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Which Firms Require More Governance? Evidence from Mutual Funds' Revealed Preferences

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Abstract

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Keywords: proxy voting, mutual funds, shareholder proposals, machine learning

JEL Classifications: G30, G34, K30, K22, G18

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Corporate governance is not "one-size-fits-all," yet assessing which firms most need reform is difficult because standard metrics like vote support only reflect the preferences of a firm's current owners. This paper develops firm-level rankings of governance needs from fund votes, capturing the collective view of the entire fund community. This ranking diverges from raw vote support—a divergence linked to ownership structure. The ranking strongly correlates with firms' governance attributes but not underperformance or life-cycle characteristics. The results reveal that funds apply a nuanced, firm-specific assessment of governance, and use the proxy voting channel mainly to address firms' governance issues.

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1. Introduction

Corporate governance research recognizes that not all firms benefit equally from the same governance structures; some may benefit from stronger shareholder rights, while others find them less necessary or even counterproductive (e.g., Coles, Daniel, and Naveen, 2008; Duchin, Matsusaka, and Ozbas, 2010; Field and Lowry, 2022). While this idea is conceptually well-established, detailed empirical evidence on which firms most need reform has been scant. The vast number of votes cast by mutual funds on shareholder proposals offers a powerful lens to examine this question, yet leveraging this rich data presents a fundamental challenge: funds hold only a subset of companies, and their ownership choices are not random. As a result, standard metrics like raw vote support can be misleading. For instance, a firm with high insider ownership might appear to have little support for a shareholder proposal simply because insiders consistently vote with management, obscuring how a broader population of investors perceives its governance needs.

The goal of this paper is to develop a new measure that captures how the mutual fund community perceives the need for governance reform at individual firms, as expressed through their votes on shareholder proposals. The paper's methodology builds on the Mallows (1957) rank model, a classic framework for analyzing preference data. To handle the partial preference data that arises from selective fund ownership, the analysis employs the Bayesian extension developed by Vitelli, Sørensen, Crispino, Frigessi, and Arjas (2018)—a framework that infers each fund's preferences across the full set of firms using a *bridging* logic. This is analogous to how a recommender system like Netflix works: it infers a user's potential preference for a movie they have not seen by analyzing the ratings of other viewers with similar preferences. Analogously, in this paper's context, when Fund 1 votes "For" a proposal at Firm A but "Against" at Firm B, it reveals a direct preference. For Firm C, which Fund 1 does not own and therefore has no vote on, the algorithm tentatively creates a placeholder rank in Fund 1's ranking, then iteratively refines it by comparing votes from other investors who hold Firm C and at least one of Firm A or Firm B.

By chaining together these comparisons, the model produces an *augmented ranking* for

each individual fund—a full ordering of all firms, combining a fund's actual votes on firms it owns with its inferred preferences for firms it does not. Simultaneously, the model identifies an overall ranking of firms that best represents the collective pattern of these individual preferences. This final ranking is not a series of point estimates; instead, for each firm, the model produces a posterior distribution of likely ranks. This approach, inherent to the Bayesian framework used, directly quantifies the uncertainty of the inference. A narrow distribution signals a consistent assessment across funds, while a wider distribution indicates more uncertainty.

This approach differs fundamentally from a standard ordinary least squares (OLS) regression with firm and fund fixed effects. An OLS approach can only analyze votes within a fund's existing portfolio. Since the decision to own a firm is often a deliberate choice, a standard regression can confound "who holds a firm" with "whether the firm truly needs stronger governance," potentially biasing the results. The Mallows-based method, by contrast, avoids this bias. A firm's final rank is not determined solely by the idiosyncratic preferences of its current owners; instead, the bridging logic incorporates the inferred views of the entire fund community, offering a more complete picture of a firm's perceived need for reform as expressed through the voting channel.

I apply this Mallows-based ranking approach to five prominent shareholder proposal topics—independent board chair, board declassification, majority voting for directors, proxy access, and say-on-pay—over the 2004–2020 proxy seasons, using data from the Institutional Shareholder Services (ISS) Voting Analytics database. I focus on these topics because they address broadly similar governance changes across firms, enabling direct firm-to-firm comparisons, unlike many environmental or social proposals that can vary significantly in terms and scope. For each year, a single ranking is generated for all firms that received the same type of proposal in that year. To ensure sufficient coverage and meaningful variation, I require each topic-year to have at least 25 proposals and at least 50 funds that cast both "For" and "Against" votes.

The analysis reveals three main findings that contribute to the corporate governance lit-

erature. First, the analysis reveals a notable alignment in the relative ordering of firms when mutual funds assess the need for governance reform. This finding adds a crucial nuance to the extensive literature on investor heterogeneity. While prior studies document that investors have different ideological leanings and distinct voting philosophies (Bolton, Li, Ravina, and Rosenthal, 2020; Bubb and Catan, 2022), the analysis reveals a notable alignment in their relative rankings. This can be understood by distinguishing between a fund's general disposition—its baseline tendency to support management—and its firm-specific assessment of a proposal. For example, a fund that is generally deferential to management and one that is highly activist may start from different baseline levels of support. However, the analysis shows that when comparing two firms, say Firm A and Firm B, funds with these distinct dispositions tend to agree on which of the two has a greater need for stronger shareholder rights. This demonstrates how heterogeneous baseline preferences can coexist with a shared assessment of relative firm-specific governance needs.

Second, the analysis reveals that a firm where a proposal receives high raw vote support is not necessarily one that the mutual fund community believes is most in need of that reform. The paper's ranking of fund preferences systematically diverges from raw vote support—a measure commonly used to gauge proposal merit (e.g., Gillan and Starks, 2000; Gantchev and Giannetti, 2020). The Spearman correlation between the two is moderate for some topics, in the 0.49–0.58 range for independent board chair, proxy access, and majority voting, but drops considerably for board declassification (0.27) and say-on-pay (0.15). More importantly, this divergence is systematically linked to firm ownership structure. For example, at a firm with high insider ownership, raw vote support on a shareholder proposal will likely be depressed relative to the fund-based rankings, not because of the proposal's merits, but because insiders almost always vote against shareholder proposals. In contrast, at a firm with high institutional ownership, raw vote support can be inflated, as institutional investors are generally more supportive of shareholder proposals than retail investors (e.g., Brav, Cain, and Zytnick, 2022). This finding offers empirical support for recent theoretical work demonstrating that final vote tallies may reflect the preferences of a firm's specific owners, which can cause voting outcomes to diverge from the value-maximizing outcome (Levit,

Malenko, and Maug, 2024).

Third, the analysis examines whether the fund-based rankings align with longstanding views on where governance reforms are most valuable. A widely held view posits that firms with more severe agency problems benefit most from increased shareholder oversight (e.g., Harris and Raviv, 2010). While there is no single, perfect measure of agency problems, the analysis finds that the rankings are consistently associated with several well-established proxies for agency problems. Companies with lower board independence, higher insider ownership, and high abnormal executive compensation rank significantly higher as needing shareholder reforms. The economic effect is notable. For example, a one-percentile decrease in board independence is linked to a 0.26-percentile increase in a firm's rank, indicating that funds perceive a greater need for reform at firms with less independent boards. Equally important are the characteristics that do not systematically predict the rankings. Although a prominent view in the governance literature is that underperforming firms stand to benefit more from reforms (e.g., Cohn, Gillan, and Hartzell, 2016), the results reveal no robust link between underperformance and the fund-based rankings, a pattern that persists across various alternative performance measures. Furthermore, contrary to the view that life-cycle characteristics such as size and age are important determinants of a firm's governance needs (e.g., Cremers, Litov, and Sepe, 2017; Field and Lowry, 2022), the analysis finds that these attributes are not significant predictors of the rankings.

This focus on governance attributes is further supported by qualitative evidence from voting rationales—the textual explanations that investors provide for their voting decisions (Michaely, Rubio, and Yi, 2025). For instance, BlackRock's rationale for supporting Avista's majority-vote requirement proposal in 2016 stated, *"Supermajority vote requirement serves as an entrenchment device for management,"* whereas its rationale for opposing a similar proposal at FedEx read, *"Corporate policy decisions are best left to the board absent demonstrable harm to shareholders by prior board action or inaction,"* implying no perceived need for further reforms. These written explanations consistently reinforce the findings based on the rankings: investors frequently cite companies' governance features, while rarely mentioning other firm attributes such as performance or size. This observation is echoed in

interviews with practitioners, who note that concerns about underperformance are often addressed through other channels like direct engagement or divestment. Taken together, this qualitative evidence indicates that mutual funds use their votes on shareholder proposals as a tool focused primarily on addressing governance issues, rather than responding to the full range of factors that may shape a firm's optimal structure.

One might wonder if these cross-firm rank differences are simply driven by proxy advisors' recommendations. In practice, ISS and Glass Lewis endorse most of the proposals studied, which provides little variation to explain the variation in firm rankings. While ISS offers more varied recommendations for independent board chair proposals, companies receiving the same "For" recommendation can still differ considerably in rank. This suggests that while proxy advisors are influential, the rankings show significant variation independently of their recommendations.

While the Mallows-based framework is designed to estimate consistent rankings when not all funds own every firm, a valid concern is whether the final rankings are biased because ownership decisions are non-random. The paper addresses this concern with three tests. First, I estimate separate rankings for index and non-index (i.e., active) funds and find a high correlation between them. This indicates that the rankings are not driven by active managers' selective ownership of firms. Second, an analysis of the ownership network shows that, on average, approximately 150 funds hold any given pair of firms. This high degree of overlapping ownership provides sufficient data for the model's bridging logic to make reliable inferences (Ford, 1957; Avery, Glickman, Hoxby, and Metrick, 2013). Third, to assess the accuracy of the model's inferences, I conduct an analysis where I randomly withhold a fund's vote on a firm's shareholder proposal, re-estimate the full set of augmented rankings without that information, and compare the original augmented ranking to the re-estimated one. The high consistency between the two (87%) demonstrates the model's robustness and its ability to produce reliable estimates with partial voting data.

A natural question is whether the relative ordering of firms identified in the main analysis is stable, or if it would be fundamentally different when estimated within a much larger and

less-selective sample of firms. To demonstrate the reliability of the ranking methodology, the analysis uses mandatory say-on-pay votes—which are required for nearly all large public firms—as a testing ground.[1] I first estimate mandatory say-on-pay rankings for the broad universe of S&P 500 firms and then separately for the narrow subset of those firms that were also targeted by shareholder proposals examined in this paper. A comparison of these two sets of rankings reveals a high correlation of approximately 0.97. This demonstrates that a firm's relative rank is stable whether it is estimated within the broader, less-selective universe or the smaller, targeted group. This result provides strong evidence that the ranking methodology produces a reliable ordering that is not simply a reflection of which firms happen to receive shareholder proposals.

This paper makes a methodological contribution by introducing and applying a new framework to aggregate shareholder preferences from data that is inherently partial and selective. The approach is built on the Mallows (1957) rank model, a classic framework for analyzing preference data, which is adapted here using the Bayesian extension developed by Vitelli et al. (2018) to handle partial data. Unlike standard regressions that can be biased by non-random ownership, this method systematically infers how funds would vote on firms they do not own, producing a more complete view of the fund community's preferences. This approach is part of a growing body of literature that use sophisticated methods to analyze proxy voting data (Bolton et al., 2020; Bubb and Catan, 2022).[2] However, the key difference lies in the focus: while these studies focus on characterizing investors, this paper focuses on ranking companies. The approach shares the revealed-preference spirit of Avery et al. (2013) and Sorkin (2018) but applies the Mallows framework to the voting context. This technique could readily extend to other settings with selectively reported data, such as sell-side analyst recommendations or credit ratings.

The analysis offers several important economic insights. It adds a crucial nuance to the

[1]The meaning of the say-on-pay ranking is different from that of the shareholder proposal rankings, as it reflects an assessment of each firm's unique compensation package, rather than a standardized reform.

[2]Notably, both this paper and Bubb and Catan (2022) start with the same fundamental challenge: a massive and sparsely populated matrix of fund votes where most of the data is missing. Both papers address this by using sophisticated statistical techniques to handle the missing data and infer the collective preferences of mutual funds.

literature on investor heterogeneity; while prior work highlights that funds have different voting philosophies (e.g., Bolton et al., 2020; Bubb and Catan, 2022), this paper shows they nonetheless converge on a *relative assessment* of which firms most need reform. This collective, firm-specific assessment reflects a preference across the entire fund universe—a result that cannot be established by standard vote-level regressions, which only capture preferences *within* a fund's chosen portfolio. The findings demonstrate that institutional investors have, in aggregate, internalized a contingent view of governance, consistent with a growing body of research indicating that governance effectiveness depends on firm-specific context rather than universal best practices (e.g., Coles et al., 2008; Chen, Core, and Guay, 2024). However, the rankings' strong association with governance features—but not with firm performance or life-cycle characteristics—suggests that proxy voting is a tool mainly used by funds to address specific governance concerns. This targeted focus, in turn, highlights the importance of complementary monitoring mechanisms in guiding a firm toward its optimal governance structure.

Finally, the findings have direct implications for how researchers and regulators interpret voting outcomes. The substantial and systematic divergence between the paper's rankings and raw vote support—a divergence linked to ownership structure—suggests that high vote support may not necessarily translate into a value-maximizing or efficient outcome (e.g., Blonien, Crane, Crotty, and De Angelis, 2022; Levit et al., 2024). This raises questions about the design of regulations like the SEC's resubmission thresholds under Rule 14a-8, which apply fixed vote hurdles whose outcomes can be driven by ownership composition rather than proposal merit.

2. Methodology: From Fund Votes to Company Rankings

This section introduces the methodology used to aggregate individual mutual fund votes into comprehensive firm-level rankings that reflect collective investor preferences on governance proposals. This requires an approach capable of handling variations in fund portfolios

and potentially non-random ownership patterns. I first evaluate the suitability of standard regression techniques for this task (Section 2.1). Next, I introduce the Mallows-based ranking framework, which uses a bridging logic to infer preferences even for unobserved fund-firm pairs. This logic relies on the extensive overlapping ownership in the data to make inferences (Section 2.2). Finally, Section 2.3 discusses the key assumptions and provides guidance on interpreting the resulting firm rankings.

2.1. Limitations of a Standard Regression

A seemingly straightforward approach to gauge investor support would be to regress fund votes on fund and firm fixed effects:

$$Vote_{ij} \;=\; \alpha_i \;+\; \gamma_j \;+\; \epsilon_{ij}, \tag{1}$$

where $Vote_{ij}$ is Fund i's vote on Firm j (1 for "For," 0 for "Against"), α_i is a fund fixed effect capturing the fund's baseline voting tendency, and γ_j is a firm fixed effect. If ownership were random, the estimate $\hat{\gamma}_j$ could plausibly represent the collective view of mutual funds towards proposals at Firm j.

In reality, however, ownership is not random. Funds follow diverse investment strategies, and their decision to hold (and thus vote on) a firm can be influenced by unobserved factors related to their governance preferences. This non-random selection means that applying the fixed-effects model in Equation (1) can confound a firm's perceived need for reform with the specific characteristics of its current owners. As Bolton et al. (2020) highlight in a related context, such fixed effects regressions can be difficult to interpret without strong assumptions about the motivations behind each fund's decisions.

This non-randomness directly challenges the interpretation of the firm fixed effects. Because the fund (α_i) and firm (γ_j) fixed effects are jointly estimated, the value of $\hat{\gamma}_j$ for a specific firm becomes highly dependent on the baseline preferences of the particular funds that happen to own it. That is, $\hat{\gamma}_j$ might be heavily influenced by a few funds with idiosyncratic preferences, rather than reflecting a stable measure of the broader fund community's

view. Appendix B provides a toy example, showing how a single outlier vote can generate a large and misleading firm fixed effect. Therefore, a standard fixed-effects regression struggles to produce a reliable cross-firm ranking of governance preferences when ownership is selective and not every fund's votes on every firm's proposal, a limitation that motivates the more robust framework introduced in Section 2.2.

2.2. A Mallows-Based Ranking Method for Partial Coverage and Preference Inference

This section introduces the Mallows-based ranking framework designed specifically to address this challenge by inferring preferences from partially observed voting data. The paper's methodology is built on two well-established statistical foundations, applied here in a novel context. The first is the Mallows rank model (Mallows, 1957), one of the most classic frameworks for analyzing preference rankings. The second is the estimation method, a Metropolis–Hastings Markov chain Monte Carlo (M–H MCMC) procedure. This is a computational workhorse in the statistics community for decades, which is well-suited for making inferences from the partial data that characterize this paper's specific goal. Further technical specifics of the Mallows model and the M–H MCMC algorithm are provided in Appendix C.

Formally, the Mallows model assumes that each fund i has a latent complete ranking, R_i, over all firms, and that these individual rankings cluster around a single, overall ranking, ρ. The model's key intuition is that an individual fund's ranking is more likely to be observed the "closer" it is to this overall ranking, where closeness is measured by a formal distance metric (e.g., Kendall distance).

Because not all funds vote on all firms' proposals, the goal is to infer the overall ranking ρ from this partial data. Figure 2 illustrates that even with partial data, meaningful patterns can emerge. While few funds hold all three of Intel, Amazon, and Tesla, Panel B shows that clear relative preferences still arise from the overlapping data (e.g., many funds favor reform at Tesla over Intel). Panel C extends the idea to 20 firms, showing that while some investors

routinely vote "Against," many deviate for certain companies. While this visual inspection reveals an ordering of firms, extracting a systematic measure requires a formal framework.

The key innovation from Vitelli et al. (2018) is an algorithm that extends the Mallows model to handle precisely the type of partial rankings found in proxy voting data, where not all funds vote on all firms. The underlying logic of this inference mirrors the collaborative filtering techniques used in recommender systems. To understand the intuition, consider how a platform like Netflix works: it infers a user's potential preference for a movie they have not seen by analyzing the ratings of other viewers with similar tastes.[3] Analogously, the approach in this paper infers how Fund A might vote on Firm X (which it doesn't own) by examining how other funds with similar voting patterns on commonly held firms voted on Firm X.

This inference is achieved using the Bayesian M–H MCMC algorithm. The algorithm begins by creating a complete augmented ranking for each fund; this is a full ordering of all firms in the sample for that topic-year, where the positions for unowned firms are initially assigned at random. At each iteration, the algorithm proposes small changes to each fund's augmented ranking and, simultaneously, to the overall ranking. These changes are accepted or rejected based on their consistency with the observed votes. After many iterations, this process generates a posterior probability distribution over the possible ranks for each firm. The key output is not a single point estimate per firm (like $\hat{\gamma}_j$ from OLS), but rather a posterior distribution, which reflects the collective assessment of the entire fund community and explicitly incorporates the uncertainty around each firm's final rank.

2.3. Assumptions, Interpretation, and Endogeneity

A central assumption underpinning the interpretation of the rankings is that a fund's "For" or "Against" vote reflects its preference regarding the specific governance proposal at that firm. The literature largely treats votes as informative signals of investors' preferences

[3]The Netflix Prize was a public competition held from 2006 to 2009, which famously spurred development in this area. The task was to develop an algorithm that could predict user ratings on a dataset of over 100 million movie ratings, with a $1,000,000 grand prize awarded to the first team to achieve a 10% improvement over Netflix's own recommender system: `https://en.wikipedia.org/wiki/Netflix_Prize`.

(e.g., Bolton et al., 2020; Bubb and Catan, 2022), although strategic considerations can occasionally influence voting outcomes (e.g., Cvijanović, Dasgupta, and Zachariadis, 2016). The Mallows-based ranking approach aggregates these revealed preferences to produce a descriptive measure of perceived governance needs as expressed through the voting channel, showing how strongly investors, as a whole, view a firm's need for reform relative to others.

The paper's goal, therefore, is descriptive; it does not attempt to explain the underlying reasons a fund invests in certain stocks, nor does it resolve the deep endogeneity between ownership and firm policies. Instead, the Mallows framework is designed to handle the main statistical consequence of this selective ownership—namely, a sparse dataset with widespread missing votes. It addresses this by using a bridging logic that leverages overlapping portfolios to infer preferences even for firms a fund does not own. This approach is effective in practice because real-world ownership data exhibits substantial overlap. The vast web of common owners—particularly through quasi-indexers or broadly diversified funds—ensures that nearly all firms can be connected through a chain of common investors, allowing the bridging logic to make reliable inferences even with partial coverage (Ford, 1957; Avery et al., 2013). While this connectedness provides the foundation for the model, Section 5 presents direct empirical evidence confirming that the rankings are robust to these selection effects.

3. Data and Summary Statistics

3.1. Data Source and Sample

Mutual funds have been required by the SEC to disclose their proxy votes since 2003 via Form N-PX. This information is collected by ISS for Russell 3000 companies and is provided in the ISS *Mutual Fund Vote Records* database. Information on each proposal's annual meeting characteristics, sponsors, voting outcomes, and recommendations from management or ISS comes from two ISS databases, *Shareholder Proposals* and *Vote Results*. Glass Lewis recommendations are added using data from Shu (2024). Information on voting rationales comes from Diligent covering the 2014 to 2020 proxy seasons. In categorizing funds as index or non-index (active) funds, the paper follows Appel, Gormley, and Keim (2016) by

examining fund names for specific index-related strings.[4] Accounting variables come from Compustat, stock returns from CRSP, and executive compensation and insider ownership from Execucomp. Information on firm age is taken from Jay Ritter's website (Field and Karpoff, 2002; Loughran and Ritter, 2004).[5] Business ties between funds and companies are identified through Form 5500 filings with the Department of Labor, matching entities by Employer Identification Number. Appendix A describes all variable definitions and sources.

Votes are analyzed at the fund (rather than family) level because the methodology employed in this paper requires votes to be provided at the voter level. That is, the algorithm does not allow votes to be aggregated into a cumulative percentage at the family level. Although funds in the same family tend to be similar, they are not always unanimous: Figure IA.1 shows that when 2–5 funds in one family vote on the same proposal, about 12% of them disagree, and when over 50 funds in a single family vote on a proposal, there is disagreement about 58% of the time, suggesting that there is significant heterogeneity in voting behavior within a fund family (e.g., Morgan, Poulsen, Wolf, and Yang, 2011; Bubb and Catan, 2022). Because this paper focuses on shareholder proposals, which tend to have lower levels of support than management proposals, the rates of non-unanimous votes are higher than Bolton et al. (2020) and Cvijanović et al. (2016), which cover both management and shareholder proposals.

The main analysis focuses on five shareholder-sponsored governance topics that were common during the 2004 to 2020 proxy seasons: requiring an independent board chair, declassifying the board, requiring a majority vote for director elections, adopting proxy access, and say-on-pay proposals (before they became management-sponsored under Dodd-Frank). These topics are selected because they are among the most frequent shareholder proposal categories, reflecting their relevance to investors, and because they generally involve consistent language across firms, which keeps the proposal content broadly similar. Holding the

[4]The specific strings I use to identify index funds are: INDEX, IDX, INDX, IND (followed by a space), RUSSELL, S & P, S AND P, S&P, SANDP, SP, DOW, DJ, MSCI, BLOOMBERG, KBW, NASDAQ, NYSE, STOXX, FTSE, WILSHIRE, MORNINGSTAR, and numerical strings such as 100, 400, 500, 600, 900, 1000, 1500, 2000, and 5000.

[5]`https://site.warrington.ufl.edu/ritter/files/founding-dates.pdf`

proposal content relatively constant thus enables a meaningful cross-firm comparison of how different funds evaluate the same governance reform. By contrast, many environmental or social proposals vary significantly in their requests; Some may emphasize adopting specific policies, others disclosure, and still others broader strategic changes, often in a prescriptive manner (Khoo and Tallarita, 2024), making it difficult to place different proposals' desirability on a single scale.[6] To ensure the analysis is based on a meaningful sample with sufficient variation, I apply two filters to the data: each topic-year must include at least 25 proposals, and feature at least 50 funds that cast both "For" and "Against" votes. Abstentions and withhold votes are relatively uncommon (about 1%) and are excluded. Controlled or dual-class firms are dropped, as they frequently have different regulatory obligations.

3.2. Descriptive Statistics

Figure 1 displays the number of shareholder proposals across the 2004–2020 proxy seasons for these five topics. Some topics, such as requirements for an independent board chair, have consistently attracted attention throughout 2004–2020, while others, such as proxy access, experienced periods of heightened interest between 2015 and 2019. There is also considerable heterogeneity in proposal outcomes. For example, Table 1 Panel A shows that board declassification proposals receive around 70% support and pass about 75% of the time, while independent board chair proposals average only 30% support and a 4% passage rate.

While proposal outcomes vary across proposal topics, there is not much variation in proxy advisors' recommendations: both ISS and Glass Lewis almost always support proposals on board declassification, majority voting requirement, and say-on-pay (Table 1 Panel A). ISS almost always supports proxy access proposals, while Glass Lewis supports them about 88% of the time. Glass Lewis almost always supports independent board chair proposals (94%), while ISS supports them about two-thirds of the time. While ISS and Glass Lewis generally recommend voting in favor of these proposals, mutual funds do not always follow these

[6]Most proxy access proposals in this sample request the adoption of proxy access requiring at least 3% ownership for a minimum of 3 consecutive years, permitting shareholders to nominate up to 25% of the board, with no limit on the number of shareholders combining their shares. Proposals that merely amend existing proxy access rules are excluded, as they differ significantly from those establishing such provisions.

recommendations (Table 1 Panel B).

Table 1 Panel C provides evidence on the extent of a "one-size-fits-all" approach toward proposal topics examined in this paper. For funds that voted on more than 10 independent board chair proposals within a given proxy season, about 8% of them always supported such proposals, and 26% always voted against the proposals. For board declassification proposals, mutual funds show overwhelming support: about 70% of the funds voted in favor of all their portfolio companies' proposals, whereas only 2% of the funds voted against all of their portfolio companies' proposals. This indicates a substantial degree of support for board declassification proposals, where many funds support the issue regardless of which company received the proposal. Overall, the extent of a "one-size-fits-all" approach varies across proposal topics.

Table 1 Panel D provides insights into the proportion of mutual funds that consistently align with the recommendations of management, ISS, or Glass Lewis, defining consistent alignment as agreeing with a source more than 99% of the time within a proxy season. Column (1) examines this behavior across all shareholder proposals for funds that voted on at least 50 proposals. The data reveal that approximately 1.2% of funds consistently voted with management, 8.2% with ISS, and less than 1% with Glass Lewis. While Column (1) offers a broader view, Column (2) focuses on the proposal topics examined in this paper, where the proportions of funds voting in line with ISS and Glass Lewis recommendations are higher, at 20.6% and 24.5%, respectively. While some of these funds may follow proxy advisors without independent analysis, others might have voting policies that happen to align with these recommendations.

Overall, these descriptive findings reveal varying fund voting behavior across different shareholder proposal topics. While some proposals consistently receive higher support, others are received with less enthusiasm. Proxy advisors ISS and Glass Lewis show strong support for most proposal topics, yet their influence on fund voting varies. These patterns offer insights into mutual fund voting behavior, laying the groundwork for the subsequent analyses that examine how funds collectively perceive each firm's governance needs.

4. Which Firms Require Stronger Shareholder Rights?

This section analyzes the firm-level rankings of governance needs to explore what they reveal about mutual fund preferences. Section 4.1 introduces the paper's core measure—the ranking—and provides an intuitive understanding of the model's output, using the 2018 independent board chair proposals as an illustrative example. To demonstrate what new information this ranking provides relative to widely used metrics, Section 4.2 then compares it to raw vote support, revealing a systematic divergence between the two. Section 4.3 investigates what drives these preferences by examining which firm characteristics are associated with the rankings. Finally, Section 4.4 examines the potential influence of other factors, such as proxy advisor recommendations and business ties.

4.1. Rank Distributions

The main output from the Mallows-based ranking method is a posterior distribution of ranks for each firm that receives a shareholder-sponsored proposal on a specific topic in a given proxy season. To provide an intuitive understanding of this output, this section uses the 2018 proxy season for independent board chair proposals as an illustrative example. Figure 3 presents the posterior rank distributions for the 48 companies that received this proposal. In this figure, each firm's rank ranges from 1 to 48. A rank of 1 indicates the highest perceived need for an independent board chair. In other words, a lower numerical rank indicates that mutual funds collectively see that firm as a higher priority for this reform.

Several noteworthy patterns emerge from Figure 3. First, the rankings align with well-known, firm-specific governance events. For instance, Tesla, faced significant corporate governance scrutiny in 2018; There were concerns regarding the combined CEO and Chairman roles held by Elon Musk and questions surrounding the independence of the board, which were amplified by events leading to an SEC investigation and a settlement requiring Musk to step down as Chairman and for Tesla to appoint an independent chair. This context provides a strong explanation for why mutual funds collectively ranked Tesla highly for needing an independent board chair. Similarly, Wells Fargo is among the highest-ranked firms, con-

sistent with strong support for enhanced oversight following its 2016 fake-account scandal. This demonstrates how specific company crises can drive a collective investor perception of the need for governance reform. By contrast, firms perceived as having less need for the reform, like Honeywell, are found at the bottom of the ranking.

The width and shape of the distributions also provide insights into the nature of fund agreement. For firms like Tesla and Honeywell, the posterior intervals are narrow, suggesting broad agreement among funds on their relative positions. Conversely, some firms (e.g., Emerson Electric) exhibit wide distributions, reflecting either fewer funds voting on the proposal or sharper disagreement among those that did vote, resulting in less certainty about their precise rank. In a few cases (e.g., Flower Foods, AutoNation), the distributions are bimodal, indicating that the collective fund opinion is not uniform but rather segmented into distinct groups. While Figure 3 provides a visual overview of the rank distributions, Table 2 presents the precise numerical details for the same 2018 independent-chair proposals. The table reports each firm's mean and median rank, along with two types of 95% Bayesian credible intervals—the Highest Posterior Density Interval (HPDI) and the Central Interval (CI)—offering a quantitative guide to the central tendency and uncertainty of each rank estimate.[7]

While Figure 3 focuses on one topic-year, the same procedure is repeated for all five proposal topics across every proxy season, and these rankings are used for the subsequent analyses. Naturally, the precision of these firm-level rankings varies. As shown in Table IA.1, topics like independent board chair, which receive a relatively balanced mix of "For" and "Against" votes, provide more differentiating signals for the algorithm to learn from and thus produce more precise estimates. In contrast, board declassification proposals, for which most funds vote in favor, offer less variation in rank, resulting in broader posterior intervals. Even with this variation across topics and years, the analysis reveals an overall agreement

[7]Both the Highest Posterior Density Interval (HPDI) and the Central Interval (CI) are useful for gauging the precision of each firm's estimated rank. Conceptually, they represent the range within which the firm's rank lies with 95% probability. The 95% CI is constructed by removing the top and bottom 2.5% of the posterior distribution. By contrast, the 95% HPDI is simply the narrowest possible interval that contains 95% of the posterior probability, which can be more informative for asymmetric or bimodal distributions.

among mutual funds on which firms most need stronger shareholder oversight.[8]

4.2. Comparing Raw Vote Support and Fund-Based Rankings

Does high raw vote support for a proposal at a given firm necessarily indicate that the mutual fund community believes that firm is most in need of reform? While many studies interpret high vote support as evidence that a proposal is broadly beneficial, this relies on the assumption that the shareholder bases across firms hold similar preferences. Yet, this is often not the case, as real-world ownership structures are complex and varied; some firms have significant insider or blockholder stakes, while others are dominated by large, diversified institutions (Amel-Zadeh, Kasperk, and Schmalz, 2022). This variation means a few insiders or blockholders may have outsized influence on the final outcome, even when most mutual funds deem a firm to have pressing governance needs. Therefore, examining whether raw vote support tracks or diverges from the fund-based rankings can clarify how reliably raw vote support reflects a proposal's merits.

To examine how closely raw vote support reflects the fund-based ranking, I calculate the Spearman correlation between each firm's vote-support percentile and its rank percentile. Table 3 Panel A shows that the correlations range from about 0.58 for majority-vote proposals and 0.51 for independent board chair, 0.49 for proxy access, 0.27 for board declassification, and 0.15 for say-on-pay. Overall, these moderate-to-weak correlations suggest that raw vote support often diverges from how strongly a broad set of mutual funds perceives a firm's need for these proposals.

Such discrepancies raise the question of why some firms receive strong aggregate support yet rank relatively low in the fund-based measure (or vice versa). One likely explanation is ownership structure: insiders or blockholders may heavily influence outcomes, even if many funds hold different views of a firm's governance needs. The following regression formalizes

[8]To test whether a single ranking might overlook distinct subgroups of funds with different preferences, I conducted an unsupervised analysis to see if funds would naturally segregate into multiple groups. The results consistently showed that the vast majority of funds (typically 80–90%) belong to one large, main group and did not reveal a compelling structure of a few major, well-defined subgroups with systematically divergent preferences. Notably, this finding is consistent with Avery et al. (2013) in their analysis of university rankings, which also explored subgroup analysis but did not find prominent preference separations.

this idea:

$$Deviation_{jt} \;=\; \beta_0 \;+\; \beta_1\, OwnershipChars_{jt} \;+\; \gamma\, X_{jt} \;+\; \varepsilon_{jt}, \tag{2}$$

where $Deviation_{jt}$ is the difference between its vote-support percentile and its rank percentile for firm j in proxy season t. A positive $Deviation_{jt}$ indicates that raw vote support is higher than the fund-based rank would suggest; a negative value indicates the opposite. From this variable, I also construct indicator variables for large mismatches (e.g., ± 20 or ± 30 percentile points), which I refer to as *Vote Inflation* or *Vote Deflation*. $OwnershipChars_{jt}$ includes ownership structure variables such as insider ownership, overall institutional ownership, and ownership concentration (HHI). X_{jt} includes controls including market capitalization and the fraction of funds holding the firm that cast the same vote on every firm within that proposal topic. This latter variable helps control for the mechanical impact of funds with rigid, non-firm-specific voting policies on raw vote support, whose presence might skew raw vote support relative to the more nuanced firm assessments reflected in the estimated rank.

Table 3 Panel B presents the regression results linking ownership structure to mismatches between raw vote support and the fund-based ranking. In Column (1), a one-percentage-point increase in insider ownership is associated with a 0.12 decrease in *Deviation* ($p < 0.01$), consistent with insiders generally siding with management and thereby lowering overall shareholder support relative to the fund-based rank. In contrast, institutional ownership increases *Deviation*, suggesting that institutions, on average, tend to vote more favorably on shareholder proposals than retail investors, causing raw vote support to potentially exceed what mutual funds' overall ranking alone would predict. This aligns with Brav et al. (2022), who find that institutional owners often exhibit greater pro-shareholder stances than retail investors. The analysis also shows that as institutional ownership becomes more concentrated (a higher HHI), vote support tends to fall below what the fund-based rankings would indicate. This is consistent with the view that as institutions accumulate larger stakes, their incentives may align more closely with management (Schwartz-Ziv and Wermers, 2022).

Columns (2)–(4) focus on *Vote Inflation* (large positive mismatches). For instance, Column (2)'s linear probability model shows that higher insider ownership lowers the likelihood

of vote inflation (threshold: 20 points), similar to Column (1). Columns (3) and (4) test alternative thresholds (30 points) and specifications (logistic), both confirming the same pattern. Columns (5)–(7) parallel these models for *Vote Deflation* (where raw support is significantly lower than the fund-based rank suggests). Across these columns for both inflation and deflation, the fraction of funds uniformly voting "For" or "Against" all firms in that proposal topic strongly predicts larger mismatches, highlighting that companies with a high concentration of potentially ideological funds are prone to more pronounced deviations of raw vote support from the estimated ranking in either direction.

Overall, the evidence shows how ownership composition can create a systematic wedge between raw vote support and mutual funds' collective assessment of a firm's governance needs. This empirical result is consistent with recent theoretical work by Levit et al. (2024), which shows that when the shareholder base itself is a result of investor choices, final vote tallies may reflect the preferences of a firm's current owners rather than the value-maximizing outcome. This suggests that relying on raw vote support as a simple proxy for a proposal's intrinsic merits can be misleading, especially when comparing firms with substantially different ownership structures.

4.3. Firm Characteristics

Having established that mutual funds converge on which firms should adopt stronger shareholder rights, this section investigates whether these rankings are associated with the firm characteristics that prior literature suggests are important for determining a firm's optimal governance structure.

A key feature of the methodology (Section 2.2) is that each firm's rank is a posterior distribution, not a single point estimate. To account for the uncertainty inherent in the ranking, the analysis uses the full posterior distribution from the M–H MCMC algorithm rather than a single summary statistic like the mean or median rank. Specifically, multiple draws are taken from each firm's posterior distribution of ranks.[9] For each draw, both the firm's rank

[9]Each MCMC chain produces 500,000 draws per seed, but only every 10,000th draw is retained—a thinning process commonly recommended by Gelman, Carlin, Stern, Dunson, Vehtari, and Rubin, 2013—to

and its characteristics (e.g., board independence, past returns) are converted to percentiles. Each sampled rank percentile is then regressed on the corresponding firm characteristic percentile, producing a distribution of coefficient estimates.[10] An effect is deemed statistically significant at the 5% level if at least 97.5% of these estimated coefficients lie above or below zero. This approach incorporates the full uncertainty of each firm's estimated rank, avoiding the false precision that could arise from using a single, potentially noisy point estimate. The percentile conversion also allows for a direct comparison of the magnitudes of the coefficients, making it easier to identify which characteristics have a stronger association with the firm's rank.

4.3.1. Governance Characteristics

Several theoretical and empirical studies suggest that firms with weaker governance structures benefit more from strengthening shareholder rights. For example, Harris and Raviv (2010) theoretically show that as agency costs increase, the optimal control should shift from management to shareholders. Empirically, Bhandari, Iliev, and Kalodimos (2021) find that proxy access becomes most valuable in firms with weak governance conditions, and Denes, Karpoff, and McWilliams (2017) document that companies with strong takeover defenses are more likely to receive shareholder proposals. Building on these insights, this section examines whether company rankings correlate with their governance characteristics. While there is no single, perfect measure of agency problems, the analysis finds that the rankings are consistently associated with several well-established proxies for such issues.

Figure 4 Panel A presents univariate regression results, regressing each company's percentile rank on one firm characteristic (also in percentile form). The first column focuses

reduce autocorrelation and computational overhead. This generates 50 posterior samples per seed; pooling across multiple seeds results in roughly 1,600 samples per firm per proposal–year.

[10]This two-step process—first estimating the aggregate ranking and then regressing that ranking on firm characteristics—is a deliberate design choice. It allows the paper to first construct a reliable measure of preferences that accounts for selective ownership, and then use a standard regression framework to transparently analyze the correlates of that new measure. It might seem more direct to regress votes on firm characteristics while including fund fixed effects. However, this within-fund approach answers a different question and can produce misleading results when ownership is not random. Section C of the Internet Appendix is dedicated to this issue. It provides a toy example illustrating how the two approaches can lead to opposite conclusions and presents an empirical comparison using this paper's data.

on board independence. A negative coefficient (e.g., -0.26 for independent board chair proposals) indicates that lower board independence is associated with a higher rank (i.e., a greater perceived need for reform). Similar negative coefficients emerge for board declassification, majority voting, and say-on-pay, suggesting that funds systematically favor proposals in companies with less-independent boards.[11] In the next three columns, insider ownership, abnormal executive compensation, and the E-Index generally exhibit positive coefficients. These results suggest that funds prioritize stronger shareholder oversight in firms with higher insider ownership, higher abnormal executive compensation, or more entrenched governance structures.

Figure 4 Panel B extends these regressions to a multivariate setting by including other firm attributes as controls. Even after accounting for these variables, the coefficients on the core governance characteristics remain statistically significant and of comparable magnitude.[12] These findings suggest that mutual funds do take into account governance conditions in their voting decisions when determining which firms most require reforms that strengthen shareholder rights. This is consistent with the idea that higher agency costs predict a shift in control from managers to shareholders.

4.3.2. Firm Performance

A widely held view in corporate governance posits that underperforming firms stand to benefit more from enhancing shareholder rights (e.g., Cohn et al., 2016; Denes et al., 2017). One might therefore expect mutual funds to be more supportive of stronger shareholder rights in poorly performing firms. Yet the results do not reveal a strong or consistent link between performance metrics and company rankings. As shown in Figure 4, coefficients on measures such as abnormal returns, ROA, and market-to-book are modest and sometimes mixed in sign. Multivariate regressions reinforce this lack of a clear pattern.

[11]Controlled companies (e.g., dual-class structures) are excluded, given their fundamentally different board-independence requirements.

[12]In Figure IA.2, additional multivariate regressions include five further controls frequently used in corporate finance research: leverage, cash, capital expenditures, repurchases, and the KZ-Index (measuring financial constraints). The results are broadly similar to those reported here in Figure 4.

Because no single indicator perfectly represents firm performance, Figure IA.3 reports alternative specifications using short- and long-horizon returns, different performance windows for ROA, and so on. In a few cases—particularly for independent board chair proposals and, to a lesser extent, say-on-pay—stock returns emerge as moderately significant; however, the economic effect is small. These findings suggest that while performance may matter in certain circumstances, it is not the most decisive factor in mutual funds' voting decisions.

Interviews with practitioners echo this conclusion. Several practitioners in charge of voting, including those from the Big Three (i.e., BlackRock, Vanguard, and State Street), noted that short-term underperformance rarely triggers a push for governance reforms; rather, they might sell shares if a firm's prospects look persistently weak. Others mentioned that performance enters explicitly only for say-on-pay proposals (especially management-sponsored), whereas for shareholder-sponsored governance initiatives, they mainly prioritize governance concerns. Taken together, the empirical results and practitioner perspectives indicate that, although mutual funds do not entirely ignore performance, they do place limited weight on performance when deciding which firms stand to benefit more from implementing shareholder proposals.

4.3.3. Firm Size and Age

A substantial body of research posits that governance structures evolve along a firm's life cycle. Several papers show that younger firms may benefit more from insulating management against takeover pressures, whereas more mature firms might require stronger shareholder oversight to address agency issues (e.g., Cremers, Lauterbach, and Pajuste, 2024; Johnson, Karpoff, and Yi, 2021; Kim and Michaely, 2019; Karakaş and Mohseni, 2021; Field and Lowry, 2022). Relatedly, firm size, which often correlates with age, is also widely discussed as shaping both existing and optimal governance structures (e.g., Gompers, Ishii, and Metrick, 2003; Cremers et al., 2017). Large firms also tend to receive more shareholder proposals (Denes et al., 2017), consistent with the idea that they benefit more from stronger shareholder rights.

The final two columns of Figure 4 examine whether mutual funds favor stronger share-

holder rights in older and larger firms. The univariate regressions (Panel A) deliver mixed results for size and, perhaps somewhat surprisingly, show negative coefficients on age for several proposal topics, suggesting that funds are more inclined to support these proposals in younger companies. This finding contrasts with the notion that mature firms stand to gain the most from these reforms (e.g., Field and Lowry, 2022). Once additional variables (e.g., performance and governance attributes) are included in the multivariate regressions (Panel B), firm size tends to become positively associated with strong shareholder rights, especially for proxy access, where the coefficient is both sizable and highly significant, consistent with Cohn et al. (2016) that provide empirical evidence that proxy access is more beneficial for large companies. In contrast, age remains negative or insignificant, indicating that older firms do not attract particularly high support for these proposals.

Several factors may explain why older firms do not consistently receive stronger support for governance reforms. First, mutual funds may treat proxy voting as a tool for addressing specific, immediate governance concerns—such as a lack of board independence or problematic insider ownership—rather than as a strategic instrument for guiding a firm's long-term evolution. This targeted focus suggests that funds use the proxy channel primarily to correct observable governance issues, which could explain why broader life-cycle attributes like firm age are less prioritized. Consequently, aligning a firm's governance with its stage of maturity may depend on a combination of proxy voting and complementary monitoring mechanisms, such as direct engagement. Second, older firms may be targeted more frequently by shareholder proposals, yet funds might not perceive a pressing governance concern if no clear weaknesses emerge. Finally, it remains possible that the negative coefficient on age reflects omitted variables correlated with maturity, rather than age itself being the decisive factor. To explore these possibilities further, Section 4.3.4 examines a dataset of voting rationales for direct evidence of how funds weigh these attributes.

4.3.4. Evidence from Voting Rationales

Although the analyses so far relate mutual funds' rankings to firm- and governance-level characteristics, these correlations are not necessarily causal. To further investigate what

truly drives voting behavior, this section examines a dataset of voting rationales, where investors voluntarily explain their decisions (Michaely et al., 2025).[13] This qualitative evidence provides direct insight into whether factors such as a firm's performance, size, or age explicitly influence voting, complementing the patterns observed in the main analysis.

The data on voting rationales comes from Diligent, including proposals on independent board chair, board declassification, majority voting for directors, and proxy access at U.S. companies from 2014 to 2020.[14] Although Diligent reports all fund-level votes, many investors disclose rationales only for certain votes. Further, multiple funds within the same voting manager (i.e., the same internal team making voting decisions) often share a single rationale, especially if their votes do not differ. Following Michaely et al. (2025), these identical rationales are assigned across funds under the same manager when no within-manager vote variation occurs, leading to a final sample of 36,003 rationales from 1,691 funds.

To classify the rationales, I read each distinct rationale and assigned it to one or more categories reflecting the main justification for the vote. As shown in Table 4, the *Governance* category includes rationales emphasizing a firm's governance condition, such as citing governance problems to support a proposal, or highlighting good governance practices as grounds for opposition. For example, *"Management has been very shareholder focused and exercises good governance practices. Will support current management at this time."* The *Performance* category covers references to firm profitability or returns, such as *"Recent returns are declining, so additional oversight is needed."* The *Company characteristics* category includes less frequent mentions of firm-level features beyond performance or governance, for instance, *"Given the company's scale, complexity, and legacy legal/regulatory issues, shareholders would benefit from an independent chairman."* Finally, some rationales simply express a general stance (e.g., *"We generally endorse independent board chairs"*) without mentioning any specific firm attributes.

[13]Michaely et al. (2025) analyze voting rationales to understand the sources of investor heterogeneity, focusing primarily on director elections. In contrast, this paper uses rationales on shareholder proposals to provide direct, qualitative insight into the motivations behind the quantitative patterns observed in the vote-based rankings.

[14]Say-on-pay proposals are excluded because Diligent's rationales begin in 2014, whereas the main say-on-pay sample covers 2007–2010.

Table 5 presents the frequency of these categories for votes in favor (Panel A) and votes against (Panel B). An initial look at all disclosed rationales reveals a key pattern. Votes in favor of a proposal are most frequently explained by a general principle (74.5% of cases, Column (1)), such as *"We believe the chair and CEO roles should be separated."* In contrast, votes against a proposal are overwhelmingly justified by citing the firm's existing strong governance (80.6% of cases, Column (1)), with statements like *"This company's governance practices are sufficiently strong."*

While this shows overall tendencies, the crucial question is why a fund supports a proposal at one company but opposes a similar one at another. To isolate the firm-specific factors driving these differential votes, Columns (2) and (3) focus on the subset of cases where the same fund explained votes in both directions for a given topic within a single proxy season. Within this subset, governance-related reasons become the clear reason for differentiation. When justifying a vote against a proposal, funds overwhelmingly continue to point to the firm's specific governance conditions. The pattern for votes in favor is more nuanced but tells a similar story: while a general principle remains the most common rationale (cited in 70.5% of cases), a firm's specific governance is often the deciding factor. In nearly a third (31.2%) of these instances, funds explicitly cite governance problems as the reason for supporting a reform at one company while opposing it at another. This finding reinforces that when a fund makes a choice between two firms, its decision is most often explained by its assessment of their respective governance structures.

In stark contrast to the focus on governance, other attributes are mentioned far less frequently. Performance is noted in only 3.7% of rationales favoring a proposal and 1.4% of those opposing it (Column (1)). Mentions of other company characteristics like size or age are even rarer, reinforcing the earlier observation that underperformance or life-cycle attributes do not appear to be main considerations. A small fraction of rationales also cite engagement with management (e.g., *"Upon engagement, decided to vote with management"*) or specific terms of the proposal as deciding factors (e.g., *"Resolution is overly prescriptive"* or *"Proposal's terms exceed standard thresholds"*), though these are not common.

Overall, the voting rationales strongly corroborate the results presented in Section 4.3. When explaining why they vote differently across firms on the same proposal topic, mutual funds predominantly cite firm-specific governance conditions. This pattern reinforces the conclusion that funds' assessments of which companies require stronger shareholder rights are driven primarily by governance concerns, rather than by other firm characteristics.

4.4. Other Influences: ISS & Business Ties

This paper interprets mutual funds' votes as reflecting their underlying governance preferences. However, these preferences do not exist in a vacuum; they are shaped within a complex system where funds' investment choices and firms' governance structures are jointly determined. A crucial challenge to our interpretation, therefore, is whether the fund rankings estimated earlier simply reflect mechanical responses to external pressures rather than genuine, fund-level assessments. To address this question, this section examines the potential impacts of two prominent external factors: first, that the rankings are simply a proxy for the influence of proxy advisors, and second, that they are driven by conflicts of interest arising from business ties.

4.4.1. ISS

Extensive research highlights the role of proxy advisors in guiding fund voting behavior and outcomes (e.g., Iliev and Lowry, 2015; Malenko and Shen, 2016). One might naturally ask whether the firm-level rankings simply mirror the voting recommendations of major proxy advisors such as ISS and Glass Lewis. In practice, however, both ISS and Glass Lewis often issue identical recommendations for many of the governance proposals studied in this paper (Table 1 Panel A). For instance, for board declassification proposals, both ISS and Glass Lewis support in over 99% of cases, providing little variation to explain cross-firm differences in the rankings.

While Glass Lewis supports most proposals studied here, ISS recommendations offer more variation for certain topics. For independent board chair proposals, ISS endorses about 65%. Not surprisingly, firms receiving an "Against" recommendation from ISS tend to appear

lower in the fund-based rankings (Figure IA.4). However, do these recommendations fully explain the observed rank variation? To investigate this, I estimate rankings specifically for a subset of companies where both ISS and Glass Lewis recommend voting "For" the shareholder proposal (contrary to management's recommendation). Figure 5 shows that, even within this subsample where major proxy advisors agree, the resulting firm-level ranks (illustrated for independent chair proposals in 2018) still display meaningful separation. This indicates that while proxy advisors exert a notable influence, the rankings capture significant, independent variation in how funds perceive the governance needs of different firms.

4.4.2. Business Ties

Another possibility is that the rankings are biased by business ties between funds and the companies in which they invest. For example, certain funds provide or manage services (e.g., pension plans, insurance, brokerage) for companies whose proposals they vote on. In principle, such affiliated funds might be inclined to favor management, potentially skewing the ranks of affiliated companies. To explore this, I reestimate rankings excluding the votes of affiliated funds.

In this sample, affiliated funds account for approximately 3% of total votes cast. Consistent with Cvijanović et al. (2016), these affiliated funds are indeed 2–5 percentage points more likely to vote aligned with management recommendations compared to unaffiliated funds (Table 6, Panel A). However, their aggregate impact on the overall firm rankings appears negligible. Re-estimating the rankings after excluding all votes from affiliated funds leaves the average firm's percentile rank almost unchanged: Table 6 Panel B shows the mean rank shifts insignificantly from 50.54 to 50.51. Consequently, while business ties may influence the votes of specific affiliated funds, they do not appear to systematically distort the aggregate firm-level rankings derived from the broader mutual fund universe.

5. Robustness of the Ranking Methodology

While the Mallows-based framework is designed to handle the statistical challenges of partial data, this section provides direct empirical evidence to validate the reliability of the

resulting rankings. The analysis addresses two distinct concerns. First, Sections 5.1 through 5.3 address the challenge that arises from selective ownership, where funds only vote on firms they choose to own. These tests confirm that the rankings are a reliable measure of collective preference and not critically biased by the potential selection. A final test in Section 5.4 then addresses the separate concern that a firm's relative standing, as estimated on the small sample of targeted firms, might be an artifact of that specific sample. The test confirms that the relative ordering of firms remains stable even when the ranking is estimated within a much broader, near-universal sample.

5.1. Robustness to Selective Ownership: Index vs. Non-Index Funds

A natural way to gauge whether the rankings are influenced by funds' portfolio choices is to compare how index and non-index (i.e., active) funds rank the same set of firms. Active funds exercise discretion over their holdings, raising the possibility that their tendency to invest in (or avoid) certain types of companies could systematically affect the aggregate ranking. Index funds, in contrast, typically track an index with minimal discretion over their holdings. Therefore, substantial agreement in their rankings would suggest that the specific portfolio construction strategies of active managers are not severely distorting the final ordering.

I separate index and non-index funds and re-estimate the Mallows-based rankings for each group, focusing on the common set of firms receiving proposals. Table 7 reports the Spearman correlations between the resulting rank percentiles for each proposal topic. The correlations are high for most topics, generally lying between 0.5 and 0.8, indicating substantial alignment on which companies are perceived as needing stronger governance oversight. The correlations for board declassification (0.51) and say-on-pay (0.48) are somewhat lower, consistent with the lower rank precision observed for these topics (Table IA.1). This reduced precision stems from near-uniform support for declassification proposals; when most funds vote in favor, there are fewer differentiating signals for the algorithm to learn from, resulting in wider posterior intervals.

This notable convergence demonstrates that despite the freedom of active funds to choose which stocks to own, their aggregate rankings largely mirror those derived from index funds. This provides strong evidence that the non-random ownership patterns of active fund managers are not severely biasing the overall firm rankings.[15] While these results have implications for ongoing debates about passive fund monitoring (e.g., Appel et al., 2016; Heath, Macciocchi, Michaely, and Ringgenberg, 2022), the key takeaway for this study is that this alignment provides reassurance that the overall rankings of perceived governance needs are not fundamentally distorted by the portfolio choices of active funds.

5.2. Robustness to Data Sparsity: The Connectedness Condition

A fundamental requirement for the Mallows-based ranking approach is that the network of observed votes allows any pair of firms to be compared, either directly or indirectly through a chain of common owners. If certain firms were completely disconnected with no shared voters linking them, there would be no empirical basis to position them relative to each other within a single, unified ranking. Formally, this idea of *connectedness* ensures that a well-defined ranking can be obtained (e.g., Ford, 1957; Avery et al., 2013).[16]

The voting data used in this paper exhibits substantial overlap that satisfies this condition. For a typical topic–proxy season with N firms receiving proposals, there are $N(N-1)/2$ unique firm pairs. On average, any given pair of firms is jointly held and voted on by approximately 151 funds, indicating a high degree of raw overlap. However, for the model to learn relative preferences, it is not enough for funds to simply hold the same firms; they must sometimes vote differently on them. Therefore, a more stringent test is to examine the overlap of differentiating votes. The analysis confirms that over 80% of relevant firm pairs have

[15] To explore whether index and non-index funds weigh specific governance attributes differently, Figure IA.5 contrasts how each group ranks firms by features such as board independence, insider ownership, and abnormal executive compensation. While some differences emerge—for instance, index funds' ranks display a stronger linkage to board independence—overall, the two groups largely converge on which firms merit closer oversight.

[16] Ford (1957) first showed that maximum-likelihood estimation in Bradley–Terry–Luce-type models is unique only if every item is connected to every other item. Avery et al. (2013) illustrate a similar idea in the context of college admissions. Each student applies to only a subset of colleges, so in principle the set of schools could fragment into disconnected groups. However, if enough students apply to overlapping subsets, each college can still be linked to every other college through a chain of shared applicants.

at least one common owner that casts a different vote on each (e.g., "For" one and "Against" the other). The model connects the remaining pairs indirectly through chains of common owners, ensuring all firms can be reliably compared within the same ranking. Among the pairs with differentiating votes, the average number of funds providing such evidence of relative preference is 25. Consequently, the network of votes is sufficiently connected, ensuring that the Mallows rank-aggregation algorithm can effectively position all firms on a common, unified scale.

5.3. Robustness of Inferences: The Withheld-Vote Experiment

A key question is whether the model can make reliable inferences given that it relies on partial data. To directly test the model's ability to accurately infer missing preferences, this section details a "withheld-vote" validation exercise, following a similar logic to Vitelli et al. (2018).[17] The test, which focuses on the independent board chair proposals during the 2018 proxy season, randomly removes a known vote from the dataset and then assesses how well the model can reconstruct it using only the remaining information.

The procedure is as follows: for each fund, I randomly remove one of its actual observed votes and then re-estimate the model. The validation then compares, for that specific fund, the two rank distributions for the firm whose vote was withheld: the original distribution (estimated with the full data) and the re-estimated distribution (generated after that fund's vote was removed). The degree of overlap between these two fund-specific distributions quantifies how accurately the method reconstructs the preference implied by the withheld vote. Section D of the Internet Appendix provides further procedural details and a fund-firm level illustration.

Across 1,403 funds in this sample, the mean overlap is 87% (median 91%). This high degree of consistency demonstrates that the model can reliably infer missing preferences based on the information contained in overlapping portfolios. This result provides strong evidence that the final firm-level rankings accurately reflect the collective view, even with

[17]Vitelli et al. (2018) use movie rating data (*MovieLens*) and showed that withholding a user's rating on one movie allowed the algorithm to reconstruct it with approximately 82% accuracy.

the partial ownership inherent in the data.

5.4. Robustness to Non-Random Proposal Targeting: Evidence from Mandatory Say-on-Pay

A natural question is how sensitive the rankings are to the sample of firms being analyzed. That is, would a firm's relative ordering remain consistent if it were estimated on a much larger and less-selective sample of firms, or is it an artifact of the small, targeted group? To answer this, I use mandatory say-on-pay votes—which are required for nearly all large public firms—as a powerful testing ground. I first estimate say-on-pay rankings for the broad universe of S&P 500 firms and then separately for the narrow subset of those firms that were also targeted with one of the five shareholder proposal topics studied in this paper.

A comparison of these two sets of rankings reveals a high correlation of approximately 0.97 (Table 8). This stability is a direct result of the ranking methodology's design; because the bridging logic leverages the entire web of common ownership across the fund universe, it is able to recover a consistent, relative ordering of firms that is not dependent on the specific sample in which it is estimated. This result provides strong evidence for the reliability of the ranking methodology, demonstrating that the relative ordering of firms is stable and not simply a reflection of which firms happen to receive shareholder proposals. A more detailed analysis of the say-on-pay rankings is presented in Section E of the Internet Appendix.

6. Conclusion

While the principle that corporate governance is not "one-size-fits-all" is well-established, identifying which firms most need reform has been an empirical challenge, as standard metrics like raw vote support are often skewed by the specific preferences of a firm's current owners. This paper addresses this measurement challenge by introducing and applying a Mallows-based ranking framework to infer the collective preferences of the entire mutual fund community from the sparse and selective data inherent in proxy voting. The application of this framework itself represents a key methodological contribution, with potential

applications for aggregating diverse and selectively reported preference data in other contexts.

Using this framework, the empirical analysis generates several fundamental insights. First, despite documented heterogeneity (Bolton et al., 2020; Bubb and Catan, 2022), mutual funds collectively exhibit significant alignment on the relative need for governance reforms across specific firms, demonstrating that they apply a nuanced, firm-specific assessment rather than a rigid, one-size-fits-all policy. Second, the analysis reveals that the firms where proposals garner the highest raw vote support are often not the same firms that the mutual fund community collectively identifies as having the greatest need for that reform. This divergence is systematically linked to firm ownership structures, which challenges the reliability of using raw vote totals as a simple measure of collective shareholder sentiment.

Finally, the paper finds that funds prioritize reforms at companies with weaker governance features, while other firm characteristics, such as firm performance, size, and age, show considerably weaker associations. This suggests that funds use the proxy voting channel as a tool to address a firm's core governance issues, distinct from other important considerations. This interpretation is further supported by qualitative evidence from voting rationales and practitioner interviews.

The paper's empirical findings are supported by a series of rigorous validation tests. The rankings are robust to concerns arising from selective ownership, where funds only vote on firms they choose to own. This is confirmed by three complementary analyses: a high correlation between rankings from index and non-index, a verification that the ownership network is sufficiently "connected" for the model's logic to be effective, and a withheld-vote experiment demonstrating the model's predictive accuracy. Furthermore, a separate analysis using mandatory say-on-pay votes confirms that the results are not an artifact of the non-random process by which firms are targeted with shareholder proposals. This comprehensive validation provides strong evidence that the methodology produces a reliable measure of the mutual fund community's collective preferences.

This study offers a clearer, more reliable perspective on how mutual funds, as influential

monitors, collectively assess firms' governance needs. While this paper establishes *where* funds favor reforms, future research can further explore the complex endogeneity between ownership choices and preference formation. Ultimately, by providing a novel method and empirical evidence on the revealed preferences of mutual funds, this paper contributes to a more nuanced understanding of institutional monitoring through proxy voting.

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Appendix A. Variable Definitions

Variable Name	Description and Definition	Source
Abnormal executive compensation	Residual from regressing log of CEO's total annual compensation ($tdc1$) on the interaction of market capitalization and industry (3-digit SIC), and fiscal year dummy	Execucomp
Age	Year minus the year in which the firm was incorporated; log of firm age: $ln(1 + Firm\ age)$	Jay Ritter's website
Blockholders	Number of blockholders.	Thomson Reuters
Board independence	Percentage of board of directors classified as independent.	ISS
Capital expenditures	$capx/at$	Compustat
Cash	che/at	Compustat
Cumulative abnormal returns	Cumulative abnormal returns using either the market-adjusted, market, Fama French three-factor, and Fama French four-factor model, over various time horizons. The default uses the Fama French four-factor model over a one-year period (250 trading days).	CRSP
Deviation	The difference between vote support and a firm's rank derived from mutual fund votes, both represented in percentiles.	ISS
E-Index	Index ranging from 0 to 6 based on anti-takeover provisions identified by Bebchuk et al. (2008).	Lucian Bebchuk's website
Funds voting one-size-fits-all	Fraction of funds that always vote for or against for a given topic within a proxy season.	ISS
Institutional ownership	Percent of institutional ownership.	Thomson Reuters
Institutional ownership HHI	HHI of institutional ownership.	Thomson Reuters
KZ-Index	The Kaplan-Zingales Index measuring financial constraints. $-1.002 \times (oibdp/at) + 0.283 \times (at + csho \times prcc\_f - ceq - txdb)/(0.9 \times at + 0.1 \times (at + csho \times prcc\_f - ceq - txdb)) + 3.319 \times (dltt+dlc)/at - 39.368 \times (dvc+dvp)/at - 1.315 \times (che/at)$	Compustat
Market capitalization	Natural log of market value of common equity, in \$ million, $ln\ (prcc\_f \times csho)$	Compustat
Market-to-book	$(at + csho \times prcc\_f - ceq - txdb)/at$	Compustat
Insider ownership	Total percentage of shares owned by the CEO and directors ($shrown\_tot\_pct$)	Execucomp
Leverage	$(dltt + dlc)/at$	Compustat
Repurchases	$(prstkc - (pstkrv - lag\_pstkrv))/at$	Compustat
Stock return	$((prcc\_f_t + dvpsx\_f_t)/ajex_t)/(prcc\_f_{t-1}/ajex_{t-1}) - 1$	
ROA	$oibdp/at$	Compustat
Vote inflation	Dummy equal to one if the variable *Deviation* is greater than 20, indicating cases where the perceived benefits from vote support exceed those evaluated by mutual funds. Vote Deflation if *Deviation* is less than than -20.	ISS
Vote support	Total votes in favor/(Total votes in favor + Total votes against)	ISS

Appendix B. Limitations of OLS Fixed Effects in Sparse Ownership Settings: A Toy Example

Overview. A seemingly natural way to measure investor preferences is to run an OLS regression with fund and firm fixed effects, interpreting each firm's coefficient as a proxy for how investors collectively view its governance proposals. However, when only certain funds own a given firm, those coefficients can be dominated by the voting patterns of a few investors. This appendix provides a toy example illustrating the problem and contrasts it with the Mallows-based ranking approach from Section 2.2. Exhibit 1 shows a hypothetical dataset with five funds and 10 firms. Fund 1 typically votes "Against" at firms with which it has business ties (Firms 1–9) but casts a "For" vote at Firm 10.

OLS Fixed-Effects Results. Exhibit 2 shows that Company 10's coefficient $\hat{\gamma}_{10}$ is large and statistically significant at the 10% level, even though only one fund (Fund 1) actually voted "For." Because fund and firm fixed effects are jointly determined in a system of equations, the results can heavily reflect which funds hold which firms, undermining any interpretation of the firm's coefficient as a stable measure of how investors at large view that proposal.

Contrast With the Mallows-Based Ranking Approach. Exhibit 3 shows how a Mallows-based M–H MCMC produces posterior distributions of rank for each firm based on Exhibit 1 data. Because only five funds voted across 10 firms, all rank distributions are wide. Specifically, even though Fund 1 supports the proposal at Firm 10, the model recognizes limited coverage and produces a broad range of plausible ranks for that firm.

Implications for Linking Estimates to Firm Characteristics. OLS provides only a coefficient and standard error for each firm, allowing limited flexibility to account for uncertainty when relating these estimates to firm characteristics (e.g., size, performance) in Section 4.3. By contrast, the Mallows-based approach generates a posterior distribution for each firm's estimated rank, capturing both central tendencies and the uncertainty stemming from incomplete or non-random coverage. This helps avoid overstating correlations that might arise simply because a small set of investors holds (and votes on) particular firms.

Exhibit 1. Toy Example: Fund Ownership and Votes

Each row shows one fund's votes (1 = "For", 0 = "Against") across ten firms. A "·" means the fund does not own that firm (thus, no vote). In this hypothetical example, Fund 1 generally votes "Against" but casts one "For" at Firm 10.

	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5	Firm 6	Firm 7	Firm 8	Firm 9	Firm 10
Fund 1	0	0	0	0	0	0	0	0	0	1
Fund 2	·	·	·	0	·	0	1	·	0	·
Fund 3	0	0	·	·	1	·	·	·	·	·
Fund 4	·	·	1	·	·	·	·	·	·	·
Fund 5	·	·	·	1	·	0	·	·	·	·

Exhibit 2. OLS Results With Fund and Firm Fixed Effects

The dependent variable is a vote (1 = For, 0 = Against). All regressions include fixed effects for Funds 1–5 (with Fund 1 as baseline) and Firms 1–10 (with Firm 1 as baseline).

	Coeff.	**Std. Err.**	**t-stat**	**p-value**
Fund Fixed Effects				
Fund 2	0.25	0.29	0.85	0.43
Fund 3	0.33	0.34	0.98	0.37
Fund 4	1.00	0.59	1.70	0.14
Fund 5	0.63	0.39	1.60	0.16
Firm Fixed Effects				
Firm 2	−0.00	0.42	−0.00	1.00
Firm 3	0.17	0.54	0.31	0.77
Firm 4	0.21	0.46	0.45	0.67
Firm 5	0.50	0.42	1.20	0.28
Firm 6	−0.13	0.46	−0.27	0.79
Firm 7	0.54	0.47	1.14	0.30
Firm 8	0.17	0.54	0.31	0.77
Firm 9	0.04	0.47	0.09	0.93
Firm 10	1.17	0.54	2.17	0.07
Intercept	−0.17	0.34	−0.49	0.64
Number of obs				20
R-squared				0.72
Adj R-squared				0.12

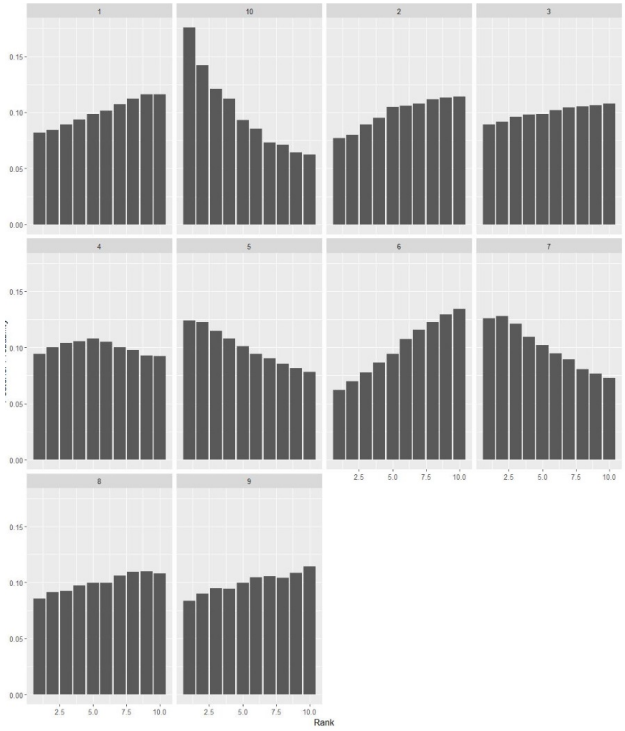


Exhibit 3. Posterior Distribution of Rank from the Mallows-based Ranking Method. Based on the same data in Exhibit 1, the Mallows-based approach produces posterior distributions over each firm's rank. With minimal overlap and few total votes, each firm's distribution is wide, indicating high uncertainty.

Appendix C. Technical Details of the Mallows Model and M–H MCMC Algorithm

This appendix provides the formal definition of the Mallows model (Mallows, 1957), extended by Vitelli et al. (2018) to accommodate incomplete or partial rankings, and outlines the M–H MCMC algorithm that implements the model in a Bayesian framework.

C.1. Mallows Model (Mallows, 1957)

Let n be the number of items (e.g., firms), and let R_i be the ranking provided by assessor (e.g., fund) i, for $i = 1, \ldots, N$. The model assumes that each assessor provides a complete ranking of all n items. The Mallows model posits an overall ranking ρ and a scale parameter $\alpha \geq 0$ controlling how tightly individual rankings cluster around ρ. Denote by $d(\cdot, \cdot)$ a dis-

tance function (e.g., Kendall's τ, footrule) between two rankings. Formally, for an observed ranking R,

$$P\big(R \mid \rho, \alpha\big) = \frac{\exp\big[-(\alpha/n)\, d(R, \rho)\big]}{Z_n(\alpha)}, \tag{C1}$$

where $Z_n(\alpha)$ is a normalizing constant. If N complete rankings $\{R_1, \ldots, R_N\}$ are conditionally independent given (ρ, α), then

$$P\big(R_1, \ldots, R_N \mid \rho, \alpha\big) = \frac{1}{Z_n(\alpha)^N} \exp\Big[-\frac{\alpha}{n} \sum_{i=1}^{N} d\big(R_i, \rho\big)\Big]. \tag{C2}$$

Although ρ is sometimes referred to as a "true" or "consensus" ranking, this does not imply perfect unanimity among assessors; rather, ρ is a single reference ordering around which observed rankings cluster. In practice, n can be large, and not all funds rank all firms. That is, fund i may only vote on a subset $S_i \subseteq \{1, \ldots, n\}$. Further, real-world votes may contain inconsistencies (e.g., $A \prec B$, $B \prec C$, yet $C \prec A$). These complexities require extending the original model, as described next.

C.2. Bayesian Extension to Partial Rankings (Vitelli et al., 2018)

While the classical Mallows model requires each assessor to provide a complete ranking of all items, this assumption rarely holds in real-world settings. A Bayesian approach can more naturally handle partial or even inconsistent data: it treats unranked items as missing information and infers their plausible positions.

Posterior Objective and Augmented Rankings. In a Bayesian version of the Mallows model (Vitelli et al., 2018), the main goal is to estimate

$$P\big(\rho, \alpha, \{\tilde{R}_i\} \;\big|\; \{\text{partial } R_i\}\big),$$

where ρ is the overall ranking, $\alpha \geq 0$ is the scale parameter controlling how tightly individual rankings cluster around ρ, and $\tilde{R}_i$ is the augmented ranking for assessor i, extending its

partial ranking R_i to all n items.[18] Following Vitelli et al. (2018), each partial ranking R_i is converted into a complete (augmented) ranking $\tilde{R}_i$ by inserting any unranked items in a provisional order that respects known relative positions. These augmented rankings are updated iteratively rather than fixed in advance, allowing the sampler to "fill in" missing votes consistently across overlapping portfolios.

M–H MCMC Algorithm. The posterior distribution is approximated through a M–H MCMC, which at each iteration:

1. **Augmented Ranking Updates.** For each assessor i, the algorithm proposes a small local change to its augmented ranking $\tilde{R}_i$ (e.g., swapping two adjacent items or performing a short "leap-and-shift"). This proposal is then probabilistically accepted or rejected[19] according to how well the new ranking aligns with the overall ranking ρ and with the partial data R_i. By iterating this process, the algorithm refines each fund's augmented ranking to reflect missing votes more consistently.

2. **Overall Ranking Update.** A small local modification (e.g., swapping two adjacent items) is proposed in ρ. The chain then accepts or rejects the new ρ based on how well the modified ranking fits all $\{\tilde{R}_i\}$.

3. **Scale Parameter Update.** Propose a new α (the scale parameter) via a random-walk move, then accept or reject it according to the M–H ratio.

These updates repeat for many iterations, during which the Markov chain gradually converges to its stationary distribution (i.e., the posterior). The initial portion of the chain (the "burn-in" phase) is discarded to reduce dependence on arbitrary starting values. In

[18] Formally, $P\big(\rho, \alpha, \{\tilde{R}_i\} \mid \{\text{partial } R_i\}\big) \;\propto\; \prod_{i=1}^{N} \exp\big[-(\alpha/n)\, d(\tilde{R}_i, \rho)\big] \;\times\; (\text{priors on } \rho, \alpha, \tilde{R}_i)$.

[19] Formally, the acceptance probability for a proposed update from $\tilde{R}_i^{t-1}$ to $\tilde{R}_i^{*}$ is

$$\min\Big\{1,\; \frac{\exp\big[-(\alpha/n)\, d(\tilde{R}_i^{*}, \rho)\big]}{\exp\big[-(\alpha/n)\, d(\tilde{R}_i^{t-1}, \rho)\big]} \;\times\; \frac{q(\tilde{R}_i^{t-1} \mid \tilde{R}_i^{*})}{q(\tilde{R}_i^{*} \mid \tilde{R}_i^{t-1})}\Big\},$$

where $q(\cdot \mid \cdot)$ is the proposal density. This is the standard M–H step.

this paper, each chain is run for 1 million iterations, discarding the first 500,000 as burn-in, and results from 32 chains with distinct seeds are combined. After convergence, the retained draws approximate $P\big(\rho, \alpha, \{\tilde{R}_i\} \mid \{\text{partial } R_i\}\big)$.

Interpretation of Posterior Samples. Because each retained draw includes a sampled ρ, the posterior provides a full probability distribution over each firm's rank, rather than a single coefficient (as in OLS). One can thus compute point estimates like the median rank, along with credible intervals capturing uncertainty. Firms with sparser or more conflicting votes typically exhibit wider posterior intervals, indicating less certainty about their true position in the overall ranking.

For a step-by-step empirical illustration of these procedures, please refer to Section B of the Internet Appendix, where the 2018 independent board chair sample demonstrates how the algorithm estimates each fund's augmented ranking and the overall ranking in practice.

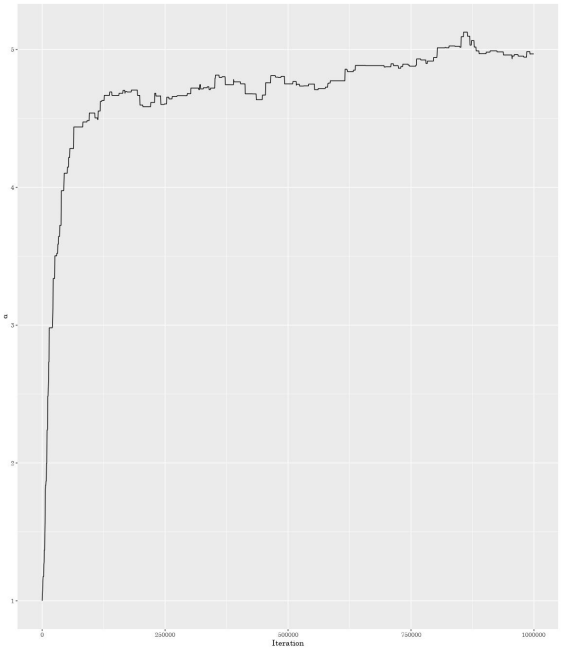


Figure C.1. Convergence of α. This figure displays in the estimated value of the scale parameter α over 1,000,000 iterations for firms receiving independent board chairman proposals in the 2018 proxy season. Results from seed 101 is shown as an example.

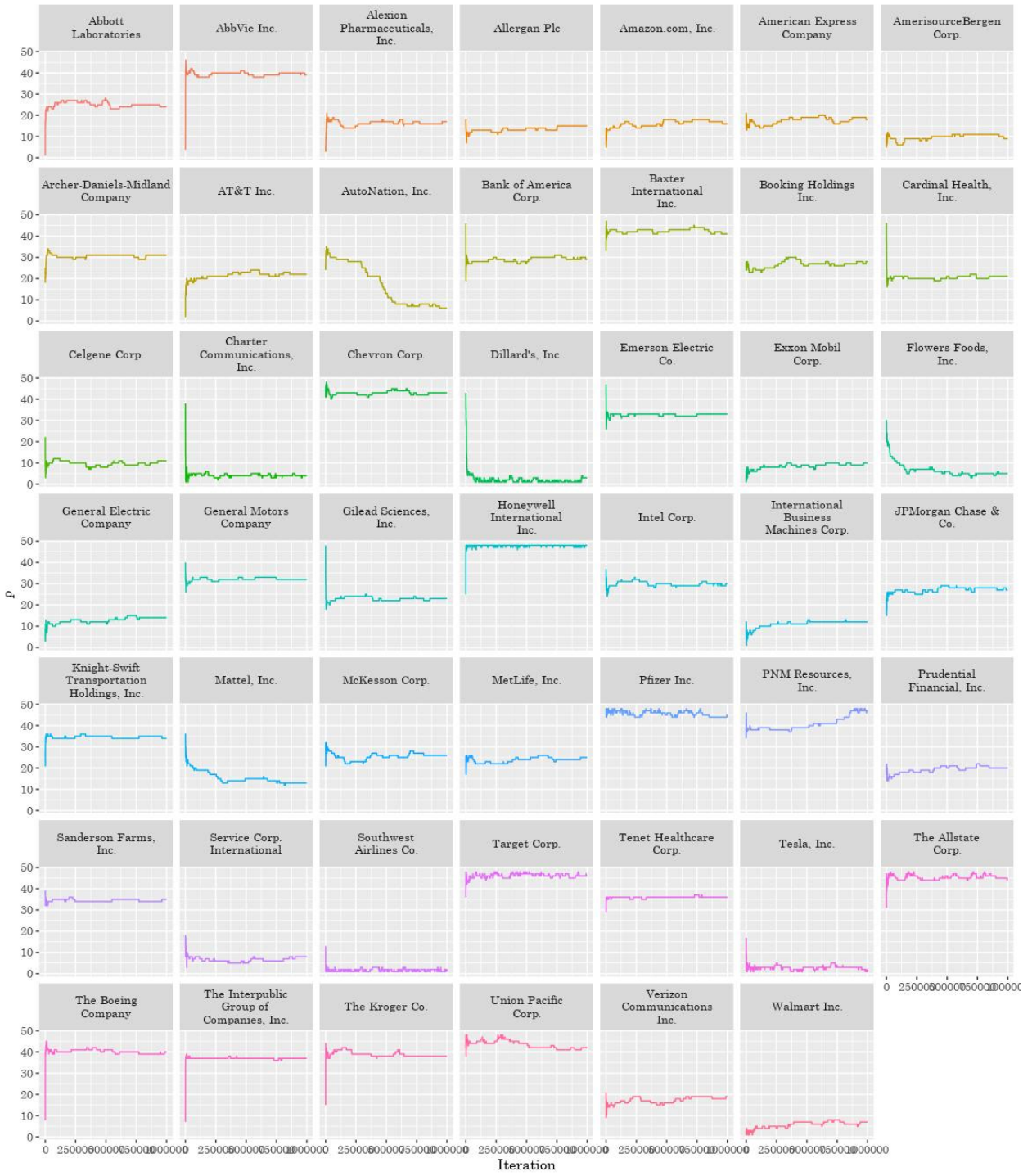


Figure C.2. Convergence of ρ. This figure displays changes in estimated rank (ρ) over 1,000,000 iterations for firms receiving independent board chair proposals during the 2018 proxy season. The results from seed 101 are shown as an example. The initial 500,000 observations are burn-ins, and the latter 500,000 observations from each of 32 seeds are used to produce Panel A of Table 2 and Figure 3.

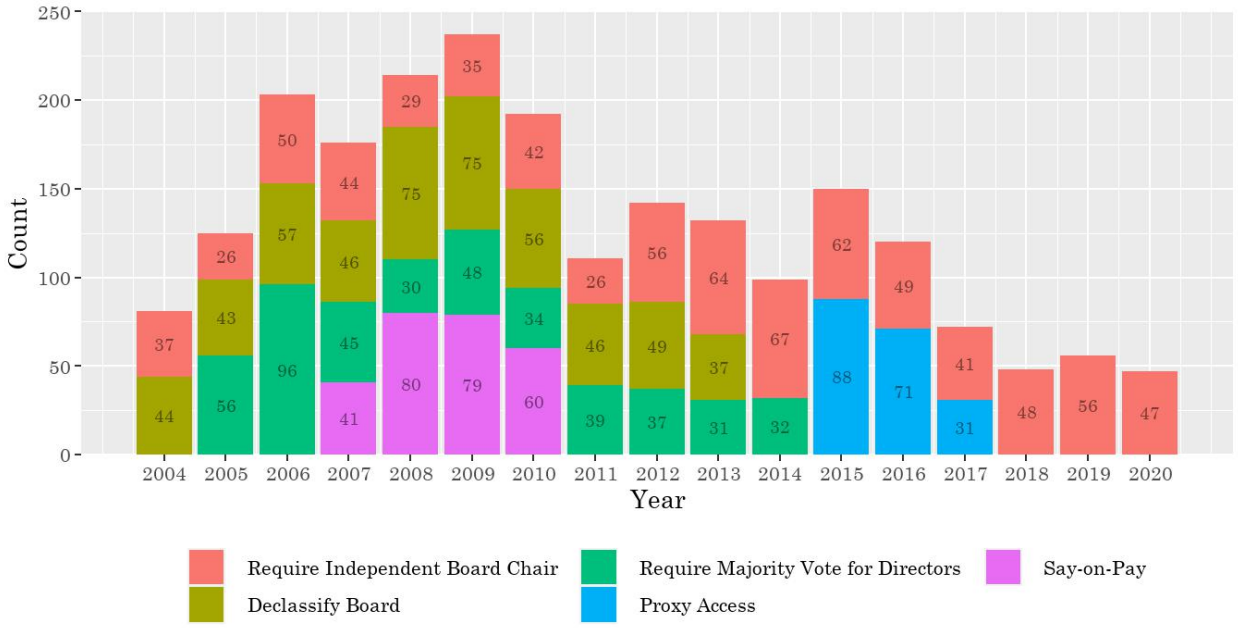
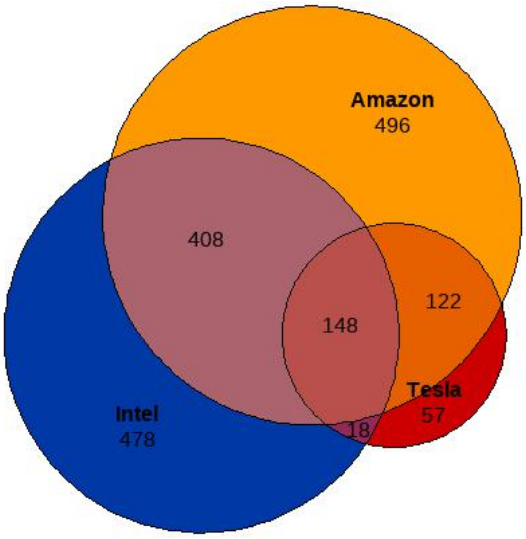


Figure 1. Number of Companies with Shareholder-Sponsored Proposals by Topic. This figure shows the number of companies with shareholder-sponsored governance proposals, by proposal topic and year. The information comes from the ISS Voting Analytics Mutual Fund Vote Records database. I require at least 25 proposals on the same topic and at least 50 funds that voted both for and against a given topic in a given proxy season.

Panel A. Number of Funds that Voted on Three Firms' Independent Board Chair Proposals in the 2018 Proxy Season



Panel B. Fund Votes on Three Firms' Independent Board Chair Proposals in the 2018 Proxy Season

	Against	For
Intel \ Tesla		
Against		
For		
Telsa \ Amazon		
Against		
For		
Intel \ Amazon		
Against		
For		

(*Continued*)

Panel C. 50 Funds' Votes on 20 Firms' Independent Board Chair Proposals in the 2018 Proxy Season

Figure 2. Mutual Fund Voting Patterns: An Illustration. Panel A presents a Venn diagram of the mutual funds that voted on Intel's, Amazon's, and Tesla's independent board chair proposals during the 2018 proxy season. Panel B shows the votes cast by these funds. Each black square represents one fund. For example, the top row shows that 54 funds voted against both Intel's and Tesla's proposals, and 42 funds voted against Intel's proposal and in favor of Tesla's proposal. Any votes other than For and Against are excluded from this figure. Panel C shows how 50 mutual funds voted on 20 firms' independent board chair proposals during the 2018 proxy season. Each column represents a company, and each row represents a fund's votes.

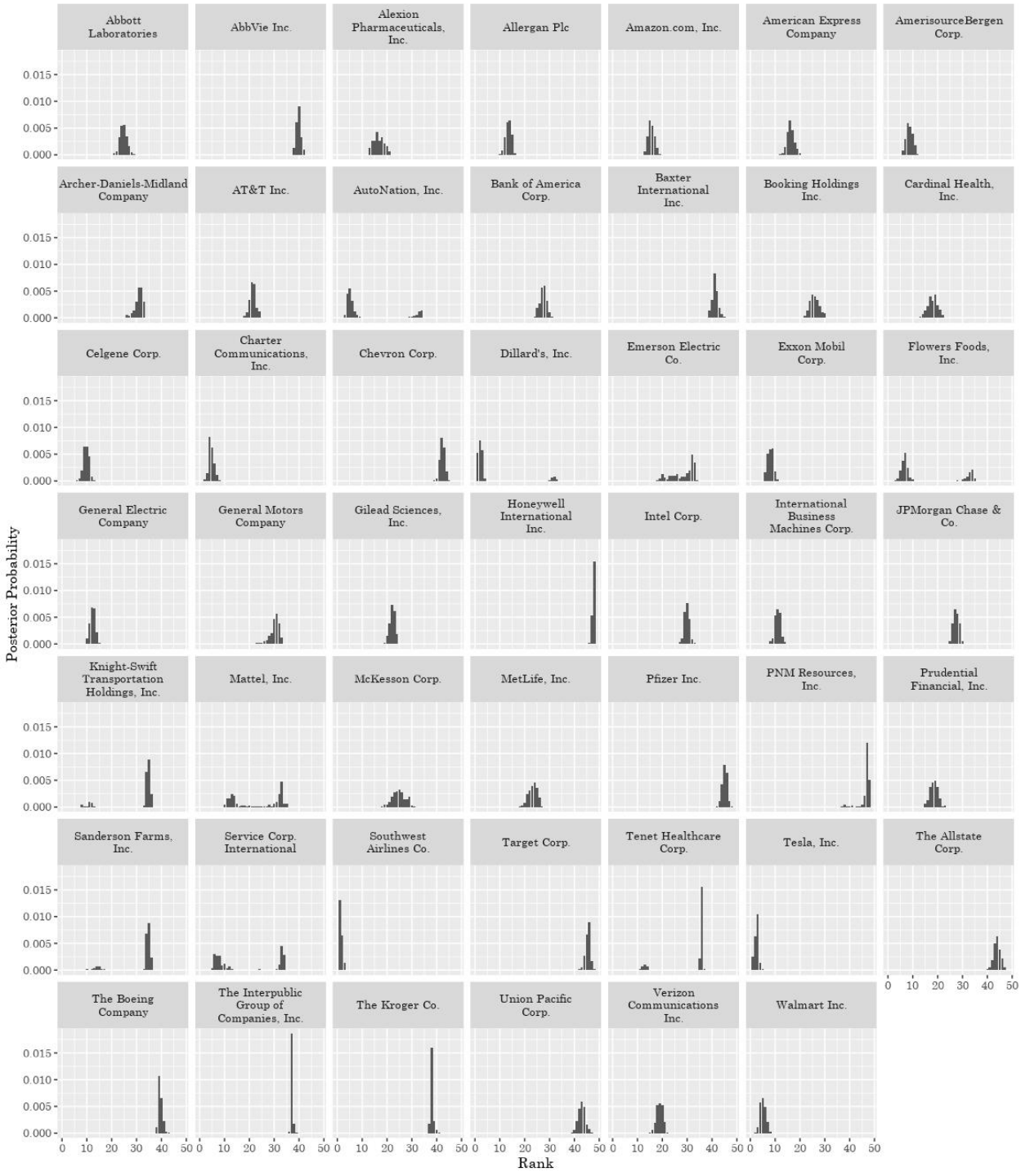
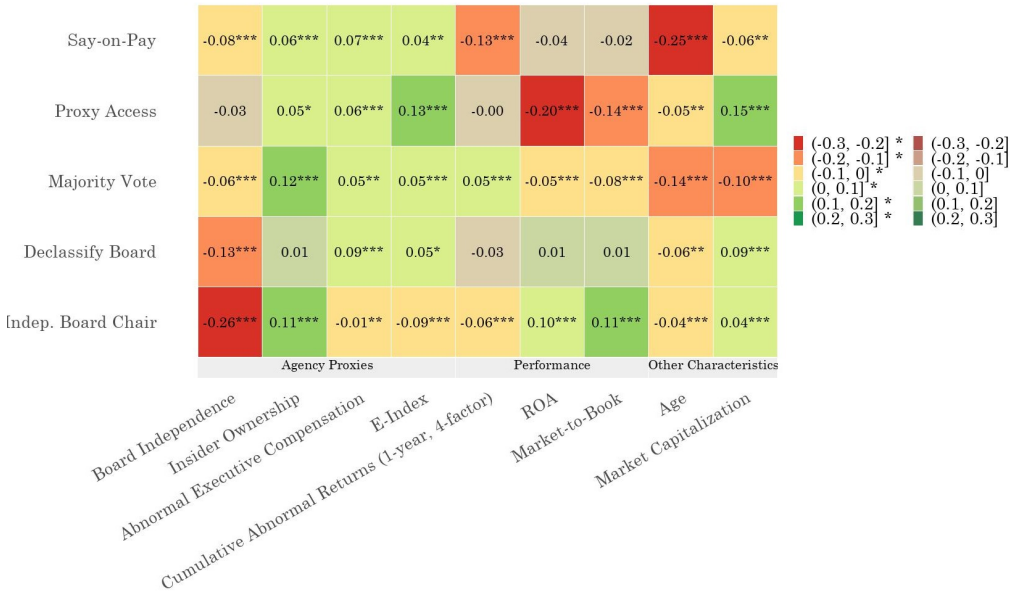


Figure 3. Posterior Distribution of Rank. This figure presents the posterior distribution of each firm's rank based on fund preferences for companies that received independent board chair proposals during the 2018 proxy season. A rank of 1 means that the governance topic under consideration is the most desirable for the given firm from the perspective of mutual funds.

Panel A. Univariate Regressions



Panel B. Multivariate Regressions

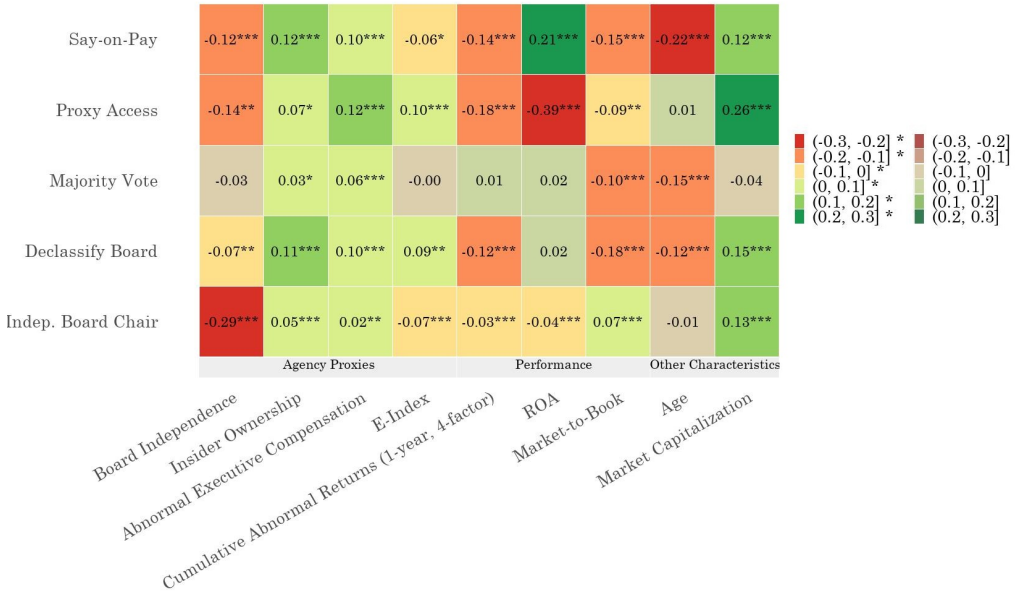


Figure 4. Company Rankings vs. Characteristics. This figure presents the relationship between company rankings and their characteristics, indicated at the bottom of the graph. For each topic displayed on the y-axis, Panel A displays the results from univariate regressions where the dependent variable is each firm's percentile rank, and the independent variable is firm characteristics. Panel B displays the results from multivariate regressions, with all nine variables indicated at the bottom of the graph. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The colors show the magnitude of the coefficients and whether the coefficients are statistically significant, at least at the 10% level. For example, red is mapped to coefficients that fall within the range of $(-0.3, -0.2]$ and are statistically significant, at least at the 10% level. The second column of the legend shows the color coding of the coefficients that are not statistically significant.

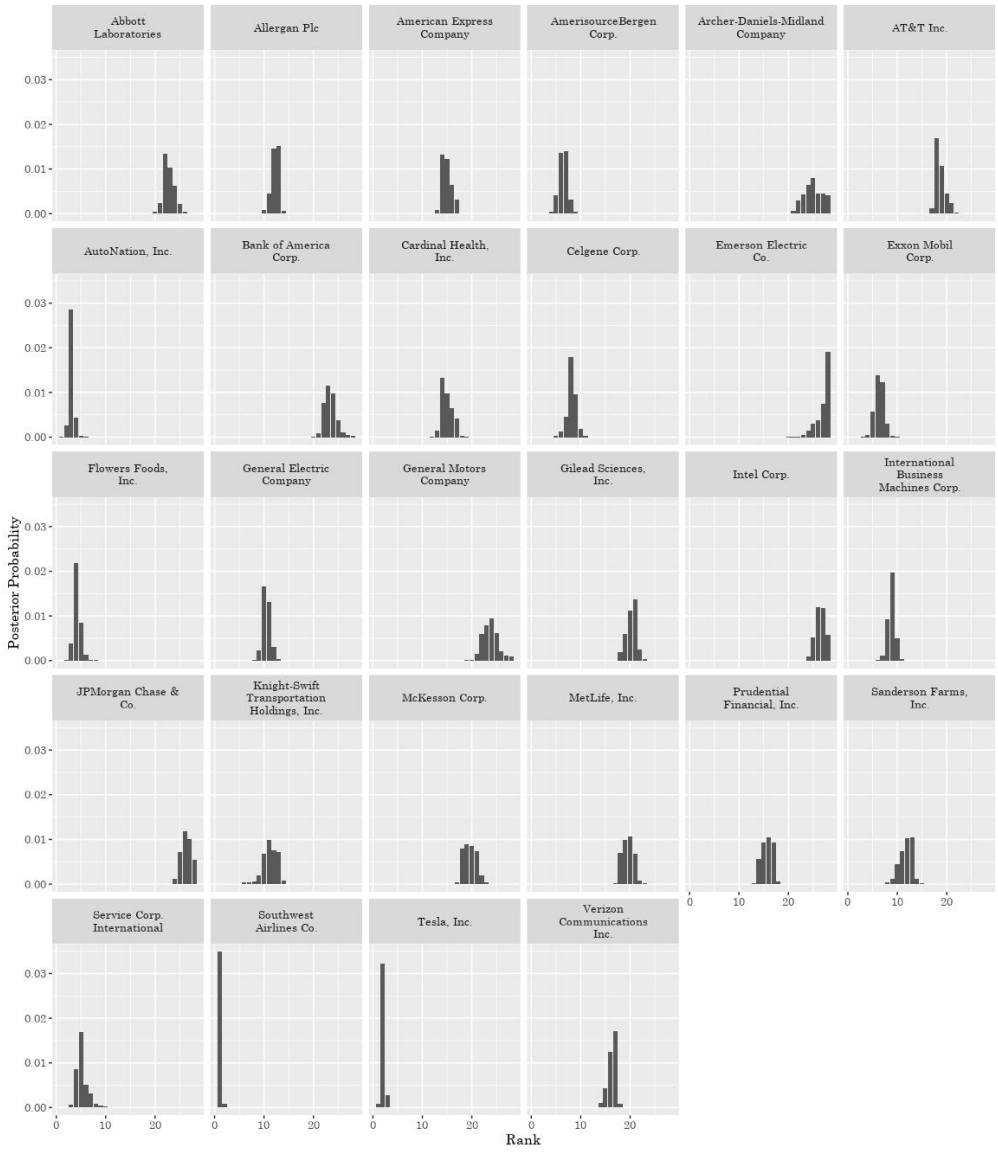


Figure 5. Proxy Advisors' Recommendations and Fund Preferences. This figure presents the posterior distribution of each firm's rank for companies that received independent board chair proposals during 2018 and that had the following voting recommendations: (ISS recommendation, Glass Lewis recommendation, Management recommendation) = (For, For, Against). A rank of 1 means that the governance topic under consideration is the most desirable for the given firm from the perspective of mutual funds.

Table 1. Summary Statistics

This table presents descriptive statistics for proposals (Panel A) and mutual fund voting behavior (Panels B–D). The unit of analysis is a proposal in Panel A, a vote in Panel B, and a fund-proxy season in Panels C and D. Panel C displays the percentage of fund-proxy seasons with identical votes across all portfolio companies for funds that voted on at least 10 proposals on a given topic within a proxy season. Panel D displays the percentage of fund-proxy seasons with votes in line with the recommendations of management, ISS, or Glass Lewis more than 99% of the time. Column (1) reports these results for funds voting on at least 50 total shareholder proposals in a proxy season, while Column (2) reports the results for funds voting on more than 50 proposals specifically within the five shareholder proposal topics studied in this paper.

	Require Independent Board Chair	Declassify Board	Require Majority Vote for Directors	Proxy Access	Say-on-Pay
	(1)	(2)	(3)	(4)	(5)
Panel A. Proposal Outcomes and Recommendations: By Proposal Topic					
Mean % of votes in favor	30	70	54	54	43
% proposal passes	4	75	47	57	15
% mgmt. recommends voting in favor	0	3	2	4	0
% ISS recommends voting in favor	65	99	99	96	99
% GL recommends voting in favor	94	99	100	88	96
Panel B. Funds' Voting Patterns: By Proposal Topic					
% Votes in favor	37	91	68	72	58
% Votes in line with management	63	12	33	31	42
% Votes in line with ISS	62	91	69	76	58
% Votes in line with Glass Lewis	39	93	71	75	58
Panel C. Funds' "One-size-fits-all" Voting Behavior					
Always votes against	26	2	13	11	25
Always votes in favor	8	70	37	25	38

Panel D. Fund Votes Mostly in Line with Management, ISS, or Glass Lewis Recommendations

	All Shareholder Proposals	Select Topics
	(1)	(2)
Management	1.2	2.1
ISS	8.2	20.6
Glass Lewis	0.0	24.5

Table 2. Mutual Funds' Governance Preference Ranking of Firms

The table presents each firm's estimated rank based on fund votes on shareholder proposals for companies that received independent board chair proposals during the 2018 proxy season. In all columns, a lower number corresponds to a higher preference (i.e., priority), and a larger value corresponds to a lower preference. The 95% HPDI (highest posterior density interval) and 95% CI (central interval) are shown in the last two columns.

Panel A. Rankings

Firm	Mean	Median	HPDI (Highest Posterior Density Interval)	CI (Central Interval)
Abbott Laboratories	25	25	[22,27]	[22,28]
AbbVie Inc.	40	40	[38,41]	[38,42]
Alexion Pharmaceuticals, Inc.	17	16	[13,20]	[13,21]
Allergan Plc	13	14	[11,15]	[11,15]
Amazon.com, Inc.	16	15	[14,18]	[13,18]
American Express Company	16	16	[14,19]	[14,19]
AmerisourceBergen Corp.	9	9	[7,11]	[6,11]
Archer-Daniels-Midland Company	31	31	[28,33]	[26,33]
AT&T Inc.	21	21	[19,24]	[19,24]
AutoNation, Inc.	11	5	[3,9],[29,34]	[3,34]
Bank of America Corp.	27	27	[25,30]	[25,30]
Baxter International Inc.	41	41	[39,43]	[39,44]
Booking Holdings Inc.	26	26	[23,30]	[23,30]
Cardinal Health, Inc.	18	18	[14,21]	[14,22]
Celgene Corp.	10	10	[8,12]	[7,12]
Charter Communications, Inc.	5	5	[3,7]	[3,7]
Chevron Corp.	42	42	[41,44]	[40,44]
Dillard's, Inc.	5	2	[1,3],[31,32]	[1,32]
Emerson Electric Co.	29	31	[20,21],[23,33]	[19,33]
Exxon Mobil Corp.	8	8	[6,10]	[6,10]
Flowers Foods, Inc.	14	7	[4,9],[31,35]	[5,34]
General Electric Company	12	12	[10,14]	[10,14]
General Motors Company	30	31	[26,33]	[25,33]
Gilead Sciences, Inc.	22	22	[20,24]	[20,24]
Honeywell International Inc.	48	48	[47,48]	[47,48]
Intel Corp.	30	30	[28,32]	[28,32]
International Business Machines Corp.	11	11	[9,13]	[9,13]
JPMorgan Chase & Co.	27	27	[26,29]	[26,29]
Knight-Swift Transportation Holdings, Inc.	32	35	[8],[11,12],[34,36]	[9,36]
Mattel, Inc.	23	26	[10,15],[17,18],[20],[28,35]	[11,35]
McKesson Corp.	25	25	[19],[21,29]	[19,29]
MetLife, Inc.	23	23	[20,26]	[20,26]
Pfizer Inc.	45	45	[43,47]	[43,47]
PNM Resources, Inc.	47	47	[38],[45,48]	[39,48]
Prudential Financial, Inc.	19	19	[16,21]	[15,21]
Sanderson Farms, Inc.	32	35	[13,15],[33,36]	[13,36]
Service Corp. International	18	10	[5,12],[32,34]	[6,34]
Southwest Airlines Co.	1	1	[1,3]	[1,3]
Target Corp.	45	46	[44,47]	[43,47]
Tenet Healthcare Corp.	33	36	[12,14],[35,36]	[12,36]
Tesla, Inc.	3	3	[1,4]	[1,4]
The Allstate Corp.	44	44	[42,47]	[41,47]
The Boeing Company	40	39	[38,41]	[38,41]
The Interpublic Group of Companies, Inc.	37	37	[37,38]	[37,38]
The Kroger Co.	38	38	[37,39]	[37,40]
Union Pacific Corp.	43	43	[41,46]	[40,46]
Verizon Communications Inc.	19	19	[17,21]	[16,21]
Walmart Inc.	5	5	[3,7]	[3,7]

Table 3. Firm Rankings vs. Vote Support

Panel A presents Spearman's correlation coefficients between each company's rank and vote support for each topic, both in percentile rank. Vote support is calculated as (# votes in favor)/(# votes in favor + # votes against). The topics are indicated at the top of each panel. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Panel B examines whether the deviation between each company's rank and vote support can be explained by the company's ownership characteristics. In Column (1), *Deviation* is the difference between vote support and a firm's rank derived from mutual fund votes, both represented in percentiles. For example, if a firm's vote support reaches the 95th percentile but ranks at the 70th percentile through mutual fund votes, then the deviation is 25. This reflects a case where the perceived benefits from vote support exceed those evaluated by mutual funds. In Columns (2)–(7), I indicate whether a vote is inflated or deflated, defining a proposal with a deviation greater than 20 as inflated, and less than −20 as deflated.

Panel A. Spearman's correlation between vote support and firm rankings

Require Independent Board Chair	Declassify Board	Require Majority Vote for Directors	Proxy Access	Say-on-Pay
(1)	(2)	(3)	(4)	(5)
0.51***	0.27***	0.58***	0.49***	0.15**
(*N*=746)	(*N*=452)	(*N*=421)	(*N*=185)	(*N*=252)

Panel B.Deviation between vote support and firm ranking percentiles

Dependent variable:	Deviation	Vote Inflation			Vote Deflation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Insider Ownership	−0.12***	−0.11***	−0.06**	−0.01***	0.10***	0.09***	0.01***
	(0.02)	(0.03)	(0.02)	(0.00)	(0.03)	(0.03)	(0.00)
Institutional Ownership	0.23***	0.18***	0.16***	0.01***	−0.26***	−0.20***	−0.02***
	(0.04)	(0.05)	(0.04)	(0.00)	(0.05)	(0.04)	(0.00)
Institutional Ownership HHI	−0.24***	−0.17***	−0.10**	−0.01***	0.25***	0.22***	0.02***
	(0.03)	(0.05)	(0.04)	(0.00)	(0.05)	(0.04)	(0.00)
Blockholders	0.02	0.01	0.01	0.00	−0.01	−0.04	0.00
	(0.04)	(0.05)	(0.04)	(0.00)	(0.05)	(0.04)	(0.00)
Market Capitalization	−0.11***	−0.17***	−0.12***	−0.01***	0.01	0.02	0.00
	(0.03)	(0.04)	(0.04)	(0.00)	(0.04)	(0.04)	(0.00)
Funds Voting	4.05	16.03***	16.92***	1.02***	9.09*	10.69**	0.53*
One-Size-Fits-All	(3.62)	(4.88)	(3.94)	(0.31)	(4.93)	(4.28)	(0.31)
Observations	1,591	1,591	1,591	1,591	1,591	1,591	1,591
R-squared	0.10	0.05	0.05		0.06	0.06	
Specification	OLS	OLS	OLS	Logit	OLS	OLS	Logit
Threshold	·	20	30	20	20	30	20

Table 4. Classification and Examples of Voting Rationales on Shareholder Proposals

This table presents categories used to classify voting rationales on shareholder proposals, accompanied by a brief description and examples of the rationales under each category.

Category	Rationales refer to...	Example: Votes For	Example: Votes Against
Governance	Governance or compensation concerns, unresponsiveness to concerns as reasons for support; good governance or lack of governance concerns, existing policy in place to address issues, or already implemented the proposal as reasons for opposition	A vote FOR this proposal is warranted given that the lead directors' duties are not considered robust and there is a concern regarding the lack of a fully independent key board committee, suggesting that shareholders would benefit from the most robust form of independent oversight in the form of an independent board chair.	1) Company has a designated lead director who fulfills the requirements appropriate to such role; 2) Management has been very shareholder focused and exercises good governance practices. Will support current management at this time.
General support/opposition	Investor generally believes in the proposed initiatives, sometimes unaccompanied by further reasoning.	1) We believe that the chairman and CEO roles should be separated; 2) A vote for this proposal is warranted given the importance of having an independent chairman of the board; 3) We supported this resolution.	Janus will generally vote with management on proposals to declassify the board.
Performance	Good, acceptable, poor performance	A vote for this proposal is warranted. The company's TSR has underperformed its peers over the past one- and three-year periods, and...	A vote against this proposal is warranted as there are no significant concerns with respect to the company's board leadership structure, governance practices, or performance at this time.
Company characteristics	Company-specific characteristics or situation	..., given the company's scale, complexity, and legacy legal and regulatory issues, shareholders would benefit from greater oversight in the form of an independent chairman.	NA
Follow policy	Follow institutional policy, or recommendations of proxy advisors or management	1) A FOR vote is warranted per policy guidelines; 2) Per client instruction.	This item does not merit support per policy guidelines.
Proposal term/scope	Terms or scope of the proposal	A vote for this item is warranted, as adoption of proxy access will enhance shareholder rights and this proposal includes appropriate safeguards.	This item does not merit support due to concerns with the terms of the proposal.
Engagement	Decision made after engagement, usually with the company	... Upon engagement, decided to support shareholder proposal.	Upon engagement decided to vote with management
Others	Idiosyncratic rationales excluded from above.	NA	While we support the idea of an independent chairman, we believe the board should make that decision.
Data error	Rationales that do not offer insights behind votes, or rationales for votes against, accompanied by votes in favor, and vice versa.	Separate CEO and chair with an independent lead director in place; governance process is robust.	Blended rationale: .

Table 5. Voting Rationales on Shareholder Proposals

The table presents the frequency of rationale categories for votes in favor (Panel A) and votes against (Panel B). Column (1) reports the relative importance of each category. Column (2) is similar to Column (1) but focuses on cases where a fund provides rationales for "Against" and "For" votes on a given topic within a proxy season. Column (3) reports the proportion of fund-proxy season-topic combinations that reference the category, focusing on funds that provide rationales for both votes For and Against. Note that the percentages in Column (3) do not sum up to 100 because funds may provide more than one rationale.

Panel A. Votes in favor

Category	(1) (N=24,361)	(2) (N=6,512)	(3) (N=1,229)
General support/opposition	74.5	70.5	76.2
Governance	9.7	12.5	31.2
Others	3.9	8.0	15.2
Performance	3.7	4.4	8.8
Proposal term/scope	5.6	2.7	5.0
Data error	0.5	0.7	3.4
Engagement	0.2	0.6	3.4
Company characteristics	0.9	0.4	1.5
Follow policy	0.9	0.3	1.5
Total	100	100	·

Panel B. Votes against

Category	(1) (N=11,642)	(2) (N=8,106)	(3) (N=1,229)
Governance	80.6	80.1	66.4
General support/opposition	5.8	6.1	31.2
Others	3.3	3.5	16.8
Engagement	3.6	3.4	16.2
Data error	2.8	2.7	11.7
Performance	1.4	1.9	4.4
Proposal term/scope	1.9	1.8	10.3
Follow policy	0.6	0.5	2.4
Company characteristics	0.0	0.0	0.0
Total	100	100	·

Table 6. Business Ties

Panel A shows whether funds with business ties to a company are more likely to vote with management. The dependent variable is equal to one if the fund votes with management, and the independent variable, business ties, is equal to one if the fund's financial institution has a business tie to the company receiving the proposal. The coefficients are scaled by 100 to represent the percentage. In Panel B, the asterisk indicates whether the mean change is statistically different from zero. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Business Ties and Fund Votes

Dependent variable:	Vote with Management			
	(1)	(2)	(3)	(4)
Business Ties	3.096***	0.899***	0.858***	3.214***
	(0.239)	(0.232)	(0.220)	(0.707)
Fund × Topic F.E.	Yes	Yes	Yes	Yes
Topic × Year F.E.	·	Yes	·	·
Company F.E.	·	Yes	Yes	·
Proposal F.E.	·	·	Yes	Yes
Fund × Company F.E.	·	·	·	Yes
R^2	0.567	0.629	0.680	0.801
N	962,344	962,338	962,334	589,470

Panel B. Business Ties and Affiliated Firm's Percentile Rank

	Companies with Business Ties			Companies without Business ties		
	Before Exclusion (1)	After Exclusion (2)	Change (3)	Before Exclusion (4)	After Exclusion (5)	Change (6)
Panel B.1. All Provisions						
Mean	50.94	51.07	0.12	51.39	51.35	-0.04
Median	51	50	0	52	52	0
S.D.	28.97	28.81	5.85	28.85	28.85	4.15
N	647	647	647	1,522	1,522	1,522
Panel B.2. By Each Provision						
Require Independent Board Chair						
Mean	49.90	49.97	0.07	52.08	52.18	0.10
Median	49	49	0	53	53	0
S.D.	29.89	29.86	4.11	28.02	28.04	3.15
N	315	315	315	459	459	459
Declassify Board						
Mean	54.91	54.44	-0.47	50.80	50.83	0.03
Median	57	55	0	51	51	0
S.D.	26.43	26.39	6.72	29.44	29.37	5.31
N	85	85	85	417	417	417
Require Majority Vote for Directors						
Mean	46.42	47.20	0.79	52.99	52.66	-0.33**
Median	39	42	0	55	55	0
S.D.	28.48	28.06	4.95	28.94	29.00	2.96
N	103	103	103	343	343	343
Proxy Access						
Mean	57.08	57.53	0.45	47.93	47.66	-0.27
Median	62	64	0	46	46	0
S.D.	29.32	29.42	5.01	28.37	28.30	6.93
N	62	62	62	128	128	128
Say-on-Pay						
Mean	51.90	51.78	-0.12	50.38	50.50	0.12
Median	51	50	0	53	51	0
S.D.	27.56	27.03	10.48	29.73	29.83	2.13
N	82	82	82	175	175	175

Table 7. Correlation Between Index vs. Non-Index Fund Rankings

This table presents Spearman's correlation coefficients between index and non-index funds' rankings. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Require Independent Board Chair (1)	Declassify Board (2)	Require Majority Vote for Directors (3)	Proxy Access (4)	Say-on-Pay (5)
0.82***	0.51***	0.82***	0.67***	0.48***
(N=710)	(N=263)	(N=384)	(N=189)	(N=257)

Table 8. Stability of Rankings: Evidence from a Mandatory Say-on-Pay Analysis of Broad vs. Targeted Samples

This table tests the stability of the firm-level rankings by comparing the mandatory say-on-pay rankings estimated on two different samples. The first sample includes the broad universe of S&P 500 firms that held an SOP vote in a given year. The second sample is restricted to the subset of those S&P 500 firms that were also targeted with one of the five shareholder proposal topics studied in this paper. For each year, the table reports the Spearman correlation between the median ranks of the firms common to both samples. The final column reports the number of firms in this overlapping sample for each year. All correlation coefficients are statistically significant at the 1% level.

Year	Median Correlation	Observations
2011	1.00	44
2012	0.97	80
2013	0.93	71
2014	0.95	55
2015	0.97	88
2016	0.98	56
2017	0.97	36
2018	0.96	35
2019	0.97	39
2020	0.97	40
Average	0.97	·

Internet Appendix
"Which Firms Require More Governance? Evidence from Mutual Funds' Revealed Preferences"

This internet appendix presents additional results to accompany the paper "Which Firms Require More Governance? Evidence from Mutual Funds' Revealed Preferences."

A. Additional Figures and Tables

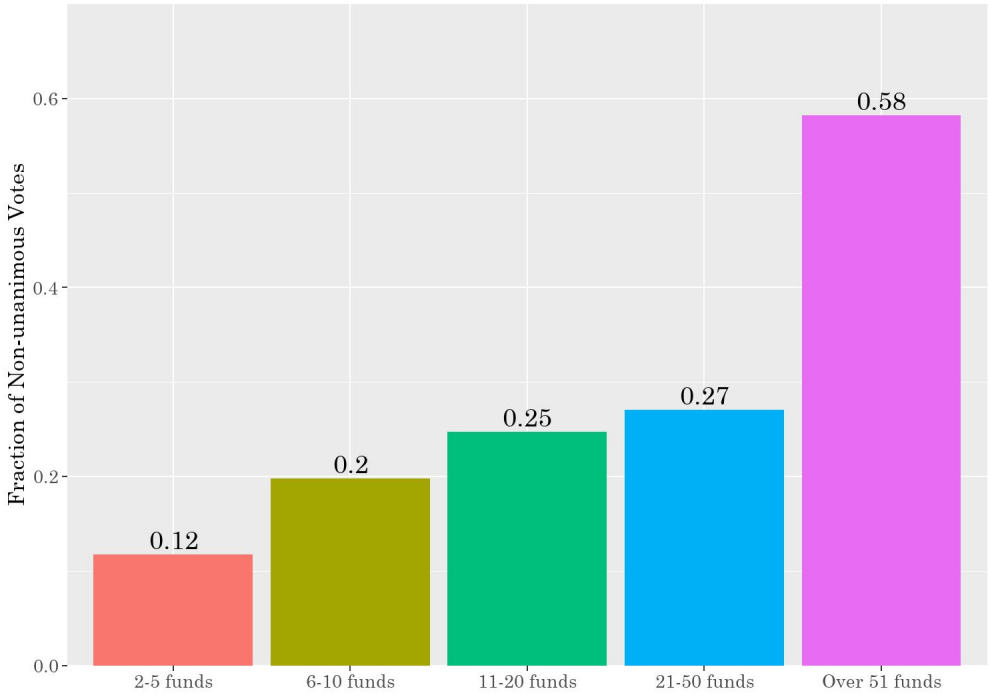


Figure IA.1. Fraction of Non-Unanimous Votes Within a Fund Family. The figure presents the fraction of non-unanimous votes within a fund family when an institution has multiple funds voting on the same proposal, focusing on the five proposal topics studied in this paper. The x-axis displays the number of funds within a family voting on the same proposal.

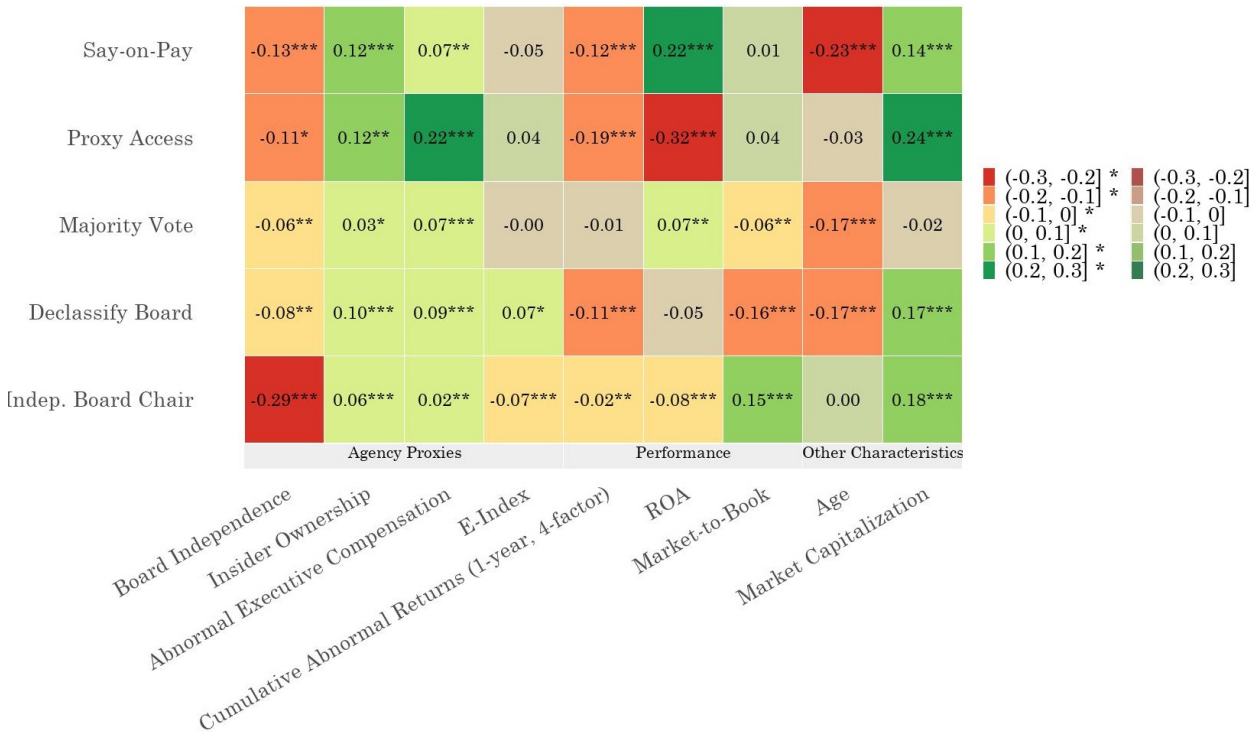
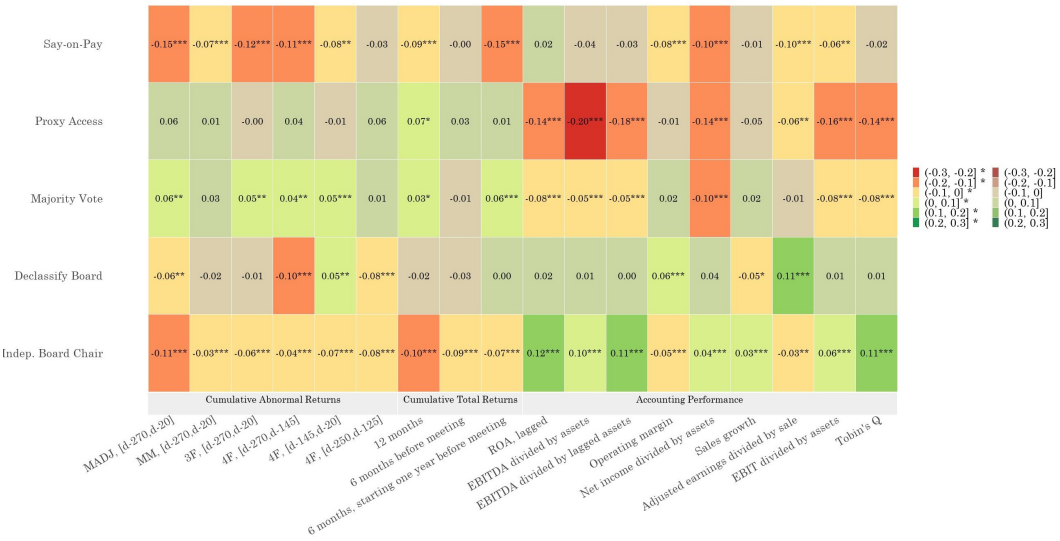


Figure IA.2. Company Rankings vs. Characteristics: Results with Additional Controls. This figure presents the relationship between company rankings and their characteristics. For each topic displayed on the y-axis, the figure displays the coefficients from multivariate regressions that include all nine variables indicated at the bottom of the graph, as well as variables that are frequently used as controls in the empirical corporate finance literature: leverage, cash, capital expenditures, repurchases, and the Kaplan–Zingales (KZ) index measuring financial constraints. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The colors show the magnitude of the coefficients and whether the coefficients are statistically significant, at least at the 10% level. For example, red is mapped to coefficients that fall within the range of $(-0.3, -0.2]$ and are statistically significant, at least at the 10% level. The second column of the legend shows the color coding of the coefficients that are not statistically significant.

Panel A. Univariate Regressions



Panel B. Multivariate Regressions

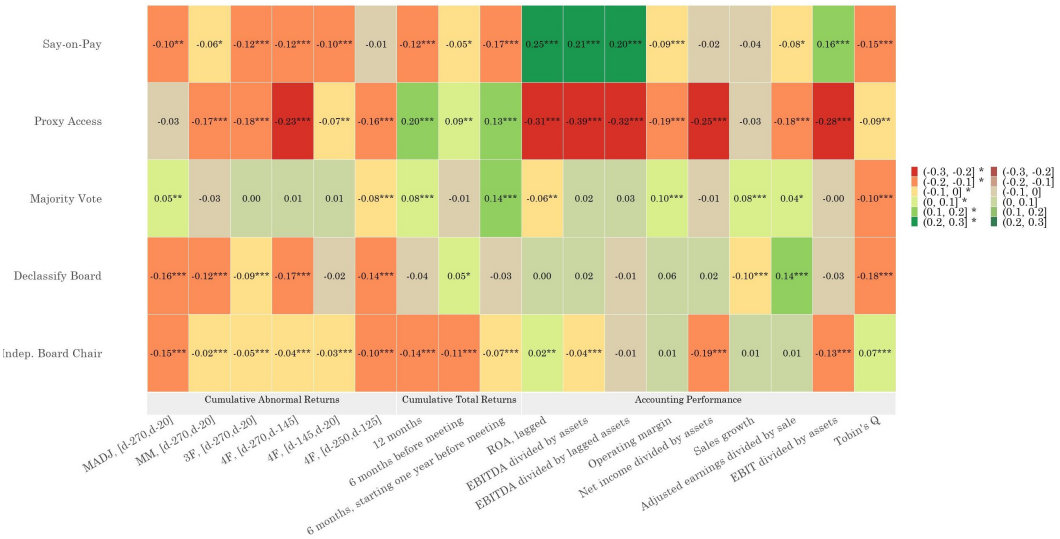


Figure IA.3. Company Rankings vs. Characteristics: Alternative Performance Measures. This figure presents the relationship between company rankings and various alternative performance measures indicated at the bottom of the graph. The dependent variable is each firm's percentile rank. Panel A displays the results from univariate regressions. Panel B displays the results from multivariate regressions with the nine explanatory variables shown in Figure 4, replacing one relevant performance variable at a time. For example, the first column of this figure incorporates board independence, insider ownership, abnormal compensation, E-Index, market-adjusted returns (over the [270,−20] trading day window), ROA, market-to-book, age, and market capitalization and presents the coefficients on market-adjusted returns. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The colors show the magnitude of the coefficients and whether the coefficients are statistically significant, at least at the 10% level. The second column of the legend shows the color coding of the coefficients that are not statistically significant at the 10% level.

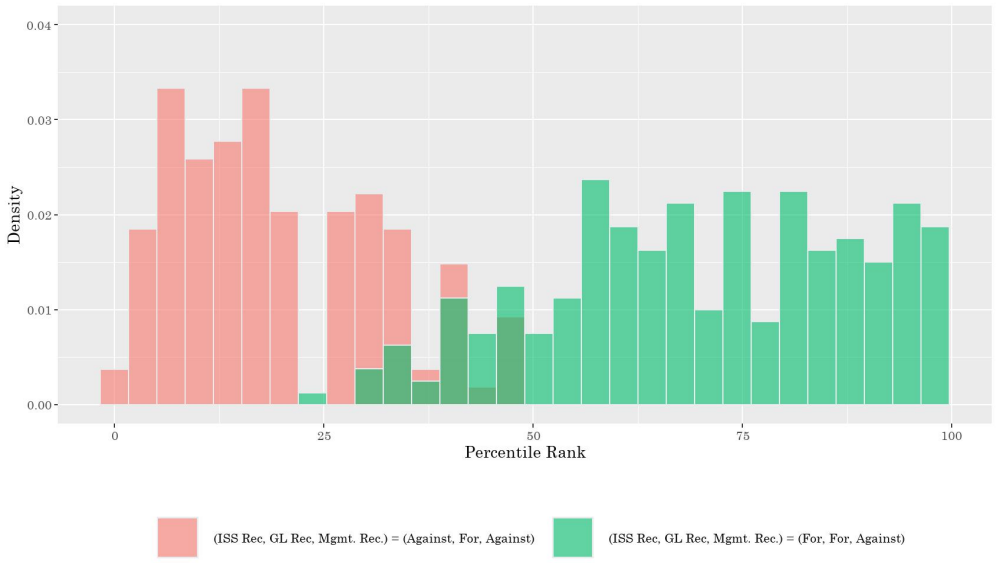
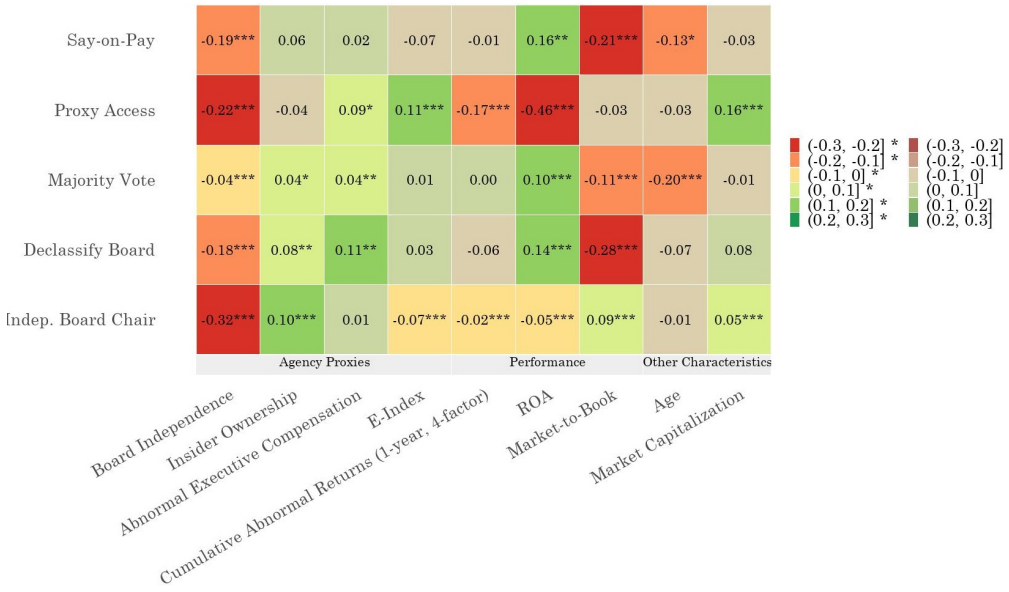


Figure IA.4. Proxy Advisors' Recommendations and Fund Preferences. This Figure presents the histogram of the percentile rank of fund governance preferences, separately for independent board chair proposals that received for vs. against ISS recommendations, limited to proposals for which management recommends voting against and Glass Lewis recommends voting in favor. A percentile rank of 100 means that the proposal under consideration is the most desirable for the given firm from the perspective of mutual funds.

Panel A. Index Funds



Panel B. Non-Index Funds

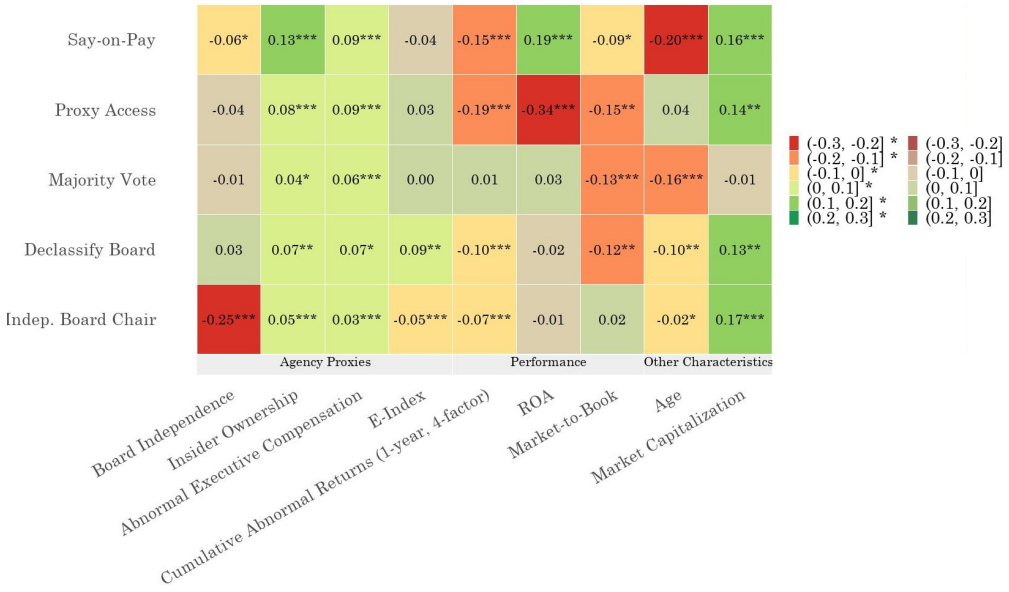


Figure IA.5. Index vs. Non-Index Funds. This figure presents the relationships between the rankings of index and non-index funds and their characteristics, indicated at the bottom of the graph, based on multivariate regressions with all nine variables indicated at the bottom of the graph. Panel A presents the results for index funds and Panel B presents the results for non-index funds. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The colors show the magnitude of the coefficients and whether the coefficients are statistically significant, at least at the 10% level. For example, red is mapped to coefficients that fall within the range of $(-0.3, -0.2]$ and are statistically significant, at least at the 10% level. The second column of the legend shows the color coding of the coefficients that are not statistically significant.

Table IA.1. Precision of Estimated Ranks

This table presents the average of each firm's 95% central interval (CI), scaled by the number of firms receiving a given proposal in that proxy season. Specifically, for each firm j with a 95% CI range $[L_j, U_j]$ and N total firms in that topic–year, the scaled CI is $(U_j - L_j)/N$. We then take the mean across all firms in that topic–year. A smaller average scaled CI indicates more precise rank estimates. For example, in 2018, 48 companies received independent board chair proposals. Abbott Laboratories' 95% CI is [22,28], so its scaled CI is $(28 - 22)/48 = 0.125$. For the 2018 independent chair proposals, the average over all 48 firms is 0.183.

Topic	Proxy Season	Mean of 95% CI Range (Scaled)
Independent Board Chair	2016	0.112
Independent Board Chair	2008	0.117
Independent Board Chair	2017	0.120
Independent Board Chair	2007	0.129
Independent Board Chair	2011	0.135
Independent Board Chair	2014	0.136
Independent Board Chair	2020	0.137
Majority Vote	2007	0.138
Independent Board Chair	2010	0.141
Independent Board Chair	2015	0.142
Independent Board Chair	2009	0.143
Independent Board Chair	2019	0.154
Independent Board Chair	2006	0.163
Independent Board Chair	2013	0.167
Independent Board Chair	2012	0.168
Independent Board Chair	2018	0.183
Majority Vote	2012	0.195
Majority Vote	2006	0.197
Majority Vote	2010	0.213
Majority Vote	2009	0.241
Majority Vote	2011	0.246
Majority Vote	2014	0.251
Proxy Access	2016	0.255
Majority Vote	2013	0.262
Majority Vote	2008	0.287
Say-on-Pay	2007	0.287
Say-on-Pay	2009	0.306
Independent Board Chair	2005	0.306
Say-on-Pay	2008	0.312
Declassify Board	2013	0.320
Say-on-Pay	2010	0.322
Proxy Access	2017	0.330
Declassify Board	2012	0.340
Independent Board Chair	2004	0.366
Declassify Board	2009	0.386
Declassify Board	2007	0.392
Proxy Access	2015	0.399
Declassify Board	2011	0.436
Declassify Board	2004	0.465
Declassify Board	2008	0.476
Declassify Board	2010	0.487
Declassify Board	2006	0.491
Declassify Board	2005	0.573
Majority Vote	2005	0.637

B. M–H MCMC: Empirical Illustration

This section provides a step-by-step demonstration of how the augmented rankings, overall ranking, and scale parameter are jointly estimated under partial coverage. Specifically, I use data from independent board chair proposals during the 2018 proxy season as an illustrative example, walking through each stage of the M–H MCMC procedure. A formal definition of the Mallows model and algorithmic details can be found in Appendix C.

B.1. Augmented Rankings

Table IA.2 presents a single fund's augmented rankings for illustrative purposes; the algorithm repeats the same procedure for every fund in the sample. At the start of the Markov chain (iteration 1), each assessor is assigned a random ranking for the 48 companies under consideration, but in a way that remains consistent with the fund's voting data. Specifically, companies the fund voted against (highlighted in red in Table IA.2) receive higher numeric values (closer to 48), reflecting a lower perceived need for an independent board chair, whereas companies the fund voted for (highlighted in green) receive lower numeric values (closer to 1). In other words, the algorithm enforces that all companies voted for receive lower numerical ranks (closer to 1) than any company voted against (closer to 48).

Table IA.2 reports the augmented rankings at selected iteration points: (1, 101, 201, 301, 401) from the early, non-converged phase of the chain and (999,501, 999,601, 999,701, 999,801, and 999,901) after the chain has converged. Each assessor's augmented ranks can change or remain the same at each iteration. Given the high autocorrelation between consecutive iterations, I report iteration points that are 100 iterations apart to reduce redundancy. The early phases of the chain exhibit considerable fluctuation due to the randomness at iteration 1. For companies with no direct vote (i.e., neither in red nor green), the chain typically exhibits more persistent fluctuations, as the algorithm continues to guess their relative positions. Meanwhile, companies with vote information (red or green) often fluctuate less.

Figure IA.6 complements Table IA.2 by visualizing the fund's augmented ranks at every iteration. Darker colors (reflecting higher numeric ranks, closer to 48) are predominantly

observed for firms that received votes against (highlighted in red in Table IA.2), whereas lighter colors are associated with firms that received votes in favor (highlighted in green in Table IA.2). Figure IA.6 also shows how the model corrects its initial random assignments for unowned firms and converges to a stable assessment. For example, the color for AutoNation Inc., an unowned firm, begins as a relatively random assignment but becomes progressively lighter over the 1 million iterations, showing the model converging to a stable assessment of the fund's preference for that firm.

Overall, the augmented rankings are consistent with the fund's underlying vote data; and when there is less information available (i.e., firms with no vote), the algorithm makes guesses and appropriately maintains uncertainty by allowing for greater rank variability.

B.2. Overall Ranking

In addition to each fund's augmented rankings, the chain also uses data from all funds to produce a single ρ at each iteration. Starting from a random ranking at iteration 1, the overall ranking ρ is updated by proposing small local modifications, then accepting or rejecting these proposals based on how well they fit the augmented rankings, as described in Appendix C. Figure C.2 shows how the overall ranking ρ converges for seed 101. To ensure the results are not dependent on any particular seed, I repeat this procedure for 32 seeds, discarding the first half-million iterations of each as burn-in. From the remaining half-million, I retain every 10,000th draw (a practice known as thinning, which helps reduce autocorrelation in the Markov chain and manage data size, recommended by Gelman et al. (2013)), producing a posterior sample of overall rankings for each seed. Combining these samples provides a posterior distribution of rank for each firm, as presented in Figure 3.

B.3. Scale Parameter

While the main focus is on rankings, the algorithm also estimates a scale parameter α that controls how tightly the distribution of rankings is concentrated around ρ. Larger values indicate greater certainty in the overall ranking (i.e., less dispersion among possible rankings), whereas smaller values imply more variability. Figure C.1 illustrates how α evolves over one million iterations for seed 101.

Table IA.2. Evolution of One Fund's Augmented Rankings

This table presents the augmented ranks assigned by a single fund to 48 companies that received independent board chair proposals during the 2018 proxy season. The ranks are shown at selected iteration points out of one million total iterations (Seed 101). Higher values correspond to less perceived need for an independent board chair. Companies the fund voted against are highlighted in red, and those the fund voted for are highlighted in green. Specifically, the fund voted against the following companies' proposals: Abbott Laboratories, AbbVie Inc., Archer-Daniels-Midland Company, Chevron Corp., Honeywell International Inc., Intel Corp., Pfizer Inc., The Allstate Corp., Union Pacific Corp., and Verizon Communications Inc. The fund voted for the following companies' proposals: Allergan Plc, Amazon.com, Inc., AT&T Inc., Cardinal Health, Inc., Celgene Corp., JPMorgan Chase & Co., Knight-Swift Transportation Holdings, Inc., Prudential Financial, Inc., and Southwest Airlines Co. The fund did not own the remaining companies in the table.

	Iteration									
Firm	1	101	201	301	401	999501	999601	999701	999801	999901
Abbott Laboratories	46	44	46	32	29	26	36	34	28	33
AbbVie Inc.	25	34	34	43	40	45	33	39	48	28
Alexion Pharmaceuticals, Inc.	30	42	29	15	42	10	20	21	21	12
Allergan Plc	6	4	14	12	16	15	7	9	18	7
Amazon.com, Inc.	19	6	6	4	2	6	3	10	2	20
American Express Company	22	12	15	18	36	20	23	30	8	6
AmerisourceBergen Corp.	20	11	13	6	9	19	21	45	12	16
Archer-Daniels-Midland Company	44	21	26	34	41	24	42	47	34	38
AT&T Inc.	8	16	17	29	3	4	19	4	13	4
AutoNation, Inc.	13	25	21	25	47	11	13	8	7	5
Bank of America Corp.	32	40	8	5	17	30	24	42	32	36
Baxter International Inc.	21	22	30	22	27	39	41	28	30	30
Booking Holdings Inc.	37	47	39	13	20	25	28	35	19	47
Cardinal Health, Inc.	18	20	18	17	13	17	16	19	20	23
Celgene Corp.	14	15	11	14	5	8	5	6	3	25
Charter Communications, Inc.	36	33	27	37	10	29	11	5	5	3
Chevron Corp.	26	32	42	40	39	48	47	48	44	44
Dillard's, Inc.	1	2	43	11	6	5	1	1	1	1
Emerson Electric Co.	24	8	28	44	45	36	43	36	33	29
Exxon Mobil Corp.	4	1	33	19	4	9	10	15	26	17
Flowers Foods, Inc.	35	17	35	28	35	33	8	12	11	8
General Electric Company	48	43	32	21	1	23	25	14	24	15
General Motors Company	47	30	24	7	30	47	18	33	36	11
Gilead Sciences, Inc.	23	24	1	1	21	12	12	38	46	43
Honeywell International Inc.	39	27	38	41	34	38	38	25	43	48
Intel Corp.	33	41	41	42	44	28	35	32	27	26
International Business Machines Corp.	41	37	44	2	7	34	31	24	29	13
JPMorgan Chase & Co.	3	18	7	20	15	16	15	18	17	19
Knight-Swift Transportation Holdings, Inc.	10	3	10	3	19	22	4	7	6	18
Mattel, Inc.	40	10	2	45	25	37	27	3	4	34
McKesson Corp.	11	35	31	23	8	1	29	16	22	21
MetLife, Inc.	38	13	37	9	24	21	30	40	23	22
Pfizer Inc.	29	26	19	36	37	31	48	46	45	27
PNM Resources, Inc.	5	38	45	35	12	44	44	20	39	41
Prudential Financial, Inc.	2	9	16	26	14	13	17	22	14	2
Sanderson Farms, Inc.	17	29	22	27	18	35	37	26	31	45
Service Corp. International	34	39	5	8	11	14	14	17	16	10
Southwest Airlines Co.	7	19	3	16	22	2	6	11	10	9
Target Corp.	31	46	12	10	43	32	34	44	42	46
Tenet Healthcare Corp.	42	7	23	33	31	18	39	37	35	39
Tesla, Inc.	9	5	40	24	48	3	2	2	9	24
The Allstate Corp.	45	28	47	47	28	42	46	43	38	37
The Boeing Company	28	31	36	39	33	40	45	41	41	42
The Interpublic Group of Companies, Inc.	15	45	9	46	46	43	40	31	47	35
The Kroger Co.	12	14	25	30	26	41	32	27	37	40
Union Pacific Corp.	43	48	48	48	23	46	22	29	40	31
Verizon Communications Inc.	27	23	20	31	38	27	26	23	25	32
Walmart Inc.	16	36	4	38	32	7	9	13	15	14

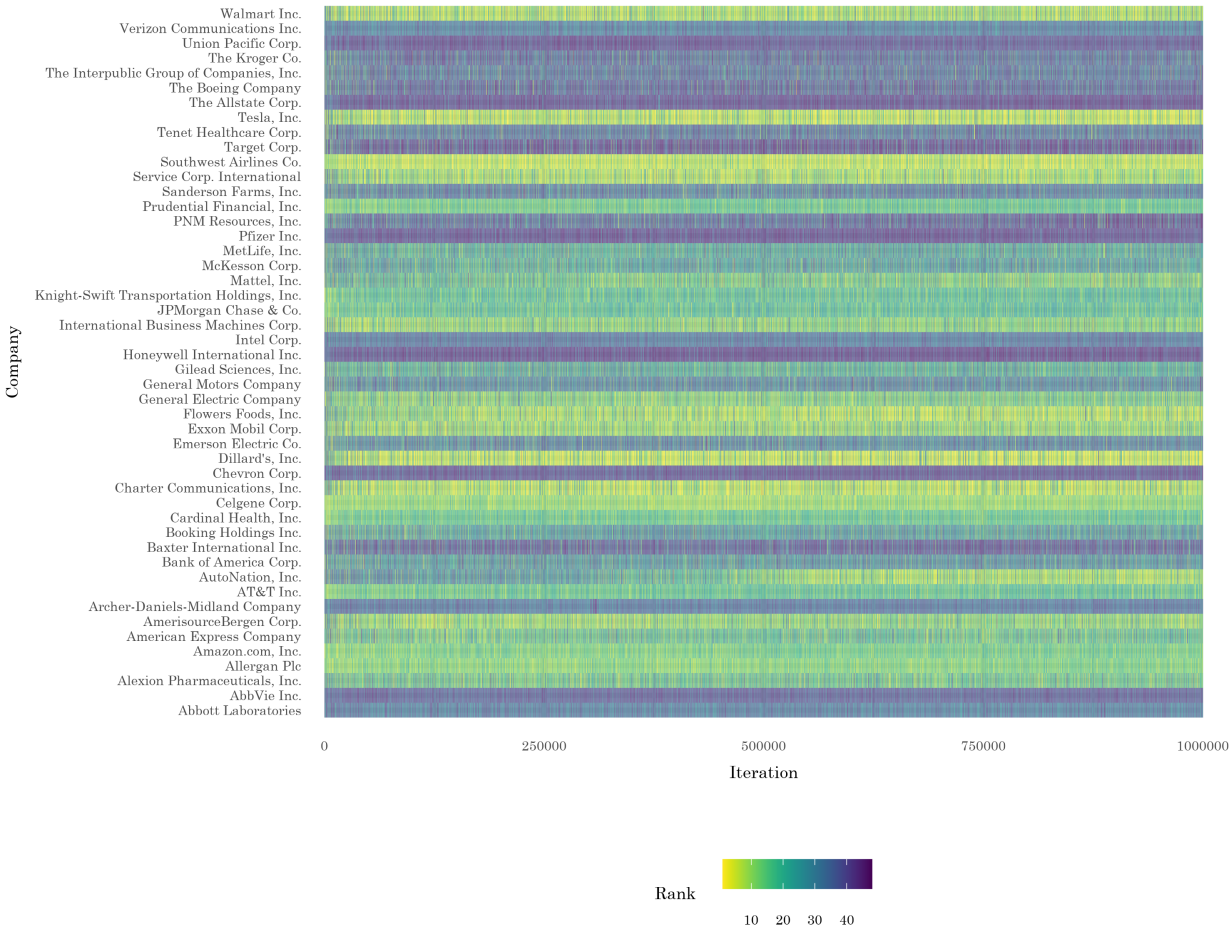


Figure IA.6. Heatmap of One Fund's Augmented Rankings. This heatmap shows how one fund's augmented ranking evolves over one million iterations for companies that received independent board chair proposals during the 2018 proxy season. The color scale indicates the rank at each iteration, with darker hues representing less perceived need for an independent board chair. The fund voted against the following companies' proposals: Abbott Laboratories, AbbVie Inc., Archer-Daniels-Midland Company, Chevron Corp., Honeywell International Inc., Intel Corp., Pfizer Inc., The Allstate Corp., Union Pacific Corp., and Verizon Communications Inc. The fund voted for the following companies' proposals: Allergan Plc, Amazon.com, Inc., AT&T Inc., Cardinal Health, Inc., Celgene Corp., JPMorgan Chase & Co., Knight-Swift Transportation Holdings, Inc., Prudential Financial, Inc., and Southwest Airlines Co. The fund did not own the rest of the companies. Seed 101 is used to produce this figure.

C. Preferences & Firm Characteristics: Mallows-Based Ranking vs. OLS

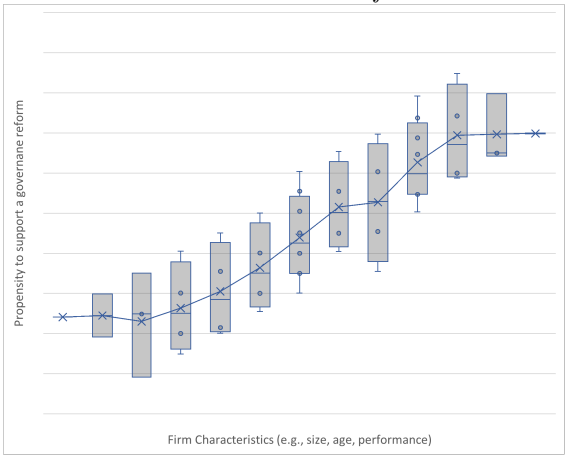
This appendix compares the Mallows-based ranking method to a standard OLS approach for the task of relating investor preferences to firm characteristics. It first clarifies the conceptual differences, then uses a toy example to illustrate how these differences can lead to opposite conclusions, and finally compares the results from both methods on this paper's dataset.

C.1. Conceptual Differences and the Potential for Opposite Conclusions

The Mallows-based ranking method and an OLS regression with fund fixed effects are not interchangeable; they are designed to answer fundamentally different questions. The Mallows-based approach answers the question: How does the entire mutual fund community, as a collective, rank the governance needs of all firms relative to each other? In contrast, an OLS regression with fund fixed effects answers the question: For a given fund, how do its votes correlate with firm characteristics among the companies it has chosen to hold? This within-fund analysis, while valuable, cannot provide the overall, cross-firm assessment that is the goal of this paper.

This distinction is not just semantic; answering these different questions can lead to opposite conclusions from the exact same data, a dynamic that is referred to as the Simpson's paradox: a phenomenon where an association between two variables in a population reverses or disappears when the population is divided into subgroups. Exhibit 4 provides a conceptual illustration of this, where the y-axis can be thought of as the propensity to support a governance reform. While the overall relationship across all funds and firms appears positive (Panel A), the relationship within each fund's individual portfolio is consistently negative (Panel B). This discrepancy arises because of selection: for example, funds that prefer to support reforms at larger firms may systematically choose to own larger firms. The OLS within-fund analysis would therefore incorrectly suggest that funds prefer reform at smaller

Panel A. Overall Preferences



Panel B. Within Preferences

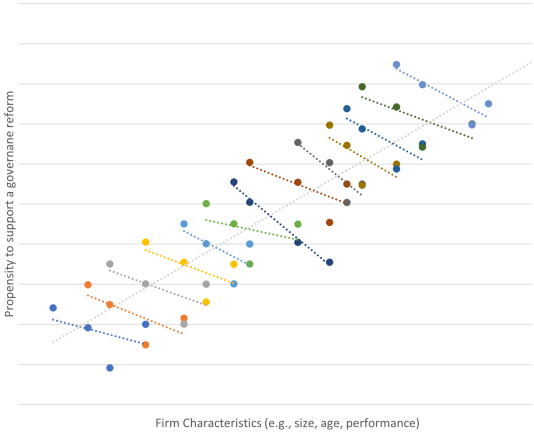


Exhibit 4. Overall vs. Within-Fund Preferences: Conceptual Illustration. These two panels use the same hypothetical dataset yet produce opposite patterns depending on whether one looks at the overall (Panel A) or within-fund (Panel B) perspective. The figure demonstrates that the same underlying data can imply quite different conclusions if one focuses on aggregate investor preferences versus within-fund variation.

firms, while the Mallows approach, designed to capture the aggregate view, would correctly identify the positive overall relationship.

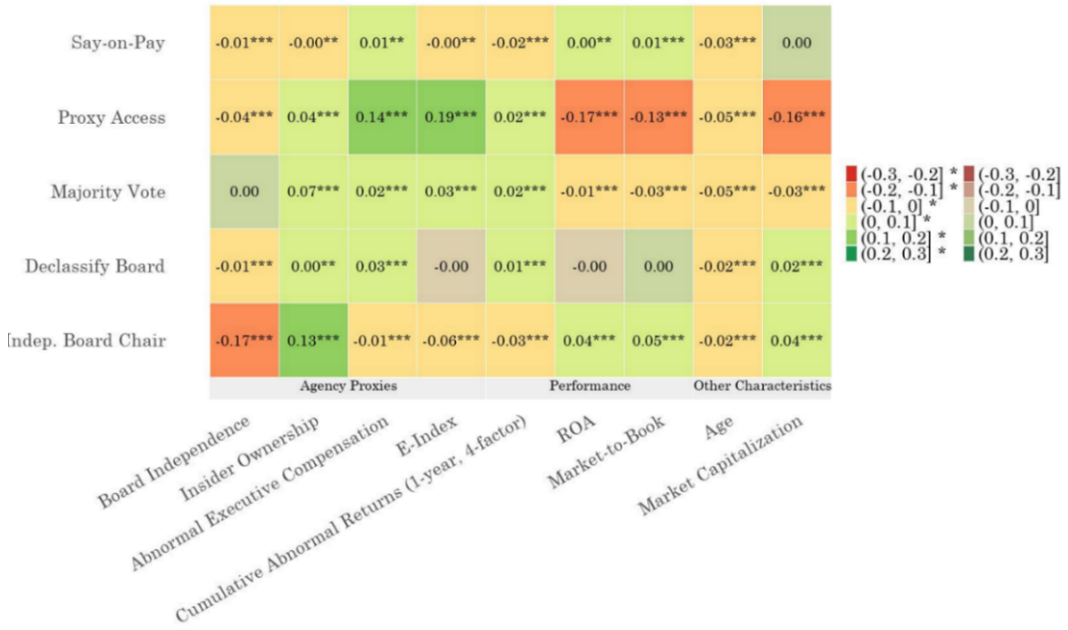
C.2. Empirical Comparison and Takeaway

The discussion above raises the question of how these conceptual differences play out in the actual data. A comparison of the paper's aggregate results (Figure 4) with the comparable within-fund OLS results (Figure IA.7) reveals that while the directional findings for some core governance attributes often align. This is not surprising, because both methods use the same underlying votes. However, the magnitudes, statistical significance, and even the signs of the relationships differ in many instances.

A notable example appears for proxy access proposals: the aggregate Mallows results show a strong positive relationship between a firm's market capitalization and support for proxy access, while the within-fund OLS results show a significant negative relationship. Similarly, the aggregate Mallows results show a pronounced negative relationship between firm age and say-on-pay support, while this relationship appears much weaker and less stable in the within-fund OLS results.

These differences illustrate that the Mallows-based ranking method and OLS are not interchangeable tools for this analysis. The key contribution of the Mallows framework is not just that the coefficients differ, but that it produces a reliable overall ranking in the first place—a task for which OLS is not well-suited. By correcting for the biases induced by selective ownership, it provides a more credible measure of the entire fund community's collective assessment. It is this overall ranking that allows for a cleaner analysis of which firm characteristics are truly associated with the collective view of mutual funds.

Panel A. Univariate Regressions



Panel B. Multivariate Regressions

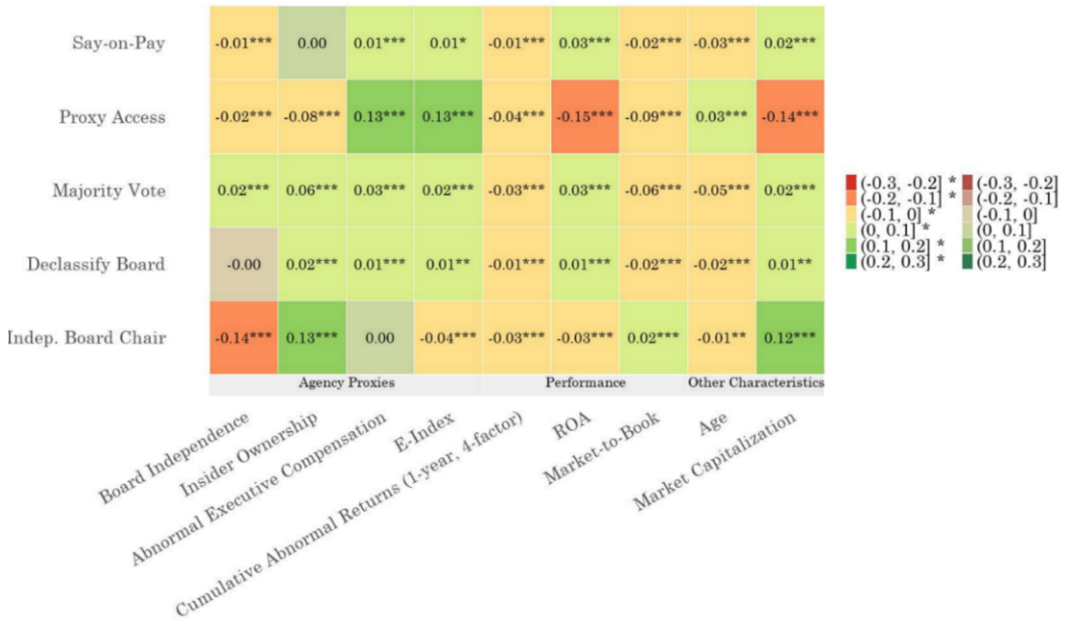


Figure IA.7. Within-Fund Analysis (OLS with Fund Fixed Effects) vs. Firm Characteristics This figure reports OLS regressions of fund votes on firm characteristics, controlling for fund fixed effects. Panel A shows univariate regressions; Panel B shows multivariate regressions.

D. Withheld-Vote Validation: Procedure and Illustration

This appendix describes a predictive validation exercise designed to assess whether the algorithm makes reliable inferences in predicting each fund's preferences for a company for which it hasn't voted on the proposal. The full procedure can be summarized as follows:

1. **Randomly select one vote to redact per fund.** For a concrete example, consider the fund whose augmented rankings appear in Table IA.2 and Figure IA.6. This fund voted on 19 independent board chair proposals during the 2018 proxy season (9 "For" and 10 "Against"). The withheld vote belongs to Union Pacific Corp, and the fund's original vote is "Against." Similarly, I randomly withhold one vote per fund.

2. **Re-estimate the augmented rankings with the redacted data.** The algorithm estimates company rankings (i.e., overall ranking) as well as each fund's augmented ranking with the redacted data.

3. **Isolate the rank distribution of the withheld company under both scenarios (original vs. redacted).** Figure IA.8 compares the aforementioned fund's newly estimated distribution for Union Pacific with the original distribution, showing a 91% overlap.[1]

4. **Compute the distributional overlap for each fund and summarize the results (e.g., mean, median) across all funds.** I repeat the same procedure for all funds that voted on independent board chair proposals during the 2018 proxy season. The overlap is high, with a mean of 87% and a median of 91% across 1,403 funds, suggesting that the algorithm is overall capable of inferring preferences for firms for which it had not voted on.

[1] To quantify overlap formally, each distribution is broken into relative frequencies by rank, the minimum of the two frequencies is taken at each rank, and these minima are summed. For example, assuming a 5-draw scenario, if the original draws for the withheld company were $\{3, 3, 3, 4, 5\}$ while the redacted draws for the withheld company were $\{3, 3, 4, 5, 6\}$, then the overlap is 80%.

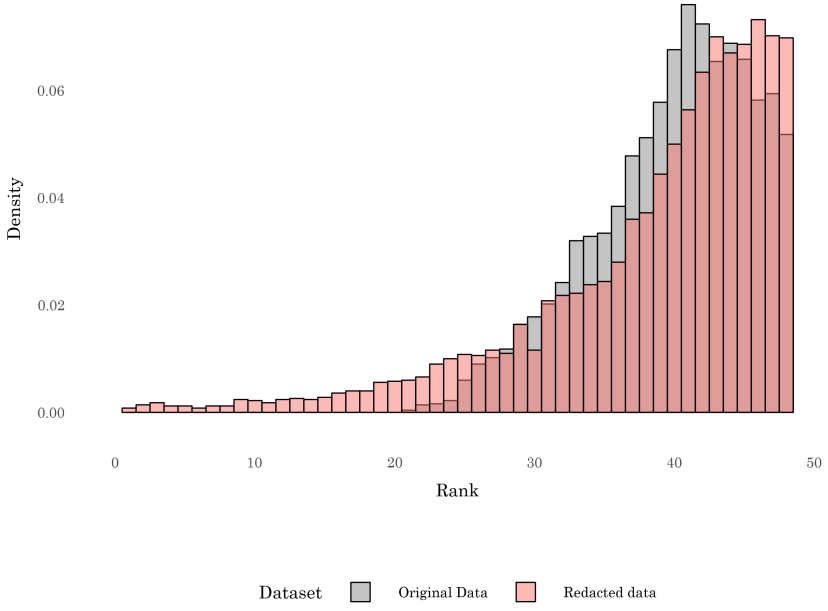


Figure IA.8. Comparison of One Fund's Original vs. Redacted Rank Distributions for Union Pacific Corp. This figure shows the distribution of possible ranks for Union Pacific's proposal under the original data (gray bars) versus the distribution estimated after withholding one vote (pink bars). The overlap of these two histograms is 91%, indicating that the algorithm can reliably recover missing preferences.

E. Additional Analyses for Mandatory Say-on-Pay

This appendix provides further detail on the analysis of mandatory say-on-pay votes, which serves as a robustness check in Section 5.4. Unlike the standardized shareholder proposals in Section 4, each say-on-pay vote is on a firm's unique compensation package, covering its overall pay structure, quantum, and specific severance terms. Consequently, the say-on-pay rank reflects the collective judgment of mutual funds on the appropriateness of each firm's pay practices in its specific context.

A notable pattern emerges from the mandatory say-on-pay rankings: the precision of a firm's estimated rank is inversely related to its raw vote support. Figure IA.9 provides an illustration of this dynamic for a sample of companies from the 2011 proxy season, a pattern that holds across all years. In the figure, a lower rank (left side of the distribution plots) indicates stronger collective support from mutual funds for the firm's compensation package, while a higher rank reflects broader dissent. Companies receiving near-unanimous approval (e.g., above 95% support) often exhibit wide posterior rank distributions. This occurs because the algorithm primarily learns relative rankings from observing differential voting patterns; when almost all votes are in favor, there are few differentiating signals to establish a precise ordering among the highly-approved firms, resulting in wider intervals that accurately reflect this uncertainty. Conversely, companies facing more significant dissent provide richer information. Each "Against" vote acts as a clearer signal of relative disapproval, allowing the algorithm to estimate the firm's rank with higher confidence and a narrower posterior distribution.

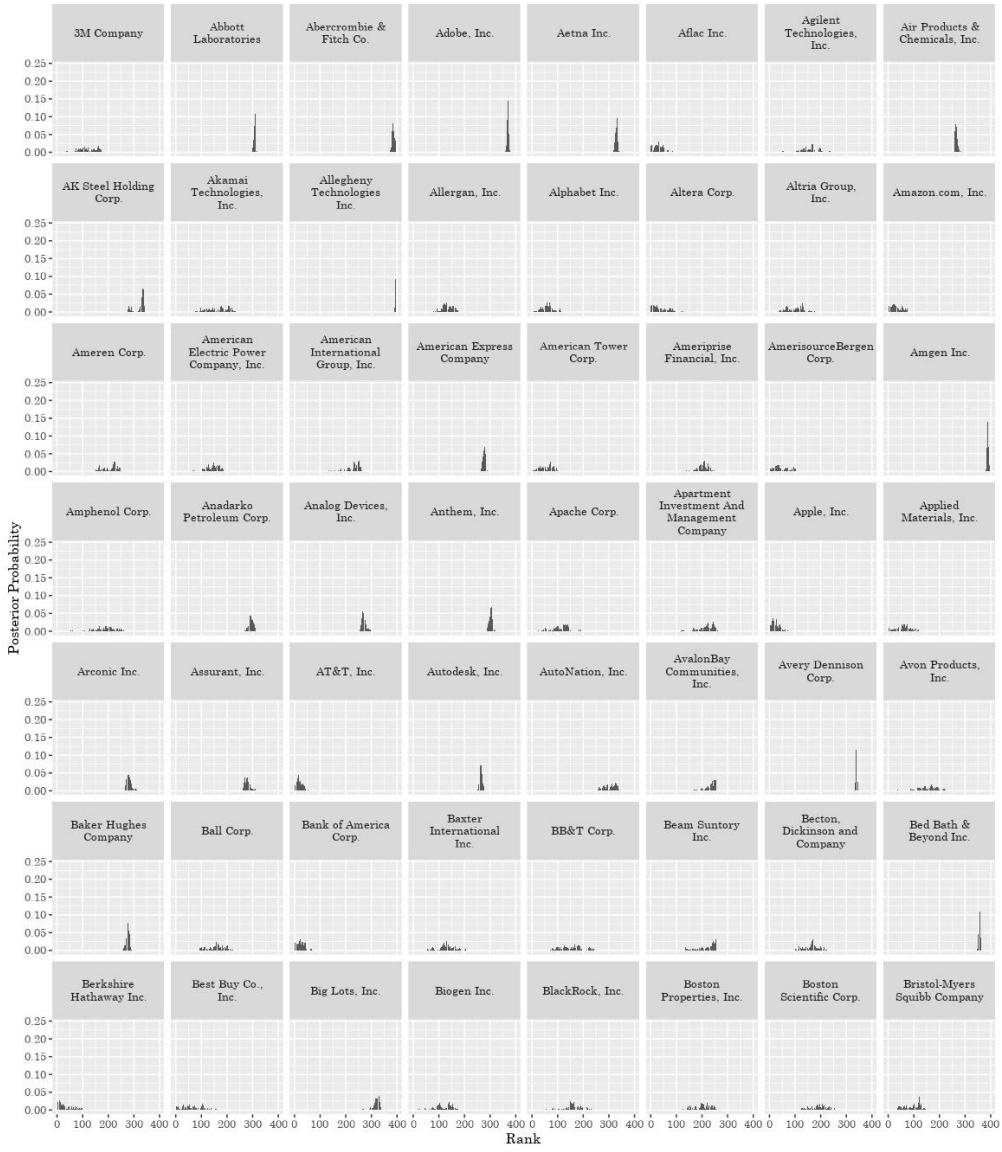


Figure IA.9. Posterior Rank Distributions for Mandatory Say-on-Pay Votes. This figure presents the posterior distribution of each firm's rank based on fund preferences for companies that received mandatory say-on-pay proposals during the 2011 proxy season, estimated using the Mallows-based ranking method. Distributions for the first 56 companies (alphabetically) out of the entire S&P 500 firms receiving votes are displayed for legibility. A rank closer to 1 (left side of plots) indicates stronger collective support from mutual funds for the firm's compensation package, while higher ranks (right side) reflect less support.

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