	(7.72)	(15.12)
Annual Stock Return	0.0231***	0.0486***
	(3.85)	(7.99)
Observations	7027	27379
Year Effects	Yes	Yes
Industry Effects	Yes	Yes
r-squared	0.508	0.485