Investors' Attention to Corporate Governance

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Abstract:

Using unique data on investor views of EDGAR company filings, we document that many investors devote significant effort towards governance research: the five largest mutual fund families access proxy statements of 29% of their portfolio firms. However, investors' monitoring is focused disproportionately on large firms, firms with low managerial entrenchment, and firms with meetings outside the busy spring proxy season. Passive indexer investors perform less research. Concentration of investor attention within the same firm meetings results in joint monitoring of a relatively small subset of firms. This attention is related to investors' voting and investment decisions.

1. Introduction

The separation of ownership and control within public firms results in agency costs that lower firm value (Jensen and Meckling, 1976). Shareholders can limit these agency costs by monitoring management. Importantly the manager also benefits from such monitoring, as the expected benefits to the CEO and management team from better future performance outweigh the loss in utility due to lower perquisite consumption. However, in the absence of monitoring the manager is unable to credibly commit to such best practices. Despite the advantages to multiple parties from monitoring, frictions can cause monitoring to be at a suboptimally low level. As highlighted by Berle and Means (1932), any single shareholder incurs all the costs of monitoring but enjoys only a small portion of the benefits.

The value of corporate governance lies in its ability to reduce these frictions. Ideally, shareholders elect directors who will better monitor and advise management, vote for compensation plans that appropriately incentivize management, and introduce governance changes via shareholder proposals. Additionally, a larger shareholder can engage with management to directly communicate concerns and suggestions. All these mechanisms, however, are only effective in positively influencing firm value if shareholders expend the necessary resources to learn about the important issues, and to subsequently make informed votes and/or to have informed discussions with management.

We seek to provide direct evidence on the extent to which investors expend resources learning about governance-related matters. To the best of our knowledge, we are the first to utilize a direct measure of research conducted by a large group of key shareholders in the company on governance-related issues prior to the shareholder meetings. We obtain novel data from the U.S. Securities and Exchange Commission (SEC), which enables us to measure both

the number of views of each company filing from the SEC Electronic Data Gathering, Analysis, and Retrieval (EDGAR) platform and the identity of key investors accessing these filings. For 89 mutual fund families, 1,565 companies, and seven calendar years (representing 7,993 firm meetings), we can determine the precise times each investor accessed each SEC filing for each company.

The publicly available EDGAR server log files provide a record of all activity on the EDGAR system. These log files include partially masked IP addresses, which do not reveal the full IP address but are sufficiently detailed to enable us to map activity on the EDGAR servers to specific institutional investors. Our primary measure of governance research is investors' views of proxy statements plus any other filings viewed by the investor (defined as the same IP address) on the same day they view the company proxy.[1] The proxy statement is the most important governance document officially filed with the SEC that is specifically associated with the meeting, while the other filings viewed by the investor concurrently provide additional relevant information. We count the number of requests for these filings, over a three-month period leading up to the annual meeting.

Our objectives are threefold. First, we quantify the determinants of governance research, within a framework that enables us to contrast firm-level benefits of monitoring versus investor-level costs of in-depth research. We consider investor characteristics such as active versus passive strategy, firm characteristics such as existing governance structure, and meeting characteristics such as the date of the firm's annual meeting relative to the busy Spring proxy season. Second, we evaluate coordination between investors, examining the extent to which

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[1] Investors likely access further information through company websites, the media, and other news aggregators. Thus, when we refer to governance research, we will be measuring the reliance on one important channel of timely information: primary firm filings in the EDGAR system.

certain types of investors jointly focus their efforts on a narrow set of firms. Third, we examine the relation between governance research and both voting decisions and changes in portfolio holdings.

Before tackling our main questions, we present novel evidence on the prevalence and depth of governance research. The value of corporate governance is a matter of constant debate, raising the question of how much attention investors devote to the issue. We document that the largest five fund families access governance-related filings of 29% of their portfolio firms, suggesting they perceive it to be value-relevant. However, these monitoring efforts are concentrated within a relatively small subset of firms: 5% of firm-years receive no attention by any investors in our sample, and across an additional 17% there is only one investor that views the firm's proxy statement. In contrast, 6% of firm-years are viewed by more than 10 investors.

This concentration of attention within a subset of firms is consistent with investors focusing their attention on firm-years where the net benefits of research are greatest. We first consider the ways in which the benefits and costs of research relate to firm governance. To the extent that firms with weaker governance would benefit more from improvements, we would expect investors to focus their attention on these firms. Alternatively, investors may determine that management entrenchment at such firms thwarts effective change, causing them to focus less attention in such firms. Results highlight the importance of the former channel. Among firms with poor governance structures that are both persistent and costly to change, with items such as classified boards and non-majority voting that can only be changed via shareholder proposals, we observe significantly less research.

Investors instead focus more attention on large firms and firms with poor recent performance. Also, larger investors and investors with larger holdings in a firm conduct more

research. These findings are largely consistent with prior literature, e.g., Iliev and Lowry (2015) and Malenko and Shen (2016), though our direct data confirms those effects and enables us to directly estimate economic magnitudes. Our findings suggest that a one standard deviation increase in the fund family's holdings of the firm is associated with 178% more research.

Investors' governance-related attention to firms should be related to their investment strategy, but prior literature provides contradictory evidence on this issue. Schmidt and Fallenbrach (2017) conclude that active investors are more influential than passive investors, a matter of potential concern given the increase in index investing. However, Appel, Gormley, and Keim (2016) find the opposite, which they note is consistent with the statement of a prominent passive investor, Vanguard: "We're going to hold your stock when you hit your quarterly earnings target. And we'll hold it when you don't. We're going to hold your stock if we like you. And if we don't. … That is precisely why we care so much about good governance."[2]

Using our data on direct governance research, we find support for the former view. A one standard deviation increase in the fraction of assets under management (AUM) in index funds is associated with 6.2% less governance research. Further, passive investors tend to focus on firms where change via voice is more likely, for example firms with more shareholder proposals. Also, the tendency to devote more attention to larger holdings is significantly stronger among passive investors. This is consistent with the disproportional effects of these firms on performance, given the inability to divest, and it contributes further to the concentration of monitoring amongst the largest firms.

Next, we test if contemporaneous monitoring by other investors represents an additional

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[2] "Getting to Know You: The Case for Significant Shareholder Engagement", June 24, 2015, F. William McNabb III, Chairman and CEO of the Vanguard funds.

factor that affects investors' attention to firms. A single investor is unlikely to swing a vote and change within a firm is more likely when multiple investors pressure for change (see, e.g., Brav, Jiang and Li, 2018). Consistent with such dynamics, we find that an investor's research is significantly positively related to contemporaneous research by other investors., even after controlling for other investor, firm, and meeting characteristics. This concentration in research is highest among cases where voice is likely to play a stronger role, between the top 5 mutual fund investors who own shares in essentially all public companies and thus interact frequently with each other, and among index funds who do not have the option to exit positions. These dynamics further contribute to a subset of firms receiving a large proportion of the attention.

If investors' attention to corporate governance is a limited resource that cannot be increased without significant cost, for example due to frictions in hiring skilled employees on demand, investors will monitor firms less diligently during 'busy' periods. Because more than half of the firm meetings are clustered during the Spring 'proxy season', the timing of the meeting reflects an exogenous influence on the extent of investors' monitoring. Consistent with this conjecture, we find that investors do on average 7.4% less research on firms with meetings during this busy period. This effect is significantly stronger within index funds, who own nearly every firm in the market and thus face particularly strong time constraints.

Governance-research should be an important input into the investors` voting behavior. Following our finding that investors focus on contentious issues, we isolate firm meetings with a single issue that is particularly controversial. We find that the extent of investors' governance research is significantly positively related to their tendency to disagree with ISS, consistent with more research on the part of the investor being associated with more informed voting.

If governance-related issues are used in investment decisions, then information obtained

from proxy statements will affect investors' buy and sell decisions. Alternatively, governance-related matters may be relatively unimportant, compared to financial statements and the overall direction of the business, for example as summarized in annual reports and form 8-Ks. Results provide strong evidence that governance-related matters influence investment decisions.

Our paper contributes to several streams of literature. First, it relates to the ways that dispersed shareholders monitor the firm and mitigate agency costs, a question at the forefront of finance since Berle and Means (1932) and Jensen and Meckling (1976). Existing studies have examined this question by inferring monitoring based on outcomes around salient corporate events such as mergers (e.g., Shleifer and Vishny, 1986; Chen, Harford, and Li, 2007) or from investor voting behavior (Matvos and Ostrovsky, 2008; Iliev and Lowry, 2015; Cai, Garner and Walkling, 2008; Fos, Li and Tsoutsoura, 2018). In contrast to these more indirect approaches, we measure monitoring directly, by observing investors' views of companies' filings.

Second, our paper contributes to the active literature on shareholder voting, activism, and the role of passive index investors. A large body of literature examines the ways in which hedge funds and shareholder activists engage in monitoring, often through aggressive means such as proxy fights (Klein and Zur, 2008; Brav, Jiang, Partnoy and Thomas, 2008; Brav, Jiang and Kim, 2010), 'Just Vote No' campaigns (Del Guercio, Seery, and Woidtke, 2008), or private engagements (Becht, Franks, Mayer, and Rossi, 2009; McCahery, Sautner and Starks, 2016). However, far less is known about the extent of monitoring by investors such as mutual funds that do not engage in such aggressive practices. Appel et al (2016) and Schmidt and Fallenbrach (2017) examine this issue by focusing on firms around Russell Index cutoff points. We provide a broader and deeper perspective, by looking across a wide set of investors and a wide set of companies and providing direct evidence of firm monitoring.

Our paper also relates to the literature on the effects of the shareholder base on firm policies. Allen, Bernardo, and Welch (2001), Becker, Ivkovic, and Weisbenner (2011), Bodnaruk and Ostberg (2013), and Brown, Liang, and Weisbenner (2007) all find that firms' policies are related to investor preferences. We examine the ways in which the shareholder base determines firm monitoring, a key issue given that monitoring influences nearly all corporate policies.

2. Data

We start with the sample of all mutual fund families that we can link to one or more IP address blocks that accessed EDGAR in 2015. We require that the fund families have voting data for more than 100 securities, and we require the firms to have CRSP, Compustat, and Riskmetrics governance data. Our final sample consists of 89 fund families and the 1,565 companies that are owned by these fund families, between 2011 and 2017, where our starting year of 2011 is dictated by our ability to obtain a high-quality IP address match.[3] We include all meetings for these firms, which includes both regularly scheduled annual meetings (99% of the sample) and special meetings (remaining 1%).

We focus on the equilibrium acquisition of governance information by individual institutions. It is important for our study that investors do not strategically choose to be in our dataset in order to over- or under-represent their use of public information through EDGAR. Importantly, because the SEC intentionally masked the IP addresses when they posted this dataset for public use, this is unlikely to be a concern. Only recently, in 2017, researchers have started to trace this public data to blocks of IP addresses that can be attributed to institutional

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[3] The EDGAR detailed log files are available through June 2017. Thus, the relatively small number of companies with annual meetings in July through December are only included in our sample through 2016.

investors with a relatively high degree of precision. We next explain this attribution process.

When a request is made through the EDGAR interface (e.g., when a person requests a company filing on EDGAR), the server records information about that request in the server log files. This information includes the filing requested, the time and date of the request, and the IP address of the computer that requested the filing. Following a Freedom of Information Act (FOIA) request by the public, the SEC has made the server log files publicly available.[4] The log files represent detailed daily records of all requests going back to 2003. The SEC partially masks each IP address to protect the identity of the requestors, by only providing three of the four blocks that comprise an IP address. For example, the IP address 192.175.172.111 will be reported as 192.175.172.*dgd* in the server logs available for request, where the "random" letter part *dgd* refers to the true number between 0 and 255. The key insight that enables us to match these partial IP addresses to investors is the fact that many large investors purchase entire blocks of IP addresses, for example owning 192.175.172.0, 192.175.172.1, 192.175.172.2, …, 192.175.172.255. Moreover, in cases where a large investor owns a part of the block, the probability that the EDGAR traffic comes from the other parts of the block (which are usually non-financial businesses or residential properties) is minimal.

To match these partially masked IP addresses to investors, we use a linking table provided by Digital Elements, which lists IP addresses and the organizations to which these addresses are registered. We match these organizations to 13-F investors using the organization

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[4] Early research using EDGAR log files focused on the aggregate flow of requests, e.g.,, Bauguess, Cooney, and Hanley (2014), Lee, Ma, and Wang (2015), Drake, Roulstone, and Thornock (2015), and Drake, Jennings, Roulstone, and Thornock (2017). Several contemporaneous papers similarly identify the individual investors behind these views,: Chen, Cohen, Gurun, Lou, and Malloy (2018), Cao, Du, Yang, and Zhang (2019), Crane, Crotty and Umar (2018), Gibbons, Iliev, and Kalodimos (2018), and Bozanic, Hooppes, Thornock, and Williams (2017) examine issues related to investment returns, mimicking peers' trades, hedge funds, sell-side analysts, and the IRS.

names that correspond to each IP address. Using this linking file, we can determine all EDGAR views by these 89 mutual fund families. For conciseness, we refer to these mutual fund families as investors. We describe the process of identifying fund families in the EDGAR log files in further detail in Appendix A.

Because we are interested in governance-related research, we concentrate on EDGAR requests in a period prior to the shareholder meeting. Company proxy statements are typically released between 40 and 50 days prior to the meeting, and many investors likely start their governance research at this point. However, the substantial clustering of meetings in calendar time means that an investor who strives to make informed votes on each firm across a large portfolio faces severe time constraints. An investor may do some preparatory work in advance, for example by looking at the prior year's proxy before the current year proxy is released. For this reason, we define our measure of research across a window beginning 30 days prior to the release of the proxy statement and continuing through the date of the shareholder meeting.

We define two measures of governance research for each investor-firm pair over this window. Our narrowest measure is the number of times during this period that each investor accessed the firm's proxy, including the proxy statement of both the current year and any past years. The inclusion of prior year statements is motivated by investors' use of historical accounting information to contextualize current-period information (Drake, Roulstone, and Thornock (2016). Our second measure captures a broader measure of governance research. We include both proxy statements and any other company filings that are accessed on the same day as a proxy statement by the same IP address (i.e., by the same computer within the organization).[5] Throughout the paper, we use this second measure as our main metric of

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[5] To do this, we take advantage of the fact that the masked portion of the IP address, i.e., the 'dgd' in 192.175.172.*dgd*, refers to the same true number (a number between 0 and 255) throughout the data.

governance research, and for conciseness, we refer to this as proxy-related views.

One potential concern with our measure of governance-related research is that it may not be comprehensive. First, a mutual fund family might download all firm filings onto a central drive for employees to access. To avoid such mass requests as representing research, we filter them out (see Appendix A for more details on our method of filtering out bot requests).[6] A second possibility is that a mutual fund family might rely exclusively on a source other than EDGAR for company filings, for example, Bloomberg. To ensure that such investors are not included in our sample, we require each fund family to look via EDGAR at a minimum of 1% of their portfolio each quarter. A third possibility is that a mutual fund family may rely on a combination of EDGAR and other sources. In this case, the family will be included in our sample, but we will underestimate the extent of research they conduct. We note that this should represent noise and thus bias us against finding predicted effects. Arguably the strongest evidence that our measure of governance-related research captures real effects is through the figures and tables described below.

Figure 1 provides an illustrative example of one mutual fund family's filing views in one company. We show Vanguard's governance-related views of Apple filings prior to their 2015 annual meeting, which was held on March 10, 2015. The figure plots our main measure of governance research, views of proxy statements and of all other filings that are viewed on the same day as a proxy statement. The figure is in event time based on calendar days, with day 0 representing the day of the annual meeting. Consistent with the expected timing of governance research, we observe some views of these filings in the two to three months ahead of Apple's annual meeting, for example with one request on day -78, two requests on day -60, etc.

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[6] As discussed in more detail in the next section, main results are qualitatively similar if we include these observations.

However, Vanguard's research is concentrated in the days closer to the shareholder meeting and after the meeting proxy statement was filed in EDGAR, for example with eight requests on day -15 and five requests on day -8.

Figure 2 shows the number of proxy-related views by all mutual fund families across all portfolio companies, on average per year. Compared to Figure 1, we observe a much smoother distribution but with the same substantial spike after the likely posting of the proxy statement (around day -40) and in advance of the annual meeting. Similar patterns are observed for individual mutual funds, as shown in Internet Appendix Figure A1 for Vanguard, Fidelity, and Blackrock, but the intensity and pattern of governance research varies between mutual fund families. For example, Vanguard does more governance-related research than Fidelity, but the Fidelity research is more spread out in event time.

At first glance, one puzzling facet of these figures is a somewhat cyclical pattern. This is driven by the fact that Figures 1 and Figure 2 are based on event time. Because annual meetings tend to be on a Tuesday, Wednesday, or Thursday, we observe less research done on certain days. Consistent with most people following a Monday to Friday workweek, we document relatively few requests on Saturdays and Sundays. Internet Appendix Figure A2 shows this strong day of the week pattern.

3.   **How actively do investors research firms' governance?**

We begin our empirical analysis by documenting the broad patterns in investors' governance-related research. Looking first at Table 1, the first four columns describe the total data, i.e., the proxy-related views of all 89 mutual fund families in all firms that they own across seven calendar years, a total of 219,840 observations. The next three columns desrcibe the

subsample of observations where an investor researched a firm filing. Looking at the first row, mutual fund families on average viewed 0.186 current year proxy statements per firm over the approximately 80-day window preceding the annual meeting. This average consists of many zeros (cases of investors viewing zero proxy statements) combined with a small number of cases in which investors conduct a substantial amount of research on a firm. Subsequent columns show that approximately 11% of investor-firm pairs had at least one request, and conditional on having at least one view the mean number of views is 1.35.

The following rows indicate that investors do indeed consult both proxy statements from prior years and other filings. Investors consult on average one old proxy together with the current proxy. Average proxy-related views, our broader main measure of governance research equals 0.743. We again observe considerable skewness; conditional on viewing at least one filing, the average investor has 5.4 proxy-related views. In regression analyses, we use logged versions of these variables to lessen the influence of extreme observations.

Total Filing Views represents the broadest measure of research, including views of all filings irrespective of whether the investor contemporaneously looked at a proxy statement of the firm. While this measure likely includes a lot of investment-related research, and we do not use it for our main tests, we include it here for descriptive purposes. On average, there are 5.12 views per investor-firm-year, with 38% of investor-firm year pairs having at least one view; conditional on viewing at least one filing, the average investor has 23.2 views.

Subsequent sets of rows provide further descriptive statistics, where data is again shown at the investor × firm level, a total of 219,840 observations. The second and third sets of rows describe firms' annual meetings and financial characteristics, the fourth and fifth sets describe governance characteristics and the frequency of recent firm events that plausibly affect investors'

monitoring activities, and the sixth set describes investors' ownership positions in these firms. Consistent with our sample consisting largely of S&P 1,500 firms (which are in RiskMetrics Governance and Directors datasets), the average firm is slightly larger and more profitable than the typical publicly-traded firm. Along governance dimensions, metrics are broadly in line with those reported in the prior literature (see, e.g., Field and Lowry, 2018; Jordan, Liu, and Wu, 2014; Bebchuk, Cohen, and Wang, 2013; Coles, Daniel, and Naveen, 2014).[7]

Across each set of rows, the right-hand set of columns provide preliminary evidence regarding the cases in which investors conduct the most research. The subset of firm-years in which an investor views the proxy statement are characterized by more contentious annual meetings, by larger firms with poorer recent performance and more disruptive recent events, and by larger investors with larger holdings in the firm.

Figure 3 highlights the extent to which governance-related research is concentrated within a subset of firm-years. Using our main measure of research, proxy-related views, we compare the hypothetical distribution of investors' views if each investor had an equal probability of viewing each firm in her portfolio within each year, with the actual distribution of investors' views.[8] As depicted with the dashed black line, under the hypothetical distribution 9.6% of firm-years have views by zero or one investor, and 1.75% would receive attention from ten or more investors in our sample. The most frequent hypothetical outcome is four or five investors viewing the company's filing, with over 33.5% of firms falling into one of these categories. In stark contrast to this hypothetical distribution, the solid red line shows that the actual distribution is much more skewed. Substantially more firm-years lie at each of the

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[7] The E-index is higher within our sample than in samples that end prior to 2007 due to changes in the underlying data, which were associated with mergers of data providers.
[8] This simulation accounts for differences in each investor's propensity to view firm filings, but randomly assigns the investor's views across its portfolio firms each year.

extremes, with either very few views (23.2% with either zero or one view) or many more views (6.0% of firms receive attention by 10 or more investors).

4. Determinants of governance-related research by investors

4.1 The Role of Firm and Investor Characteristics

We begin by providing univariate statistics on the types of firms in which investors concentrate their governance research, as a first step towards understanding the determinants of the stark contrasts in governance-related attention shown in Figure 3. To isolate the effects of firm characteristics, independent of the decision of whether to invest in a firm, this univariate evidence is based only on the holdings of the top 5 mutual fund families in our sample, as these investors own essentially every firm in the market.

We expect investors to conduct more research in larger firms, as large firms tend to represent a greater portion of an investor's portfolio and thus the benefits of governance research are greater. Panel A of Figure 4 shows strong support for this prediction. Placing firms into quintiles based on market capitalization, investors view an average of 4.1 governance-related filings per firm within the largest market capitalization quintile, compared to only 1.4 within the bottom quintile. Panel B shows the relationship between investment size and investors' research effort. Within each investor's portfolio, we rank firms such that firms in quintile five represent those with the greatest weight in the portfolio. Patterns are similar to those shown in Panel A.

Panel C places firms into quintiles based on their market-adjusted returns over the fiscal year preceding the meeting. All else equal a firm that is underperforming the market is more likely to have problems that need to be addressed, for example, to be operating inefficiently. Investors have incentives to determine whether such inefficiencies are related to agency issues,

for example, suboptimal management incentives, or whether they are beyond the control of management. Somewhat surprisingly, this univariate evidence provides no evidence of a relation between firms' recent performance and investors' research.

We turn to regression analyses to examine this prediction as well as a variety of other dynamics in more detail. We control for the strong effects of firm size and investors' position, and include industry, time, and investor fixed effects. Multiple factors potentially affect incentives to acquire information: investors' passive versus active investment strategies, investors' holdings in the firm, firm size and financial characteristics, firm governance, and the contentiousness of items up for vote. Table 2 shows panel regressions of investor research on each of these factors, and Table 3 examines the extensive and intensive margins of this research.

Focusing first on Table 2, the sample represents an unbalanced panel consisting of all 89 mutual fund families in our sample and all firms owned by each family within each calendar year that have the necessary data over the 2011 to 2017 period. This results in a sample of 219,840 investor-firm-year observations with non-missing control variables. The dependent variable is our main measure of governance research, the log of one plus investor views of both firm proxy statements and all other firm filings accessed on the same day as a proxy by the same computer, in the window that starts 30 days before the current proxy is filed and ends at the meeting date. Regressions in columns 1 - 5 include industry and calendar year fixed effects and standard errors are clustered at the company annual meeting level. Column 6 additionally includes investor fixed effects. We begin by estimating regressions of governance research on one set of variables at a time because many of the covariates might be related. For example, mutual fund ownership is closely related to firm size, and activist attacks reported on form 13-D filings are usually

provoked by poor performance.[9]

All continuous independent variables are scaled by the standard deviation of the underlying variable, meaning coefficients can be interpreted as the effects of a one standard deviation change in the determinant (indicator variables are not scaled). Because the dependent variable in many analyses (Tables 2 – 8) is measured as ln(1+ *Proxy-related Views*) rather than ln(*Proxy-related Views*), to infer economic significance (as discussed throughout the text) we multiply each coefficient by an adjustment factor of 2.35 [=1.743 / 0.743=(1+mean of dependent variable) / mean of dependent variable]. This generates the percentage change in proxy-related views for one unit of change in the independent variable.

We begin in Column 1 by focusing on the ways in which governance research is related to firm characteristics such as size and performance. Consistent with univariate statistics we find a significant positive relation with firm size, and after controlling for size we also find a significant negative relation with firm performance. In economic terms, investors conduct 2.8% (17.7%) less research for one standard deviation lower market adjusted return (profitability), and 3.7% more research in firms that are one standard deviation larger.[10]

We also find that investors tend to conduct more research in firms with higher leverage, higher default risk, higher R&D expenditures, lower market to book, and lower tangibility. These characteristics are related to both higher riskiness of the company's equity and a potentially higher probability of larger losses in default. Hence, it is natural that investors will scrutinize these companies' governance practices. Again, economic magnitudes are large. For example, investors conduct 16.1% more research on firms with high default risk (measured as being in the

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[9] Karpoff, Malatesta and Walkling (1996) document that firms with poor performance attract governance proposals.
[10] As described above, economic magnitudes are calculated as the coefficient on the relevant independent variable times the adjustment factor of 2.35.

top decile to default),

Finally, in addition to all of these firm financial characteristics, we also include a measure of when during the calendar year the firm's annual meeting is held. Many firms' fiscal year end is December, and these firms' annual meetings are all held in the late Spring. The concentration of so many firm meetings in one period potentially decreases investor attention to these firms. We define Busy Week as an indicator variable equal to 1 for the weeks that happen during the two-month peak period in the year, commonly known as the proxy season. Results are striking. Conditional on all other firm characteristics and performance measures, investors do 7.4% less research on firms whose meetings occur in this busy period. We later use this (exogenous to the investors) concentration of meetings as an outside shock to the costs of research.

The second column focuses on the contentiousness of the issues up for vote. We posit that the extent of research will be greater among firms facing more pressure, for example, firms with more agenda items on which ISS is recommending against management, firms with more shareholder proposals, and firms with an exempt solicitation filing. As described earlier, exempt solicitation filings are required when a shareholder communicates her views to other investors in advance of votes. We also examine the extent to which investors devote more attention to firms that have recently experienced more disruption, as proxied by the presence of a 13-D filing, a CEO turnover, a merger filing, a proxy contest filing, or a revised proxy indicator. Across all these measures except CEO turnover, we find strong support for the prediction that investors focus more attention on more controversial firm-years. All measures are positive as predicted, and seven of the eight are significant at the 1% level. In economic terms, one standard deviation increases in most of these measures are associated with 8 – 17% more research.

The third column investigates the effects of firm governance. A broad body of literature,

including for example Gompers, Ishii, and Metrick (2003, 2010), and Bebchuk, Cohen, and Ferrell (2009), argues that some governance structures give less power to shareholders, and thereby facilitate perquisite consumption by management. To the extent that investors can improve the governance environment of such firms and thereby increase firm value, they would have incentives to focus their attention on these firms. However, focusing on such poorly governed firms will not be worthwhile if management is so entrenched that change is improbable. Many governance structures can only be altered via shareholder proposals, and changes in these cases are both costlier and more uncertain; shareholder proposals in the U.S. are advisory and might not be adopted even if they receive majority shareholder support (see, e.g., Bhandari, Iliev, and Kalodimos, 2018). In sum, the relation between firm governance and investors' governance-related attention is an empirical question.

Looking at Column 3, as well as columns 5 and 6 where we include all variables, results provide strong support for the conjecture that overly entrenched management can lead to less monitoring. The coefficient on Dictator Firm (measured by an E-Index of four or more) is significantly negative across all columns. In contrast, inferences regarding other dimensions of governance are more mixed. Following Coles et al. (2014), fraction co-opted Board is defined as the percent of Board members that are appointed after the CEO. The premise is that Boards that are either chaired by the CEO or have a greater portion of co-opted directors will be on average less stringent monitors, and therefore investors would have incentives to research them more heavily. After controlling for other factors (Columns 5 and 6), coefficients on both CEO-Chairman Duality and Fraction Co-Opted Board are positive, and the latter is weakly statistically significant. Because these dimensions of governance that relate to Board composition are more fluid than the components of the E-Index, investors plausibly have more incentives to focus on

these firms. We examine this conjecture further in subsequent analyses.

The fourth column focuses on investor characteristics, including investment strategy, investor size, and the investor's holdings in the firm. As discussed earlier, the effects of active versus passive investment strategy on research intensity can be positive or negative. To the extent that governance factors relate to future expected performance, we would expect more active investors to undertake more governance-related research as an input into portfolio decisions. Moreover, active investors compete to a lesser degree on fees and therefore might afford more resources on governance research. Alternatively, passive investors frequently argue that they are more engaged with firms, as improving firm governance is a possible mechanism for increasing portfolio value. This argument suggests that more passive investors would undertake more governance-related research. Results support the first scenario. A one standard deviation increase in the fraction of assets in index funds is associated with a 6.2% decrease in the amount of research (5.2% after controlling for other factors, as shown in col 5). In today's markets, where a greater portion of investments is moving into passive investment strategies, this lower monitoring represents a potential cause for concern.

We also find that investors conduct significantly more research on their larger holdings. The motivation for conducting governance-related research is to influence firm decisions in ways that contribute to higher shareholder value, where this influence may come in the form of shareholder votes and/or more informal lines of communication. If such influence has the potential to increase shareholder value by a certain percent, then the fund has strong incentives to focus its efforts on its largest positions where this percent translates into the largest dollar gain. Investors, on average, conduct 65% more research on their top 10 holdings, compared to other firms. This effect is in addition to the 178% increase in research associated with one standard

deviation higher shareholdings of an investor in a firm.

Fund family AUM is also among the important factors in economic magnitude, which as discussed by Iliev and Lowry (2015) is consistent with economies of scale in governance research: larger investors can spread the costs of research over a wider asset base, and any gains in terms of higher returns are magnified by the wider asset base.

The fifth column includes all covariates within a single specification. Results are largely consistent with those discussed above. Governance-related research is heavily concentrated among larger firms, among firms with contentious items up for vote, and among firms whose meetings are in non-busy periods, and significantly more research is conducted by larger investors and by non-indexers. Column 6 shows that inferences regarding firm and meeting characteristics are robust to the inclusion of investor fixed effects.

Results are robust to both sample selection criteria and the definition of governance-related research. First, we include all views of proxy-related filings, irrespective of whether they are likely to be done by a bot (defined as a single IP address downloading 1000 or more filings within a single day) or by a human. Under this more comprehensive definition of governance research, an additional 0.6% of investor ×firm × years have at least one view (a total of 14.4%, compared to 13.8% under our main 'human only' definition, as previously shown in Table 1), and average number of views equals 1.527 (compared to 0.743). Second, we use a narrower definition of governance research, views of proxy statements only rather than our main specification variable *Proxy-related Views*, which includes views of both proxy statements and any other filing viewed by the same computer on the same day as a proxy. Under this narrower definition, the average number of views is 0.417 (compared to 0.743). As shown in Internet Appendix Table A1, results are qualitatively similar under both definitions.

Table 3 decomposes the governance research into the extensive and intensive research margins of research. This is an important test because, as shown in Table 1, investors on average only conduct governance research in 14% of firm-years, meaning Table 2 regressions include many zeros. Moreover, it is likely that an investor first decides whether to do research on a firm, and subsequently decides on the amount of research to conduct as it investigates the actual filings. Focusing first on the extensive margin, Column 1 of Table 3 includes all observations, and the dependent variable equals one if the investor viewed any proxy filings of the firm in that year, zero otherwise. To test for the intensity of research, Column 2 restricts the sample to those investor-firm-years in which the investor viewed one or more proxy-related filings, and the dependent variable equals the log of one plus the number of such filings. Columns 1 and 2 include all control variables from Table 2, with industry and year fixed effects; columns 3 and 4 further include investor fixed effects. Similar to Table 2, continuous variables are scaled by their standard deviation to facilitate comparisons of economic magnitudes.

Results are largely consistent along both the extensive and intensive margins: indexers do significantly less research, and research is positively related to an investor's holdings, negatively related to firm performance, and positively related to the contentiousness of the items up for vote. Coefficients on the intensity of research are often much larger in magnitude, implying that conditional on attracting investors' attention, poorly performing firms with significant default risk and contentious meetings require deep research. For example, a proxy contest increases the probability of an investors' attention to any filing by 7.7%. However, conditional on looking at a proxy, investors look at 40% more filings in cases of a proxy contest. These models also highlight that firms are not only less likely to view filings during the busy period, but conditional on doing any research they also view fewer filings during these periods.

In sum, Tables 2 and 3 provide strong evidence that investor research is concentrated within large, low performing firms with contentious issues. Moreover, we find evidence that investors' research is shaped by each investor's incentives and the overall firm governance environment. On the one hand, these findings are generally consistent with fundamental economics underlying governance-related research: all players focus their efforts where their net benefits are greatest. However, they also suggest that certain types of firms are substantially less likely to be monitored by any of these entities. This strong clustering of research within a subset of firms raises questions about the extent of monitoring in firms that are smaller, that have lower institutional ownership, and that have the most entrenched management. Iliev, Kalodimos, and Lowry (2019) show that the largest proxy advisory service company, ISS, largely focuses on the same set of firms, and explores the ways in which being 'ignored' impacts the underlying firms.

4.2 Indexers versus actively managed funds: contrasts in governance research

Both academic and practitioner research has highlighted the increasing importance of index mutual funds. Whereas actively managed funds' research is motivated by both the voice channel and the exit channel, indexers are motivated solely by the possibility of influencing firms through voice. This suggests that in addition to differing in the overall level of research (shown in Tables 2 and 3), indexers will focus on different types of firms than active investors.

Given that shareholder voting represents a primary channel to exercise voice, we predict that index investors' will be particularly likely to devote more attention to firms with contentious items up for vote. The existence of a contentious item up for vote signals two necessary criteria for indexers to conduct research: the presence of governance-related concerns at the company, and the presence of multiple investors who are advocating for change. We employ five measures of contentious items: the number of shareholder proposals at the company's annual meeting, the

percent of agenda items on which ISS recommends against management, and indicator variables equal to one if the company has a 13-D filing, proxy contest filing, or exempt solicitation filing, respectively, within the 180 days preceding the annual meeting.

To examine these predictions, we split all mutual fund families by whether or not the fund family has greater than 50 percent of assets under management (defined across funds designated as belonging to the Lipper equity class) held in index funds.[11] We then estimate panel regressions similar to those in the last model of Table 2, where the dependent variable is the natural log of one plus proxy-related views, and the observational level is the fund family's research prior to each firm's meeting. All independent variables and fixed effects used in Table 2 are included as controls, but they are not tabulated to conserve space.

Looking at Panel A of Table 4, results provide strong support for the prediction that indexers focus their attention on cases where voice is likely to be a more effective channel. Across each of the five measures of efficacy of voice, indexers conduct significantly more research than other mutual fund families. Economic magnitudes are largest for proxy contests and meetings in which ISS recommends against management on more proposals, with indexers viewing 17 - 22% more filings in such cases.

The effectiveness of voice is also related to the governance structure of the firm. As discussed earlier, poor governance can take different forms. Both anti-takeover devices and board composition can contribute to managerial entrenchment, but the former rarely get altered in the absence of shareholder proposals, while the latter changes on a more regular basis and is influenced by shareholder votes every year. Contrasts in coefficients between dictatorship

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[11] Out of our 219,840 observations, 19.25% of observations are for families with more than 50% of assets in index funds. At the family level, 8 families are categorized as indexers throughout the 2011 – 2017 period, 79 are categorized as non-indexers, and 2 families switch sides. Regression results are qualitatively similar if we use a 75% cutoff (instead of a 50% cutoff) for assets in index funds.

versus CEO-Chairman duality and Co-Opted Board in Tables 2 and 3 provide suggestive evidence that both channels play a role. Given that these relations are based on the effectiveness of voice, we predict that they will be stronger for indexers. Panel B of Table 4 shows some support for these predictions. Indexers are significantly more likely to research firms with co-opted Boards. In contrast, we do not find similar effects for dictatorship firms; in fact, the coefficient on this variable is negative, albeit not significant.

Finally, we conjecture that index funds' inability to divest shares increases their incentives to devote attention to their top 10 holdings. While top holdings represent a disproportionate amount of portfolio value for any investor, active investors can change the composition of these top holdings to increase performance. In contrast, index funds' only option is to advocate for value-increasing changes among the set of firms they are forced to hold. Results are again consistent, as shown in Column 4 of Table 4, Panel B: all investors are 21% more likely to research their top 10 holdings, but the effect for indexers is near twice as large, with a total economic magnitude of 48% (21% + 27%).

Overall, our evidence is consistent with the indexers' incentives to concentrate on their top positions and to concentrate on firm-years in which they can advocate for change through voice.

5. Commonality in investors' research

Beyond the investor's own characteristics and the characteristics of the underlying firms, an investor should also consider the monitoring activities of the other investors. A single investor is unlikely to swing a vote, and Matvos and Ostrovsky (2010) find that an investor is more likely to vote against a director if other investors are similarly voting against that director.

This suggests that an investor may be more motivated to research a firm if other investors are similarly advocating for change, a dynamic that suggests a positive relation between an investor's research and expected monitoring by other shareholders.

Alternatively, it is also possible that an investor devotes *less* resources towards governance research in firms that are heavily monitored by other investors, especially conditional on all other determinants of research as captured in our regression specifications. An investor might optimally free-ride off the efforts of other investors.

Our data provide a rare opportunity to examine whether such interactions exist. Looking first at Table 5, we again estimate regressions similar to those in Table 2, but we now include measures of research by other investors. In columns 1 and 2, the dependent variable is our main measures of governance research, the natural log of one plus proxy-related views; independent variables are continuous measures of other investors' research. For each investor-firm-meeting observation, we measure the number of proxy-related views of the firm by all other mutual fund families in our sample, with Column 1 employing a value-weighted average (using the investors' fractional ownership of the firm as weights) and Column 2 employing an equal-weighted average. In columns 3 and 4, the dependent variable is an indicator variable equal to one if the investor conducted any governance-related research on the firm, zero otherwise. The independent variable is analogously defined: for each of the other investors in the firm we define an indicator variable equal to one if the investor researched the firm in that year. Column 3 (4) uses a value-weighted (equal-weighted) average of these indicator variables.

Table 5 provides strong evidence that investors' jointly concentrate on a common set of firms. After controlling for firm characteristics, meeting characteristics, investor time-varying characteristics and investor, industry and time fixed effects, a one standard deviation increase in

other investors' research is associated with an investor conducting 2.6 to 9.6% more governance-related research, with all specifications statistically significant at the 5% or 1% level.

The tendency of investors to focus within the same subset of firms potentially reflects implicit coordination, where multiple investors focus on the same set of issues, for example those that are contentious along some dimension that we cannot capture. Alternatively, it might reflect some explicit form of coordination, such as communication between investors or influence of other stakeholders. Panel A of Table 6 provides suggestive evidence regarding the effects of implicit versus explicit coordination. We interact our measure of coordination with proxies for both the contentiousness of meetings and the likelihood of more explicit inter-investor communications around the meetings. While we find that these interactions are positive in every case, the magnitudes and statistical significance are greater among cases with more explicit communications. The magnitude is greatest in cases with an exempt solicitation filing, which is required in the case of explicit communications. The economic magnitude is 6 times as large in such cases: 16.1% (2.8% + 14.0%) versus 2.8%.[12]

The fact that coordination is motivated by the voice channel suggests that it will be significantly greater in cases where voice is more effective. We examine this in Panel B of Table 6 using a structure similar to that of Panel B of Table 4 (which was similarly focused on differences across investors' research conditional on the effectiveness of voice). First, we follow-up on earlier findings suggesting that investors' perceptions regarding the effectiveness of voice is sensitive to firms' governance environments. Results in Tables 2, 3, and 4 suggest that investors perceive voice to be more effective in firm-years with questionable board composition,

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[12] The economic magnitude of others' research equals 0.0120 times the adjustment factor (as explained in section 4.1) of 2.35, which equals 2.8%. The incremental magnitude for the exempt solicitation indicator equals 0.0595 × 2.35, 13.98%.

but not in firm-years where high managerial entrenchment thwarts meaningful change. Consistent with this conjecture, we observe significantly more coordination among firm-years with higher fraction Co-Opted Boards, compared to no comparable effect among dictatorship firms. Second, Column 4 shows that there is significantly greater coordination among index funds, consistent with these investors relying more heavily on voice.

Coordination, whether implicit or explicit, is arguably motivated by the fact that change within a firm is more likely when a firm receives greater shareholder pressure. This leads to the prediction that investors will tend to coordinate more with the Top 5 mutual fund families. First, these top investors have the largest centralized resources to perform governance research, they own essentially every firm in the market, and in many cases they have large positions in these firms. Thus, they can influence many votes. Second, their positions on governance matters are arguably better known among the investment community, compared to those of smaller funds, for example due to participation in investor conferences and media attention. This familiarity facilitates coordination. In the context of explicit activist attacks, the mechanism of implicit coordination between large passive investors and activists has been shown to increase the probability of successful interventions (Appel, Gormley, and Keim, 2018).

Table 7 examines these predictions, by splitting all mutual fund families in our sample into Top 5 versus Non-Top 5 based on their assets under management. Our top 5 investors are Blackrock, Vanguard, Fidelity, State Street, and T. Rowe Price. We begin in Column 1 with our full sample of mutual fund family × firm × years, and we regress our standard measure of governance research (log of one plus proxy-related views) on proxy-related views of other Top 5 investors and proxy-related views of other Non-Top 5 investors. Consistent with predictions, we find that the coefficient on Top 5 investor views is more than six times greater. The implied

economic magnitude from a one standard deviation increase in research of top 5 investors of 7.2%, versus 1.2% for Non-Top 5 investors.

Subsequent columns subset the sample into Top 5 fund families × firms × years (Column 2) and Non-Top 5 fund families × firms × years (Column 3). Results strongly support our prediction of greater coordination among Top 5 families. First, looking within each subsample, both investor types (large and small) coordinate more with the large investors: in each column, the coefficient on Other Top 5 investor views is significantly greater than that on Other Non-Top 5 investor views. Second, looking across the subsamples, the greatest amount of coordination is found by Top 5 investors with other Top 5 investors: the coefficient on Other Top 5 investor views is more than three times greater within the Top 5 subsample (Column 2) than among the Non-Top 5 subsample (Column 3). Importantly, all these regressions include investor fixed effects, meaning these effects are incremental to differences in investors' average level of research.

The channel along which such coordination occurs likely varies across investors. A key takeaway is that regardless of the channel, the concentration in research has ramifications for the underlying firms. While many investors devote resources to governance matters, each investor focuses on similar types of firms (e.g., large, poor performers, with management that is not overly entrenched), and incremental to this investors' coordination with each other effectively lowers the set of 'monitored' firms even further. Thus, while across our entire sample of 1,565 firms × 89 mutual fund families × 7 years we find that investors conduct research in 13.8% of cases, this research is very unequally distributed across firms.

6. Differential monitoring of firms with meetings during busy spring proxy season

This section uses the timing of firms' meetings during the calendar year, a facet that is largely independent of firms' financial and governance characteristics, to test how investors research changes during a period when the marginal cost of research is higher. The exogenous clustering of meetings in late April through early June influences the cost of monitoring, and thus provides a reduced form instrument for the extent of investor monitoring. Because mutual fund families rely on skilled labor to evaluate firms' proxy statements, they face time constraints during the busy Spring season. Moreover, the specialization required to appropriately evaluate a firm's governance structure makes it unlikely that a mutual fund family can quickly (and temporarily) adjust its labor force in response to the seasonal time constraints. Consistent with this intuition, as previously shown in Table 2, and as repeated in the first column of Table 8, investors do on average 7.8% less research on firms whose meetings fall during this period.[13]

Subsequent columns of Table 8 examine the ways in which investors focus their efforts on different types of firms during these busy periods. Column 2 shows that the tendency to do less research during busy periods is approximately twice as large among indexers: indexers conduct 11.8% less research during the proxy season, compared to 6.9% among other investors. This is consistent with indexers' time constraints being more binding because they own nearly every stock in the market.

Column 3 of Table 8 shows that the concentrated research results documented in Table 6 are four times stronger during the busy weeks when the cost of attention is higher. Knowing that they can only focus on a subset of firms, investors tend to focus together on the same subset of firms, an effect that is significant even after controlling for all firm, meeting, and investor

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[13] As described in section 2 and the Appendix, we eliminate proxy-related views that are likely conducted by bots, thereby focusing on governance-related research by humans. While bot-research is less sensitive to such time constraints (not tabulated), when we include all views by both humans and bots we continue to find significantly less research during these busy periods (See Internet Appendix Table A1).

characteristics, as well as industry, year and investor fixed effects.

In sum, the extent to which a firm is monitored depends on a wide set of factors. Some of these are widely publicized and likely value enhancing, for example with both investors and proxy advisory service companies stating that they focus on firms that have recently performed poorly. However, the finding that companies receive significantly less attention if their meetings fall during certain months of the year is perhaps more troubling.

7. The relation between governance research, voting, and investment positions

In this section, we focus on the relation between in-depth research and two major observable ways in which mutual funds can exert governance: voting in shareholder meetings and changing their portfolio holdings.

6.1 Voting behavior

Gillan and Starks (2000) and Aggarwal, Saffi, and Sturgess (2015) conclude that institutional investors as a group generally use the voting process to affect corporate governance. If some fund families devote more resources towards becoming informed and thus make more independent decisions, these investors will be less likely to indiscriminately follow the recommendations of either management or ISS (see, for example, Iliev and Lowry, 2015, Malenko and Malenko, 2018). Following this logic, Figure 5 examines the relation between governance-related research and the extent of disagreement with each of these parties. We categorize all fund family – firm years into quartiles based on the number of proxy-related filings viewed before the firm's annual meeting. Across all observations within each quartile, we calculate the percent of issues for which the fund family votes against management's recommendation (Panel A) or ISS's recommendation (Panel B).

Both panels are consistent with the prediction that fund families who conduct more governance-related research tend to vote more independently. Looking at Panel A, fund families who view six or more filings prior to the firm's annual meeting disagree with management on an average 7.7% of cases, compared to only 6.2% for fund families that view zero filings. Panel B suggests an even larger effect when we focus on disagreement with ISS: fund families that view six or more filings disagree with ISS in an average 7.7% of cases, compared to 5.3% when zero filings are viewed.

While this descriptive evidence is illustrative, a more robust empirical examination faces several challenges. First, most elections are non-controversial, with management receiving substantial support on all proposals. This results in limited variation in observed voting behavior. Second, investors likely use some of the information acquired through research for purposes of private communications with management, meaning that voting behavior is only a partial reflection of the ways they seek to influence company governance through voice. Third, our measure of governance research is at the meeting level (rather than the agenda item level) and at the fund family level (rather than the individual mutual fund level). In contrast, voting is at the agenda item – mutual fund level. Thus, even if we observe a substantial amount of research before an election, we are unable to discern the precise issue that precipitated this research.

To address these challenges, we focus on issues up for vote that are most controversial. Specifically, we restrict our sample to agenda items on which management receives between 40% and 60% of the votes. These are the "close" votes that require extra research because they are the cases where a fund vote will matter most.[14] For each firm meeting and each mutual fund

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[14] This approach introduces a potential look ahead bias in our results. However, the bias should arguably not be severe under the reasonable assumption that investors recognize which issues are likely to pass or fail with only a small margin, i.e., people know ahead of time when something will be a close vote.

family, we calculate the percent of funds within the family that vote against the ISS recommendation. If informed funds tend to disagree more with the advice of ISS, then we would expect our measure of investor research to be positively related to this disagreement with ISS.

We present regression results in Table 9. The dependent variable is percent fund family disagreement with ISS on these close votes and the independent variable of interest is a measure of investor governance-related research. We find that investor research is significantly positively related to investors' tendency to disagree with the ISS recommendation. We document slightly lower magnitudes when we include investor fixed effects, but similar magnitudes when we include meeting level fixed effects that control for any firm and meeting level variation, as shown in subsequent columns.

6.2 Investor Ownership Changes

Having established that investors' research is related to their tendency to monitor management via voice, we next seek to provide evidence on the relation with investment decisions. Actively managed funds should increase their positions if they conclude that the governance structure of the firm is stronger than they previously believed.[15] Conversely, they should divest positions if they are not satisfied with management's commitment to shareholder value. As shown by Parrino, Sias, and Starks (2003), Admati and Pfleiderer (2009), Edmans (2009), Edmans and Manso (2011), and Edmans, Fang and Zur (2013), exit can be a powerful governance strategy. This is particularly true if voice fails.

Table 10 examines these relations. The dependent variable is the absolute value of the percent changes in investors' shares held. For each annual company meeting, we measure the percent change in shares held from the quarter immediately before to the quarter immediately

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[15] In related contemporaneous work, Gargano and Rossi (2018) use brokerage data to document that paying attention is profitable.

following the annual meeting. The sample is similar to that used in prior tests, an unbalanced panel of the 89 mutual fund families × the firms in which each family holds shares in each calendar year, with the exception that we eliminate all index fund families (defined as 50% or more of the assets held in index mutual funds) because such funds have less discretion in changing their positions. We include three measures of governance-related research. Our first measure is proxy-related views, which includes both proxy statements and all other filings accessed on the same day as a proxy and has been our main measure throughout the paper. Our second and third measures are motivated by the fact that this regression focuses on investment decisions, making it more important to ensure that we isolate even more narrowly governance research versus non-governance research. For this reason, we separately consider the views of proxy statements, and views of filings by IP addresses that do not access a proxy statement (Non-Proxy Related Views). The latter measure serves as a measure of contemporaneous non-governance research.

Looking first at column 1 of Table 10, we observe a strong positive relation between governance-related research and investors' tendencies to change their holdings. A one standard deviation increase in the natural logarithm of proxy-related views is associated with a change of 56% in shares held. Column 2 further highlights the importance of governance-specific research compared to research that might be related to financial metrics, by including both proxy views and non-proxy views in one regression. We find that both independently have a significant effect. A one standard deviation increase in the logarithm of proxy views is associated with a 47% change in the shares, compared to a 76% change for non-proxy views.

It is important to note that this regression includes only holdings changes in the quarter immediately following the annual meeting, and governance-related research is likely to have a

smaller effect in the other three quarters of the year. For example, in the quarter when the annual report is released, investment decisions are likely to be more influenced by information contained in that filing and less influenced by governance-related matters. Overall, we document that governance-related research is an important ingredient in the funds' decisions to invest or divest in a company after the annual meeting.

8. Conclusion

The value of corporate governance is a matter of continual debate. Despite a large body of academic literature on the topic, there remains a lack of consensus on this core issue. Our paper provides a revealed preference argument to the importance of governance research. If investors did not perceive corporate governance to be relevant to firm value, they would not devote substantial resources to researching the governance-related policies of the firm. We provide direct evidence that investors engage in a significant amount of governance-related research. Arguably even stronger evidence is the significant relation between investment decisions and governance-related research.

Our findings also suggest some reason for concern. First, fund families with a greater portion of assets in index funds do significantly less research, a potentially troubling fact given the increased trend toward passive investing. Second, governance research is quite concentrated within certain types of firms. Smaller firms with lower institutional ownership have significantly lower levels of monitoring. Moreover, dictatorship firms, which prior literature suggests are likely to have more entrenched management, receive significantly less attention. Finally, institutional investors tend to concentrate their research together in the same relatively small sample of firms, and they tend to decrease the level of research when busy periods of meetings

tax their resources. This raises questions regarding the extent of agency-related problems within such firms and the ability of investors to efficiently monitor them.

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Appendix A: Data description

Since 1996 the U.S. Securities and Exchange Commission (SEC) has made all company filings publicly available online through the Electronic Data Gathering and Retrieval (EDGAR) database. The EDGAR server records information about each request in the server log files. As discussed by Bauguess, Cooney, and Hanley (2014), these requests exclude two cases. First, they exclude requests of SEC filings from the EDGAR ftp site, which predominantly consist of bulk requests from data vendors. Second, in some cases, ISPs cache frequently requested EDGAR documents for future reference, a scenario that is most likely relevant for the most frequently requested EDGAR documents such as hot IPO prospectuses. The EDGAR server information includes the filing requested, the time and date of the request, and IP addresses of the computer that requested the filing. The SEC has made the server log files created since 2003 available to the public. To ensure a quality match between the investors and their IP addresses, we use these data after 2011.

In order to protect the privacy of the individuals requesting the filings, the SEC partially masks the IP address that requested the filings. In this paper, we exploit the fact that organizations such as mutual fund families register large blocks of IP address to map individual, partially masked IP address to mutual fund families.

An IP address is composed of four blocks of numbers (octets), each of which ranges from 0 to 255, and this address uniquely identifies the computer. To mask the identity of the IP address of the computer requesting a given filing, the SEC replaces the fourth octet of the IP address with three letters. For example, the IP address 192.175.172.111 might be reported as 192.175.172.dgd in the server logs available for request.

We use a lookup table provided by Digital Elements, a company specializing in analytics and geolocation of IP addresses, to identify the organization(s) that are associated with the first three blocks of each IP address. Continuing with the previous example, the partially masked IP address 192.175.172.dgd likely belongs to Vanguard because "The Vanguard Group, Inc." is the registered owner of all IP addresses that begin with 192.175.172 (i.e., the registered owner of 192.175.172.0, 192.175.172.1, 192.175.172.2, …, 192.175.172.254, 192.175.172.255). We refer to the first three octets of an IP address as an IP3 block.

To form our sample, we start with a list of fund families that have more than 100 voting records in the ISS Voting Analytics database in 2015. For each of these fund families, we use broad regular expressions to match on the name with the organizations in the lookup table. For example, for Fidelity Investments we constructed the regular expression (.*fidelity.*)|(.*fmr.*). We manually verify each potential match to create a linking table between fund families and the IP3 blocks of which they are the registered owner.

Most organizations in our sample hold 100% of an IP3 address block, as was the case for Vanguard with the IP3 block 192.175.172. Out of the 47,133 IP3 blocks that we associate with fund

families, 95.5% are 100% owned by a single fund family. The remaining 4.5% of IP3 blocks represent cases where an organization in our sample owns a portion of the block. In the cases where one fund family owns a portion of an IP3 block and the remaining portion of the block is not matched to any fund family in our sample, we assign all EDGAR server activity from that IP3 block to the fund family. In the 110 (0.23%) cases where two or more fund families are registered owners of a fraction of an IP3 block we assign the EDGAR server activity to the fund family that holds the highest fraction of that IP3 block. Finally, there are 71 (0.15%) cases where two or more fund families are registered owners of the same fraction of an IP3 block, and we drop these observations.

The EDGAR server logs record all activity by a user. There are several categories of activity that we exclude. First, the recorded activity includes requests of landing pages, which represent lists of the filings that are available for the user to examine. These requests have an extension of "-index.htm". We view these as uninformative measures of research and exclude them from our analysis of the server logs. Second, we follow Drake, Roulstone, and Thornock (2015) and also exclude clicks on icons (".ico" extensions), XML filings (".xml" extensions), and filings that are under 500 bytes in size. Third, Loughran and McDonald (2016) document that a considerable portion of EDGAR requests are by "robots", which mass request filings for processing through computer programs. We focus on "human" governance research and remove server activity associated with robots. We classify an IP address (e.g., 192.175.172.dgd) as being a robot on a particular day if that IP address requests more than 1,000 filings in a single day. This results in the exclusion of 2,386 robot-day observations by 112 IP addresses that account for 140,853,527 requests. In Table A1, we show that our results are qualitatively similar if we include robot observations. We only exclude the EDGAR server activity from these IP address for the days that IP address is classified as a robot. Finally, if a single IP address requests the same filing multiple times within 5 minutes, we count this as one view of the filing.

The lookup table provided by Digital Elements is a snapshot of all IP address registrations as of April 2016. It is possible that a fund family changes its underlying technology infrastructure and, in that process, changes its registration of IP3 blocks. To minimize the possibility of misattributing EDGAR activity (or lack of EDGAR activity) to a fund family, we use the following methodology to determine a window for which we are confident that the link is high quality. First, for each quarter we calculate the percentage of the fund family's stock holdings on which it conducts research via EDGAR. Starting with the fourth quarter of 2015 we work in reverse chronological order and classify a quarter as a good link if the fund family looks at more than 1% of its positions. We classify the link as no longer valid if two consecutive quarters are below the 1% threshold. To fix ideas, if a fund family uses EDGAR to research 5% in Q4, 22% in Q3, 0% in Q2, and 0% in Q1 in the link would be considered terminated as of the start of the third quarter. Finally, to further avoid the possibility of mismatching the IP addresses, we include EDGAR views data going back only to 2011.

Appendix B: Variable descriptions

Variable	Descriptions
EDGAR Activity Variables	
Current Proxy Views	The number of times the current statement was viewed in the window starting when the current proxy statement was filed and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Current Proxy-related Views	The number of times the current proxy statement was viewed plus the number of times any other filings were viewed, conditional on these other filings being viewed by the same IP address on the same day(s) as the current proxy. This is calculated from the posting of the current proxy statement and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Proxy Views	The number of times any proxy statement was viewed in the window starting 30 days prior to the posting of the current proxy statement and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Proxy-related Views	The number of times any proxy statement was viewed plus the number of times any other filings were viewed, conditional on these other filings being viewed by the same IP address on the same day(s) as a proxy. This is calculated over the window starting 30 days prior to the posting of the current proxy statement and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Non Proxy-related Views	The number of times any filing was viewed by an IP address that did not view a proxy statement on that day in the window starting 30 days prior to the posting of the current proxy statement and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Total Filing Views	The number of any filing was viewed in the window starting 30 days prior to the posting of the current proxy statement and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Research Indicator	An indictor variable equal to one if the mutual fund family viewed a proxy statement in the window starting 30 days prior to the posting of the current proxy statement and ending on the date of the annual meeting. [Source: EDGAR Log Files]
Other Investors' Weighted Research	Calculated at the level investor j, firm f, meeting year t: $\sum_{i=1}^{N} \%Ownership_{Inv\ i,yr\ t,firm\ f} * \text{Proxy} - \text{related Research}_{Inv\ i,yr\ t,firm\ f}$, where i includes all N investors other than j. [Source: EDGAR Log Files, Thompson Reuters S34/WRDS]
Other Investors Average Research	For each investor-firm-meeting observation, we measure the average proxy related views for all the other investors holding the stock. [Source: EDGAR Log Files, Thompson Reuters S34/WRDS]
Other Investors' Weighted Research Indicator	Calculated at the level investor j, firm f, meeting year t, where i includes all N investors other than j: $\sum_{i=1}^{N} \%Ownership_{Inv\ i,yr\ t,firm\ f} * Research\ Indicator_{Inv\ i,yr\ t,firm\ f}$. [Source: EDGAR Log Files, Thompson Reuters S34/WRDS]

Other Investors' Average Research Indicator	For each investor-firm-meeting observation, we measure the proportion of the other investors holding the stock that viewed a proxy. [Source: EDGAR Log Files, Thompson Reuters S34/WRDS]

Company Variables

Market Adjusted Returns	The cumulative stock returns over the previous 12 months in excess of the value-weighted market index [Source: CRSP]
Profitability	Operating Income Before Depreciation / Total Assets [Source: Compustat]
High Default Risk	Indicator variable equal to one if the firm is above the 90th percentile for risk of default. The risk of default is measured using the naïve Merton's measure (Bharath and Shumway 2008) [Source: Compustat, CRSP].
Market Value of Equity	Adjusted Share Price × Total Shares Outstanding at the close of the fiscal year before a recommendation/forecast change. [Source: Compustat]
Book Leverage	(Long Term Debt + Debt in Current Liability) / Total Assets [Source: Compustat]
R&D / Assets	Research and Development / Total Assets [Source: Compustat]
Cash / Assets	Cash and Short-Term Investments / (Total Assets – Cash and Short Term Investments) [Source: Compustat]
Market to Book	Adjusted Share Price × Total Shares Outstanding / (Total Assets – Total Liabilities) at the close of the fiscal year before a recommendation/forecast change. [Source: Compustat]
Tangibility	Net Property, Plant, and Equipment / Total Assets [Source: Compustat]
Dictatorship Firm	An indicator variable equal to one if the firm has an E-index of 4 or higher. See Bebchuk, Cohen, and Ferrell (2009) for the entrenchment index. [Source: ISS Governance]
CEO-Chairman Duality	An indicator variable equal to one if the CEO is also the chairman of the board of directors [Source: Execucomp]
Fraction Co-Opted Board	The fraction of Board members that are appointed to the Board after the CEO. [Source: ISS Directors]

Company events within the past 180 days

Exempt Solicitation	An indicator variable equal to one if a PX14A6G or PX14A6N was filed over the previous 180 days. [Source: EDGAR]
Proxy Contest	An indicator variable equal to one if a DEFC14A or DEFC14C (or equivalent preliminary version) was filed over the previous 180 days. [Source: EDGAR]
Has 13D form	An indicator if a Form 13D was filed over the previous 180 days. [Source: EDGAR]
Merger Filing	An indicator variable equal to one if a DEFM14A or DEFM14C (or equivalent preliminary version) was filed over the previous 180 days. [Source: EDGAR]
CEO Turnover	An indicator variable equal to one if the firm changed CEOs within 180 days prior to the annual meeting

Annual Meeting Variables

ISS Recommends Against (Meeting Average)	The fraction of agenda items on a proxy statement that ISS Recommends "Against" or "Withhold" [Source: ISS Voting Analytics]
Number of Management Proposals	The number of management proposals on a proxy statement [Source: ISS Voting Analytics]
Number of Shareholder Proposals	The number of shareholder proposals on a proxy statement [Source: ISS Voting Analytics]
Revised Proxy Indicator	An indicator variable equal to one if an amendment to the current company proxy was filed in the EDGAR system. [Source: EDGAR]
Vote Against ISS	The average tendency of the funds to vote against the ISS recommendation on "close" votes. Close votes are defined as agenda items up for vote that receives between 40% and 60% support for the managements' recommendation [Source: ISS Voting Analytics]
Busy Week of Meetings	An indicator variable equal to one if the meeting is during the peak of the proxy season, defined as between the 18th week and 24th week of the year. [Source: ISS Governance]

Ownership Variables

Fund Family Holdings	The fraction of the company's equity that a fund family owns. [Source: Thompson Reuters S34/WRDS]
Top 10 Holding	An indicator if the stock is one of the 10 largest holdings of the fund family. [Source: Thompson Reuters S34/WRDS]
Fund Family Assets Under Management (AUM)	Mutual fund family assets under management, measures the family total equity holdings. [Source: Thompson Reuters S34/WRDS]
Fraction Index Funds	The aggregate total net assets of all index equity mutual funds in a fund family divided by the aggregate total net assets of all equity-focused mutual funds in the same family. [Source: CRSP Mutual Fund Database]
Indexer	An indicator variable is equal to one if the fraction of total net assets held by index funds in a firm family is greater than 50 percent. [Source: CRSP Mutual Fund Database]
Change in Holdings	The absolute value of the investor's percentage change in shares held in firms for which it votes, from the quarter immediately preceding the annual meeting to the quarter following the meeting. The share change is winsorized at +100%. [Source: Thompson Reuters S34/WRDS]

Figure 1: Governance-related research of one mutual fund family in one firm

The figure plots the Vanguard mutual fund family's views of proxy and proxy related filings of Apple, Inc in 2015. The figure shows Vanguard's views of Apple's proxy statements and of any other filings accessed by the same IP address at Vanguard on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the 2015 proxy statement through the 2015 annual meeting, which was held on March 10, 2015. In the figure, the day of the annual meeting represents day 0, and days -90 through -1 represent calendar days relative to this date. The dashed line represents the day the Apple proxy was filed in the EDGAR system.
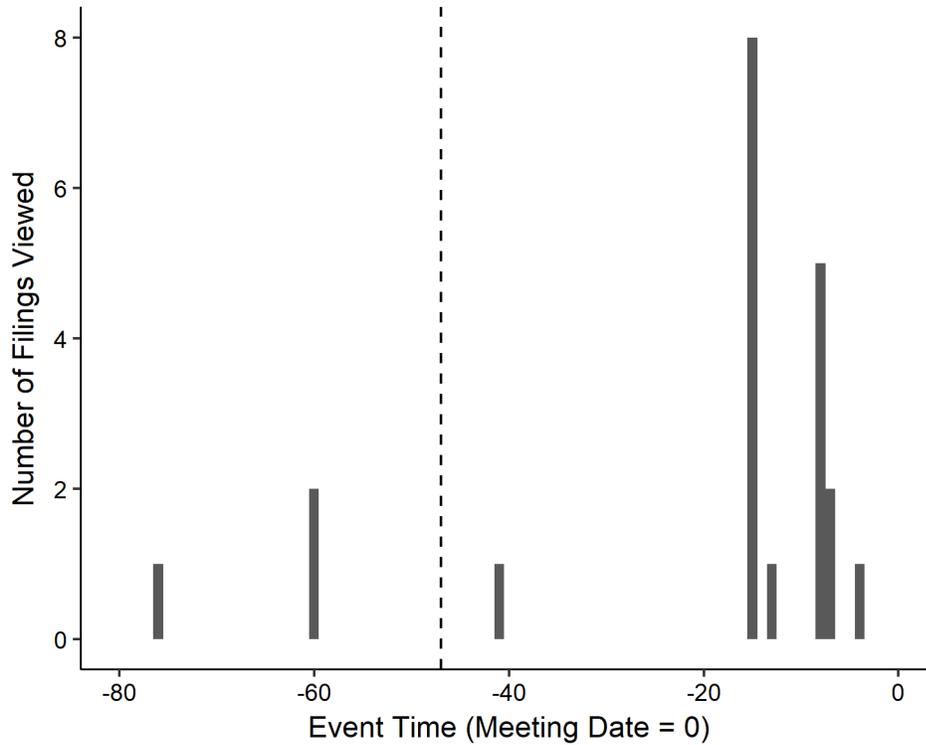
Figure 2: Governance-related research by mutual fund families

The sample consists of an unbalanced panel of firms held by 89 mutual fund families, between 2011 and 2017. For each investor-firm-year, we focus on the investor's views of the firm's proxy statements and of any other filings accessed by the same investor IP on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting, and report the average total filings viewed for all mutual funds families per year. In the figure, the day of the annual meeting represents day 0, and days -90 through -1 represent event days relative to this date.
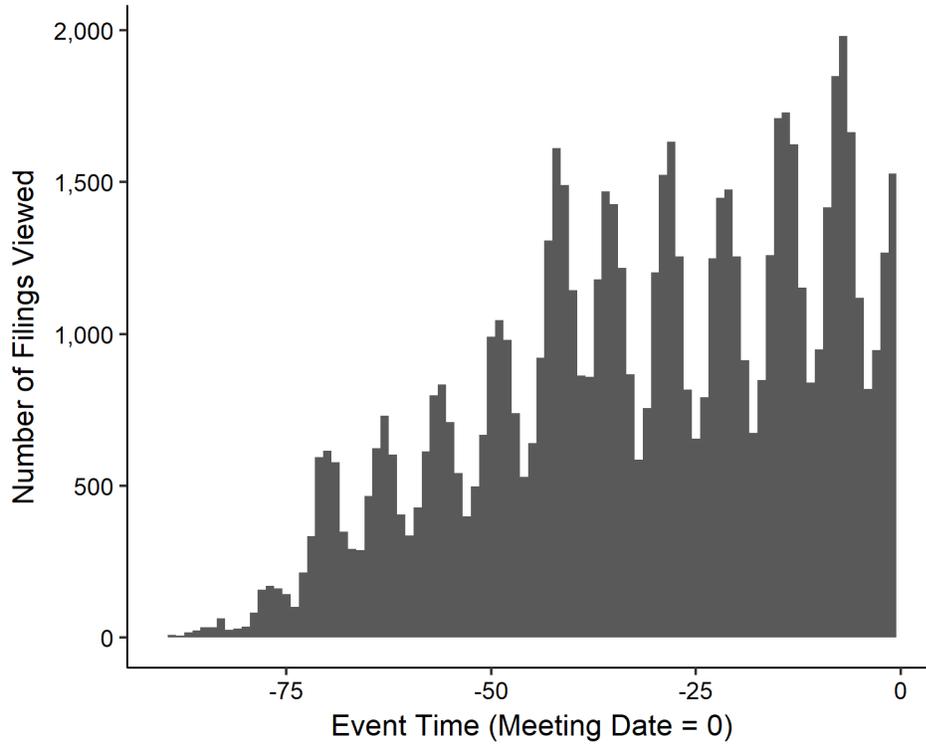
Figure 3: Governance-related research by mutual fund families

This figure shows the distribution of meetings with different numbers of investors doing research (in the solid line) and the simulated distribution of investors research based on 1,000 random draws from the actual research each investor did across each year (the dashed line). Hence, in the simulated distribution, Vanguard research for a firm in 2015 will be drawn randomly from the Vanguard research on all firms in 2015. The gray area represents a 98% confidence interval around the median value (the area between the 1% and 99% of the simulated distribution of meetings with a given number of active investors).
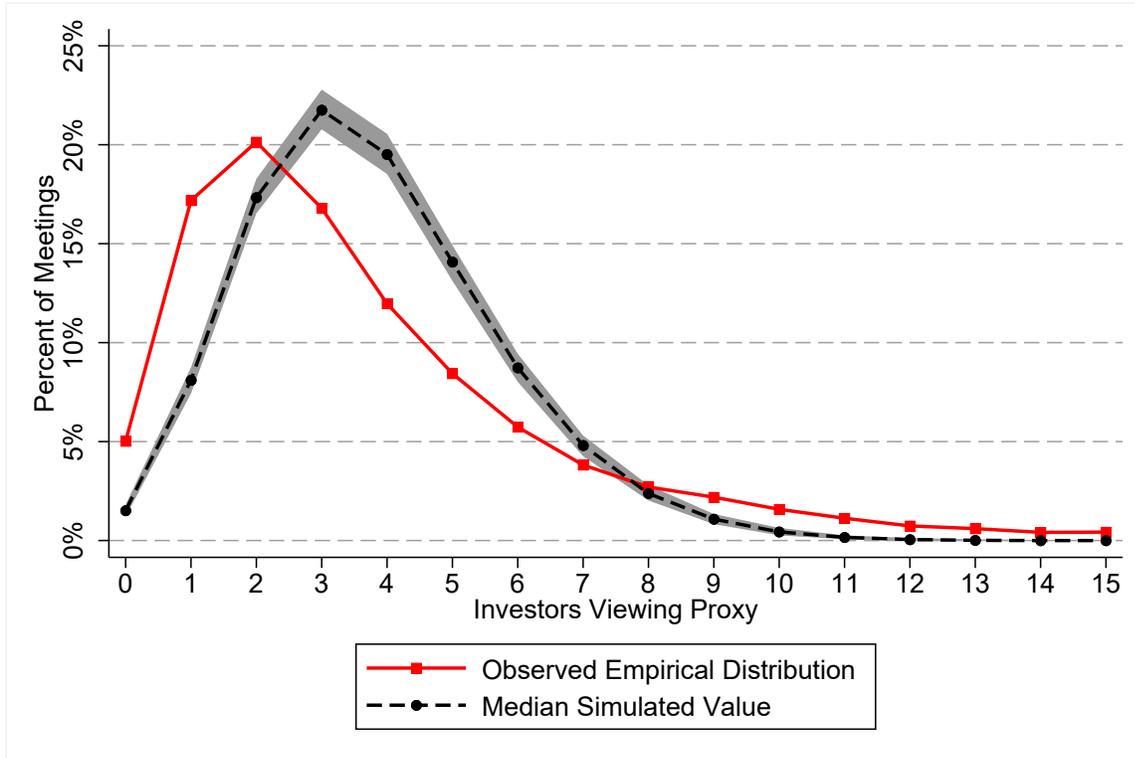
Figure 4: Investors' governance-related research, by firm type and investor type

The sample consists of an unbalanced panel of the firm holdings of five specific mutual fund families, between 2011 and 2017. The five mutual fund families are Blackrock, Vanguard, Fidelity, State Street, and T. Rowe Price, as they each own nearly every firm in the market. For each investor-firm-year, we focus on the investor's views of the firm's proxy statements and of any other filings accessed by the same investor IP on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting. In Panel A, we place firms into quintiles based on their market capitalization measured at the end of the last fiscal year, where quintile 5 includes the largest firms. The figure shows the average number of views across firms in each quintile. In panel B, for each investor-year, we rank each firm based on the weight in the fund family's portfolio at the end of the quarter preceding the annual meeting. We then place firms into quintiles based on this ranking, where quintile 5 includes firms that represent the greatest weight. In panel C, we rank firms based on their market-adjusted returns over the fiscal year preceding the meeting (firm return minus the value-weighted CRSP index return), where quintile 5 includes firms with the highest abnormal returns.

Panel A: By firm market capitalization   *Panel B: By firm's rank in investor's portfolio*
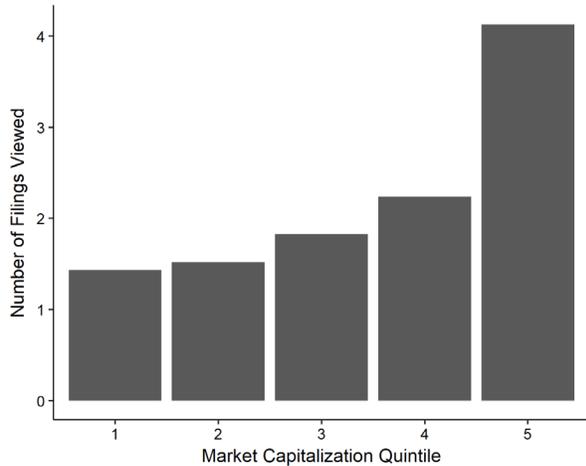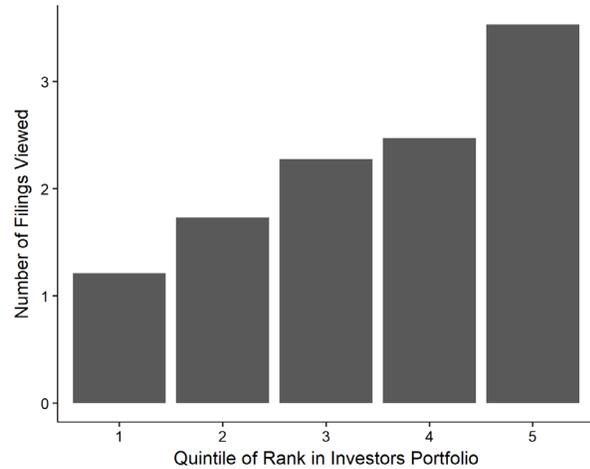
Panel C: By firm returns
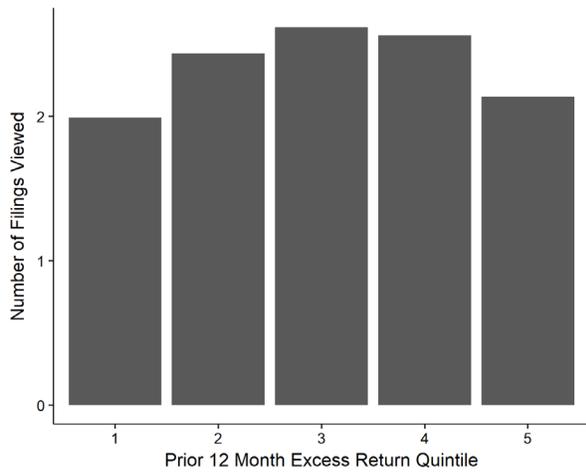
Figure 5: Investors' governance-related research and voting

The sample consists of an unbalanced panel of firms held by 89 mutual fund families, between 2011 and 2017. For each investor-firm-year, we plot the percent of issues on which the fund family votes against management's recommendation (in Panel A) or against ISS' recommendation (in Panel B) averaged across all meetings, as a function of the number of filings viewed by the fund family before the meeting. Filings viewed include the firm's proxy statements and of any other filings accessed by the investor on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting.

Panel A: Governance-related Research and Investor Disagreement with Management
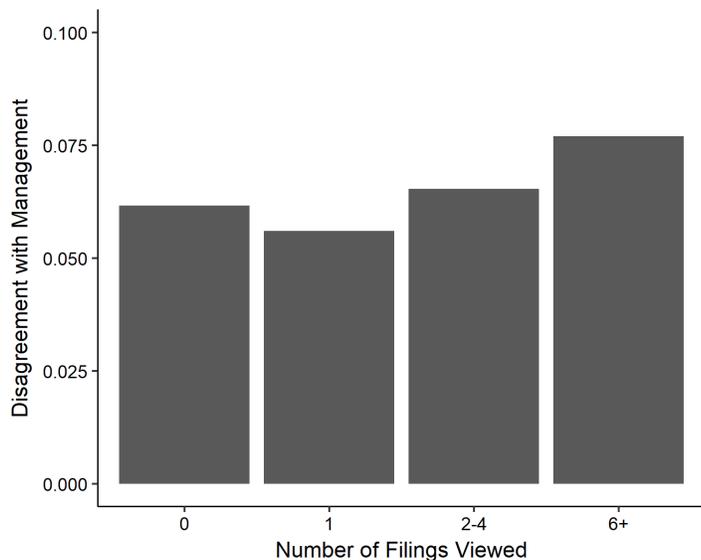
Panel B: Governance-related Research and Investor Disagreement with ISS
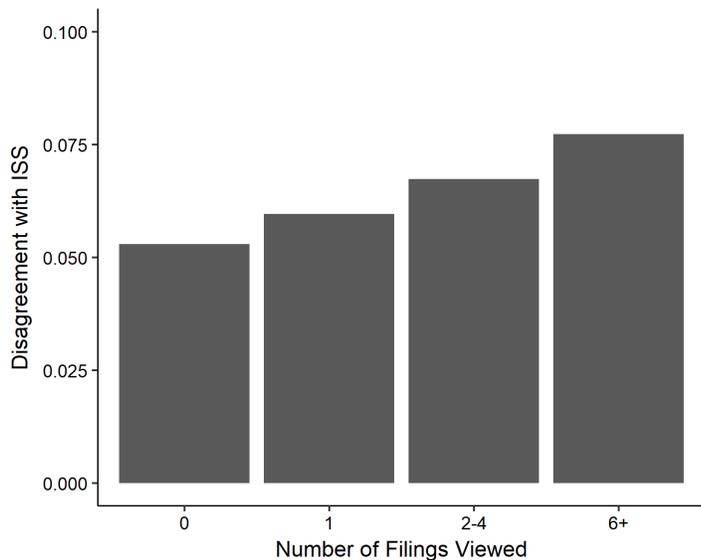
Table 1: Descriptive statistics on mutual fund families' governance-related research

The sample consists of an unbalanced panel of 89 mutual fund families × 1,565 firms owned by each fund, between 2011 and 2017, a total of 219,840 observations and 7,993 firm annual meetings. The left-hand columns represent this full sample, and the right-hand columns limit the sample to the 30,227 investor-firm-years in which the investor accessed the firm's current year proxy statement at least once. Variable descriptions are provided in Appendix B.

	Summary stats at for all observations (219,840 obs)				Cond'l on viewing current proxy (30,227 obs)		
	Mean	% Non-Zero	Median	Std Dev	Mean	Median	Std Dev
EDGAR filings views [Proxy Filing Date – 30, Meeting Date]							
Current Proxy Views	0.186	11.00%	0	0.734	1.354	1	1.528
Current Proxy-related Views	0.34	11.00%	0	2.091	2.474	1	5.151
Proxy Views	0.417	13.70%	0	2.47	3.036	2	6.034
Proxy-related Views	0.743	13.70%	0	7.976	5.403	2	20.917
Total Filing Views	5.12	38.30%	0	36.932	23.232	6	94.655
Annual meeting characteristics							
ISS Recommend Against Mgmt	0.07	36.30%	0	0.141	0.091	0	0.158
Number of Shareholder Proposals	0.516	25.40%	0	1.284	0.84	0	1.858
Number of Management Proposals	10.261	100.00%	11	4.191	10.753	12	4.366
Revised Proxy Indicator	0.66	66.00%	1	0.474	0.725	1	0.447
Busy Week of Meetings	0.572	57.20%	1	0.495	0.541	1	0.498
Company financial characteristics							
Market Adj. Return$_{t-1}$	0.047	53.80%	0.023	0.306	0.039	0.017	0.305
Profitability	0.131	98.30%	0.125	0.093	0.128	0.123	0.094
High Default Risk	0.017	1.70%	0	0.13	0.019	0	0.135
Market Value of Equity ($ billion)	20.014	100.00%	4.606	47.407	31.405	7.891	65.737
Book Leverage	0.221	90.70%	0.208	0.165	0.227	0.214	0.163
R&D / Assets	0.023	43.70%	0	0.045	0.024	0	0.045
Cash / Assets	0.22	100.00%	0.102	0.364	0.222	0.108	0.366
Market to Book	4.165	100.00%	2.41	9.993	4.174	2.413	10.077
Tangibility	0.238	99.90%	0.142	0.243	0.233	0.135	0.241
Company governance characteristics							
Dictatorship Firm	0.446	44.60%	0	0.497	0.41	0	0.492
CEO-Chairman Duality	0.537	53.70%	1	0.499	0.575	1	0.494
Fraction Co-Opted Board	0.49	85.80%	0.5	0.343	0.492	0.5	0.343
Recent company events (past 180 days)							
Exempt Solicitation	0.136	13.60%	0	0.342	0.192	0	0.394
Proxy Contest Filing	0.07	7.00%	0	0.255	0.096	0	0.294
Has 13D form	0.127	12.70%	0	0.333	0.162	0	0.369
Merger Filing	0.094	9.40%	0	0.291	0.121	0	0.326
CEO Turnover	0.056	5.60%	0	0.231	0.058	0	0.234

	Mean	Median	Std Dev	Mean	Median	Std Dev
Ownership of 89 mutual funds within the sample						
Fund Family Holdings	0.013	0.003	0.024	0.024	0.009	0.032
Top 10 Position Rank in Portfolio	0.014	0	0.116	0.027	0	0.163
Fund Family AUM ($billion)	74.031	0.347	215.922	146.064	0.968	287.296
Fraction Index Funds	0.227	0.062	0.316	0.231	0.065	0.301

	Mean	Median	Std Dev	Mean	Median	Std Dev

Table 2: Where do investors conduct governance-related research?

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each fund, between 2011 and 2017. For each investor-firm-year, the dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements plus any other filings accessed by the same investor IP on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting. Independent variables are defined in Appendix B. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Industry and year fixed effects are included, model (6) also includes investor fixed effects. Standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dep't Var = Ln(1+ Proxy-related Views)					
Market adj. return	-0.0119***				-0.0085***	-0.0090***
	(0.002)				(0.002)	(0.002)
Profitability	-0.0755***				-0.0446***	-0.0457***
	(0.008)				(0.006)	(0.006)
High Default Risk	0.0687***				0.0565***	0.0589***
	(0.016)				(0.015)	(0.015)
Ln(Mkt Value of Equity)	0.0157***				0.0139***	0.0155***
	(0.000)				(0.001)	(0.001)
Book Leverage	0.0092**				0.0058	0.0059
	(0.004)				(0.004)	(0.004)
R&D / Assets	0.0390**				0.0312**	0.0276*
	(0.016)				(0.015)	(0.014)
Cash / Assets	0.0052***				0.0035**	0.0030**
	(0.002)				(0.002)	(0.001)
Market to Book	-0.0002***				-0.0001***	-0.0001**
	(0.000)				(0.000)	(0.000)
Tangibility	-0.0060				-0.0140***	-0.0137***
	(0.004)				(0.003)	(0.003)
Busy Week of Meetings	-0.0316***				-0.0286***	-0.0334***
	(0.003)				(0.003)	(0.003)
Number of Shareholder Proposals		0.0145***			0.0098***	0.0097***
		(0.001)			(0.001)	(0.001)
ISS Recommend Against		0.0296***			0.0399***	0.0387***
		(0.005)			(0.005)	(0.005)
Exempt Solicitation		0.0361***			0.0071	0.0050
		(0.008)			(0.007)	(0.007)
Revised Proxy Indicator		0.0411***			0.0261***	0.0260***
		(0.003)			(0.003)	(0.003)
Proxy Contest Filing		0.0706***			0.0779***	0.0779***
		(0.008)			(0.008)	(0.008)
Has 13D form		0.0573***			0.0568***	0.0524***
		(0.006)			(0.006)	(0.005)
Merger Filing		0.0555***			0.0487***	0.0454***
		(0.007)			(0.007)	(0.007)
CEO Turnover		0.0050			0.0083	0.0052
		(0.007)			(0.007)	(0.007)
Dictatorship Firm			-0.0413***		-0.0091***	-0.0081***
			(0.004)		(0.003)	(0.003)
CEO-Chairman Duality			0.0345***		0.0051	0.0047
			(0.004)		(0.003)	(0.003)
Fraction Co-Opted Board			-0.0050***		0.0029*	0.0027*
			(0.002)		(0.002)	(0.002)
Fund Family Holdings				0.7561***	0.8925***	0.3293***
				(0.026)	(0.026)	(0.027)

	(1)	(2)	(3)	(4)	(5)	(6)
Top 10 Holding				0.2755***	0.0905***	0.1034***
				(0.025)	(0.021)	(0.021)
Ln(Fund Family AUM)				0.0156***	0.0166***	-0.0014***
				(0.000)	(0.000)	(0.000)
Fraction Index Funds				-0.0265***	-0.0222***	0.0233***
				(0.001)	(0.001)	(0.007)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Investor FE	No	No	No	No	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.023	0.029	0.009	0.056	0.090	0.235
Observations	219,840	219,840	219,840	219,840	219,840	219,840

Table 3: Intensive vs Extensive margin of governance research

The full sample, as used in Column 1, consists of an unbalanced panel of 89 mutual fund families × firms owned by each fund, between 2011 and 2017. Columns 1 and 3 focus on the extensive margin, and the dependent variable equals one if the fund family conducted any research on the firm prior to the meeting. Columns 2 and 4 focus on the intensive margin, and the sample is limited to firm meetings for which the fund family conducted research. The dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements plus any other filings accessed by the same investor IP on the same day as a proxy statement. Independent variables are defined in Appendix B. All variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Industry and year fixed effects are included in columns 1 and 2, and industry, year, and investor fixed effects are included in columns 3 and 4. Standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Full Sample	Subsample with Non-zero research	Full Sample	Subsample with Non-zero research
Dep't Var. =	*Research Indicator*	*Ln(1+ Proxy-related Views)*	*Research Indicator*	*Ln(1+ Proxy-related Views)*
Company Characteristics				
Market adj. return	-0.0051***	-0.0169***	-0.0054***	-0.0182***
	(0.001)	(0.005)	(0.001)	(0.005)
Profitability	-0.0262***	-0.0778***	-0.0259***	-0.0822***
	(0.003)	(0.022)	(0.003)	(0.021)
High Default Risk	0.0230***	0.1199**	0.0247***	0.1251**
	(0.008)	(0.048)	(0.008)	(0.050)
Ln(Mkt Value of Equity)	0.0087***	0.0194***	0.0096***	0.0181***
	(0.000)	(0.001)	(0.000)	(0.001)
Book Leverage	0.0019	0.0362***	0.0022	0.0243*
	(0.002)	(0.013)	(0.002)	(0.012)
R&D / Assets	0.0132	0.1089**	0.0104	0.1019**
	(0.008)	(0.050)	(0.008)	(0.050)
Cash / Assets	0.0022**	0.0066	0.0019**	0.0076
	(0.001)	(0.005)	(0.001)	(0.005)
Market to Book	-0.0001*	-0.0004**	-0.0000*	-0.0004**
	(0.000)	(0.000)	(0.000)	(0.000)
Tangibility	-0.0063***	-0.0349***	-0.0062***	-0.0325***
	(0.002)	(0.012)	(0.002)	(0.012)
Busy Week of Meetings	-0.0155***	-0.0532***	-0.0188***	-0.0696***
	(0.002)	(0.010)	(0.002)	(0.010)
Contentious Company-Year				
Number of Shareholder Proposals	0.0041***	0.0096***	0.0040***	0.0107***
	(0.000)	(0.002)	(0.000)	(0.002)
ISS Recommend Against	0.0246***	0.0665***	0.0236***	0.0728***
	(0.002)	(0.013)	(0.002)	(0.013)
Exempt Solicitation	0.0063*	0.0040	0.0042	0.0128
	(0.003)	(0.017)	(0.003)	(0.017)
Revised Proxy Indicator	0.0102***	0.1206***	0.0103***	0.1188***
	(0.002)	(0.011)	(0.002)	(0.011)
Proxy Contest Filing	0.0327***	0.1750***	0.0327***	0.1699***
	(0.004)	(0.021)	(0.004)	(0.021)
Has 13D form	0.0265***	0.1192***	0.0228***	0.1140***
	(0.003)	(0.015)	(0.003)	(0.015)
Merger Filing	0.0257***	0.0923***	0.0233***	0.0774***
	(0.004)	(0.018)	(0.004)	(0.018)
CEO Turnover	0.0025	0.0349	0.0004	0.0371
	(0.004)	(0.023)	(0.003)	(0.023)

Company Governance				
Dictatorship Firm	-0.0044***	-0.0231**	-0.0035**	-0.0271***
	(0.002)	(0.010)	(0.002)	(0.010)
CEO-Chairman Duality	0.0063***	-0.0167	0.0060***	-0.0121
	(0.002)	(0.011)	(0.002)	(0.011)
Fraction Co-Opted Board	0.0007	0.0120**	0.0005	0.0139***
	(0.001)	(0.005)	(0.001)	(0.005)
Fund Family Ownership				
Fund Family Holdings	0.6995***	0.1692***	0.1391***	0.5290***
	(0.016)	(0.055)	(0.016)	(0.062)
Top 10 Holding	0.0392***	0.0454	0.0503***	0.0730**
	(0.011)	(0.032)	(0.011)	(0.032)
Ln(Fund Family AUM)	0.0112***	0.0154***	-0.0017***	0.0057***
	(0.000)	(0.001)	(0.000)	(0.002)
Fraction Index Funds	-0.0109***	-0.0996***	0.0055	0.1245**
	(0.001)	(0.006)	(0.005)	(0.049)
Industry FE	Yes	Yes	Yes	Yes
Investor FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.095	0.091	0.272	0.154
Observations	219,840	30,227	219,840	30,227

Table 4: Governance research of Passive vs Active Investors across different firms

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each fund, between 2011 and 2017. For each investor-firm-year, the dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements plus any other filings accessed by the same investor IP on the same day as a proxy statement. The *Indexer* indicator variable is equal to one if the fraction of total net assets held by index funds in a firm family is greater than 50 percent. Independent variables are defined in Appendix B. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Panel A interacts the *Indexer* indicator with meeting level contentiousness proxies. Panel B interacts the *Indexer* indicator with governance or portfolio characteristics. Independent variables previously included in columns 5 and 6 of Table 2 are included, but not tabulated. Industry, investor and year fixed effects are included, and standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

Panel A: Effectiveness of voice - meeting contentiousness

	Dep't Var = Ln(1 + Proxy-related Views)				
Indexer x Number of Shareholder Proposals	0.0083***				
	(0.001)				
Indexer x ISS Recommend Against		0.0938***			
		(0.008)			
Indexer x Has 13D Form			0.0324***		
			(0.009)		
Indexer x Proxy Contest Filing				0.0732***	
				(0.016)	
Indexer x Exempt Solicitation					0.0288***
					(0.010)
Number of Shareholder Proposals	0.0082***	0.0098***	0.0097***	0.0097***	0.0097***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ISS Recommend Against	0.0388***	0.0193***	0.0387***	0.0387***	0.0387***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Has 13D form	0.0521***	0.0523***	0.0460***	0.0522***	0.0524***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Proxy Contest Filing	0.0774***	0.0776***	0.0778***	0.0645***	0.0780***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Exempt Solicitation	0.0061	0.0056	0.0051	0.0054	0.0004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.235	0.236	0.235	0.235	0.235
Observations	219,840	219,840	219,840	219,840	219,840

Panel B: Effectiveness of voice - the role of firm governance structures and relative size of holdings

	Dep't Var = Ln(1 + Proxy-related Views)			
Indexer x Dictatorship Firm	-0.0066			
	(0.005)			
Indexer x CEO-Chairman Duality		0.0031		
		(0.005)		
Indexer x Fraction Co-Opted Board			0.0082***	
			(0.003)	
Indexer x Top 10 Holding				0.1146**
				(0.051)
Dictatorship Firm	-0.0068**	-0.0081***	-0.0081***	-0.0081***
	(0.003)	(0.003)	(0.003)	(0.003)
CEO-Chairman Duality	0.0047	0.0041	0.0046	0.0047
	(0.003)	(0.003)	(0.003)	(0.003)
Fraction Co-Opted Board	0.0027*	0.0027*	0.0011	0.0027*
	(0.002)	(0.002)	(0.002)	(0.002)
Top 10 Holding	0.1034***	0.1034***	0.1034***	0.0907***
	(0.021)	(0.021)	(0.021)	(0.020)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.235	0.235	0.235	0.235
Observations	219,840	219,840	219,840	219,840

Table 5: Effects of monitoring by other investors

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each family, between 2011 and 2017. For each investor-firm-year, the dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements and any other filings accessed by the same investor IP on the same day as a proxy. *Other Investors' Weighted Research* is $\sum_{i=1}^{N} \%Ownership_{Inv\ i, yr\ t, firm\ f} * ProxyRelatedViews_{Inv\ i, yr\ t, firm\ f}$, where N are the other investors that have a position in the firm f in year t. *Other Investors' Average Research* is the average views for all the other investors in the same year and firm. Similarly, *Other Investors' Weighted Research Indicator* measures the ownership weighted sum of an indicator variable for all other investors that accessed filings, and *Other Investors' Average Research Indicator* measures the average of an indicator variable for all the other investors that accessed filings. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Independent variables previously included in columns 5 and 6 of Table 2 are included, but not tabulated. Industry, investor and year fixed effects are included, and standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

Dep't Var =	Ln(1 + Proxy-related Views)	Ln(1 + Proxy-related Views)	Research Indicator	Research Indicator
Other Investors' Weighted Research	0.0162**			
	(0.007)			
Other Investors' Average Research		0.0410***		
		(0.006)		
Other Investors' Weighted Research Indicator			0.0112***	
			(0.001)	
Other Investors' Average Research Indicator				0.0284***
				(0.001)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.236	0.240	0.273	0.276
Observations	219,840	219,840	219,840	219,840

Table 6: Cross-sectional variation in effects of monitoring by other investors

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each family, between 2011 and 2017. For each investor-firm-year, the dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements and any other filings accessed by the same investor IP on the same day as a proxy. *Other Investors' Weighted Research* is $\sum_{i=1}^{N} \%Ownership_{Inv\ i,yr\ t,firm\ f} * ProxyRelatedViews_{Inv\ i,yr\ t,firm\ f}$, where N are the other investors that have a position in the firm f in year t. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Panel A interacts the *Other Investors' Weighted Research* with meeting level contentiousness proxies. Panel B interacts the *Other Investors' Weighted Research* with governance or indexer characteristics. Independent variables previously included in columns 5 and 6 of Table 2 are included, but not tabulated. Industry, investor and year fixed effects are included, and standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

Panel A: Effectiveness of voice – contentiousness of meetings

	Dep't Var = ln(1+Proxy-related views)				
Other Investors' Weighted Research x Number of Shareholder Proposals	0.0025 (0.002)				
Other Investors' Weighted Research x ISS Recommend Against		0.0040 (0.004)			
Other Investors' Weighted Research x Has 13D form			0.0329* (0.019)		
Other Investors' Weighted Research x Proxy Contest Filing				0.0315* (0.017)	
Other Investors' Weighted Research x Exempt Solicitation					0.0595*** (0.012)
Number of Shareholder Proposals	0.0302*** (0.004)	0.0327*** (0.004)	0.0325*** (0.004)	0.0310*** (0.003)	0.0313*** (0.004)
ISS Recommend Against	0.0155*** (0.002)	0.0139*** (0.002)	0.0149*** (0.002)	0.0151*** (0.002)	0.0152*** (0.002)
Has 13D form	0.0505*** (0.005)	0.0502*** (0.005)	0.0392*** (0.007)	0.0491*** (0.005)	0.0507*** (0.005)
Proxy Contest Filing	0.0734*** (0.008)	0.0734*** (0.008)	0.0713*** (0.008)	0.0608*** (0.009)	0.0717*** (0.007)
Exempt Solicitation	0.0084 (0.006)	0.0075 (0.006)	0.0081 (0.006)	0.0083 (0.006)	-0.0151** (0.006)
Other Investors' Weighted Research	0.0133* (0.007)	0.0132* (0.008)	0.0121** (0.006)	0.0119* (0.006)	0.0120** (0.006)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.236	0.236	0.236	0.236	0.237
Observations	219,840	219,840	219,840	219,840	219,840

Panel B: Effectiveness of voice – firm governance and relative position size

	Dep't Var = ln(1+Proxy-related views)			
Other Investors' Weighted Research x Dictatorship Firm	0.0247 (0.018)			
Other Investors' Weighted Research x CEO-Chairman Duality		-0.0234 (0.015)		
Other Investors' Weighted Research x Fraction Co-Opted Board			0.0122** (0.006)	
Other Investors' Weighted Research x Indexer Indicator				0.0216** (0.010)
Dictatorship Firm	-0.0120*** (0.004)	-0.0074*** (0.003)	-0.0075*** (0.003)	-0.0073*** (0.003)
CEO-Chairman Duality	0.0043 (0.003)	0.0091** (0.004)	0.0042 (0.003)	0.0041 (0.003)
Fraction Co-Opted Board	0.0027* (0.002)	0.0028* (0.002)	0.0000 (0.002)	0.0028* (0.002)
Indexer				
Other Investors' Weighted Research	0.0133** (0.007)	0.0365*** (0.014)	-0.0017 (0.011)	0.0127** (0.006)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.236	0.236	0.236	0.236
Observations	219,840	219,840	219,840	219,840

Table 7: Overlapping research across large versus small investors

The sample in Column 1 consists of an unbalanced panel of 89 mutual fund families × firms owned by each family, between 2011 and 2017. The sample in Column 2 uses only observations for Top 5 investors defined as Blackrock, Vanguard, Fidelity, State Street, and T. Rowe Price. The sample in Column 3 includes all investors that are not classified as Top 5. For each investor-firm-year, the dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements and any other filings accessed by the same investor IP on the same day as a proxy. *Other Top 5 Investors' Weighted Research* is similar to the *Other Investors' Weighted Research* defined in Table 5, but instead focusses only on the research of other top 5 investors. Similarly, *Other Non-Top 5 Investors' Weighted Research* measures the holdings weighted research by other non-top 5 investors. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Independent variables previously included in columns 5 and 6 of Table 2 are included, but not tabulated. Industry, investor and year fixed effects are included, and standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

| | *Dep't Var = ln(1+Proxy-related views) by:* | | |
	All Investors	Top 5 Investors	Non-Top 5 Investors
Other Top 5 Investors' Weighted Research	0.0308***	0.0828***	0.0262***
	(0.004)	(0.011)	(0.003)
Other Non-Top 5 Investors' Weighted Research	0.0050**	0.0119	0.0032**
	(0.002)	(0.008)	(0.002)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adj. R-squared	0.238	0.216	0.240
Observations	219,840	38,704	181,136

Table 8: Differential monitoring during busy periods

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each family, between 2011 and 2017. For each investor-firm-year, the dependent variable equals the natural logarithm of one plus the investor's views of the firm's proxy statements and any other filings accessed by the same investor IP on the same day as a proxy. *Busy Week* is an indicator for shareholder meetings held during the busiest two-month period of the year. *Indexer* is an indicator equal to one if the fraction of total net assets held by index funds in a fund family is greater than 50 percent. *Holdings Weighted Research by Other Investors* is $\sum_{i=1}^{N} \%Ownership_{Inv\ i,yr\ t,firm\ f} * ProxyRelatedViews_{Inv\ i,yr\ t,firm\ f}$, where N are the other investors that have a position in the firm f in year t. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Independent variables previously included in columns 5 and 6 of Table 2 are included, but not tabulated. Industry, investor and year fixed effects are included, and standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dep't Var = ln(1+Proxy-related views)		
Busy Week of Meetings	-0.0334***	-0.0293***	-0.0413***
	(0.003)	(0.003)	(0.003)
Busy Week x Indexer		-0.0208***	
		(0.005)	
Busy Week x Other Investors' Weighted Research			0.0469***
			(0.010)
Other Investors' Weighted Research			0.0107**
			(0.005)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adj. R-squared	0.235	0.235	0.237
Observations	219,840	219,840	219,840

Table 9: Relation between investors' governance-related research and voting

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each fund, between 2011 and 2017, with the additional restriction that there be at least one close vote on the meeting agenda. Close votes are defined as an agenda item up for vote that receives between 40% and 60% support for the managements' recommendation. For each investor-firm-year, the dependent variable equals the percent of funds within the mutual fund family that voted against the ISS recommendation, on these "close" votes. *Proxy-related views* include the investor's views of the firm's proxy statements plus any other filings accessed by the same investor IP on the same day as a proxy statement. All other independent variables are defined in Appendix B. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Standard errors are clustered at the meeting level. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dept Var = Average Fund Vote Against ISS on Close Items		
	Industry and Year FE	Industry, Year, and Investor FE	Industry, Year, and Meeting FE
Ln(Proxy-related views)	0.010***	0.006*	0.010***
	(0.003)	(0.003)	(0.003)
Fund Family Holdings	0.065***	0.032***	0.061***
	(0.003)	(0.003)	(0.003)
Top 10 Holding	0.045**	0.032*	0.020
	(0.018)	(0.016)	(0.017)
Ln(Fund Family AUM)	0.112***	0.009	0.125***
	(0.006)	(0.010)	(0.006)
Fraction Index Funds	-0.010***	-0.011	-0.008***
	(0.002)	(0.020)	(0.002)
Market adj. return	-0.002	-0.002	
	(0.004)	(0.004)	
Add. Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	No
Investor FE	No	Yes	No
Year FE	Yes	Yes	No
Meeting FE	No	No	Yes
R-squared	0.070	0.290	0.110
Observations	25,868	25,868	25,868

Table 10: Relation between investors' governance-related research and changes in holdings

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each fund, between 2011 and 2015. For each investor-firm-year, the dependent variable equals the absolute value of the percentage change in the investor's shares held, from the quarter immediately preceding the annual meeting to the first calendar quarter following the meeting. *Proxy-related views* include the investor's views of the firm's proxy statements plus any other filings accessed by the same investor IP on the same day as a proxy statement. *Proxy views* include only views of the firm's proxy statements, and *Non-Proxy related views* include views of all filings other than proxy statements by IPs that do not view a proxy statement on that day. All other independent variables are defined in Appendix B. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Investor, industry, and year fixed effects are included. Standard errors are clustered at the meeting level. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dep't Var = | % Change in Shares Held |	
Ln(Proxy-related views)	0.563***	
	(0.098)	
Ln(Proxy views)		0.468***
		(0.101)
Ln(Non-Proxy related views)		0.761***
		(0.124)
Market adj. return	0.336**	0.345**
	(0.135)	(0.134)
Profitability	0.544***	0.562***
	(0.156)	(0.156)
High Default Risk	4.099***	3.971***
	(1.017)	(1.018)
Ln(Mkt Value of Equity)	-2.228***	-2.400***
	(0.191)	(0.194)
Book Leverage	0.026	-0.001
	(0.164)	(0.164)
R&D / Assets	0.464**	0.470**
	(0.188)	(0.188)
Cash / Assets	-0.021	-0.025
	(0.128)	(0.128)
Market to Book	0.010	0.012
	(0.117)	(0.117)
Tangibility	0.490**	0.491**
	(0.223)	(0.223)
Busy Week of Meetings	-0.550**	-0.557**
	(0.275)	(0.275)
Fund Family Holdings	-1.225***	-1.264***
	(0.103)	(0.104)
Top 10 Holding	-0.843***	-0.858***
	(0.080)	(0.079)
Ln(Fund Family AUM)	1.819***	1.803***
	(0.323)	(0.322)
Fraction Index Funds	8.250***	8.170***
	(0.347)	(0.348)
ISS Recommend Against	0.342*	0.342*
	(0.192)	(0.192)
# Shareholder Proposals	-0.783***	-0.791***
	(0.189)	(0.190)

Has 13D form	2.262***	2.196***
	(0.451)	(0.451)
Proxy Contest	0.965	0.946
	(0.611)	(0.611)
Revised Proxy	0.894***	0.871***
	(0.270)	(0.270)
Exempt Solicitation	-2.127***	-2.150***
	(0.463)	(0.463)
Merger Filing	6.919***	6.903***
	(0.771)	(0.770)
CEO Turnover	0.256	0.249
	(0.639)	(0.637)
Dictatorship Firm	0.385	0.390
	(0.267)	(0.267)
CEO-Chairman Duality	-0.162	-0.164
	(0.272)	(0.271)
Fraction Co-Opted Board	0.117	0.119
	(0.142)	(0.142)
Industry FE	Yes	Yes
Investor FE	Yes	Yes
Year FE	Yes	Yes
Adj. R-squared	0.121	0.122
Observations	169,624	169,624

## Online Appendix to "Investors' Attention to Corporate Governance"

Figure A1: Total governance-related research of three mutual fund families

The sample in Panel A consists of event-time governance-related filings viewed by the Vanguard mutual fund family for firms in their portfolio, between 2011 and 2017. For each firm-year, we focus on Vanguard's views of the firm's proxy statements and of any other filings accessed by the same Vanguard IP on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting. In the figure, the day of each company's annual meeting represents day 0, and days -90 through -1 represent calendar days relative to this date. Panel B (Panel C) is similar to Panel A but represents views by the Fidelity (Blackrock) mutual fund family.

Panel A: The Vanguard mutual fund family   *Panel B: The Fidelity Investments mutual fund family*
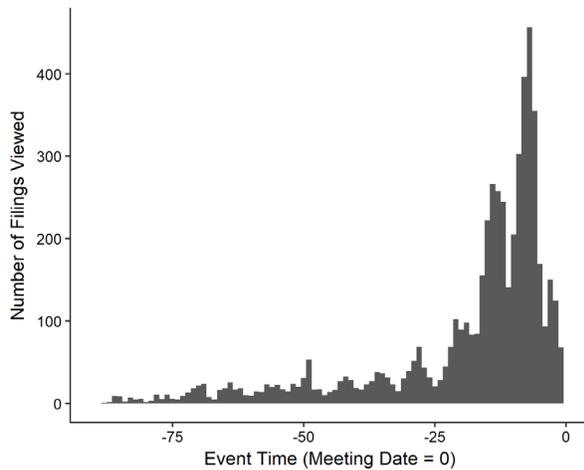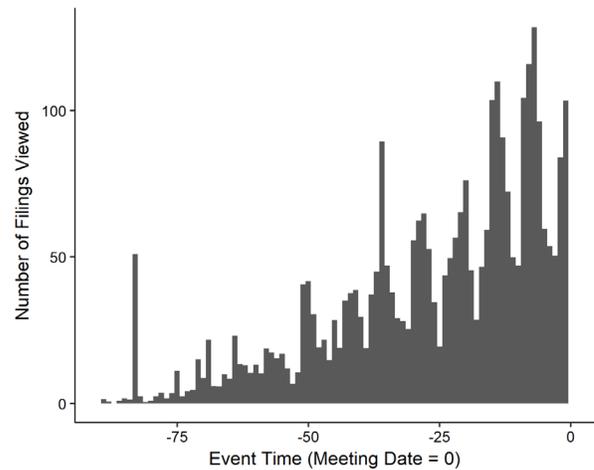
*Panel C: The Blackrock mutual fund family*
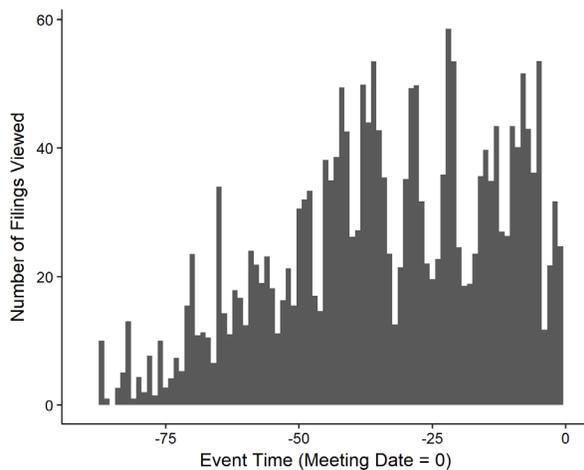
Figure A2: Governance-related research by mutual fund families in publicly traded firms

The sample consists of an unbalanced panel of firms held by 89 mutual fund families, between 2011 and 2017. For each investor-firm-year, we focus on the investor's views of the firm's proxy statements and of any other filings accessed by the same investor IP on the same day as a proxy statement. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting, and the figures show the day of the week of the views.
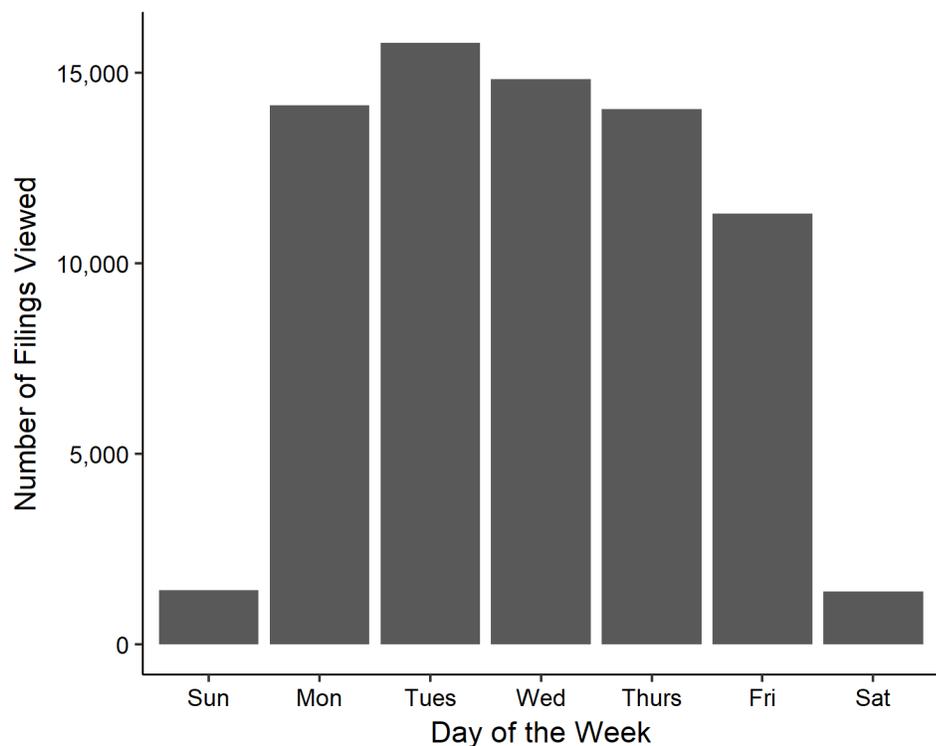
Table A1. Human vs. Bot Research, All Views vs. Proxy Views.

The sample consists of an unbalanced panel of 89 mutual fund families × firms owned by each fund, between 2011 and 2017. The dependent variable in Column 1 equals the natural logarithm of one plus the investor's views of the firm's proxy statements and any other filings accessed by the same investor IP on the same day as a proxy statement, and the dependent variable in columns 2 to 4 equals the natural logarithm of one plus the investor's views of the firm's proxy statements. The views in column 1 and 3 also include views deemed to be generated by a "bot", defined as a unique IP address for a computer that views more than 1,000 filings per day. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the date of the annual meeting. Independent variables are defined in Appendix B. All continuous independent variables are scaled by the standard deviation of the underlying variable so to be interpreted as a one-standard deviation change in the determinant. Industry and year fixed effects are included, models 3 and 4 also includes investor fixed effects. Standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

Dep't Var =	Ln(Proxy-related views)	Ln(Proxy views)		
	All Views	Human	All Views	Human
Market adj. return	-0.0104***	-0.0075***	-0.0115***	-0.0080***
	(0.002)	(0.001)	(0.002)	(0.001)
Profitability	-0.0446***	-0.0367***	-0.0453***	-0.0371***
	(0.007)	(0.005)	(0.006)	(0.005)
High Default Risk	0.0576***	0.0475***	0.0599***	0.0494***
	(0.017)	(0.014)	(0.017)	(0.014)
Ln(Mkt Value of Equity)	0.0142***	0.0115***	0.0163***	0.0130***
	(0.001)	(0.000)	(0.001)	(0.000)
Book Leverage	0.0073*	0.0018	0.0073*	0.0020
	(0.004)	(0.003)	(0.004)	(0.003)
R&D / Assets	0.0482***	0.0169	0.0428***	0.0136
	(0.017)	(0.012)	(0.016)	(0.011)
Cash / Assets	0.0032**	0.0028**	0.0027*	0.0024**
	(0.002)	(0.001)	(0.002)	(0.001)
Market to Book	-0.0002***	-0.0001**	-0.0001***	-0.0001**
	(0.000)	(0.000)	(0.000)	(0.000)
Tangibility	-0.0144***	-0.0108***	-0.0147***	-0.0106***
	(0.004)	(0.003)	(0.004)	(0.003)
Busy Week of Meetings	-0.0133***	-0.0245***	-0.0187***	-0.0285***
	(0.003)	(0.003)	(0.003)	(0.002)
Number of Shareholder Proposals	0.0098***	0.0089***	0.0097***	0.0088***
	(0.001)	(0.001)	(0.001)	(0.001)
ISS Recommend Against	0.0419***	0.0363***	0.0404***	0.0353***
	(0.005)	(0.004)	(0.005)	(0.004)
Exempt Solicitation	0.0057	0.0055	0.0032	0.0034
	(0.007)	(0.006)	(0.007)	(0.006)
Revised Proxy Indicator	0.0283***	0.0240***	0.0282***	0.0241***
	(0.003)	(0.002)	(0.003)	(0.002)
Proxy Contest Filing	0.0787***	0.0667***	0.0791***	0.0667***
	(0.009)	(0.007)	(0.008)	(0.007)
Has 13D form	0.0617***	0.0453***	0.0563***	0.0412***
	(0.006)	(0.005)	(0.006)	(0.004)
Merger Filing	0.0521***	0.0410***	0.0475***	0.0381***
	(0.007)	(0.006)	(0.007)	(0.006)
CEO Turnover	0.0093	0.0051	0.0061	0.0025

	(0.007)	(0.006)	(0.007)	(0.005)
Dictatorship Firm	-0.0101***	-0.0072***	-0.0087***	-0.0063***
	(0.003)	(0.002)	(0.003)	(0.002)
CEO-Chairman Duality	0.0036	0.0060**	0.0031	0.0056**
	(0.003)	(0.003)	(0.003)	(0.003)
Fraction Co-Opted Board	0.0039**	0.0025*	0.0036**	0.0023*
	(0.002)	(0.001)	(0.002)	(0.001)
Fund Family Holdings	0.9912***	0.7985***	0.3425***	0.2595***
	(0.030)	(0.022)	(0.032)	(0.022)
Top 10 Holding	0.0892***	0.0818***	0.1076***	0.0925***
	(0.022)	(0.018)	(0.021)	(0.017)
Ln(Fund Family AUM)	0.0197***	0.0137***	-0.0010**	-0.0017***
	(0.000)	(0.000)	(0.000)	(0.000)
Fraction Index Funds	-0.0396***	-0.0175***	-0.0196***	0.0162***
	(0.001)	(0.001)	(0.007)	(0.006)
Industry FE	Yes	Yes	Yes	Yes
Investor FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.089	0.099	0.224	0.254
Observations	219,840	219,840	219,840	219,840