Investors' Attention to Corporate Governance

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Abstract:

The efficacy of shareholder voting and shareholder engagement requires that shareholders devote resources toward becoming informed. We use unique data to assess the extent of governance-related research on EDGAR conducted by 89 mutual fund families and by ISS in 3,700 companies. Investors conduct substantial governance-related research, with the top five mutual fund families accessing proxy statements of 24% of their portfolio firms. More passive investors conduct significantly less research than active investors, which is rational but potentially troubling given the increasing trend toward index investing. Investors concentrate their attention on firms and shareholder meetings where the expected effects on portfolio value are greatest. They devote less attention to firms with lower quality governance environments, highlighting the extent to which management entrenchment can discourage investors' monitoring. Among small investors, we find a negative relation between the level of research and the expected monitoring by large shareholders in a firm, consistent with the marginal benefit from devoting attention to these firms being lower. Across all funds, investors' governance research is related to their investment decisions.

1. Introduction

The separation of ownership and control within public firms results in agency costs that negatively influence 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 mitigate these frictions. Ideally, shareholders elect directors who will better monitor and advise management, they vote for compensation plans that better incentive management, and they introduce necessary governance changes via shareholder proposals. Additionally, a larger shareholder can engage directly with management to communicate concerns and suggestions. All these mechanisms facilitate monitoring of the firm. However, they are only effective in positively influencing firm value if shareholders expend the necessary resources to become informed about the important issues, and to subsequently make informed votes and/or to have informed discussions with management.

The objective of this paper is to provide direct evidence on the extent to which investors expend resources becoming informed 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, prior to the shareholder meetings where governance, director representation, and compensation issues are up for a vote.

We obtain novel data from the U.S. Securities and Exchange Commission (SEC), which allows 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 large mutual fund families and 3,700 companies over seven years, we can determine the precise times when each investor accessed each SEC filing for each company. For three more recent calendar years within our sample, we also observe the times when the largest proxy advisory service company, Institutional Shareholder Services (ISS), accessed each company filing.

We build our dataset using the publicly provided EDGAR server internet search files. These log files include partially scrambled IP addresses, which do not reveal the full IP address but which are sufficiently detailed to enable the mapping to the IP blocks held by institutional investors. Our primary measure of governance research is investors' views of proxy statements plus any other filings viewed by the investor on the same day they view the company proxy.[1] The proxy statement is the most important document officially filed with respect to the meeting, with other filings viewed concurrently providing additional relevant information. We count the number of requests for these filings, over a three-month period leading up to the annual meeting.

Broadly speaking, our objectives are threefold. First, we examine the level of governance research conducted by both investors and ISS across different companies. We consider investor characteristics such as active versus passive strategy, and firm characteristics such as governance and performance. Second, we evaluate coordination between investors. Third, we examine the relation between such research and both voting decisions and changes in portfolio holdings.

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[1] Both investors and ISS 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

Our first set of findings highlights the amount of governance-related research conducted by many mutual fund families. The top five families access governance-related filings of 24% of their portfolio firms, on average. While the value of corporate governance is a matter of constant debate, the finding that these mutual fund families are devoting substantial resources to the issue provides indirect evidence on the extent to which they perceive it to be value-relevant to their portfolio.

Investors' governance-related research should be related to their ability to influence a firm's governance in ways that positively affect firm value. To the extent that worse governed firms would benefit more from improvements, investors should focus their attention here. Alternatively, investors may determine that management entrenchment at such firms thwarts effective change, causing them to focus less attention in such firms. Across multiple tests, we find significant support for the latter effect. Investors conduct significantly less research in dictatorship firms and in dual-class firms. Interestingly, this contrasts with patterns in ISS's level of research, where we find little evidence of less research in more poorly governed firms. This difference is consistent with the contrasting incentives of these two groups. ISS is arguably more focused on highlighting governance problems in firms, whereas investors are incentivized to focus on firms where they can make value-increasing changes.

Investors also focus firms that have recently performed more poorly. These are the firms where the potential for value-increasing change is likely greater. In addition, larger investors and investors with larger holdings in a firm conduct significantly more research. These findings are largely consistent with prior literature, e.g., Iliev and Lowry (2015) and Malenko and Shen (2016), though our more precise data gives us a direct confirmation of this phenomenon and a better ability to estimate economic magnitudes. Specifically, our findings suggest that a one

standard deviation increase in logged fund family assets under management (AUM) is associated with 40% more governance research, and a one standard deviation increase in the fraction of the firm held is associated with 14% more governance research.

Perhaps not surprisingly, we find that ISS is motivated by its incentives to cater to its clients. Conditional on issuing a recommendation, ISS accesses an average of 17 company filings among the firms in the top quintile of institutional investors, but only 4 filings among the firms in the lowest quintile. Among the firms on which it issues recommendations, ISS views zero filings in approximately 20% of cases and these cases predominantly represent small firms with few institutional investors. Our results suggest that the quality of ISS recommendations likely varies across firms, a troubling finding if ISS influences vote outcomes (see, e,g., Malenko and Shen (2016), Iliev and Lowry (2015), Cai, Garner and Walkling (2009)).

Investors' governance-related attention to firms should also be related to the relevance of this information for their portfolio decisions. An outstanding question in both academic and regulatory circles concerns the level of monitoring by passive investors. On the one hand, more active investors have stronger incentives to research the firm's governance environment, as it potentially influences their portfolio decisions.[2] Findings of Schmidt and Fahlenbrach (2017) are consistent with such effects. Alternatively, more passive investors regularly state that they are more engaged in firms' governance because they lack the option to sell firms. As summarized in Vanguard's statement, "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

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[2] In addition, exit can itself be a powerful governance mechanism, as shown by Admati and Pfleiderer (2009), Edmans (2009), Edmans and Manso (2011), and Edmans, Fang and Zur (2013).

governance."[3] Findings of Appel Gormley and Keim (2016) provide empirical support for this viewpoint.

On average across all firms, our findings support the former view. A one standard deviation increase in assets in index funds is associated with 5.6% less governance research. Cross-sectional differences provide additional insight. While all investors devote more attention to their larger holdings, this effect is stronger among more passive investors. This is consistent with the disproportional effects of these firms on performance, given the inability of these investors to divest. We also find that more passive investors focus significantly more attention on firms where change via voice is more likely, as evidenced by more shareholder proposals or more proposals where ISS recommends voting against management.

Finally, expected monitoring by other investors represents an additional factor that may affect investors' attention to a firm. At the margin, if an investor perceives other shareholders to be diligently monitoring the firm, she may conclude that the marginal benefit from devoting time to similar monitoring activities is lower. When other investors are more likely to uncover and communicate governance problems, all investors will benefit from any changes (see, e.g., McCahery, Sautner and Starks, 2016). This suggests a negative relation between an investor's level of research and the expected monitoring by other investors, i.e., a substitution-type effect. Alternatively, investors may have incentives to coordinate, especially when the stakes are high. A single investor is unlikely to swing a vote and change within a firm is more likely when multiple investors pressure for change.

These effects are not mutually exclusive, and our findings suggest that both play a role.

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[3] "Getting to Know You: The Case for Significant Shareholder Engagement", June 24, 2015, F. William McNabb III, Chairman and CEO of the Vanguard Funds.[4] The three-digit character code, e.g., *dgd*, refers to the same numeric code throughout the sample, meaning it uniquely identifies one computer.

Consistent with investors working together to effect change, each investor's level of research is positively related to contemporaneous research by other investors. However, controlling for contemporaneous research, investors conduct less research on firms whose other shareholders are expected to be more engaged, as proxied by their propensity to do research in other firms.

The contention that governance-research reflects investors' monitoring of the firms leads to the prediction that this research should be significantly related to voting behavior. Following our finding that investors focus on contentious issues, we isolate firm meetings where we can identify a single issue that is particularly controversial, and we compare investor research in advance of these meetings to investors' tendencies to follow ISS's recommendations. We find that the extent of investors' governance research is significantly positively related to their tendency to disagree with ISS, which the literature uses as a strong proxy for informed voting.

In the last part of the paper, we examine if investors' governance-related research is related to their investment decisions. 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 would be summarized in annual reports and form 8-Ks. Results provide strong evidence that governance-related matters influence investment decisions, where the magnitude of this effect is similar to that of non-governance related EDGAR usage around the time of the annual meetings.

Our paper contributes to several streams of literature. First, our paper contributes to the stream of literature examining the extent in which dispersed shareholders monitor the firm and mitigate agency costs, a question that has been 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 the company's filings.

Our paper also relates to the literature on the effects of the shareholder base and the ways in which owners can influence corporate policies. Allen, Bernardo, and Welch (2001), Becker, Ivkovic, and Weisbenner (2011), and Brown, Liang, and Weisbenner (2007) highlight the effects of the shareholder base, finding that firms' policies are related to investor preferences. We examine the ways in which firm monitoring relates to the identity of the firm's owners, an important issue given the fact that monitoring underlies influences nearly all corporate policies.

Third, our paper relates to the literature on shareholder voting and activism. A relatively 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) provide evidence that greater ownership by passive index funds causes better governance practices by focusing on Russell Index cutoff points. We provide a broader perspective on this issue, by looking across a wide set of investors and a wide set of companies.

2. Data

Our sample consists of all mutual fund families that we can link to IP address block(s) accessing EDGAR in 2015. We require that the fund families have voting data for more than 100 securities. Our final sample consists of 89 fund families and the 3,700 companies that are owned by these fund families, between 2011 and 2017. We include all meetings for these firms, which includes both regularly scheduled annual meetings (99% of the sample) and special meetings (remaining 1%).

Early research into the EDGAR log files focused on the aggregate flow of requests. For example, Bauguess, Cooney, and Hanley (2014) use these data to assess investors' aggregate interest in IPOs, and Lee, Ma, and Wang (2015) use data on these EDGAR requests to identify firm peers through investor searches. Drake, Roulstone, and Thornock (2015) study the determinants of the aggregate demand for information, and Drake, Jennings, Roulstone, and Thornock (2017) rely on EDGAR views to proxy for the co-movement of investor attention.

Several contemporaneous papers similarly identify the individual investors behind the EDGAR views. For example, Chen, Cohen, Gurun, Lou, and Malloy (2017) study the relation between institutional investors' EDGAR usage and their subsequent investment returns, Crane, Crotty and Umar (2018) study hedge funds, Gibbons, Iliev, and Kalodimos (2018) study sell-analyst reliance on EDGAR, and Bozanic, Hooppes, Thornock, and Williams (2017) identify the use of EDGAR by the IRS.

We focus on the equilibrium acquisition of governance information by individual institutional investors. Therefore, 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. This is unlikely to be the case because the SEC intentionally scrambled the

user IDs when they posted this dataset for public use. Only recently, in 2017, researchers have started to trace this public data to blocks of IP addresses that can be attributed to institutional investors with 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. 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.[4] 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 business or residential properties) is minimal. Digital Elements provides a linking file, which lists IP addresses and the organizations to which these addresses are registered. We match these organizations to 13-F investors using the organization 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

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[4] The three-digit character code, e.g., *dgd*, refers to the same numeric code throughout the sample, meaning it uniquely identifies one computer.

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 annual meeting. Company annual proxy statements are typically released between 40 and 50 days prior to the annual meeting, and many investors likely start their governance research at this point. However, the substantial clustering of annual meetings in calendar time means that an investor who strives to make informed votes on each firm across a large portfolio faces rather severe time constraints. Faced with such constraints, an investor may choose to 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 investor governance research across a window beginning 30 days prior to the release of the proxy statement and continuing through the date of the annual meeting. In this measure we include both current and past filings viewed because investors often use historical accounting information to contextualize current-period information (Drake, Roulstone, and Thornock, 2016).

For each investor-firm pair, we first measure 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. This is our narrowest measure of governance research. 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. Throughout the paper, we utilize this second measure as our main metric of governance research, and for conciseness, we refer to this as proxy-related views.

Figure 1 provides an 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. However, Vanguard's research is concentrated in the days closer to the annual meeting, for example with eight requests on day -15 and five requests on day -8.

When we aggregate across all of Vanguard's holdings, we observe a much smoother distribution but with the same substantial spike in governance research in advance of the annual meeting. Over days -90 through -50, governance-related research is close to zero. The bulk of the governance-related research occurs between days -25 and 0, with multiple days on which Vanguard viewed over 1,000 filings a day related to governance. The heaviest activity occurs on day -7, with over 2,000 filing views. Patterns are similar for Fidelity, though the magnitude across these two families differs substantially. While Vanguard views over 1,000 filings in many of the days leading up to the annual meetings, Fidelity only views between 200 and 600 filings during this period. These patterns are shown in Online Appendix Figure A1.

One potential concern with our measure of governance-related research is that it may not be comprehensive. We discuss here three potential sources of bias and the ways in which we address these issues. First, a mutual fund family might batch request 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). Further, to ensure that we do not classify such cases as representing a mutual fund family that does zero governance research, we require the investor to look at EDGAR a minimum of 100

times and to look at a minimum of 1% of their portfolio each quarter.[5]   A second possibility is that a mutual fund family might rely on a source other than EDGAR for company filings, for example, Bloomberg. However, by the virtue of using the log files, we by definition only link mutual fund families that use EDGAR. Moreover, our requirement that the mutual fund family view at least 100 company filings and at least 1% of its holdings during the period leading up to the annual meeting will filter out any mutual fund family that relies nearly exclusively on a non-EDGAR source. Finally, 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 the 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 in the next two subsections.

3.   How actively do investors and ISS research firms' governance?

3.1 Governance-related research by investors

We begin our empirical analysis by investigating the extent of governance-related research conducted by investors. First, this provides indirect evidence on investors' perception of the importance of firm governance to portfolio value. A rational investor would only expend resources researching firms' governance environment if she felt that this research will affect her decision to hold the stock and/or increase firm value for the companies she holds. Second, we compare the factors related to the research of investors versus ISS. Because ISS is not a shareholder in these firms, its incentives to conduct research are arguably not exactly aligned

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[5] After imposing this filter, in 95% percent of the investor-year observations investors view at least 10% of their stable portfolio holdings. Investors look at 48% (45%) of their stable portfolio on average (median).

with investors'.   Third, it is also informative to observe what types of firms have very little governance oversight, either by investors or by ISS.

Table 1 provides details on the extent of investors' research. The left-hand set of columns describes the total data, i.e., the filing views of all 89 mutual fund families in all firms that they own across seven calendar years, a total of 327,329 observations. Looking at the first row, mutual fund families on average viewed 0.18 current year proxy statements per firm over the approximately 80-day window preceding the annual meeting. This average consists of many zeros, i.e., many 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 10% of investor-firm pairs had at least one request, and conditional on having at least view the mean number of views is 1.76.

The following rows indicate that investors do indeed consult both proxy statements from prior years and other filings. Average total proxy-related views, our main measure of governance research equals 0.81.   We again observe considerable skewness; conditional on viewing at least one filing, the average investor has 6.68 proxy-related views. In regression analyses, we use logged versions of these variables to eliminate outliers.

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 more investment-related research and we do not use it for our main tests, we include it here for descriptive purposes. On average, an investor views 4.28 filings, with 36% of investor-firm pairs having at least one view.

The second and third sets of rows describe the firms' annual meetings and financial characteristics, respectively where data is again shown at the investor * firm level, a total of

327,329 observations. On average, ISS recommends to vote "For" on 92% of the items on a firm's agenda, there are 0.35 shareholder proposals and 9.49 management proposals. The average firm is slightly larger and more profitable than the average publicly-traded firm. This is consistent with the fact that institutional ownership is larger in such firms and thus our sample is weighted toward these types of firms.

The fourth set of rows describes the ownership positions of these investors in these firms. On average, ownership by the 89 mutual fund families in our sample equals 1.35%, 11 of these investors have ownership between one and five percent and these large investors' aggregate ownership equals 24%. There are an average 1.76 mutual fund families with ownership greater than 5% with aggregate ownership of 14%. The fifth set of rows describes the governance characteristics of the firms held by investors, where the sample is restricted to the S&P1500 firms covered by RiskMetrics. These metrics are broadly similar to those reported in the prior literature (see, e.g., Field and Lowry (2018), Jordan et al (2014), Bebchuk et al (2013)).[6]

Panel A of Figure 2 depicts our main measure of governance research, across this dataset. Patterns observed here are largely similar to the patterns previously shown for subsets of the data, i.e., research of a single mutual fund family. The magnitude of governance-related research increases markedly as one approaches the annual meeting. The strength and consistency of these patterns across the figures represents a strong signal regarding the quality of the data.

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 calendar time. Because annual meetings tend to be on a Tuesday, Wednesday, or Thursday, there will tend to be less research done on certain days when measured in event time. Consistent with most people following a

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[6] 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.

Monday to Friday workweek, there are relatively few requests on Saturdays and Sundays. Panel A of Online Appendix Figure A2 shows the strong day of the week pattern.

Figure 3 provides some univariate statistics on the types of firms in which investors concentrate their governance research. Looking first at panel A, the extent of research is strongly positively related to firm size. Placing firms into quintiles based on market capitalization, investors view an average of 2.3 filings per firm within the largest market capitalization quintile, compared to only 0.7 filings per firm within the bottom quintile. Panel B shows the effects of firm size from a slightly different perspective. Within each investor's portfolio, we rank firms such that firms in quintile 5 represent those with the greatest weight in the portfolio and firms in quintile 1 the lowest weight. Patterns are similar to those shown in Panel A.

Finally, Panel C places firms into quintiles based on their market-adjusted returns over the fiscal year preceding the meeting, where quintile 5 includes firms with the highest abnormal returns. We conjecture that investors will conduct more research on firms that have performed more poorly over the past year. Somewhat surprisingly, this univariate evidence does not show evidence of such a pattern. We examine this prediction in more detail using regressions in the next section of the paper, where we control for the strong effects of firm size.

3.2 Governance-related research by ISS

An additional feature of our data is that we can also identify the research of ISS over a span of three years. Table 2 shows statistics analogous to Table 1, but centered around ISS research instead of investors' research. The sample consists of all publicly traded firms for which ISS issues recommendations, between 2015 and 2017.

As expected for an informational intermediary, ISS is a much heavier user of financial

filings than its clients. ISS views proxy statements in approximately 83% of the companies in our sample. However, a more cynical perspective is that among nearly one-fifth of companies for which ISS issues recommendations, we observe no record of ISS accessing company governance-related filings. Subsequent findings show that these firms are strongly concentrated among certain firm types.

For the median company-year, ISS views two current year proxies and four proxy-related filings (including proxies from current and past years). The mean views are even larger, suggesting that ISS does extra research about some company meetings. The following sets of rows provide meeting and firm characteristics similar to those shown in Table 1. The overall firm size here is smaller because this is essentially an equally weighted firm sample, while Table 1 was weighted by the families that hold a firm, and therefore weighted more towards the larger companies. Nonetheless, the summary statistics in Table 2 are qualitatively similar to their counterparts in Table 1.

Given that ISS distributes their recommendations to funds in advance of the vote, we expect ISS research to be concentrated slightly earlier in event time. As shown in Panel B of Figure 2, this is exactly what we find. ISS governance-related views begin and end slightly earlier. Around day -50, they request approximately 500 filings a day (in event time), which increases to nearly 1500 filings a day between day -25 and -12. There are very few requests after day -12. As described earlier, we are only able to match ISS requests for three calendar years, 2015 through 2017. To ensure that our data quality is similar for these years, we also replicate this figure for each individual year (not shown). The pattern is similar. Finally, as shown in Panel B of Online Appendix Figure A2, there is also a strong day of the week effect for ISS, which is similar to that of mutual funds.

We also find that patterns in ISS's research are similar to those of investors, for example concentrating more on large firms. Consistent with ISS catering to the demands of its customers, i.e., institutions, we also find that the extent of ISS research is strongly related to the number of institutions that own firms. These patterns are shown in Appendix Figure A1.

4. Governance-related research by investors and ISS

4.1 Patterns in investors' and ISS's research

In this section we study the firm and investor characteristics that relate to the governance research of both institutional investors and ISS. We expect that investors will weigh the benefits from governance research against the time costs of reading and analyzing company filings. Hence, an observed relationship between company and institutional characteristics and EDGAR research will be a measure of the expected benefits from governance research for the particular investor and company. We examine multiple factors that potentially affect the 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 the items up for vote.

Table 3 shows ordinary least squares (OLS) regressions of investor research on each of these factors. Table 4 examines the extensive and intensive measures of investors' research, and also contrasts investors' research with ISS's research. Focusing first on Table 3, 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, resulting in a sample of 219,954 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, in the window that starts 30 days before the current proxy is filed and ends at the meeting date. Regressions include industry and calendar year fixed effects and standard errors are clustered at the company annual meeting level. 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, the percent of institutional ownership is closely related to firm size, and activist attacks reported on form 13-D filings are usually provoked by poor performance.[7] All 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. Because the dependent variable in many analyses (Tables 3 – 7) is measured as the ln(1+ proxy-related views) rather than ln(proxy-related views), to interpret economic significance we multiply each coefficient by an adjustment factor. The adjustment factor equals (1+mean of dependent variable) / mean of dependent variable, which equals 1.81 / 0.81.

We begin in Column 1 by focusing on investor characteristics, including investment strategy, investor size, and the investor's holdings in the firm. As discussed earlier, the effects of investment strategy on research intensity, i.e., of active versus passive investing, 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. Alternatively, passive investors frequently argue that they are more engaged with firms, as it is their only mechanism for increasing portfolio value. This argument suggests that more passive investors would undertake more governance-related research. Results support the first scenario. Mutual fund families with a greater portion of assets

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[7] Karpoff, Malatesta and Walkling (1996) document that firms with poor performance attract governance proposals.

in index funds conduct significantly less research. A one standard deviation increase in the fraction of assets in index funds is associated with a 4.7% decrease in the amount of research.[8] In today's markets, where a greater portion of investments are 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 top 10 holdings, and more generally that research is significantly positively related to fund family 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. As evidenced by the magnitude of the coefficients (which can be compared directly because each is scaled by its respective standard deviation), fund family holdings has among the largest economic effects.

Larger fund families conduct more research, which as discussed by Iliev and Lowry (2015) is consistent with economies of scale in governance research: larger fund families 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. Fund family AUM is also among the most important factors in economic magnitude, where AUM is measured as the fund family's aggregate equity holdings.

Column 2 examines the ways in which research is related to firm characteristics such as firm size and firm performance. We expect a positive relation with firm size, as large firms tend

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[8] As previously described in the data section, because the dependent variable is measured as the ln(1+proxy-related views), we multiply each coefficient by an adjustment factor to infer economic significance. Thus, a one standard deviation increase in percent assets in index funds is associated with an 0.053 * 1.81/0.81 = 4.7% decrease in proxy-related views.

to represent a greater portion of an investor's portfolio and thus the benefits of governance research are greater. We expect a negative relation with firm performance. All else equal a firm that is underperforming the market is more likely to have some 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. The second column shows support for both these predictions.

We also find that investors tend to conduct more extensive research in firms with higher leverage, lower market to book, lower tangibility, and higher probability of default. These characteristics are related to both higher riskiness of the company equity and a potentially higher probability of and larger losses in default. Hence, it is natural that investors will scrutinize these companies' governance practices. Across all these characteristics, firm size has the largest magnitude effect.

The third column investigates the effects of firm governance. A broad body of literature, including for example Gompers et al (2003), Gompers et al (2010), and Bebchuk et al (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 sufficiently entrenched that change is improbable. For example, Bhandari et al (2018) show that entrenched management is more effective at blocking controversial shareholder proposals from annual meetings. In sum, the relation between firm governance and investors' governance-related attention is an empirical question.

As shown in Column 3, results are more consistent with investors devoting less time to more poorly governed firms. For example, investors devote significantly less attention to dictator firms, as measured by an E-Index of four or more. In the full regression specification where we control for all factors, we also find that investors also devote significantly less attention to dual-class firms.

Finally, we posit that the extent of research will be greater among firms facing more pressure, for example, firms with an agenda item on which ISS is recommending against management, firms with a 13D filing, and firms with more shareholder proposals. The fourth column provides strong support for this prediction. All three of these measures of controversy are significantly positive. Among these, the number of shareholder proposals has the largest economic effect.

The fifth column includes all proxies, with the exception of the governance measures as these are only available for a subsample, and the sixth column includes all variables. Results across both these specifications are largely consistent with those discussed above.

As shown in Table 1, investors on average only conduct research in 13% of firm-years, meaning the Table 3 regressions include many zeros. Moreover, it is likely that an investor first decides whether to do research on a firm, and subsequently assesses the amount of research to conduct. Columns 1 and 2 of Table 4 investigate the above patterns further, by estimating both the extensive and intensive margins. Specifically, column 1 includes all observations, and the dependent variable equals one if the investor viewed any proxy-related filings of the firm in that year, zero otherwise. 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. Similar to Table 3, variables are scaled by their standard

deviation to facilitate comparisons of economic magnitudes. Results are largely consistent using both measures: indexers do significantly less research, and firms with lower quality governance structures are significantly less researched. In addition, both the propensity to conduct research and the amount of research conducted are positively related to an investor's holdings, negatively related to firm performance, and positively related to the contentiousness of the items up for vote.

Unlike investors, ISS's incentives to conduct research are not driven by the dollar returns on investments in these firms. Rather, ISS's business model relies on selling its recommendations to institutional investors, and investors with fewer resources might be even more reliant on ISS.[9] It follows that ISS research should be positively correlated with investors' demands for research. Thus, our first prediction is that the extent of ISS research should be positively related to the number of institutional investors in a firm. Beyond this, ISS has incentives to focus on the same types of firms as investors. For example, each investor focuses more on the larger firms in its portfolio, meaning that ISS likewise has added incentives to focus on these same firms. Similar arguments hold for other factors discussed above.

Columns 3 and 4 of Table 4 show broad support for these predictions, along both the extensive and intensive margin. A one standard deviation increase in the logarithm of one plus the number of institutional investors is associated with a 3.7% higher probability of conducting governance research, and conditional on some research with a 38.3% increase in the number of filings accessed.[10] Similar to investors, both the probability of and the extent of ISS research are

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[9] In 2003 the SEC mandated that all mutual funds adopt policies and procedures ensuring that their votes are casts in the best interests of their clients. The SEC further considers the use of outside advisors like ISS as fulfilling this fiduciary duty.

[10] Economic significance is measured by the coefficient of 0.333 * (1+average ISS proxy-related views) / ISS proxy-related views, equal to 0.333 * (7.68 / 6.68) = 38.3%.

negatively related to past firm performance and positively related to firm size. In addition, like investors, ISS conducts substantially more research on firms that have more contentious items on their agenda, as measured by the presence of a shareholder proposal, and the presence of a 13D filing.

The most notable difference between investors' research and ISS's research pertains to the governance environment of the firm. While investors conduct less research on poorly governed firms, we find no evidence of such a negative relation for ISS. Compared to investors, ISS has less of a reason to only focus on firms for which it can make value-increasing changes.

In sum, Tables 3 and 4 provide strong evidence that both investor and ISS research are concentrated within certain types of firms. On the one hand, these findings are generally consistent with fundamental economics underlying governance-related research: all players focus their efforts where the 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 and that have lower institutional ownership.

4.2 Indexers versus actively managed funds: contrasts in attention

Index mutual funds differ from their actively managed counterparts along one key dimension: their ability to divest holdings. Whereas an actively managed fund might conduct governance research to inform investment decisions, this is not a relevant factor for index funds. Index funds' governance research is relevant to the extent that it enables them to make 'better' voting decisions or to engage 'better' with management, where better is defined as a mechanism that increases expected shareholder value.

These contrasting incentives generate the prediction that index funds will be particularly

likely to focus attention on firms in which there is a higher probability of effecting change through voice. 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. Importantly, the existence of a contentious item up for vote signals two necessary criteria: the presence of governance-related concerns at the company, and the presence of multiple investors who are advocating for change. We employ three criteria of contentious items: a dummy for whether ISS recommends against any item at the company's annual meeting, the number of shareholder proposals at the company's shareholder meeting, and a dummy for whether the company has a 13D around the time of the annual meeting.

Voice is less likely to be an effective channel if management is overly entrenched, making a change either infeasible or so costly as to not be optimal to pursue. Following prior literature (see, e.g., Gompers, Iishi and Metrick, 2003), we conjecture that management entrenchment is higher among firms in which shareholders have fewer rights. We employ two proxies: dictatorship-type firms, which we measure as an E-Index greater than or equal to four, and dual-share class structure.

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, more 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.

Panels A and B of Table 5 examine these predictions. We begin in Panel A by splitting all mutual fund families by whether or not the fund family has greater than 50 percent of assets held in index funds. We then estimate panel-type regressions similar to those in Table 3, 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 used in Table 3 are included as controls, but they are not tabulated to conserve space.

Results largely support predictions. Consistent with indexers focusing more on firms with more contentious items up for vote, the coefficients on ISS Recommend Against and on #Shareholder proposals are both approximately twice as large in the high indexer group than in the low indexer group.

Indexers also focus less attention on firms in which shareholders have less power, with the coefficient on the high E-Index dummy being substantially lower among the high indexer group. Finally, indexers also focus more on their Top 10 holdings, again consistent with predictions.

Panel B examines the significance of these differences, in a series of regressions. We use the full sample, the dependent variable is again 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. Each column shows one regression, where the independent variable of interest is an interaction term between high indexer and one of the above proxies. Consistent with patterns shown in Panel A, indexers devote significantly more attention to firms in which voice is a more viable channel, as evidenced by the significantly positive coefficients on ISS Against Average, on #Shareholder proposals, and on 13D filing. However, the differences (suggested in Panel A) in the governance structure of the firm are not significant at conventional levels. Finally, indexers devote significantly more attention to their top 10 holdings.

5. Interactions between investors

Beyond the investor's own characteristics and the characteristics of the underlying firms, an investor may also consider the monitoring activities of other investors. All else equal, if other investors are expected to more diligently monitor a firm, then the marginal benefits of additional monitoring would be lower. This suggests a negative relation between an investor's research and the expected monitoring by other shareholders.

Alternatively, the fact that a single investor is unlikely to swing a vote potentially pushes the effect in the opposite direction. As noted above, investors should rationally focus more attention on firms in which the probability of change is greater. Matvos and Ostrovsky (2010) conclude that peer effects exist in voting, with an investor being 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 would suggest a positive relation between an investor's research and expected monitoring by other shareholders.

Our data provide a rare opportunity to directly examine whether such interactions exist. Several factors suggest that investors may be able to estimate the intensity of research by other shareholders with some degree of precision. First, institutional investors' votes are publicly available, making it possible to understand their voting behavior. Related to this, one can arguably infer institutions' general devotion toward governance matters from a variety of other sources, including for example participation at industry conferences, personal connections, statements in the media, etc. Second, many institutions tend to hold large and stable positions in firms across time, often because they need to have a balanced well-diversified portfolio or, in the case of mutual funds, because a portion of the assets under management is held in index funds.

Tables 6 and 7 examine the interactions between investors' research efforts. Looking first at Table 6, we again estimate regressions similar to those shown in Table 3, but we now include measures of the expected research by other investors. 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. Columns 1 and 2 include all investors, and columns 3 and 4 limit the sample to the five largest mutual fund families in our sample: Blackrock, Vanguard, Fidelity, State Street, and T. Rowe Price. Columns 5 and 6 include all mutual fund families except these largest five. Regressions include investor and calendar year fixed effects and standard errors are clustered at the meeting level.

The key independent variable is expected research by other investors, and we define several measures of this. First, we calculate 'Expected research by all other investors' as follows: for each investor in a firm in year t, we calculate the average number of proxy-related views across all other firms in their portfolio in year t-1. We calculate a weighted average of these percentages across current investors in a firm, where the weight equals each investor's holding in the firm in year t. This weighted average is calculated across all investors except the investor represented by the dependent variable. Expected research by large (small) investors is calculated analogously, with the exception that it is restricted to investors that own more than (less than) 0.3% of the firm, as this represents the median position size within our sample.

In all regressions, we include the actual research by other investors, defined as the average number of proxy-related views by all other investors in the firm in the same year. To the extent that control variables don't fully capture the characteristics of the items up for vote, this is likely positively correlated with the contentiousness of the issues. In addition, it is also possible that investors coordinate directly or indirectly in where to allocate their attention and push for

governance changes. Consistent with predictions, this is significantly positive across all specifications.

Incremental to these coordination effects, we find evidence of substitution effects in investors' monitoring. Looking first at column 1, a one standard deviation increase in expected research by other investors is associated with a 2.0% decrease in an investor's level of research.[11] Subsequent columns show that this effect is concentrated within small investors benefiting from the monitoring of large investors. For example, column 4 shows that Top 5 investors' research is unrelated to the extent of research by either large or small investors. In contrast, column 6 shows that non-Top 5 investors rely on the research of large investors: they conduct significantly less expected research by the Top 5 investors is greater, yet they show no similar inclination to 'free-ride' off the research of other smaller investors.

We conjecture that these effects will vary across a fund's holdings, and Table 7 focuses on these cross-sectional differences. The specifications follow Table 6, with coefficients on control variables again suppressed. To the extent that the substitution effect documented in Table 6 reflects a confidence in the monitoring of other investors, it should be greater among an investor's top 10 holdings. A fund's top 10 holdings represent the firms on which it conducts the most research, and thus these are the cases where reliance on others' research would have the largest effects. Alternatively, it may be that funds always monitor their top 10 holdings, irrespective of the research (or lack thereof) by other investors.

Results are consistent with the former scenario: substitution effects are significantly greater among an investor's Top 10 holdings. However, consistent with inferences from Table 6, effects are entirely concentrated within the set of small investors relying on the expected research

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[11] Economic significance is measured by the coefficient of 0.333 * (1+average proxy-related views) / mutual proxy-related views, equal to 0.333 * (1.81 / 0.81) = -2.0%.

of large investors. Across all specifications, no one relies on the monitoring of small investors, regardless of whether it is a Top 10 holding or not. However, there is significant reliance among small investors on the expected research of large investors, and this reliance is significantly greater among their Top 10 holdings.

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

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

6.1 Voting behavior

First, we test if governance research is related to the actual fund family votes. 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. We begin by presenting descriptive evidence in Figure 4. If informed funds tend to make more independent decisions, then they will be less likely to indiscriminately follow the recommendations of management or of ISS (see, e.g., Iliev and Lowry (2015)). Following this logic, Panel A examines the relation between governance-related research and the extent of disagreement with management. 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 B is constructed similarly, with the exception that we focus on the percent of issues for which the fund family votes against ISS's recommendation.

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 12% of cases, compared to only 9% for fund families that view zero filings. Panel B suggests that more active researchers are also more likely to disagree with ISS a greater percentage of the time, though the magnitude of the difference is smaller.

While this descriptive evidence is illustrative, we note that a more robust empirical examination faces two challenges. First, most elections are non-controversial, with management receiving substantial support on all proposals. This results in limited variation in the observed voting behavior. In a related point, 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 in which they seek to influence company governance through voice. A second challenge is that our measure of governance research is at the meeting level (rather than the agenda level) and at the fund family level (rather than the fund level). In contrast, voting is at the agenda – 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 both challenges, we focus on the issues up for vote that are most controversial. Specifically, we use only agenda items where management receives between 40% and 60% of the votes. These are the "close" votes that require extra research and they represent the cases about which an investor most likely seeks to research.[12] For each firm meeting and each mutual fund family, we calculate the percent of funds within the family that vote against the

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[12] Note that this approach introduces a 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.

ISS recommendation, on these close votes. 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 8. The sample in these regressions includes only the elections with close votes, and therefore is smaller than the other tables. We estimate OLS regressions, where 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. This is true when we use the investors' overall governance-related research (in column 1) and when we focus more narrowly on investors' research based solely on the company proxy statements (in column 2).

6.2 Investment decisions

Having established that investors' research is related to their tendency to monitor management via voice, we next seek to provide evidence on the relation between governance research and investors' 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. Conversely, they should divest positions if they are not satisfied with management's commitment to shareholder value. As shown by 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 arguably particularly true if voice fails, where voice may be in the form of either a shareholder vote or more informal conversations with management.

By examining the relation between different forms of research and changes in investors' holdings, we can test if governance-related concerns influence investment decisions. The

magnitude of governance-related research represents a measure of the importance an investor assigns to these issues. For example, Gargano and Rossi (2018) use brokerage data to document that paying attention is profitable.

Table 9 examines these relations. Our dependent variable is the absolute value of the percent changes in investors' holdings. We regress this measure of portfolio changes on the investors' EDGAR research. 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.[13] For each annual company meeting, we measure the percent change in holdings from the quarter immediately before to the quarter immediately following the annual meeting. We include three measures of governance-related research. Our first measure is proxy-related views, the measure that includes both proxy statements and all other filings accessed on the same day as a proxy, which 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 non-proxy filings on days when the investor did not access a proxy. The latter measure serves as a measure of contemporaneous non-governance research.

Looking first at column 1 of Table 9, we observe a strong positive relation between governance-related research and investors' tendencies to change their holdings. A one standard deviation increase in the logarithm of proxy-related views is associated with investors' holdings

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[13] Because we observe requests at the mutual fund family level, investors' holdings are also aggregated to the family level. However, we note that this likely causes our results to be understated, as many mutual fund families include passive funds, which have limited ability to change holdings in response to any particular event.

changes being 14% greater, relative to the mean.[14] Columns 2 and 3 further highlight the importance of governance-specific research, compared to research that might be related to financial metrics. When we focus just on views of proxy filings, the economic magnitude is slightly greater. A one standard deviation change in this narrower definition of governance research is associated with a 15% change in holdings relative to the mean. In column 3, where we include both proxy views and non-proxy views in one regression, the effects of the narrower definition of governance research are similar to the effects of all other filings in aggregate. A one standard deviation increase in the logarithm of proxy views is associated with a 12.2% change in holdings relative to the mean, compared to an analogous 14.6% for non-proxy views.

It is important to note two points, with respect to this analysis. First, 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. Second, the mutual fund families within our sample include both index funds and actively managed funds, and the motivation to engage in governance-related research differs at least somewhat between these two groups. For example, Vanguard regularly states that they have to engage in governance, because exit is not an option. Because our holdings are measured at the family level, the economic magnitudes suggested by this regression represent a weighted average across the actively managed funds and the passive funds, where the latter are by definition not able to significantly change positions in response to any firm policy.

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[14] A one-standard deviation higher research is associated with an 0.048% change in holdings, which relative to the mean absolute change in holding of 0.35 represents 14%.

It follows that the economic magnitudes among the actively managed funds are even greater than what is suggested by this specification.[15]

7. 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, the amount of research is decreasing in the expected research of other investors, suggesting free riding incentives. Third, the governance research is quite concentrated within certain types of firms. Smaller firms with lower institutional ownership have significantly lower levels of monitoring. This raises questions regarding the extent of agency-related problems within such firms.

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[15] In untabulated robustness checks, we estimate the same set of regressions, over the post-March 2013 period and find similar results. We perform this robustness check because the Thompson 13-F files have been corrupted. The WRDS issued solution provides stable time series in the post 2013 period but still leaves some of the pre 2013 time series of holdings unstable. In our regressions using the overall sample, we drop cross sections for managers where the data exhibits inconsistencies.

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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.[16] This 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.

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 to identify the organization(s) that are associated with the first three blocks of each IP address. [17] 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

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[16] 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.
[17] Digital Elements is a company specializing in analytics and geolocation of IP addresses.

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. 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.

Appendix B: Variable descriptions

Variable	Descriptions
EDGAR Activity Variables	
Current Proxy Views	The number of times the current proxy statement was read before the annual meeting. [Source: EDGAR Log Files]
Current Proxy-related Views	The number of times the current proxy statement was read before the annual meeting plus the number of times other filings were read on days the current proxy was read. [Source: EDGAR Log Files]
Proxy Views	The number of times any proxy statement was read in the window starting 30 days prior to the posting of the current proxy statement and ending at the annual meeting. [Source: EDGAR Log Files]
Proxy-related Views	The number of times any proxy statement was read in the window starting 30 days prior to the posting of the current proxy statement and ending at the annual meeting plus the number of filings that were read on days that any proxy was read in that window. [Source: EDGAR Log Files]
Non Proxy-related Views	The number of times any filing was read was read in the window starting 30 days prior to the posting of the current proxy statement on days that no proxy was read. [Source: EDGAR Log Files]
Total Filing Views	The number of any filing was read in the window starting 30 days prior to the posting of the current proxy statement and ending at the annual meeting. [Source: EDGAR Log Files]
E[Research by other Investors]	This is calculated at the level investor j, firm f, meeting year t, where i includes all investors other than j: $\sum_{i=1}^{88} \%Ownership_{Inv\ i, yr\ t, firm\ f} * \overline{ProxyRelatedViews_{Inv\ i, yr\ t-1, all\ firms}})$. Thus, for each investor-firm meeting observation, holdings are measured for the firm and research is measured as the average across all firms held by other investors in the prior year. [Source: EDGAR Log Files, Thompson Reuters S34/WRDS]
E[Research by other Large Investors]	Calculated similar to E[Research by other Investors], except restricted to positions where the mutual fund family owns greater than 0.3 percent of the firm. 0.3 percent is approximately the median position size for this sample. [Source: EDGAR Log Files]
E[Research by other Small Investors]	Calculated similar to E[Research by other Investors], except restricted to positions where the mutual fund family owns less than 0.3 percent of the firm. 0.3 percent is approximately the median position size for this sample. [Source: EDGAR Log Files]
Actual research by other investors	This is calculated at the level investor j, firm f, meeting year t, where i includes all investors other than j: $\sum_{i=1}^{88} \%Ownership_{Inv\ i, yr\ t, firm\ f} * ProxyRelatedViews_{Inv\ i, yr\ t, firm\ f})$. Thus, for each investor-firm meeting observation, holdings are measured for the firm and research is the number of views of proxy related materials in the current year for that firm. [Source: EDGAR Log Files, Thompson Reuters S34/WRDS]

Any Research Dummy	Dummy variable equal to one if the mutual fund family performed a positive amount of governance-related research for an annual meeting. [Source: EDGAR Log Files]

Company Variables

Market Value of Equity	Adjusted Share Price * Total Shares Outstanding at the close of the fiscal year before a recommendation/forecast change. [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]
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]
R&D / Assets	Research and Development / Total Assets [Source: Compustat]
Book Leverage	(Long Term Debt + Debt in Current Liability) / Total Assets [Source: Compustat]
High Default Risk	Dummy 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].
Cash / Assets	Cash and Short-Term Investments / (Total Assets – Cash and Short Term Investments) [Source: Compustat]
Tangibility	Net Property, Plant, and Equipment / Total Assets [Source: Compustat]
E-index	Entrenchment index ranging between 0 and 6 proposed by Bebchuk, Cohen, and Ferrell (2009) [Source: ISS Governance]
Dictator Dummy	A dummy variable equal to one if the firm has an E-index of 4 or higher. [Source: ISS Governance]
Dual Class	Dummy variable equal to one if the company has two share classes with unequal voting rights [Source: ISS Governance]
CEO-Chairman Duality	Dummy variable equal to one if the CEO is also the chairman of the board of directors [Source: Execucomp]
CEO Turnover	Dummy variable equal to one if the firm changed CEOs within 180 days prior to the annual meeting [Source: Execucomp]

Voting 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]
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]
Number of Shareholder Proposals	The number of shareholder proposals on a proxy statement [Source: ISS Voting Analytics]
Number of Management Proposals	The number of management proposals on a proxy statement [Source: ISS Voting Analytics]

Ownership Variables

Percent Institutional Ownership	Total percent of equity held by institutional investors required to report holdings on Form 13F. [Source: Thompson Reuters S34/WRDS]
Percent Ownership by other institutions	Total percent of equity held by institutional investors required to report holdings on Form 13F, excluding the institution we study. [Source: Thompson Reuters S34/WRDS]
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]
Busy Week	Dummy variable equal to one if the week falls into the top quartile based on the total number of company annual meetings during the week [Source: ISS Governance]
Has 13D Form	An indicator is a Form 13D was filed over the previous 12 months. [Source: EDGAR]
Change in Holdings	The absolute value of the investor's change in holdings in firms for which it votes, from the quarter immediately preceding the annual meeting to the quarter following the meeting [Source: Thompson Reuters S34/WRDS]

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

The sample focuses on 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 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.
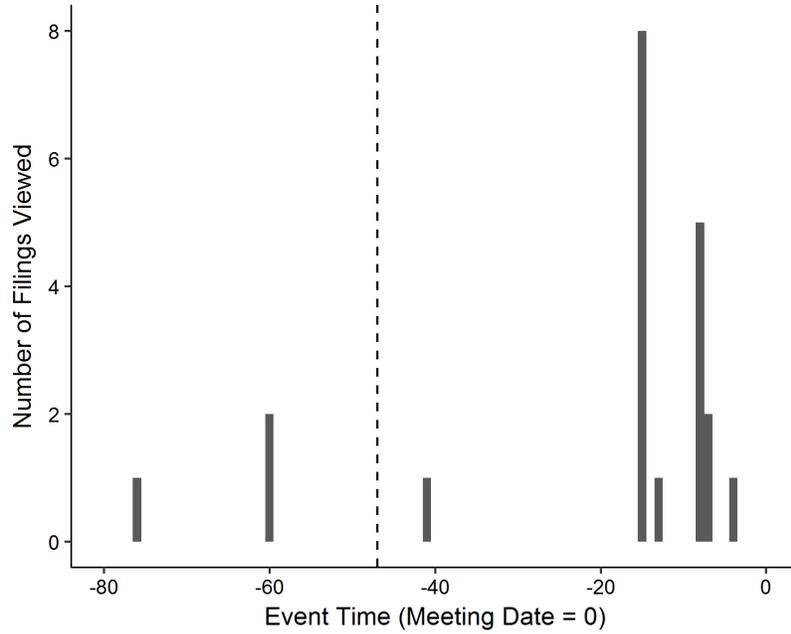
Figure 2: Governance-related research by mutual fund families and ISS

The sample in Panel A 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 investor on the same day as a proxy statement. In Panel B, the sample consists of all publicly traded firms for which ISS provided recommendations, between 2015 and 2017. For each firm-year, we measure ISS's views of the firm's proxy statements and of any other filings accessed by ISS 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 annual meeting. In the figure, the day of the annual meeting represents day 0, and days -90 through -1 represent calendar days relative to this date.

*Panel A: Governance-related views by mutual fund families, in event time*
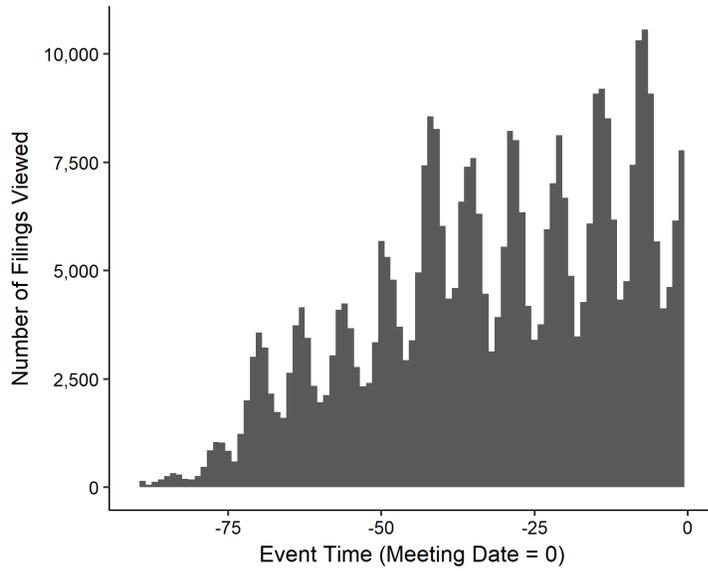
Panel B: Governance-related research by ISS, in event time
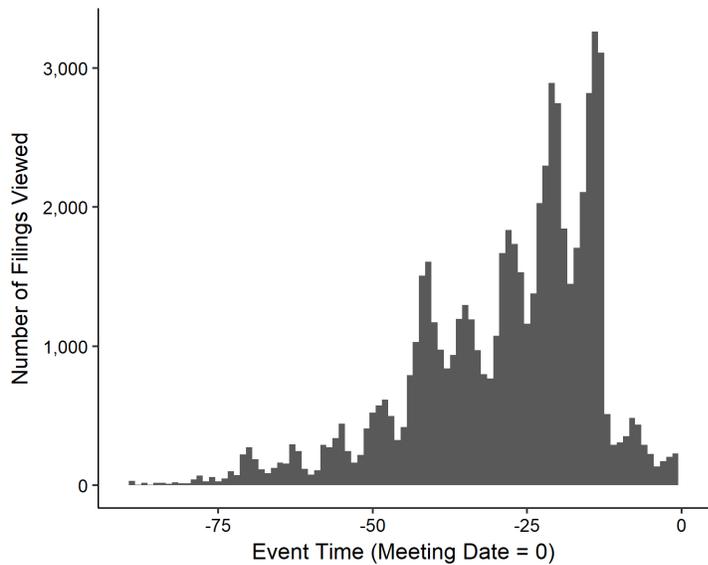
Figure 3: Investors' governance-related research, by firm type and investor type

The sample consists of an unbalanced panel of the firm holdings of three specific mutual fund families, between 2011 and 2017. The three mutual fund families are Blackrock, Fidelity and Vanguard, 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 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 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.
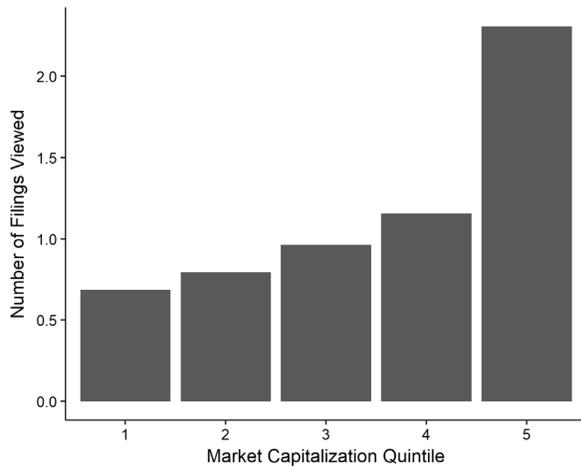
Panel A: By firm market capitalization *Panel B: By firm's rank in investor's portfolio*
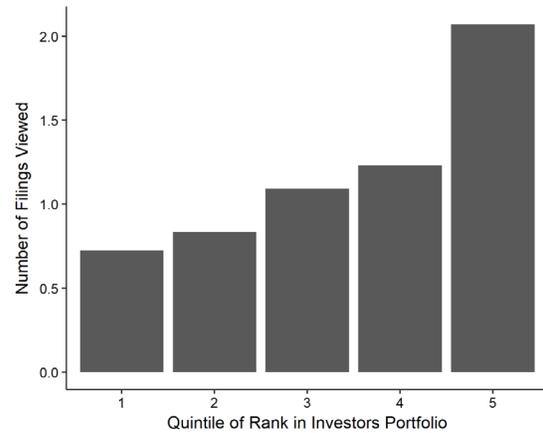
Panel C: By firm returns
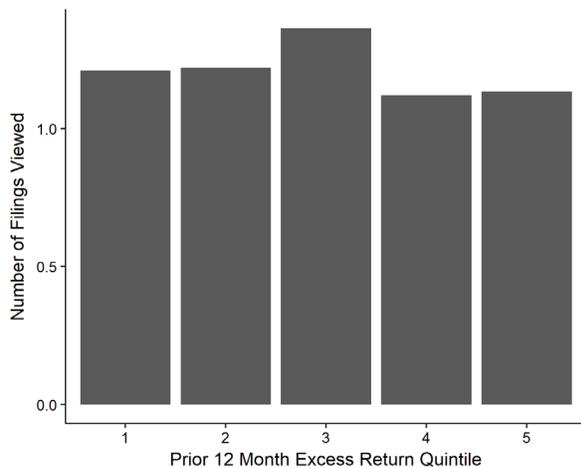
Figure 4: Investors' governance-related research and Voting

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 annual meeting.

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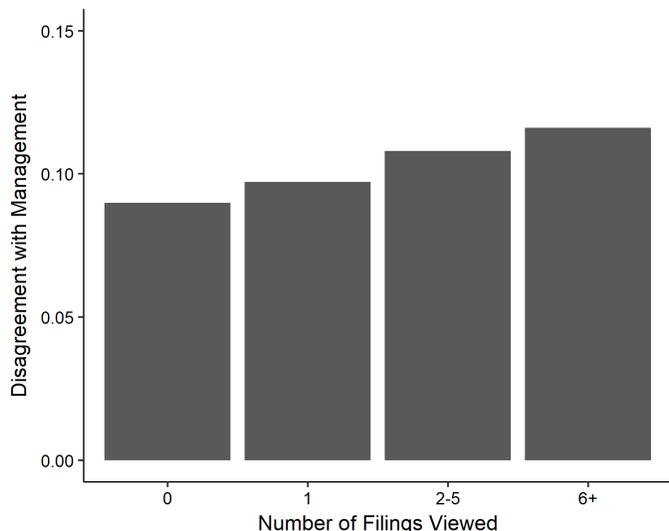
Panel B: Governance-related Research and Investor Disagreement with ISS
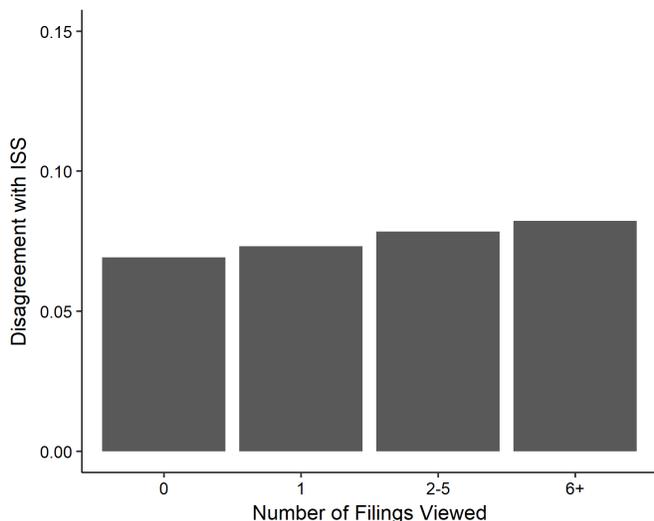
Table 1: Descriptive statistics on mutual fund families' governance-related research

The sample consists of an unbalanced panel of 89 mutual fund families * firms owned by each fund, between 2011 and 2017, a total of 327,329 observations. The left-hand columns represent this full sample, and the right-hand columns limit the sample to the 33,732 investor-firm-years in which the investor accessed the firm's current year proxy statement at least once. Within each of these samples, governance variables are only available for S&P 1500 firms, and thus the number of governance observations are smaller (220,546 in left-hand columns, and 23,988 in right-hand columns). Variable descriptions are provided in Appendix B.

	Summary stats at for all observations (327,329 obs)				Conditional on reading current meeting's proxy (23,988 obs)		
	Mean	% Non-Zero	Median	Std Dev	Mean	Median	Std Dev
EDGAR Filings Views [Proxy Filing Date - 30, Meeting Date]							
Current Proxy Views	0.18	10.3%	0	0.98	1.76	1	2.54
Current Proxy-related Views	0.49	10.3%	0	10.77	4.75	2	33.26
Proxy Views	0.34	12.7%	0	2.04	2.78	1	5.51
Proxy-related Views	0.81	12.7%	0	18.52	6.68	2	57.05
Total Filing Views	4.28	36.0%	0	30.99	17.80	5	89.66
Annual meeting Agenda Items							
ISS Recommend For (Meeting Avg)	0.92		1	0.16	0.91	1	0.17
Number of Shareholder Proposals	0.35		0	1.01	0.55	0	1.29
Number of Management Proposals	9.49		9	4.18	9.99	10	4.27
Firm financial characteristics							
Market Value of Equity ($ billion)	14.37		2.66	40.22	23.03	3.80	57.91
Market adj. return$_{t-1}$	0.06		0.02	0.45	0.06	0.02	0.40
Profitability	0.10		0.11	0.23	0.10	0.11	0.14
R&D / Assets	0.03		0.00	0.11	0.03	0.00	0.08
Book Leverage	0.22		0.20	0.47	0.22	0.20	0.18
Cash / Assets	0.58		0.11	0.78	0.54	0.11	3.53
Market to Book	4.37		2.36	7.53	4.37	2.35	10.25
Tangibility	0.23		0.13	0.65	0.22	0.12	0.24
Percent Institutional Ownership	0.59		0.59	0.19	0.59	0.59	0.20

	Mean	Median	Std Dev	Mean	Median	Std Dev
Ownership of 89 mutual funds within sample						
Fund Family Holdings	1.35%	0.36%	2.49%	2.76%	1.38%	3.36%
Fund Family AUM ($billion)	79.43	0.35	229.00	177.0	1.19	314.00
Fraction Fund Family Indexed	0.24	0.07	0.32	0.28	0.08	0.32
# Insts with 1% to 5% Ownership	11.03	11.00	5.27	10.82	10.00	5.39
# Insts with >5% Ownership	1.76	2.00	1.42	1.69	1.00	1.43
Fraction Total Holdings of Insts w/ 1-5% Own	0.24	0.23	0.12	0.23	0.22	0.12
Fraction Total Holdings of Insts w/ >5% Own	0.14	0.12	0.14	0.13	0.10	0.14
Firm governance characteristics						
E Index	3.42	3	0.99	3.34	3	1.01
Dual Share Class	0.06	0	0.23	0.06	0	0.24
CEO-Chairman Duality	0.52	1	0.50	0.55	1	0.50
CEO Turnover	0.06	0	0.23	0.06	0	0.23

Table 2: Descriptive statistics on ISS's governance-related research

The sample consists of all publicly-traded firms for which ISS issues recommendations, between 2015 and 2017. The left-hand columns represent this full sample, a total of 6,800 observations. The right-hand columns limit the sample to the firm-years in which ISS accessed the firm's current year proxy statement, a total of 5,410 observations. Variable descriptions are provided in Appendix B.

	Summary stats at for all observations (6,800 obs)				Conditional on reading current meeting's proxy (5,410 obs)		
	Mean	% Non-Zero	Med	Std Dev	Mean	Med	Std Dev
Current Proxy Views	2.95	79.6%	2	3.33	3.71	3	3.33
Current Proxy-related Views	7.16	79.6%	3	10.55	9.00	5	11.11
Proxy Views	4.75	82.8%	3	6.20	5.88	4	6.45
Proxy-related Views	8.68	82.8%	4	12.84	10.77	6	13.59
Total Filing Views	12.10	91.5%	7	16.45	14.50	9	17.46
Annual meeting Agenda Items							
ISS Recommend For (Meeting Avg)	0.89		1	0.19	0.89	1	0.20
Number of Shareholder Proposals	0.21		0	0.75	0.26	0	0.83
Number of Management Proposals	8.73		8	4.12	9.00	9	4.20
Firm financial characteristics							
Market Value of Equity ($ billion)	8.30		1.33	29.23	10.0	1.65	32.5
Market adj. return	0.02		0.00	0.42	0.01	-0.01	0.41
Profitability	0.05		0.09	0.22	0.06	0.09	0.21
R&D / Assets	0.05		0.00	0.12	0.04	0.00	0.11
Book Leverage	0.99		0.10	5.20	0.93	0.10	5.15
Cash / Assets	4.45		2.25	10.80	4.59	2.29	11.19
Market to Book	0.21		0.10	0.25	0.22	0.11	0.25
Tangibility	0.02		0.00	0.42	0.01	-0.01	0.41
Percent Institutional Ownership	0.50		0.51	0.20	0.51	0.52	0.20
Firm governance characteristics							
E Index	3.35		3	0.88	3.32	3	0.88
Dual Share Class	0.06		0	0.24	0.06	0	0.24
CEO-Chairman Duality	0.47		0	0.50	0.48	0	0.50
CEO Turnover	0.06		0	0.24	0.06	0	0.24

Table 3: 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 logarithm of the investor's views of the firm's proxy statements plus 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 annual meeting. 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 calendar 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 Variable = Ln(1+Proxy-related views)			
% Index Funds	-0.021***				-0.015***	-0.025***
	(0.001)				(0.001)	(0.001)
Top 10 Holding	0.033***				0.013***	0.012***
	(0.003)				(0.002)	(0.002)
Fund Family Holdings	0.053***				0.060***	0.064***
	(0.001)				(0.001)	(0.002)
Ln(Fund Family AUM)	0.143***				0.162***	0.180***
	(0.002)				(0.003)	(0.004)
Busy Week	-0.038***				-0.039***	-0.039***
	(0.003)				(0.002)	(0.003)
Market adj. return		-0.007***			-0.005***	-0.010***
		(0.001)			(0.001)	(0.002)
Profitability		-0.019***			-0.012***	-0.024***
		(0.002)			(0.001)	(0.003)
Ln(Mkt Value of Equity)		0.075***			0.078***	0.089***
		(0.002)			(0.002)	(0.003)
Book Leverage		0.005***			0.006***	0.006***
		(0.001)			(0.001)	(0.002)
R&D / Assets		-0.002			-0.001	0.007*
		(0.002)			(0.002)	(0.004)
Cash / Assets		-0.001			-0.002	0.058***
		(0.001)			(0.001)	(0.016)
Market to Book		-0.005***			-0.004***	-0.004***
		(0.001)			(0.001)	(0.001)
Tangibility		-0.007***			-0.008***	-0.006**
		(0.002)			(0.002)	(0.003)
High Default Risk		0.011***			0.009***	0.011***
		(0.001)			(0.001)	(0.002)
E-Index >= 4			-0.020***			-0.005***
			(0.002)			(0.001)
Dual Share Class			0.004*			-0.002
			(0.002)			(0.002)
CEO-Chairman Duality			0.017***			0.001
			(0.002)			(0.001)
CEO Turnover			0.004*			0.004**
			(0.002)			(0.002)
ISS Recommend Against				0.009***	0.014***	0.023***
				(0.001)	(0.001)	(0.002)
Has 13D form				0.011***	0.011***	0.014***
				(0.001)	(0.001)	(0.002)
# Shareholder Proposals				0.062***	0.035***	0.029***
				(0.004)	(0.003)	(0.004)
Adj. R-squared	0.050	0.021	0.008	0.018	0.079	0.086
Observations	327,329	327,329	219,954	327,329	327,329	219,954
N. Meetings	15,338	15,338	7,963	15,338	15,338	7,963

Table 4: Intensive vs Extensive margin, in research by investors and ISS

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. Column 1 focuses on the extensive margin, and the dependent variable equals one if the fund family conducted any research on the firm prior to the meeting. Column 2 focuses on the intensive margin, meaning the sample is limited to firm meetings for which the fund family conducted some research, and the dependent variable equals the logarithm of one plus the investor's views of the firm's proxy statements plus any other filings accessed by the investor on the same day as a proxy statement. Columns 3 and 4 are analogous, but focus on ISS's research, using an unbalanced panel of all publicly traded firms for which ISS issues recommendations, between 2015 and 2017. The dependent variable in column 3 is a dummy for whether ISS conducted any research, and the dependent variable in column 4 is the logarithm of one plus ISS's views of the firm's proxy statements plus any other filings accessed by ISS on the same day as a proxy statement. In both cases, we count the number of views of these filings, from 30 days prior to the release of the proxy statement through the annual meeting. 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 calendar year fixed effects are included, and standard errors are clustered by firm-meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Proxy-related views by Investors		Proxy-related views by ISS	
	Extensive Margin	Intensive Margin	Extensive Margin	Intensive Margin
Fund / Institutional Ownership				
% Index Funds	-0.011***	-0.125***		
	(0.001)	(0.006)		
Top 10 Holding	0.004***	0.008**		
	(0.001)	(0.004)		
Fund Family Holdings	0.051***	0.004		
	(0.001)	(0.004)		
Ln(Fund Family AUM)	0.113***	0.202***		
	(0.002)	(0.013)		
Busy Week	-0.023***	-0.061***	-0.015	-0.334***
	(0.002)	(0.011)	(0.012)	(0.031)
Ln(1 + # Institutional Investors)			0.037*	0.333***
			(0.019)	(0.090)
Firm Performance				
Market adj. return	-0.006***	-0.018***	-0.002	-0.084***
	(0.001)	(0.007)	(0.009)	(0.023)
Profitability	-0.012***	-0.054***	-0.033**	-0.197***
	(0.001)	(0.011)	(0.013)	(0.034)
Ln(Mkt Value of Equity)	0.048***	0.155***	0.046**	0.125
	(0.001)	(0.008)	(0.018)	(0.078)
Book Leverage	0.002*	0.036***	0.010	0.079***
	(0.001)	(0.007)	(0.008)	(0.021)
R&D / Assets	0.003	0.036***	0.028	0.066
	(0.002)	(0.013)	(0.020)	(0.049)
Cash / Assets	0.031***	0.097*	-0.202*	-0.088
	(0.008)	(0.055)	(0.119)	(0.252)
Market to Book	-0.002**	-0.013**	0.005	-0.045***
	(0.001)	(0.006)	(0.004)	(0.014)
Tangibility	-0.003*	-0.018*	0.002	0.016
	(0.001)	(0.009)	(0.009)	(0.025)
High Default Risk	0.004***	0.028***	0.011	0.064***
	(0.001)	(0.007)	(0.007)	(0.021)
Firm Governance				
E-Index >= 4	-0.002***	-0.015***	-0.005	-0.022*
	(0.001)	(0.005)	(0.005)	(0.013)

Dual Share Class	-0.001	0.000	0.001	0.003
	(0.001)	(0.006)	(0.005)	(0.015)
CEO-Chairman Duality	0.002***	-0.011**	-0.006	-0.007
	(0.001)	(0.005)	(0.006)	(0.015)
CEO Turnover	0.002**	0.013**	0.002	0.027*
	(0.001)	(0.006)	(0.005)	(0.015)
Contentious Firm-Year				
ISS Recommend Against	0.013***	0.036***		
	(0.001)	(0.007)		
Has 13D form	0.007***	0.029***	0.011**	0.065***
	(0.001)	(0.006)	(0.005)	(0.016)
# Shareholder Proposals	0.014***	0.026***	0.004*	0.113***
	(0.001)	(0.005)	(0.002)	(0.013)
Adj. R-squared	0.091	0.090	0.057	0.285
Observations	219,954	29,841	3,316	2,945
N. Meetings	7,963	7,589	3,316	2,945

Table 5: The interaction between firm governance and funds' ability to divest

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 logarithm of the investor's views of the firm's proxy statements plus 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 annual meeting. 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. Panel A splits the sample based on whether fraction of Assets Under Management (AUM) held by index funds is greater than 50 percent and estimates the same regression as Table 4, Column 2. Panel B expands on the analysis by interacting a dummy variable equal to one if the fraction of Assets Under Management held by index funds is greater than 50 percent with governance or portfolio characteristics. The full specification is the same as Table 4, Column 2 except uses an indicator for greater than 50 percent Assets Under Management instead of the continuous measure. Industry and calendar 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: Subsamples by Indexing intensity

	Dep't Variable = Ln(1+Proxy-related views)	
	< 50% AUM in Index Funds	>= 50% AUM in Index Funds
Likelihood of effecting change		
ISS Recommend Against	0.016***	0.048***
	(0.002)	(0.004)
# Shareholder Proposals	0.025***	0.049***
	(0.003)	(0.005)
Has 13D form	0.013***	0.017***
	(0.002)	(0.003)
Management entrenchment		
E-Index >= 4	-0.004***	-0.010***
	(0.001)	(0.002)
Dual Share Class	-0.001	-0.005*
	(0.002)	(0.003)
Largest dollar positions		
Top 10 Position Rank in	0.011***	0.021***
Portfolio by Value	(0.002)	(0.006)
Controls Included	Yes	Yes
Adj. R-squared	0.072	0.139
Observations	177,718	42,236
N. Meetings	7,957	7,958

Panel B: Full sample with interaction terms

Interaction term =	ISS Against Avg	# SH Props	13D	E-Index >= 4	Dual Class	Top 10
	Dep't Variable = Ln(1+Proxy-related views)					
High Indexer * Interaction	0.040***	0.018***	0.008***	-0.002	0.004	0.013**
	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.006)
High Indexer	-0.051***	-0.046***	-0.041***	-0.036***	-0.039***	-0.039***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Interaction Term	0.014***	0.026***	0.012***	-0.005***	-0.003*	0.011***
	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)
Controls Included	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.083	0.083	0.083	0.083	0.083	0.083
Observations	219,954	219,954	219,954	219,954	219,954	219,954
N. Meetings	7,963	7,963	7,963	7,963	7,963	7,963

Table 6: Effects of monitoring by other investors

The full sample, as used in columns 1 and 2, consists of an unbalanced panel of 89 mutual fund families * firms owned by each family, between 2011 and 2017. The sample in columns 3 and 4 is restricted to the largest five mutual fund families in our sample: Blackrock, Vanguard, Fidelity, State Street, and T. Rowe Price. The sample in columns 5 and 6 includes all mutual fund families except these largest five. 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 investor on the same day as a proxy. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the annual meeting. Actual research by other investors represents the number of proxy-related filings accessed by other mutual fund families for the same firm meeting. In columns 1, 3 and 5, 'E[Investor research by other investors]' is calculated as $\sum_{i=1}^{88} \%Ownership_{Inv\ i,yr\ t,firm\ f} * \overline{ProxyRelatedViews}_{Inv\ i,yr\ t-1,all\ firms}$), where holdings are measured for the specific firm and research is measured as the average across all firms held by other investors in the prior year. In columns 2, 4, and 6, E[research] by LARGE [SMALL] other investors is defined analogously, but where mutual fund family owns greater than (less than) 0.3 percent of the firm, which is approximately the median position size for this sample. 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. Independent variables previously included in columns 1 and 2 of Table 4 are included, but not tabulated. Investor and calendar 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 Variable = Ln(1+Proxy-related views)					
	All Investors		Top 5 Investors		Non – Top 5 Investors	
E[research] by ALL other investors	-0.009***		-0.009*		-0.012***	
	(0.002)		(0.005)		(0.002)	
E[research] by LARGE other investors		-0.009***		-0.008		-0.012***
		(0.002)		(0.005)		(0.002)
E[research] by SMALL other investors		-0.001		0.003		-0.003*
		(0.002)		(0.004)		(0.001)
Actual research by other investors	0.019**	0.019**	0.050**	0.050**	0.016**	0.016**
	(0.009)	(0.009)	(0.023)	(0.023)	(0.007)	(0.007)
Controls Included	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.242	0.242	0.198	0.198	0.251	0.251
Observations	193,497	193,497	33,113	33,113	160,384	160,384
N. Meetings	6,826	6,826	6,820	6,820	6,826	6,826

Table 7: 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 investor on the same day as a proxy. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the annual meeting. Actual research by other investors represents the number of proxy-related filings accessed by other mutual fund families for the same firm meeting.   '*E[Investor research by other institutions]*' is calculated as $\sum_{i=1}^{88} \%Ownership_{Inv\ i,yr\ t,firm\ f} * \overline{ProxyRelatedViews}_{Inv\ i,yr\ t-1,all\ firms}$), where holdings are measured for the specific firm and research is measured as the average across all firms held by other institutions in the prior year. These measures are interacted with a dummy indicating whether the firm represents one of that investor's Top 10 positions (in dollar value). Independent variables previously included in columns 1 and 2 of Table 4 are included, but not tabulated. 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. Investor and calendar year fixed effects are also included, and standard errors are clustered by firm meeting. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dep't Variable = Ln(1+Proxy-related views)		
	All	Top 5	Non-Top 5
E[research] by other large investors	-0.009***	-0.008	-0.012***
	(0.002)	(0.005)	(0.002)
E[research] by other large investors * Top 10 Holding	-0.008***	-0.001	-0.006**
	(0.003)	(0.011)	(0.002)
E[research] by other small investors	-0.001	0.003	-0.003*
	(0.002)	(0.004)	(0.001)
E[research] by other small investors * Top 10 Holding	-0.002	0.002	-0.002
	(0.002)	(0.009)	(0.002)
Actual research by other investors	0.019**	0.050**	0.016**
	(0.009)	(0.023)	(0.007)
Top 10 Holding	0.029***	0.021	0.023***
	(0.006)	(0.018)	(0.005)
Controls Included	Yes	Yes	Yes
Adj. R-squared	0.242	0.198	0.251
Observations	193,497	33,113	160,384
N. Meetings	6,826	6,820	6,826

Table 8: 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 items up for vote that receive 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. For each mutual fund family, we count the number of views of filings, from 30 days prior to the release of the proxy statement through the annual meeting. Proxy-related views include the investor's access of the firm's proxy statements plus any other filings requested on the same day as a proxy statement. Proxy views include only views of the firm's proxy statements. All other 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 calendar year fixed effects are included, and standard errors are clustered at the meeting level. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dep't Variable = Vote against ISS	
Ln(1 + Proxy-related views)	0.019***	
	(0.004)	
Ln(1 + Proxy views)		0.029***
		(0.005)
Fund Family Holdings	0.054***	0.053***
	(0.003)	(0.003)
Top 10 Position Rank in Portfolio by Value	0.005**	0.005**
	(0.002)	(0.002)
Ln(Fund Family Assets Under Mgmt)	0.100***	0.099***
	(0.005)	(0.005)
Busy Week	0.012	0.012
	(0.008)	(0.008)
Previous fiscal year market adj. return	-0.003	-0.003
	(0.003)	(0.003)
Profitability	-0.001	-0.001
	(0.005)	(0.005)
Log Market Value of Equity	0.027***	0.026***
	(0.006)	(0.006)
Book Leverage	-0.021***	-0.021***
	(0.004)	(0.004)
R&D	-0.011**	-0.011**
	(0.005)	(0.005)
Cash to Assets	-0.002	-0.002
	(0.003)	(0.003)
Market to Book	-0.003	-0.003
	(0.006)	(0.006)
Tangibility	0.008	0.008
	(0.008)	(0.008)
High Distance to Default	0.012***	0.012***
	(0.005)	(0.005)
Has 13D form	-0.010***	-0.010***
	(0.004)	(0.004)
# Shareholder Proposals	-0.011*	-0.011*
	(0.006)	(0.006)
R-squared	0.054	0.054
Observations	35,665	35,665
N. Meetings	1,347	1,347

Table 9: 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 investor's change in holdings, from the quarter immediately preceding the annual meeting to the first calendar quarter following the meeting. We count the number of views of these filings, from 30 days prior to the release of the proxy statement through the annual meeting. Proxy-related views include the investor's views of the firm's proxy statements plus any other filings accessed by the investor 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 on days on which they do not view a proxy statement. All other 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. Investor fixed effects are included, and standard errors are clustered by investor. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

	Dep't Variable = Change in Holdings		
Ln(1 + Proxy Related Reads)	0.048***		
	(0.008)		
Ln(1 + Proxy Reads)		0.054***	0.043***
		(0.009)	(0.009)
Ln(1 + Non-Proxy Related Reads)			0.051***
			(0.007)
Previous fiscal year market adj. return	0.004	0.005	0.005
	(0.004)	(0.004)	(0.004)
Profitability	0.010**	0.010**	0.011**
	(0.005)	(0.005)	(0.005)
Log Market Value of Equity	-0.003	-0.004	-0.015
	(0.015)	(0.014)	(0.015)
Book Leverage	-0.001	-0.001	-0.003
	(0.003)	(0.003)	(0.003)
R&D	0.014***	0.014***	0.014***
	(0.005)	(0.005)	(0.005)
Cash to Assets	0.011**	0.011**	0.011**
	(0.005)	(0.005)	(0.005)
Market to Book	0.004*	0.004*	0.004*
	(0.002)	(0.002)	(0.002)
Tangibility	0.005**	0.005**	0.006**
	(0.002)	(0.002)	(0.002)
High Distance to Default	0.006***	0.006***	0.005**
	(0.002)	(0.002)	(0.002)
Percent Institutional Ownership	0.085***	0.085***	0.084***
	(0.011)	(0.011)	(0.011)
Log Fund Family Assets Under Management	0.008	0.008	0.008
	(0.014)	(0.014)	(0.014)
ISS Recommend For (Meeting Average)	0.006	0.006	0.006
	(0.004)	(0.004)	(0.004)
Contested Meeting	0.005	0.004	0.005
	(0.003)	(0.003)	(0.003)
Has 13D form	-0.006**	-0.006**	-0.007***
	(0.003)	(0.003)	(0.003)
Number of Shareholder Proposals	-0.013***	-0.013***	-0.015***
	(0.005)	(0.005)	(0.005)
Adj. R-squared	0.009	0.009	0.010
Observations	448,060	448,060	448,060

Online Appendix to "Investors' Attention to Corporate Governance"

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

The sample in Panel A consists of event-time governance-related filings viewed 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 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 proxy statement through 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 is similar to Panel A, but represents views by the Fidelity mutual fund family.

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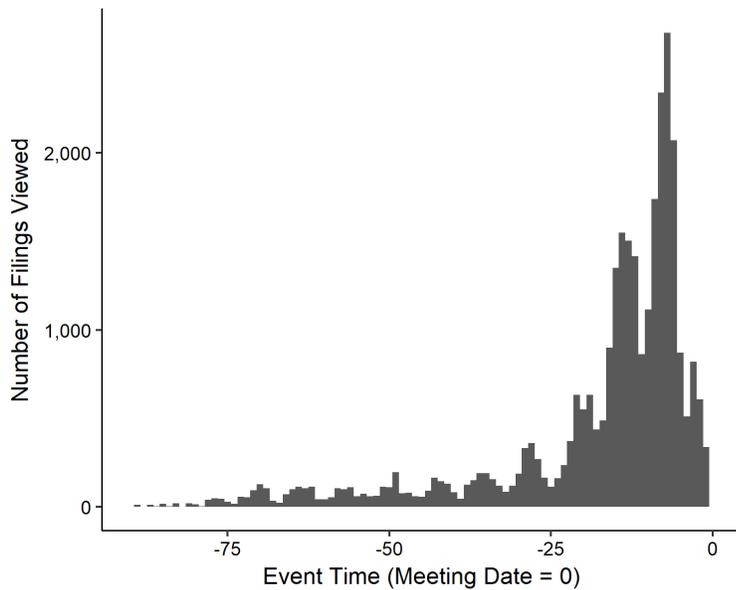
*Panel B: The Fidelity Investments mutual fund family*
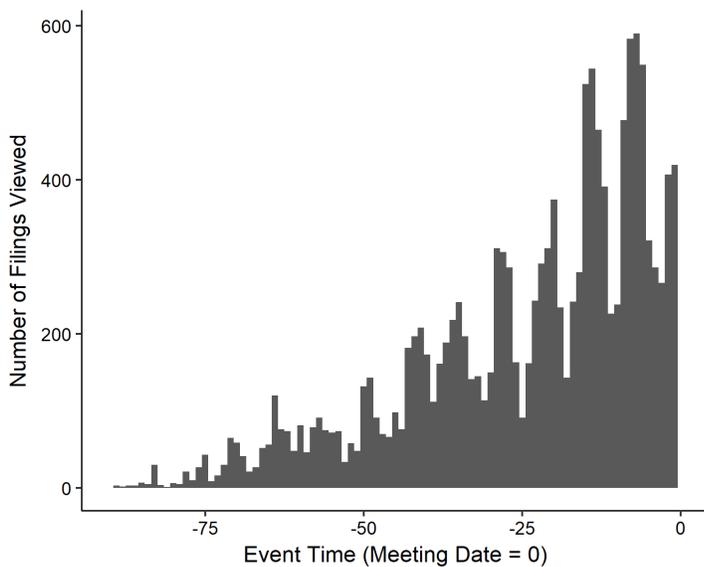
Figure A2: Governance-related research by mutual fund families in publicly traded firms

The sample in Panel A 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 investor on the same day as a proxy statement. In Panel B, the sample consists of all publicly traded firms for which ISS provided recommendations, between 2015 and 2017. For each firm-year, we measure ISS's views of the firm's proxy statements and of any other filings accessed by ISS 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 annual meeting, and the figures show the day of the week of the views.

Panel A: Investors' governance-related views by day of the week
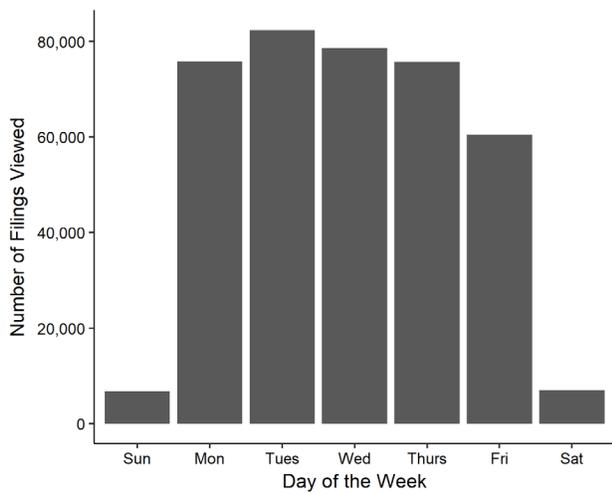
*Panel B: ISS's governance-related views by day of the week*
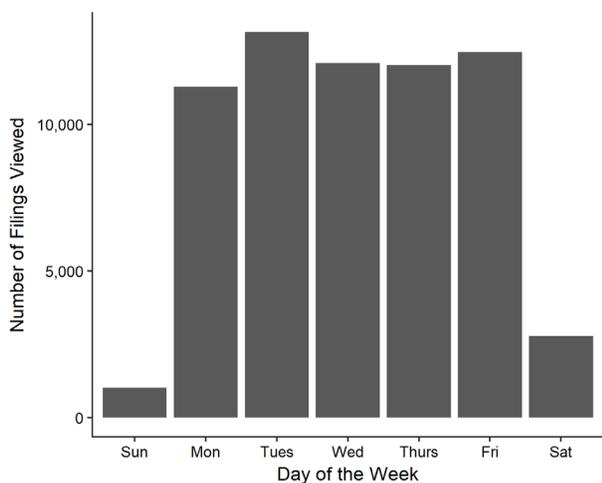
Figure A3: ISS's governance-related research by firm type.

The sample consists of an unbalanced panel of publicly-traded firms for which ISS issues recommendations, in 2015 and 2016. For each firm-year, we focus on ISSs views of the firm's proxy statements and of any other filings accessed by ISS 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 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, we rank firms into quintiles based on total institutional ownership at the end of the quarter prior to the annual meeting. In Panel C, we rank firms into quintiles based on the number of institutional investors, measured at this same point in time. In Panel D, 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
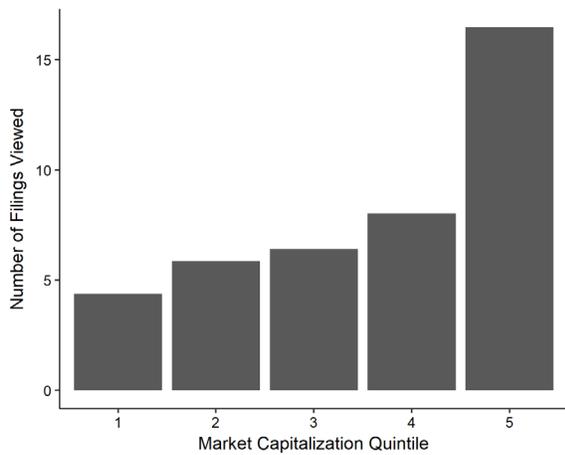
Panel B: By institutional ownership
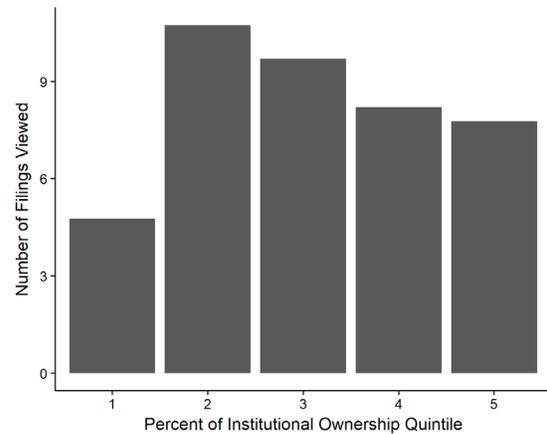
Panel C: By number of institutional investors

Panel D: By firm return