The Party Structure of Mutual Funds*

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ABSTRACT. We investigate the structure of mutual funds' corporate governance preferences as revealed by how they vote their shares in portfolio companies. We apply standard unsupervised learning tools from the machine learning literature to analyze a comprehensive dataset of mutual funds' votes and find that a parsimonious two-dimensional model can explain the bulk of mutual fund voting. The two dimensions represent competing visions of shareholder rights and modes of shareholder engagement with management. Model-based cluster analysis shows that mutual funds are organized into three 'parties'—the Traditional Governance Party, the Shareholder Intervention Party, and the Shareholder Veto Party—that follow distinctive philosophies of corporate governance and shareholders' role. Our preference measures for mutual funds generate a range of insights about the broader system of corporate governance.

*We are grateful to Alon Brav, Andrew Eggers, Marcel Kahan, Ed Rock, and seminar participants at Oxford University, New York University, the NYU-Penn Law and Finance Conference, the University of Michigan, Columbia University and the University of California, Berkeley for helpful comments and discussions. We thank Nicolas Duque Franco and Stephanie Thomas for very able research assistance. Bubb: ryan.bubb@nyu.edu. Catan: emiliano@nyu.edu. *First draft*: Feb. 14, 2018. *This draft*: April 16, 2018.

1. INTRODUCTION

To understand corporate governance in the United States, one must understand the voting behavior of mutual funds. Mutual funds have grown to hold about one-third of publicly traded stock and are subject to legal duties to vote that stock in the interest of the funds' investors. Recent years have also seen a shift in the asset management industry away from actively managed funds to index funds, as well as increasing concentration of assets in the largest mutual fund families. The resulting changes in the ownership of public companies have raised concerns about their effects on corporate governance. Azar, Schmalz, and Tecu (2017), for example, provides evidence that the growth in common ownership by mutual funds of multiple competitors has had anticompetitive effects.

In tandem with the growth of mutual funds as corporate shareholders, corporate law and practice have evolved to elevate the role of the shareholder franchise. Shareholder votes today play an important role in setting issuer-level corporate governance policies, including through the use of shareholder proposals to spur governance reforms, and have become an important tool used by institutional investors to discipline corporate management. Recent legal changes that have enhanced the role of voting include the Dodd-Frank Act's requirement that public companies hold regular advisory votes on executive compensation and the widespread move to majority voting rules for director elections. Finally, the rise of activist investor campaigns that culminate in a shareholder vote has made votes by mutual funds increasingly pivotal.

But despite these trends that have made mutual funds central players in corporate governance, we know relatively little about their behavior as company owners. In this paper we develop the first systematic account of the structure of mutual fund preferences over corporate governance as expressed by the proxy votes they cast in their portfolio companies. We focus specifically on two basic questions. First, what are the main ways in which mutual funds differ in their corporate governance preferences? Second, given that variation in corporate governance preferences, what are the characteristic "types" of mutual funds in terms of their corporate governance philosophies? As

a theoretical matter, it is not obvious why mutual funds' voting behavior would vary systematically. Mutual funds are merely financial intermediaries that face broadly similar financial incentives and legal duties with respect to voting the shares in their portfolio companies. One might expect that they would generally vote their shares in a way that would maximize the value of their portfolios and would generally agree on how to do so. We also investigate the determinants of mutual fund corporate governance preferences.

To investigate mutual fund voting behavior empirically, we use a comprehensive sample of mutual funds' votes. The full sample covers votes on 181,951 proposals from 5,774 portfolio companies by 4,906 mutual funds from 458 fund families. The full data matrix of mutual fund votes, composed of funds as rows and proposals as columns, is massive, with 892,651,606 cells. But because most mutual funds own only several hundred portfolio companies, and hence vote on only a small fraction of all public companies' proposals, 96.7% of the cells in the data matrix are empty. This type of data analysis task—uncovering the underlying structure of a large but sparsely populated dataset—is referred to as an "unsupervised learning" problem in the machine learning literature. We adopt two key unsupervised learning tools—principal components analysis and cluster analysis—to provide a new window into the structure of mutual funds' corporate governance preferences that generates a range of insights into the broader system of corporate governance.

First, we hypothesize that mutual funds' corporate governance preferences can be organized or represented as positions along a small number of latent dimensions. To investigate this hypothesis, we use principal components analysis to approximate our high dimensional data matrix using a rank-two matrix and find that a parsimonious two-dimensional model can indeed explain the bulk of mutual fund voting. The explanatory power of a relatively low dimensional model reflects linkages between issues in the high-dimensional proposal space as part of a "belief system" (Converse, 1964) of mutual funds about corporate governance. Those two main dimensions, in turn, represent competing visions of "shareholder rights" and modes of shareholder engagement with management. The first dimension measures the tendency of mutual funds to vote against management in a mode that focuses on affirmatively intervening in corporate affairs through proposals to reform

corporate policies. The second dimension measures the tendency of mutual funds to vote against management in a mode that focuses on monitoring management proposals and attempting to veto courses of action that raise shareholder concerns.

The dramatic reduction in the dimensionality of the data we achieve in turn helps facilitate our characterization of the typology of mutual fund corporate governance preferences. While one might expect mutual funds' preferences to be distributed unimodally in our estimated two-dimensional preference space, there are in fact three distinct modes. We conceptualize these groups as mutual fund "parties," each of which corresponds to a group of mutual funds with broadly similar corporate governance preferences that tend to vote together. Using model-based cluster analysis, we classify mutual funds into one of these three distinct parties, or into no party, and characterize the voting behavior of each party. We label the three parties the Traditional Governance Party, the Shareholder Intervention Party, and the Shareholder Veto Party, and we refer to the latter two parties as the shareholder rights parties.

Funds in the Traditional Governance Party—which is by far the largest party and includes the "Big Three" passive managers BlackRock, Vanguard, and State Street—support management at much greater rates than the two shareholder rights parties. This is consistent with belief in a traditional model of corporate governance in which the board, and not shareholders, manages the business and affairs of the corporation between annual shareholder meetings. But members of the Traditional Governance Party will oppose management to defend the right of shareholders to take control of the corporation by majority shareholder action at an annual meeting. For example, they strongly support shareholder proposals to declassify the board and to reduce supermajority vote requirements in the company's governing documents.

The two shareholder rights parties, in contrast, each follow distinctive philosophies of corporate governance and the role of shareholders. The Shareholder Intervention Party supports shareholder proposals and proxy contests much more often than the Shareholder Veto Party. These votes are forms of proactive shareholder engagement and entail shareholders attempting to intervene in the company's corporate affairs—hence the name "Shareholder Intervention Party." The recommenda-

tions of the leading proxy advisor—Institutional Shareholder Services—place it in the Shareholder Intervention Party, and it likely plays a role in coordinating the votes of party members. In contrast, the Shareholder Veto Party opposes management proposals at a substantially higher rate than members of the Shareholder Intervention Party. These proposals entail corporate management asking shareholders to ratify some management decision—hence the name "Shareholder Veto Party." The recommendations of the second leading proxy advisor—Glass Lewis—place it in the Shareholder Veto Party. One might expect shareholders' willingness to intervene proactively and willingness to veto management proposals to be positively related, but we show that across the two shareholder rights parties, they are negatively related. The two parties thus represent distinctive visions of shareholders' role in corporate governance. To our knowledge we are the first to recognize and document these two competing philosophies that drive institutional shareholders' voting behavior.

We then investigate the factors that shape mutual funds' preferences by regressing our preference measures on fund characteristics that are likely to influence their incentives. Index funds, and families that specialize in indexing, are less shareholder-rights oriented than actively managed funds. Even more interestingly, we also find that funds that follow a growth stock strategy are less shareholder-rights oriented than value funds. This is consistent with the idea that the investment thesis for most growth stocks includes belief in the company's current management. We also show that larger funds and fund families are less shareholder-rights oriented.

Our main contribution is to systematically measure and characterize the corporate governance preferences of mutual funds and to use those measures to generate new insights about the system of corporate governance more broadly. We hope that the "spatial map" of mutual fund corporate governance preferences we provide will serve as a useful field guide to scholars and practitioners of corporate governance, helping to reveal important patterns and trends. In addition to descriptive insights, the shareholder preference measures we introduce to the literature might also enable new quantitative tests of theories and hypotheses in corporate governance. We consider our results on the determinants of mutual fund preferences to be an initial proof of concept in that regard. In work in progress, Bubb and Catan (2018), we use our measures of shareholder preference developed in

this paper to construct issuer-level measures of the preferences of public companies' shareholder bases and study their determinants and consequences.

Our overall findings are broadly consistent with a burgeoning literature on the voting behavior of institutional investors (Matvos and Ostrovsky, 2010; Choi, Fisch, and Kahan, 2010, 2013; Ertimur, Ferri, and Oesch, 2013; Iliev and Lowry, 2014; Malenko and Shen, 2016; Appel, Gormley, and Keim, 2016; Brav, Jiang, and Li, 2017). In contemporaneous and independent work, Bolton, Li, Ravina, and Rosenthal (2018) also estimate a spatial model of voting by institutional investors. Their preference estimation methodology and data are different from ours. In particular, they estimate a 1-dimensional model using W-NOMINATE, a tool developed in political science to study Congressional voting. They take the mutual fund family as the "voter" and include "votes" of 211 mutual fund families in their analysis sample. In contrast, we use individual mutual funds as the unit of analysis because, legally, funds and not families vote shares, and in several major fund families (e.g., Fidelity) there are substantial differences in voting across funds within the family. They include votes from a single fiscal year, and exclude director election proposals, yielding only 3,318 proposals in their analysis sample, an order of magnitude fewer than in our sample.

As a combined result of these differences they reach quite different conclusions from ours. In contrast to our finding of a party structure in mutual fund voting, Bolton, Li, Ravina, and Rosenthal (2018) emphasize that their distribution of ideal points is close to unimodal, distinguishing it from the bimodal distribution of preferences in Congress that follows political parties. More fundamentally, Bolton, Li, Ravina, and Rosenthal (2018) interpret their estimated mutual fund preference space in terms of investors' degree of social orientation versus profit-seeking, writing: "The left represents relatively socially-oriented investors, while the right represents Management recommendations and exclusively profit-oriented investors" (p. 16). Our approach results in a very different understanding of the preference space. We show that two latent dimensions underlie heterogeneity in preferences among the profit-seeking institutional investors that hold the vast majority of mutual fund assets, and that those two dimensions measure the extent to which funds adopt two competing modes of shareholder engagement vis-a-vis management.

The plan of the paper is as follows. In Section 2 we estimate a low-dimensional model of mutual fund corporate governance preferences and characterize the main dimensions on which funds' preferences vary. In Section 3 we classify mutual funds into three distinct parties and characterize the parties' voting behavior. In Section 4 we use our preference measures to test various theories about the determinants of mutal funds' corporate governance preferences. Section 5 concludes.

2. The Dimensions of Mutual Fund Preference

Corporate shareholders vote on a range of issues, including in the election of directors and on various corporate governance policy issues. Our goal is to uncover the structure of mutual funds' corporate governance preferences, as revealed through how they vote their shares in their portfolio companies. We focus specifically on two main questions. First, what are the main ways in which mutual funds differ in their corporate governance preferences? Second, what are the characteristic "types" of mutual funds in terms of their corporate governance philosophies? To answer these questions, we apply standard unsupervised learning tools from the machine learning literature. We begin in this section with the first of these questions by applying principal components analysis (PCA) to estimate a parsimonious spatial model of mutual funds' corporate governance preferences that reveals the main dimensions of mutual funds' preferences. The dramatic reduction in the dimensionality of the data we achieve then facilitates our characterization of the "party structure" of mutual funds—identifying clusters of funds that have similar preferences—in the following section.

2.1. **Voting data.** Our mutual fund voting data is from ISS Voting Analytics, which is drawn from public filings by mutal funds on Form N-PX. Our sample period is from 2010 - 2015. We treat the set of mutual funds in the CRSP mutual funds database that hold U.S. common stock as the population of interest. Hence, we only keep in our sample the mutual funds from ISS Voting Analytics that we can match to a CRSP fund. We use ticker, fund name, and family name as well

as data from EDGAR to link the two datasets. After excluding votes cast by funds that voted on fewer than 200 proposals, the full sample covers votes on 181,951 proposals from 5,774 portfolio companies by 4,906 mutual funds from 458 fund families. We also include as "voters" in the data matrix rows for management, ISS, and Glass Lewis based on their respective recommendations.[1] This enables us to place these actors in the same preference space as the mutual funds, which aids in interpretation of the model. Including these three actors as voters in the data matrix has a negligible effect on our estimates; all results are robust to excluding them.

The resulting data matrix, formed by funds as rows and proposals as columns, has a total of 893,197,459 cells. However, because each individual mutual fund owns only a fraction of the portfolio companies covered in the dataset, and therefore votes on only a small fraction of the proposals in the sample, there are only 29,826,930 votes in the sample. In other words, 96.7% of the cells in the data matrix are empty.

2.2. **Estimating a low-dimensional model of mutual fund preference.** Each of the 181,951 proposals represents a variable in the dataset, and the sheer number of variables threatens to swamp attempts to use the data to systematically characterize mutual funds' corporate governance preferences. Many of these variables, however, are highly correlated. Relatedly, we hypothesize that much of the variation in mutual funds' votes on these proposals are driven by preferences that can be well represented as positions in a much lower dimensional space.

To investigate this, we use PCA. PCA can be motivated and derived in a number of different ways. One is in terms of finding the mutually orthogonal directions in the data having maximal variances (Joliffe, 2002). Here we focus on an alternative framing: PCA finds a low rank approximation of the data that minimizes the squared approximation error. In particular, let X be the $n \times p$ matrix of votes of n funds on p proposals. To find the best (in a least squares sense) rank k

[1]The data on management recommendations and ISS recommendations come from ISS Voting Analytics. We impute Glass Lewis's recommendations by identifying a set of mutual funds that follow Glass Lewis, based on information from the Proxy Insight website, and coding the Glass Lewis recommendation as the majority vote among the Glass Lewis followers for proposals in which at least two of the Glass Lewis followers voted on it and more than two-thirds of the Glass Lewis followers voted in the same direction.

approximation of X, we solve:

$$\min_{Z,A,M} \|X - ZA - M\|^2,$$

where Z is an $n \times k$ matrix of principal component "scores," A is a $k \times p$ "coefficient" (or "loadings") matrix, and M is an $n \times p$ matrix with each row equal to a vector containing the means of each variable. Let z_i be the i-th row of Z, a_j be the j-th column of A, and m_j be the mean of the j-th column of X. Then the problem can be written element-by-element as:

$$\min_{Z,A,M} \sum_{i=1}^{n} \sum_{j=1}^{p} (X_{ij} - z_i a_j - m_j)^2.$$

The solution to this complete-data problem can be calculated using the singular value decomposition of the centered data matrix $(X - M)$.

A challenge to performing PCA posed by our data, however, is that 96.7% of the entries in the data matrix are missing. Let $O \subset \{1, \ldots, n\} \times \{1, \ldots, p\}$ denote the set of (i, j) such that X_{ij} is *observed*. PCA can be generalized to this setting as:

$$\min_{Z,A,M} \sum_{i,j \in O} (X_{ij} - z_i a_j - m_j)^2,$$

which lacks an analytic solution. We fit the model using a type of expectation maximization algorithm proposed by Kiers (1997) and further analyzed in Ilin and Raiko (2010) and Josse and Husson (2012). To estimate a k dimensional model, the algorithm proceeds as follows:

1. Impute missing observations in X using the mean of each variable.
2. Perform PCA on the completed dataset to estimate $(\hat{Z}, \hat{A}, \hat{M})$. Retain k dimensions of $\hat{Z}$ and $\hat{A}$; denote the truncated matrices as $\hat{Z}^k$ and $\hat{A}^k$.
3. Reimpute the missing values of X using $\hat{M} + \hat{Z}^k \hat{A}^k$.
4. Repeat steps 2 and 3 until convergence.

The principal component scores z_i can be understood as the projection of the rows of X (each representing a fund) onto a k dimensional subspace. One interpretation of these scores is as k-dimensional latent variables for each fund that best explain the observed voting data. Indeed, Heckman and Snyder (1997) develop a linear probability model approach to estimating a spatial model of preferences over discrete choices in settings in which the analyst does not observe the attributes of the choices that drive decisions and show that the agents' preference parameters can be estimated using PCA.

In particular, suppose each proposal $j = 1, ..., p$ represents a choice between a "Yes" outcome and a "No" outcome, $O_{jy}, O_{jn} \in \mathbb{R}^k$, where k denotes the number of dimensions of the preference space. Each mutual fund $i = 1, ..., n$ has an "ideal point," $z_i \in \mathbb{R}^k$, in that same space. Utility for mutual fund i given the outcome of proposal j is:

$$U_i(O_{jy}) = -h(\|z_i - O_{jy}\|) + \epsilon_{ijy}, \tag{1}$$

and,

$$U_i(O_{jn}) = -h(\|z_i - O_{jn}\|) + \epsilon_{ijn}, \tag{2}$$

where $h(\cdot)$ is a strictly increasing loss function, and ϵ_{ijy} and ϵ_{ijn} are random shocks. Fund i's vote on proposal j is then given by,

$$X_{ij} = 1 \Leftrightarrow U_i(O_{jy}) > U_i(O_{jn}). \tag{3}$$

Heckman and Snyder (1997) show that our principal component scores can be interpreted as estimates of the funds' ideal points in such a spatial model.

2.3. **Filtering the sample.** One challenge of applying our estimation approach to the data is that it is computationally expensive, given the enormous size of the data matrix. Many of the proposals in the full dataset, however, contain little information. In particular, the vast majority of proposals are highly lopsided, with almost all funds voting the same way. The most numerous type of lopsided

proposal is votes on management nominees in uncontested director elections. These lopsided votes contain little information about the relative preferences of mutual funds. To see the intuition, consider the extreme case of a unanimous vote—unanimous votes contain *no* information about mutual funds' relative preferences. To focus on informative votes, and to make the computation more manageable, we require that there be at least a minimal amount of controversy among mutual funds about a proposal for the proposal to be included in our estimation sample. In particular, we drop all proposals for which fewer than 8% of funds voted in the minority. Similarly, for a proposal to be included in the estimation sample, we require that at least 20 mutual funds vote on it, and for a fund to be included it must have voted on at least 200 sample proposals.

The resulting estimation sample covers votes by 3,616 mutual funds from 309 fund families on 33,183 proposals from 3,838 portfolio companies. Table 1 provides counts of proposal types for the estimation sample and the full sample. The prefixes "MP" and "SP" in the proposal categories refer to management proposals and shareholder proposals, respectively. Proposals to elect directors nominated by management are by far the most common type of proposal. The second most frequent proposal category is management proposals related to executive compensation, the bulk of which are say-on-pay proposals or proposals to approve or amend the company's stock compensation plan. Shareholder proposals are less numerous and mostly focused on corporate governance issues rather than corporate social responsibility.

With 3,619 voters (3,616 funds plus management, ISS, and Glass Lewis) and 33,183 proposals, there are a total of 120,089,277 potential votes in the estimation sample and therefore cells in our data matrix defined by one row for each voter and one column for each proposal. The median fund, however, owns a total of only 557.5 unique portfolio companies over the sample period, and as a consequence there are only 5,315,876 votes in the analysis sample. In other words, 95.6% of the cells of the estimation sample data matrix are empty.

2.4. **Data on fund characteristics.** For fund characteristics, we merge in data from CRSP's mutual fund database. Table 2 compares the CRSP population of mutual funds from 2010 - 2015

holding U.S. common stock to the CRSP funds that we were able to match to a fund in the ISS Voting Analytics data that was included in our estimation sample. The estimation sample includes votes by funds representing about half of the CRSP population in each year, and almost 80% of the value of U.S. common stock held by mutual funds in CRSP. Tables 3 and 4 provide summary statistics for the CRSP population and for the funds in the estimation sample, respectively. They show that the funds in the estimation sample are somewhat larger on average than funds in the CRSP population of funds and moreover that index funds are disproportionately represented.

2.5. **The number of dimensions.** An initial question is how many dimensions of mutual fund preference are needed to provide a good model of mutual fund preferences. The eigenvalues of each principal component provide one perspective on the issue. The eigenvalue of the k-th principal component measures the variance in the voting data along that dimension. Figure 1 plots the eigenvalues of the first thirty principal components. Note that starting with the third component, the plot becomes linear. A widely used rule-of-thumb is to include the principal components up to the first component in the linear portion of the plot (Joliffe, 2002, pp. 116-117). Here, that is the third component. But while the first two components have fairly straightforward interpretations, as discussed below, the third principal component has no obvious substantive interpretation. In what follows, we thus focus on the first two dimensions as a parsimonious model of mutual fund preference.

Table 5 provides the classification percentage (CP) and average proportional reduction in error (APRE) for models using 1 - 10 dimensions. The CP is simply the percentage of votes that the model classifies correctly, where a predicted value $\hat{M}_{ij} + \hat{z}_i^k \hat{a}_j^k > 0.5$ is classified as a "Yes" vote, and $\hat{M}_{ij} + \hat{z}_i^k \hat{a}_j^k < 0.5$ is classified as a "No" vote. APRE measures the reduction in error the model achieves in classifying votes relative to a simple benchmark model of predicting that all funds vote with the majority on the proposal.[2] A two-dimensional model performs well, correctly classifying 87% of the votes, with an APRE of 50%.

[2]For each proposal, the proportional reduction in error (PRE) is equal to $\frac{\text{Number Minority Votes} - \text{Number Classification Errors}}{\text{Number Minority Votes}}$. The APRE sums over all of the proposals: $\frac{\sum_{j=1}^{m} \text{Number Minority Votes}_j - \text{Number Classification Errors}_j}{\sum_{j=1}^{m} \text{Number Minority Votes}_j}$.

2.6. **The interpretation of the dimensions.** We turn now to the substantive interpretation of the dimensions of mutual fund preference. As a first step, we study the distribution of loadings on the two dimensions across proposals. Figure 2 reports the distribution of loadings across the 33,183 proposals in the sample. To aid in interpretation, we partition the set of proposals into those submitted by management and those submitted by shareholders, and analyze separately the distribution of loadings in each subset. Almost all the proposals submitted by shareholders have positive loadings on both dimensions. By contrast, in the case of proposals submitted by management, proposals tend to have systematically more negative loadings. This is particularly the case for dimension 2, for which almost 80 percent of management proposals load negatively. By contrast, a much more sizable fraction of management proposals have positive loadings on dimension 1. Management always supports its own proposals, of course, and almost always opposes proposals submitted by shareholders. Hence, the fact that proposals submitted by shareholders tend to load much more positively on both dimensions than do proposals submitted by management suggests that both dimensions capture some type of "shareholder rights" corporate governance philosophy.

In sum, the most distinctive feature of dimension 1 is how positively shareholder proposals tend to load on that dimension, whereas the most distinctive feature of dimension 2 is how negatively management proposals tend load on that dimension. This pattern reflects the two distinctive philosophies of corporate governance represented by the two dimensions. Dimension 1 measures an approach to shareholder rights that focuses on shareholders affirmatively intervening in corporate affairs by supporting reforms to corporate policies and practices. Dimension 2 in contrast measures an approach to shareholder rights that focuses on shareholders monitoring corporate management and attempting to "veto" management proposed courses of action that raise concerns. We return to the differences in the corporate governance philosophies represented by the two dimensions in Section 3 below, when we discuss the "party structure" of mutual fund preferences.

2.7. **The distribution of mutual funds' preferences.** Figure 3 shows the estimated preferences of mutual funds, with funds' scores on the first dimension on the horizontal axis and their scores on

the second dimension on the vertical axis. Each dot is a mutual fund. Also depicted with triangles are the preferences at the mutual fund family level, calculated as the average of the family's funds' preferences (weighted by each fund's TNA), for a subset of the mutual fund families in the data. We also show the univariate densities of funds' locations on dimensions 1 and 2 in Figure 4.

Note first the location of management (which we also highlight in the univariate densities). In line with our basic interpretation of both dimensions as capturing different "shareholder rights" philosophies, Management is in the lower left of the figure, with low scores on both dimensions. As discussed in subsection 2.6, this reflects that management tends to vote systematically against (for) proposals that have positive (negative) loadings on either dimension. Given the distribution of loadings across proposals, for both dimensions, the higher a fund's scores are, the more the fund opposes management proposals and supports shareholder proposals.

Moreover, the two leading proxy advisors are also at extreme locations: ISS is in the lower right, and Glass Lewis is in the upper left. As shown in Figure 5, the proxy advisors' extreme locations are driven by the fact that their voting recommendations are strongly associated with the proposal loadings. As shown in the top panel, proposals that load positively (negatively) on dimension 1 overwhelmingly receive positive (negative) recommendations from ISS. In the same vein, proposals that load negatively (positively) on dimension 2 generally receive a negative (positive) recommendation by Glass Lewis. The extreme positions for the two proxy advisors indicate that ISS's and Glass Lewis's endorse differential shareholder rights philosophies. The proxy advisors' recommendations, in turn, might well have a causal influence on some mutual funds' voting and thereby reinforce the two main dimensions of mutual funds' corporate governance preferences.

In sum, our spatial model shows that mutual fund preferences can be well-represented as positions along two latent dimensions, each of which represent distinct "shareholder rights" governance philosophies. It is noteworthy that these two dimensions are orthogonal. That is, while one might imagine that management, mutual funds, and the proxy advisors sit on a single dimension that ranges from an extreme managerialist view on one end to an extreme shareholder rights view on the other, with each voter ordered according to the intensity of their shareholder rights views, a

better representation of mutual fund preferences is that there are two orthogonal dimensions of shareholder rights preferences. A fund can be extreme on dimension 1 without being extreme on dimension 2, and vice-versa. In the next section, we further explore the differences between the visions of corporate governance and shareholders' role captured by the two dimensions by examining how clusters of funds that are extreme on just one of the dimensions vote their shares.

2.8. **Mapping the votes on specific proposals.** To build further intuition about the window into mutual fund voting preferences our framework provides and to illustrate how it works, in this section we discuss four specific proposals using our preference estimates to explain the patterns in funds' votes. Figures 6 - 9 depict the spatial maps of votes for four different proposals. In each figure, we plot the "Yes" and "No" votes cast by each fund at the location of the fund's estimated preferences, using different marker styles to identify "Yes" and "No" votes according to whether the model correctly classified the fund's vote. Each point is labeled using the first two letters of the fund's family name, to aid in identifying funds (e.g., Vanguard fund votes are labeled "Va").

2.8.1. *Dissident nominee for director at DuPont.* The first proposal vote plotted in Figure 6 is for a candidate for director at DuPont nominated by the activist hedge fund Trian Partners in a 2015 proxy contest. Trian had nominated four candidates for DuPont's twelve member board, but despite winning the backing of most non-index institutions, its candidates narrowly lost to management's nominees when the "Big Three" indexers, Vanguard, BlackRock, and State Street, all sided with management. In our data, 72% of funds (ignoring the number of shares each held) voted in favor of the Trian nominee. Following the outcome of the vote, it was reported that had any of the Big Three backed Trian, its nominees would have won.[3]

Examining the vote plot for this proposal, the cutting line that separates the model's predictions of "Yes" versus "No" runs diagonally through the two clusters of funds in the lower left of the diagram between the incorrectly predicted "Yes" and "No" votes. As illustrated in the figure, Trian won the support of not only the bulk of the funds with high scores on dimension 1—who accord-

[3] *See* Reuters, "DuPont wins board proxy fight against activist investor Peltz," May 13, 2015.

ing to our interpretation of the two dimensions would be most favorably disposed toward the challenger, given that we see this kind of vote as the ultimate example of shareholder intervention—but also funds that scored high on dimension 2—funds whose preferred mode of opposing management involves rejecting management's proposals. In fact, it even gathered substantial support from funds with (moderately) negative scores on dimensions 1 and 2. Interestingly, the model predicted that State Street funds would vote "Yes"–they are among the cloud of incorrectly predicted "No" votes in the upper-right portion of the South-West quadrant. The model suggests that this was indeed a close call, with State Street in particular the key swing vote.

Overall the model classifies correctly 78% of the votes on this proposal and achieves a proportional reduction in error (PRE) of 24%. So while the model certainly helps organize and explain the voting patterns on the proposal, it performs less well in classifying votes in this particular proxy contest than it does on average. (Recall the overall percentage of votes classified correctly across the entire sample of proposals is 87%, with an APRE of 49%.)

2.8.2. *Shareholder proposal on executive compensation at Waste Management, Inc.* The shareholder proposal at issue in the vote plotted in Figure 7 was submitted by International Brotherhood of Teamsters General Fund at the 2015 annual shareholder meeting of Waste Management, Inc. It requested that the board of directors adopt a policy under which it would limit the acceleration of the vesting of equity awards for Waste Management executives, noting that under the company's current practices its CEO would receive accelerated vesting of stock worth $18.2 million upon a change of control. 44% of funds in our data voted for the proposal.

In our view, this type of proposal falls squarely in the category of "shareholder intervention" proposals that should be disproportionately supported by funds with a high score on dimension 1 (and disproportionately rejected by funds with a low score on that dimension). The vote plot reveals that was indeed the case. Interestingly, State Street again bucked our model's predictions: the cloud of incorrectly predicted "Yes" votes on the South-West quadrant are State Street funds. But overall, the model performs very well in classifying funds' votes on this proposal, correctly

classifying 91% of the votes and achieving a PRE of 78%.

2.8.3. *Management say-on-pay proposal at PolyOne Corporation.* In Figure 8 is plotted a say-on-pay proposal at PolyOne Corporation from its 2015 annual shareholder meeting. 83% of funds in our data voted for the proposal. As predicted by the model, on the whole, only the funds in the North-West quadrant—those whose preferences suggest the highest propensity to veto management's proposals—voted against the proposal. Overall the model correctly classifies 91% of the votes and achieves a PRE of 47%.

2.8.4. *Uncontested director election at Avnet, Inc.* Finally, in Figure 9 is plotted an uncontested director election at Avnet Inc. from 2011. 85% of funds in our data voted for the proposal. Again, the model organizes funds' votes well: the proposal only failed to attract the support of funds with very high scores on dimension 2. The cutting line separates the incorrectly predicted "Yes" and "No" votes toward the upper left of the preference space, and the model mispredicts only the funds that are close to that cutting line. Overall the model correctly classifies 94% of the votes and achieves a PRE of 61%.

2.9. **Robustness checks.**

2.9.1. *S & P 500 to reduce missing data.* One concern about our estimates is the high degree of missingness in the data matrix: 95.6% of the cells of the estimation sample data matrix are empty. To investigate whether the amount of missing data is distorting our estimates, we construct a new sample with far less missing data by restricting the proposals in the sample to those from S&P 500 companies. Furthermore, we restrict the funds in the sample to those that vote on at least 85% of the S&P 500 proposals for at least one year of the sample. The resulting sample includes 5,705 proposals and 174 funds from 67 families and has far less missing data: only 37.3% of the cells in the data matrix are empty. Figure 10 provides a plot of the resulting preference estimates and reveals the same basic configuration of preferences as in the main estimation sample, giving

greater confidence that our imputation approach can handle the high degree of missingness in the estimation sample.

2.9.2. *Stability over time.* So far we have used voting data from the entire sample period 2010 - 2015 to estimate a single preference score for each fund. A natural question is whether the structure of preferences we estimate is stable over the period. To investigate this, we divide the sample into three two-year cohorts and estimate the model separately for each cohort. The resulting fund preference scores for each cohort are plotted in Figure 11. The locations of major fund families are stable over time as well, showing that the latent dimensions of corporate governance preferences that we estimate are stable, and giving us more confidence in our results from the pooled sample.

3. The Party Structure of Mutual Funds

One might expect mutual funds' preferences to be distributed unimodally across their two-dimensional preference space. But the scatter plot of mutual funds' preferences in Figure 3 reveals that there are in fact three distinct modes, or clusters, of mutual funds. In this section we use cluster analysis—a standard unsupervised learning tool from the machine learning literature—to identify more formally three characteristic "types" of mutual funds in terms of their corporate governance philosophies that correspond to those three modes.

3.1. **Empirical framework.** Our goal is to segment mutual funds into distinct groups on the basis of similarity in their voting behavior. Our dataset has two features, however, that pose signficant challenges to cluster analysis. First, it is very high dimensional, with 181,951 proposals (i.e., variables) in the full sample and 33,183 in the estimation sample, and the "curse of dimensionality" poses well-known challenges to standard cluster analysis techniques (Tomašev and Radovanović, 2016). Second, about 96.7% of the cells in the data matrix are empty. To see the challenge missing data poses, consider: how can one measure the similarity of two funds that never vote on the same proposal? This is a fairly common ocurrence in our data.

Our methodology for estimating mutual fund preferences from Section 2 provides a solution to both of these problems. First, we have dramatically reduced the dimensionality of the data, down to a two-dimensional measure of mutual funds' corporate governance preferences. Second, in order to do so we impute mutual funds' predicted votes on all proposals using PCA, which takes advantage of correlations in voting behavior across proposals. This provides a way to compare funds that have limited or no overlap in the sets of proposals on which they actually vote.

To proceed we thus cluster mutual funds on the basis of their scores on the first two principal components of their voting data using a Gaussian mixture model. We model mutual funds' two-dimensional scores z as random vectors with density of the form:

$$f(z) = \sum_{m=1}^{M} \alpha_m \phi(x; \mu_m, \Sigma_m), \tag{4}$$

where M is the number of components of the mixture, α_m represents the mixing proportion of the m-th Gaussian component, which has mean μ_m and covariance matrix Σ_m. We put no restrictions on Σ_m and estimate the parameters using the expectation maximization algorithm as outlined in Celeux and Govaert (1995). We use a four component model in order to capture each of the three modes evident in the scatter plot in Figure 3 plus a component to capture the funds that lie between and far from each of the three modes. Each mutual fund i is then assigned to the component that provides the greatest conditional probability that z_i arises from it.

3.2. **The estimated party structure.** Figure 12 plots the contours for the estimated Gaussian mixture density along with a scatter plot of the mutual fund preferences. The preferences of the mutual funds that were classified into one of the three components corresponding to the three extreme modes are plotted with dark closed circles. The preferences of mutual funds classified into the fourth component are plotted with lighter open circles.

We interpret the three extreme clusters as mutual fund "parties" in the sense that each cluster is a group of funds with similar corporate governance preferences as reflected by their voting behavior. Much like members of political parties generally vote together, so too do the mutual fund

parties. Given the interpretation of the two dimensions of mutual fund preference described in Section 2, we label the party that is extremely positive on dimension 1 the "Shareholder Intervention Party" and the party that is extremely positive on dimension 2 the "Shareholder Veto Party." We also refer to these two parties as the shareholder rights parties. For reasons we discuss below, we label the party that is extremely negative on both dimensions the "Traditional Governance Party."

3.3. **Party coherence.** Table 6 provides measures of the degree to which party members vote together. For each proposal, we calculate the outcome voted for by a majority of each party's members. We then report the fraction of party members' votes in each proposal category that were cast in the opposite direction of the party's majority. The column labeled "All" reports the corresponding fractions for all mutual funds considered as a single party, which serves as a useful benchmark. Considering mutual funds as a whole, 25% of mutual fund votes in the sample are cast in the opposite way from how a majority of mutual funds voted on the proposal. In contrast, for all proposals, only 15% of the votes of Traditional Governance Party members were cast against the majority of the party, and the corresponding figures for the Shareholder Intervention Party and Shareholder Veto Party are 2% and 9%, respectively. Hence the two shareholder rights parties exhibit substantially more coherence in their voting than the Traditional Governance Party, a result consistent with those parties having a clear focal point in a proxy advisor's recommendations to coordinate their votes—ISS for the Shareholder Intervention Party and Glass Lewis for the Shareholder Veto Party.

3.4. **Party corporate governance philosophies.** Consider now the substantive visions of corporate governance that animate each of the three parties. Figure 13 provides the fraction of "Yes" votes cast by each party by proposal category for the estimation sample. Keep in mind that for a proposal to make it into the estimation sample, it must pass our "lopsidedness" threshold by having at least 8% of the mutual funds voting on the proposal vote in the minority among mutual funds. Relative to the full sample, this sample selection criterion generally drives down support for management proposals and drives up support for shareholder proposals. Figure 14 provides the

corresponding figures for the full sample of proposals. By adding back in many uncontroversial proposals, the full sample diminishes the differences between the parties, but the basic contrasts remain. In what follows, we use the figures from the estimation sample—i.e., the non-lopsided votes—to characterize the differences between the parties, which generally manifest only on proposals with a non-negligible amount of controversy.

We begin with the Traditional Governance Party, which is on the extreme negative side on both preference dimensions. Since both dimensions measure the willingness of mutual funds to vote against management in line with a particular vision of shareholder rights, it is unsurprising that mutual funds in the Traditional Governance Party support management proposals at far higher rates than do members of the two shareholder rights parties. To be clear, Traditional Governance Party members do not always support management proposals. Across all management proposals, members of the Traditional Governance Party vote in favor 82% of the time, in contrast to 70% across all mutual funds and 50% for the Shareholder Veto Party. But the greater tendency of members of the Traditional Governance Party to defer to management on these proposals reflects a traditional view of corporate governance in which shareholders largely defer to the board on run-of-the-mill corporate management issues.

The contrast is even starker with respect to shareholder proposals. Members of the Traditional Governance Party support shareholder proposals only 19% of the time, compared to 47% across all mutual funds and 84% for the Shareholder Intervention Party. For an important class of shareholder proposals, however, members of the Traditional Governance Party vote in favor most of the time: shareholder proposals to declassify the board, to reduce supermajority requirements, to eliminate dual class shares, and to subject the poison pill to shareholder approval. This captures nicely the corporate governance philosophy animating the party. The Traditional Governance Party believes that, between annual meetings, the board—and not shareholders—should generally manage corporate affairs. But at the annual shareholder meeting, shareholders should retain power to take control by majority vote, hence their support for board declassification (requiring that the entire board be up for election each year), reducing supermajority requirements, and eliminating dual

class shares.

Turning to the two shareholder rights parties, as outlined in subsection 2.6, each represents a distinctive vision of corporate governance and shareholders' role. The two key comparisons that capture the basic difference between the Shareholder Intervention Party and the Shareholder Veto Party is (1) between their overall rates of support for management proposals; and (2) between their overall rates of support for shareholder proposals. The Shareholder Intervention Party supports shareholder proposals at a rate of 87%, compared to only 50% for the Shareholder Veto Party. These shareholder proposals generally entail shareholders attempting to affirmatively intervene in the corporate affairs of the company by demanding that the company's board of directors adopt changes to corporate policies and practices, hence the name "Shareholder Intervention Party."

In contrast, the Shareholder Veto Party supports management proposals at a rate of only 51%, compared to 63% support for the Shareholder Intervention Party. Put differently, the Shareholder Veto Party opposes management proposals at a rate of 49%, which is 32% more often than the Shareholder Intervention Party's rate of 37%. Management proposals generally entail corporate management asking for shareholders to ratify some decision by the board, such as management's pay practices, an increase in authorized common stock, a management nominee for director, and the like. A vote against these proposals is thus a sort of "veto" by the shareholder of a management initiated decision, hence the name "Shareholder Veto Party" for the shareholder rights party that tries to veto management at relatively high rates.

This basic distinction between the two shareholder rights parties is reinforced by examination of specific subcategories of management proposals and shareholder proposals. For only one category of management proposals does the Shareholder Veto Party support management at a materially greater rate than the Shareholder Intervention Party: management nominees for director in a proxy contest in which a shareholder dissident has nominated a competitive slate of directors. Such proxy contests are perhaps the most interventionist shareholder actions possible, and hence it is consistent with our conceptual distinction between the two shareholder rights parties that the Shareholder Intervention Party opposes the management nominees (and supports the shareholder

nominees) at greater rates than the Shareholder Veto Party. Similarly, for every subcategory of shareholder proposal save one (shareholder proposals to name an independent board chair), the Shareholder Intervention Party supports the proposals at greater rates than does the Shareholder Veto Party.

The two shareholder rights parties thus represent distinctive philosophies of shareholders' role in corporate governance. The Shareholder Veto Party focuses on monitoring the management of the corporation and critically considering management's proposed courses of actions, voting against them when the shareholder views them as problematic. In contrast, the Shareholder Intervention Party focuses instead on actively intervening in corporate affairs by demanding reforms to basic corporate governance rules and supporting proxy contests for corporate control. Importantly, while one might expect shareholders' willingness to affirmatively intervene and their inclination to veto management's proposed actions and policies to be positively related, we find that the Shareholder Veto Party intervenes less than the Shareholder Intervention Party, while the Shareholder Intervention Party vetos less than the Shareholder Veto Party. So among members of the two shareholder rights parties, these two modes of shareholder engagement are *negatively* related.

These two competing visions of corporate governance are in turn reflected in the recommendations of ISS and Glass Lewis. Recall that ISS is in the Shareholder Intervention Party and Glass Lewis is in the Shareholder Veto Party. One theory that might explain why ISS and Glass Lewis follow these two distinctive approaches is based on product differentiation. ISS and Glass Lewis compete in the market for proxy advice. Given some preexisting cleavages among institutional investors in their corporate governance philosophies, competition between the two may have led to a product differentiation and market segmentation that has resulted in the reinforcement or even creation of the two shareholder rights parties and their distinctive approaches to superintending corporate management.

To give a sense of which mutual fund families populate the three parties, Table 7 lists the top ten families in each party by total TNA of the families' funds in the party. There are major fund families in each party. The top five families in the Traditional Governance Party are all industry

giants and include the three largest passive managers in the industry. Somewhat smaller families populate the major families in the Shareholder Intervention Party, including Dimensional Fund Advisors, OppenheimerFunds, and John Hancock. Franklin Templeton, Columbia Funds, and Charles Schwab are the largest families in the Shareholder Veto Party.

Tables 8, 9, and 10 provide the fraction of "yes" votes for the six largest fund families in each party by proposal category, along with the corresponding figures for ISS and Glass Lewis in the Shareholder Intervention Party and Shareholder Veto Party, respectively. While the voting behavior of the funds within each party is much more similar to each other than to the voting behavior of funds in other parties, there are differences across families within each party. The differences are largest in the Traditional Governance Party. For example, Dodge & Cox rarely votes against management proposals, but State Street casts 25% of its votes on management proposals against management in the estimation sample. Vanguard stands out as the least likely to support shareholder proposals, voting in favor at a rate of only 6%. But these intraparty differences are dwarfed by the differences between the top six Traditional Governance Party families on the one hand, the the top six families in the two shareholder rights parties in Tables 9 and 10 on the other.

Finally, note that there are a few funds in the preference plot in Figure 3 that score highly on both dimensions of fund preference. We have labeled the fund families with average scores in the upper right of the preference space—note that they are socially responsible fund management companies, like Domini and Calvert. Our framework shows that these socially responsible fund families are extreme in their shareholder rights orientation, as expressed through their votes.

3.5. **Characteristics and sizes of the parties' memberships.** A final set of questions about the party structure of mutual funds concerns the characteristics of their memberships and their size in terms of total net assets. Table 11 provides average characteristics across the three parties. The primary contrast is between the Traditional Governance Party on the one hand and the two shareholder rights parties on the other. Funds in the Traditional Governance Party are more heavily indexed, far larger by assets, come from larger fund families, and charge substantially lower ex-

pense ratios. Another intriguing difference is that funds in the Traditional Governance Party are more heavily weighted toward growth stock strategies than value stock strategies in comparison to the two shareholder rights parties. We return to this pattern in Section 4 below. The final row in the table gives the fraction of TNA in the mutual fund industry held by funds in each of the parties as of 2015. The Traditional Governance Party is much larger than the others, at 58% of mutual fund industry TNA, followed by the Shareholder Intervention Party at 7% and the Shareholder Veto Party at 6%.

3.6. **Comparing the votes cast by mutual funds to those cast by other shareholders.** Having provided a new window into understanding the voting behavior of mutual funds, a natural question is how mutual fund voting compares with the voting of other corporate shareholders, such as retail investors, corporate insiders, and other types of institutional investors. In this section we combine our mutual fund voting data with data on the overall shareholder vote on sample proposals to construct measures of how all other shareholders vote on each sample proposal. We use data on the total number of votes cast for or against each proposal from the Voting Analytics Company Vote Results dataset available through WRDS. To calculate the number of *shares* that mutual funds covered in our estimation sample voted for or against each proposal, we use the CRSP Mutual Funds Portfolio Holdings dataset and assume that each funds' holdings remained fixed between the end of the quarter immediately preceding a given vote and the date of the vote.[4] We calculate the number of shares that the other shareholders cast for or against a proposal by subtracting the number of shares voted by mutual funds in our estimation sample from the corresponding number of aggregate votes. For each of the two groups of voters—mutual funds in our estimation sample and all other shareholders—we calculate the fraction of shares that the group voted in favor of a given proposal relative to all the votes cast on the proposal by the relevant group.

Figure 15 reports the fraction of shares vote in favor across different categories of proposals for both mutual funds in our estimation sample and all other shareholders. On average, mutual funds

[4]Since the coverage of the CRSP Mutual Funds Portfolio Holdings database is dramatically lower for 2010, this analysis excludes all proposals voted on during that year.

are substantially less supportive of management proposals than are the other shareholders—both in aggregate terms and for each of the subcategories of management proposals. This suggests that mutual funds are relatively more intensive monitors of corporate management compared to other types of shareholders.

On the other hand, mutual funds are also relatively less supportive of *shareholder* proposals in the aggregate and are thus relatively less inclined to actively push management to reform corporate policies. Mutual funds do, however, support several specific types of shareholder proposals at greater rates compared to other types of shareholders. These categories are proposals to declassify the board, to eliminate dual-class share structures, to remove poison pills, and to reduce supermajority requirements. Note that these are the specific shareholder proposal categories that are favored by the Traditional Governance Party. They are thus the set of shareholder proposals that mutual funds in general support at high rates, and it is noteworthy that there is less consensus in favor of these types of proposals among other shareholders.

4. The Determinants of Mutual Fund Preference

What factors shape mutual funds' preferences and underlie the heterogeneity we have documented?

4.1. **Theory.** As a theoretical matter, mutual fund managers' incentives to become informed and exercise the funds' voting rights in a meaningful way are relatively weak. One reason is the classic collective action problem that besets shareholder voting generally. Because (1) shareholders bear all of the costs of becoming informed but share the benefits of informed voting with other shareholders; and (2) the probability that any public company shareholder's votes are pivotal is so small, shareholders have little incentive to invest in voting.

By aggregating share capital, mutual funds might seem to mitigate these problems. But these intermediaries are subject to their own agency problem vis-a-vis the ultimate beneficial owners who invest in them (Rock, 1991; Black, 1992). In particular, any improvement in portfolio company value produced by a mutual fund exerting effort to vote in an informed manner is shared with all

of the mutual fund competitors who hold the company's stock. For index funds, this means that costly voting effort increases their costs without improving their returns relative to competitors. One caveat to this conclusion is that, since index funds (unlike actively managed funds) cannot sell when they are displeased with management, their inability to exit might lead them to resort more to "voice." But even so, the basic logic above that effective voice is costly without producing competitive benefits would seem, as a theoretical matter, overpowering.

In contrast, the managers of actively managed funds face somewhat stronger voting incentives than those of index funds (Kahan and Rock, 2007; Shapiro-Lund, 2017). An actively managed fund manager can improve the fund's return relative to competitors by taking actions that increase the value of a stock in which the fund is overweight relative to the market. Moreover, the process of investment selection might generate information that is useful for voting.

Relatedly, we hypothesize that different approaches to security selection might result in different views about corporate governance. Active managers who follow growth stock strategies attempt to identify companies whose rich market valuation is more than justified by their growth prospects. That suggests that the fund manager will believe in the management of the company, leading the fund manager toward a view of corporate governance generally in line with the Traditional Governance Party's view (i.e., to score low on each dimension). In contrast, a value stock strategy might include investing in stocks whose undervaluation is driven in part by mistakes of the current management, and that investing philosophy might lead naturally to a view of corporate governance in line with the views of one of the shareholder rights parties.

The size of a mutual fund and of a fund family might also shape their corporate governance preferences. In particular, larger funds and fund families benefit from economies of scale in voting and moreover have a higher probability of being pivotal voters. The largest fund families often own more than 5% stakes in large public companies, making them potentially crucial swing voters (Fichtner, Heemskerk, and Garcia-Bernardo, 2017). How this translates into their corporate governance preferences is not obvious. We offer two competing hypotheses. First, it may be that the path of least resistance (i.e., the lowest cost approach to voting) is to simply generally follow man-

agement's recommendations. Under this account, economies of scale in voting might make it cost effective to invest in information that could lead the fund to vote against management, at least for the actively managed funds that might receive a competitive benefit from votes that increase firm value. In this case, we might expect large funds and families to have higher scores than smaller funds. But note that this hypothesis is at odds with the basic comparisons of fund characteristics across the three parties in Table 11.

Alternatively, the path of least resistance for small funds might be to simply follow one of the two proxy advisors. Economies of scale might thus result in large funds and fund families moving away from simply outsourcing voting decisions to proxy advisors. Indeed, Iliev and Lowry (2014) show that, among actively managed funds, larger funds and larger fund families are less likely to vote in line with ISS's recommendations. Under this view, larger funds and larger fund families will score lower on dimensions 1 and 2.

Finally, consider the relationship between funds' expense ratios and their preferences. One natural perspective is that because it is costly to become informed about the issues being voted on, the funds that do so will have higher expense ratios. But theoretically, this leads to the same set of ambiguous predictions for their preferences as does fund size—it turns on what the "path of least resistance" for fund voting is.

4.2. **Empirical approach.** Ultimately whether variation in incentives faced by fund managers shapes their corporate governance preferences as reflected in how they vote portfolio company shares is an empirical question. We view one contribution of this paper as the creation of parsimonious measures of shareholder preference that allow for testing various theories and hypotheses in corporate governance, like the ones considered above. In this section we illustrate the potential value of our measures of shareholder preference by using them to investigate whether institutional investors' incentives matter for their voting behavior.

The univariate comparisons between characteristics of members of the three mutual fund parties in Table 11 discussed above suggest that fund and family size and indexing are associated with

mutual fund corporate governance preferences. But because these fund characteristics covary—for example, index funds are on average much larger than actively managed funds—multiple regression can help tease out partial correlations that are more informative about the underlying process of preference formation.

We report regressions of mutual funds' scores on dimensions 1 and 2 on fund-level and family-level characteristics in Tables 12 and 13, respectively, with standard errors clustered at the family level. Because ultimately we are trying to characterize mutual funds' *votes*, and those votes are a direct linear function of assets (since dollars buy shares which equal votes), we use weighted OLS regressions, weighting each fund observation by its TNA.

Column (1) of Tables 12 and 13 reports a regression of funds' score on dimension 1 on measures of the funds' / families' management style (index, growth, or value) and quintiles of TNA. Column (2) adds a measure of the fund's / family's expense ratio to the regression, which is missing for about half of sample funds, and columns (3) and (4) repeat the two regressions using funds' score on dimension 2 as the dependent variable.

4.3. **Results.**

4.3.1. *Fund management style.* There is strong evidence that indexing leads to lower scores on the two dimensions. Focusing on the full sample regressions in columns (1) and (3) of Table 12, the coefficient on Index fund is negative for both dimensions but statistically significant only for Score 2. The models using family-level covariates in Table 13 show that indexing has a large and statistically significant negative relationship with both Score 1 and Score 2. Indeed, the absolute value of the coefficients on fraction of family assets indexed are much larger than for the coefficients on Index fund in the fund-level covariate regressions. This suggests that the role of indexing in shaping mutual fund preferences is largely a family-level, as opposed to fund-level, phenomenon. This makes economic sense: for families that specialize in index funds, like Vanguard, BlackRock, and State Street, there would be little reason to delegate voting decisions down to the fund manager level. The activities of index fund managers would generate little useful information for voting

the funds' shares. Similarly, for families that specialize in active management, while it may make sense to allow some individual managers for active funds to direct their funds' votes separately from the fund family as a whole, the voting of shares held by the family's index funds is likely to be centralized and therefore follow the general approach of the fund family.

There is also evidence for our hypothesis that growth stock investment strategies lead to less shareholder-rights oriented voting behavior relative to value stock investment strategies. The coefficient on Growth fund is below the coefficient on Value fund for both Score 1 and Score 2 in Table 12, but this difference is statistically signficant only for Score 2 (F-test p-value = .007). The results using family-level measures of growth versus value strategies in Table 13 are similar, with the difference between the two coefficients statistically significant only for Score 2 (F-test p-value = 0.041).

4.3.2. *Fund and family size.* There is strong evidence that fund size is negatively related to scores on both dimensions. The coefficients on quintiles of fund TNA in Table 12 are monotonically decreasing in fund size for both dimensions. Importantly, note that this is controlling for being an index fund versus an actively managed fund. Big funds are more managerialist.

The relationship between family size and preferences is more complicated. The coefficients in column (1) of Table 13 show an initially increasing relationship between Score 1 and family TNA up to the 3rd quintile of TNA. The coefficients then fall thereafter, with the coefficient on the 5th quintile statistically significantly different from the coefficient on the 4th quintile. The pattern is similar for Score 2 in column (3).

4.3.3. *Expense ratios.* Finally, the coefficients on expense ratio reported in columns (2) and (4) of the two tables are consistently positive but only statistically significant in the fund-level model for Score 2. Note again that this is controlling for being an index fund, which have lower expense ratios than actively managed funds.

5. CONCLUSION

In this paper we have systematically characterized the corporate governance preferences of mutual funds. We show that a model with just two latent dimensions of preference provides a highly predictive model of mutual fund voting behavior. Those two dimensions in turn reflect two different philosophies of corporate governance and shareholders' role.

Our parsimonious measures of mutual funds' corporate governance preferences generate a number of descriptive insights about the broader system of corporate governance and moreover enable the quantitative testing of various hypotheses. In particular, we show that mutual funds are clustered into three parties, a Traditional Governance Party and two shareholder rights parties. Members of the Traditional Governance Party vote in line with a traditional conception of corporate governance in which the board, and not shareholders, manage the business and affairs of the corporation but the shareholder retain the right to take control by majority action at an annual shareholder meeting. The two shareholder rights parties, in contrast, follow two distinctive modes of shareholder engagement. The Shareholder Intervention Party supports efforts to actively intervene in corporate affairs, including by supporting shareholder-initiated reforms to basic corporate governance rules and activist investor proxy contests for board seats. In contrast, the Shareholder Veto Party focuses on monitoring corporate management and vetoing management's proposed courses of actions when they raise concerns. We show furthermore that funds' preferences are shaped by fund characteristics that influence their incentives. Index funds, growth stock funds, and larger funds are less shareholder-rights oriented than actively managed funds, value stock funds, and smaller funds, respectively. We hope the introduction of our measures of mutual fund corporate governance preferences to the literature will enable other researchers to test quantitatively a range of theories and hypotheses about corporate governance.

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APPENDIX

Table 1: Distribution of Proposal Categories in Estimation and Unfiltered Samples

Proposal Type	Estimation Sample	Full Sample
All MP	30,446	177,916
MP-Compensation	6,107	23,005
MP-Corporate Finance	461	2,098
MP-Corporate Governance	249	1,711
MP-Elect Director (Contested)	358	607
MP-Elect Directors	21,883	125,651
MP-Merger / Acquisition Related	56	1,474
MP-Other	1,083	3,398
MP-Ratify Auditors	249	19,972
All SP	2,737	4,035
SP-Cumulative Voting	77	77
SP-Declassify Board	44	212
SP-Elect / Remove Directors (Contested)	338	592
SP-Eliminate Dual Class Shares	21	37
SP-Executive/Director Compensation	364	411
SP-Independent Chairman/Lead Director	307	316
SP-Majority Vote for Directors	137	182
SP-Other	188	455
SP-Poison Pills	16	29
SP-Proxy Access	107	127
SP-Reduce Supermajority Requirements	80	111
SP-Say on Pay Precatory Proposals	54	55
SP-Social Proposal	704	1,122
SP-Special Meetings	138	146
SP-Written Consent	162	163

Table 2: CRSP Coverage

Year	Number of CRSP Funds	Number of Merged Funds	Fraction	TNA CRSP	TNA Merged	Fraction
2010	5,763	3,223	0.56	5,252,852	4,079,975	0.78
2011	5,970	3,324	0.56	4,990,577	3,890,052	0.78
2012	5,833	3,355	0.58	5,586,311	4,356,478	0.78
2013	6,024	3,340	0.55	7,652,467	5,991,897	0.78
2014	6,207	3,310	0.53	8,603,009	6,724,803	0.78
2015	6,420	3,235	0.50	8,551,900	6,723,419	0.79

Notes: Number of CRSP Funds is the number of unique crsp_portno's in CRSP in the respective year that hold U.S. common stock. *Number of Merged Funds* is the number of such crsp_portno's that were merged with a fundid from ISS Voting Analytics for which we estimated an ideal point. *TNA CRSP* is the sum of total net assets invested in common stock for crsp_portno's in CRSP that hold U.S. cmmon stock. *TNA Merged* is the sum of total net assets invested in common stock for crsp_portno's in CRSP that were merged with a fundid from ISS Voting Analytics for which we estimated an ideal point. All TNA in $ millions.

Table 3: CRSP Summary Statistics

	N	Mean	St. Dev.	25th %-tile	median	75th %-tile
TNA ($ millions)	13209	545	4171	1	11	176
Index fund	13209	0.13	0.34	0	0	0
Growth fund	13209	0.17	0.37	0	0	0
Value fund	13209	0.077	0.27	0	0	0
Exp. ratio (bps)	5831	98	73	61	94	128
Number funds in family	13209	99	110	22	72	125
Family TNA ($ millions)	13209	96963	220841	2405	18836	62898
Frac. family indexed	13209	0.17	0.29	0	0.018	0.16
Frac. family growth	13209	0.25	0.22	0.064	0.21	0.39
Frac. family value	13209	0.12	0.15	0.017	0.08	0.16
Family avg. exp. ratio (bps)	12635	69	55	38	68	98

Notes: Sample is all crsp_portno's that appear in the CRSP Mutual Fund dataset from 2010 - 2015 that held domestic equity. Time-varying variables are created by averaging over the years the fund is in the sample. TNA is total net assets in common stock. Index fund, Growth fund, and Value fund are indicators for funds that CRSP identifies as "pure" index funds, growth funds, and value funds, respectively. Exp. ratio is the expense ratio of the fund. Family TNA is total net assets in domestic common stock held by mutual funds in the fund's family. Frac. family indexed / growth / value are the fractions of common stock held by funds in the fund's family that are in funds in the respective category. Family avg. exp. ratio is the average expense ratio across funds in the fund's family that own domestic equity, weighted by TNA of each fund. Number funds in family is the number of crsp_portno's in CRSP for the management company that manages the fund.

Table 4: Merged Sample Summary Statistics

	N	Mean	St. Dev.	25th %-tile	median	75th %-tile
TNA ($ millions)	3610	1521	7395	68	259	859
Index fund	3610	0.17	0.38	0	0	0
Growth fund	3610	0.27	0.44	0	0	1
Value fund	3610	0.15	0.35	0	0	0
Exp. ratio (bps)	1760	98	46	65	97	128
Number funds in family	3610	115	113	40	85	132
Family TNA ($ millions)	3610	128962	259716	8972	29644	80760
Frac. family indexed	3610	0.19	0.29	0	0.058	0.17
Frac. family growth	3610	0.28	0.21	0.13	0.28	0.39
Frac. family value	3610	0.12	0.13	0.046	0.091	0.18
Family avg. exp. ratio (bps)	3573	65	38	37	66	92
Number of votes	3610	1450	2585	376	640	1325

Notes: Sample is all crsp_portno's that appear in the CRSP Mutual Fund dataset from 2010 - 2015 that were merged with a fundid from ISS Voting Analytics for which we estimated an ideal point. Common variables are as defined in notes to Table 3. Number of votes is the number of proposals voted on by the fund used to estimate its ideal point.

Table 5: Goodness of Fit by Number of Dimensions

# of dims	CP	APRE
1	0.84	0.36
2	0.87	0.50
3	0.90	0.58
4	0.91	0.65
5	0.93	0.70
6	0.94	0.74
7	0.94	0.77
8	0.95	0.81
9	0.96	0.83
10	0.96	0.85

Table 6: Fraction of Votes Cast in the Party's Minority

Proposal Category	All	SI Party	SV Party	TG Party
MP-Compensation	0.24	0.02	0.05	0.13
MP-Corporate Finance	0.22	0.00	0.10	0.24
MP-Corporate Governance	0.30	0.04	0.09	0.20
MP-Elect Director (Contested)	0.29	0.03	0.08	0.25
MP-Elect Directors	0.23	0.01	0.09	0.15
MP-Merger / Acquisition Related	0.22	0.02	0.11	0.13
MP-Other	0.15	0.00	0.02	0.19
MP-Ratify Auditors	0.13	0.00	0.14	0.03
SP-Cumulative Voting	0.36	0.07	0.07	0.08
SP-Declassify Board	0.11	0.01	0.17	0.17
SP-Elect / Remove Directors (Contested)	0.28	0.05	0.08	0.24
SP-Eliminate Dual Class Shares	0.12	0.01	0.04	0.22
SP-Executive/Director Compensation	0.36	0.01	0.07	0.06
SP-Independent Chairman/Lead Director	0.31	0.04	0.32	0.08
SP-Majority Vote for Directors	0.29	0.00	0.03	0.23
SP-Other	0.34	0.02	0.08	0.13
SP-Poison Pill	0.15	0.01	0.02	0.28
SP-Proxy Access	0.29	0.03	0.29	0.37
SP-Reduce Supermajority Requirements	0.15	0.00	0.03	0.31
SP-Say on Pay Precatory Proposals	0.39	0.01	0.05	0.12
SP-Social Proposal	0.37	0.07	0.10	0.08
SP-Special Meetings	0.39	0.01	0.09	0.19
SP-Written Consent	0.41	0.01	0.11	0.13
All	0.25	0.02	0.09	0.15

Notes: For each proposal type we calculate the fraction of votes determine for each proposal the majority vote among members of the party. We then calculate the fraction of party member votes that are cast against the party's majority.

Table 7: Top Fund Families in Each Party by TNA

Traditional Governance Party
1. Vanguard Group Inc
2. Fidelity Management & Research Company
3. American Funds
4. BlackRock Inc
5. State Street Bank and Trust Company
6. Dodge & Cox
7. Hartford Mutual Funds
8. TIAA-CREF
9. ING Investments LLC
10. Davis Selected Advisers LP
Shareholder Intervention Party
1. Dimensional Fund Advisors LP
2. OppenheimerFunds Inc
3. John Hancock Group
4. Wells Fargo Funds Management LLC
5. Principal Management Corporation
6. USAA Asset Management Company
7. SunAmerica Asset Management Corp
8. First Trust Advisors LP
9. MainStay Funds
10. Janus Capital Management LLC
Shareholder Veto Party
1. Franklin Templeton Investments
2. Columbia Funds
3. Charles Schwab Investment Management Inc
4. Neuberger Berman Management LLC
5. Allianz Global Investors
6. Russell Investment Group
7. Yacktman Asset Management Company
8. Fidelity Management & Research Company
9. Invesco Funds
10. RidgeWorth Funds

Notes: The panels list in order the top 10 families in each party by total TNA of family funds in the party.

Table 8: Fraction of Yes Votes by Proposal Category, Fund Family: Traditional Governance Party

Proposal Category	American	BlackRock	D & C	Fidelity	State Street	Vanguard
MP-Compensation	0.57	0.90	1.00	0.68	0.76	0.81
MP-Corporate Finance	0.88	0.90	1.00	0.66	0.68	0.33
MP-Corporate Governance	0.83	0.66	1.00	0.61	0.53	0.89
MP-Elect Director (Contested)	0.26	0.56		0.23	0.63	0.87
MP-Elect Directors	0.96	0.73	0.99	0.87	0.79	0.83
MP-Merger / Acquisition Related	1.00	0.79	1.00	0.70	0.67	0.85
MP-Other	0.96	0.63	1.00	0.52	0.04	0.63
MP-Ratify Auditors	0.99	0.99	1.00	1.00	0.95	0.88
All MP	0.85	0.77	0.99	0.81	0.75	0.81
SP-Corporate Governance	0.36	0.24	0.37	0.12	0.31	0.05
SP-Elect / Remove Directors (Contested)	0.78	0.39		0.75	0.29	0.09
SP-Other	0.03	0.20	0.00	0.38	0.15	0.07
SP-Social Proposal	0.02	0.01	0.01	0.25	0.28	0.05
All SP	0.26	0.18	0.27	0.15	0.30	0.06

Table 9: Fraction of Yes Votes by Proposal Category, Fund Family: SI Party

Proposal Category	ISS	DFA	J. Hancock	Oppenheimer	Principal	USAA	Wells F.
MP-Compensation	0.57	0.53	0.61	0.66	0.51	0.67	0.62
MP-Corporate Finance	0.62	0.69	0.69	0.68	0.54	0.67	0.71
MP-Corporate Governance	0.43	0.48	0.45	0.51	0.27	0.48	0.46
MP-Elect Director (Contested)	0.17	0.20		0.61	0.12	0.35	0.18
MP-Elect Directors	0.58	0.60	0.67	0.67	0.61	0.66	0.71
MP-Merger / Acquisition Related	0.46	0.52	0.61	0.84	0.73	0.84	0.77
MP-Other	0.58	0.60	0.67	0.60	0.74	0.47	0.77
MP-Ratify Auditors	0.90	0.89	0.91	0.94	0.91	0.98	0.98
All MP	0.57	0.58	0.66	0.66	0.58	0.66	0.68
SP-Corporate Governance	0.90	0.82	0.67	0.83	0.89	0.85	0.83
SP-Elect / Remove Directors (Contested)	0.71	0.76		0.36	0.73	0.61	0.67
SP-Other	0.83	0.58	0.68	0.91	0.77	0.91	0.93
SP-Social Proposal	0.96	0.13	0.62	0.96	0.94	0.95	0.88
All SP	0.89	0.62	0.66	0.86	0.89	0.87	0.84

Table 10: Fraction of Yes Votes by Proposal Category, Fund Family: SV Party

Proposal Category	GL	Allianz	C. Schwab	Columbia	Frank. T.	Neub. Ber.	Russell
MP-Compensation	0.48	0.44	0.44	0.50	0.50	0.48	0.49
MP-Corporate Finance	0.51	0.42	0.46	0.60	0.60	0.59	0.80
MP-Corporate Governance	0.32	0.35	0.39	0.58	0.47	0.28	0.41
MP-Elect Director (Contested)		1.00	0.88	0.40	0.88		0.94
MP-Elect Directors	0.54	0.52	0.53	0.62	0.51	0.43	0.49
MP-Merger / Acquisition Related	0.50	0.69	0.32	0.74	0.00	0.29	0.74
MP-Other	0.73	0.22	0.63	0.69	0.41	0.77	0.57
MP-Ratify Auditors	0.06	0.20	0.05	0.49	0.21	0.08	0.19
All MP	0.53	0.49	0.50	0.59	0.50	0.45	0.49
SP-Corporate Governance	0.66	0.69	0.41	0.71	0.58	0.60	0.70
SP-Elect / Remove Directors (Contested)		0.00	0.00	0.60	0.11		0.24
SP-Other	0.25	0.14	0.29	0.23	0.16	0.00	0.30
SP-Social Proposal	0.34	0.37	0.31	0.42	0.27	0.27	0.10
All SP	0.54	0.57	0.37	0.64	0.47	0.48	0.50

Table 11: Fund Characteristics by Party

	SI Party	SV Party	TG Party
Fraction Index	0.11	0.14	0.4
TNA ($ millions)	508	1035	2860
Family TNA ($ millions)	24038	67741	304948
Expense Ratio (bps)	82	83	43
Fraction Growth	0.27	0.17	0.29
Fraction Value	0.16	0.23	0.1
Fraction MF TNA in Party 2015	0.072	0.056	0.58

Notes: Index is the fraction of funds (by assets) in the party that are index funds; TNA is the average total net assets in domestic equity of funds in the party; Family TNA is the average total net assets of the fund family of the funds in the party; Expense Ratio is the weighted average expense ratio of funds in the party in basis points (weighted by the fund's TNA). Fraction Growth and Fraction Value are the fraction of funds (by assets) in the party that are growth funds and value funds, respectively.

Table 12: The Determinants of Mutual Fund Preference: Fund-level Covariates

	Score 1		Score 2	
	(1)	(2)	(3)	(4)
Index fund	−8.723	−11.821	−16.965**	2.526
	(7.078)	(15.371)	(7.485)	(4.903)
Growth fund	−3.524	−10.186**	−5.165*	−6.378*
	(2.919)	(4.228)	(3.018)	(3.371)
Value fund	−1.221	−1.045	7.109**	9.062***
	(3.465)	(5.084)	(2.906)	(3.411)
Exp. ratio (bps)		0.079		0.235***
		(0.144)		(0.089)
2nd quintile TNA	−5.993	−2.320	−1.103	2.728
	(5.822)	(6.759)	(2.340)	(3.728)
3rd quintile TNA	−7.746	0.170	−3.767	2.034
	(6.143)	(8.064)	(2.642)	(4.102)
4th quintile TNA	−13.595**	−8.701	−6.695**	−2.889
	(6.323)	(8.916)	(3.317)	(4.706)
5th quintile TNA	−26.694***	−19.761*	−17.745***	−11.539**
	(6.871)	(10.107)	(4.659)	(4.597)
Constant	11.796*	3.037	7.424**	−24.754**
	(6.864)	(21.437)	(3.526)	(12.226)
Observations	3,610	1,760	3,610	1,760
R^2	0.056	0.125	0.122	0.251

Note: *p<0.1; **p<0.05; ***p<0.01
Regression is weighted using the funds' TNA.
Standard errors are clustered at the fund family level.

Table 13: The Determinants of Mutual Fund Preference: Family-level Covariates

	Score 1		Score 2	
	(1)	(2)	(3)	(4)
Frac. family indexed	−30.658**	−31.259*	−32.093**	−22.961**
	(12.174)	(16.946)	(13.179)	(10.870)
Frac. family growth	−14.378	−15.840	−7.129	−3.948
	(17.422)	(18.317)	(14.176)	(14.126)
Frac. family value	−7.434	−8.415	53.367*	54.497**
	(27.244)	(28.237)	(27.688)	(27.326)
Family avg. exp. ratio (bps)		0.001		0.163
		(0.134)		(0.104)
2nd quintile family TNA	7.156	7.329	−5.648	−4.917
	(9.041)	(9.205)	(9.003)	(9.387)
3rd quintile family TNA	19.401**	21.884**	−3.038	1.012
	(9.022)	(9.635)	(8.066)	(8.759)
4th quintile family TNA	9.516	9.597	−7.772	−3.344
	(9.570)	(10.434)	(8.205)	(9.202)
5th quintile family TNA	−7.576	−7.316	−15.803**	−5.808
	(8.748)	(11.534)	(7.936)	(9.991)
Constant	2.376	2.804	5.654	−14.801
	(9.136)	(20.098)	(9.101)	(15.525)
Observations	3,610	3,573	3,610	3,573
R^2	0.120	0.123	0.214	0.234

Note: *p<0.1; **p<0.05; ***p<0.01
Regression is weighted using the funds' TNA.
Standard errors are clustered at the fund family level.

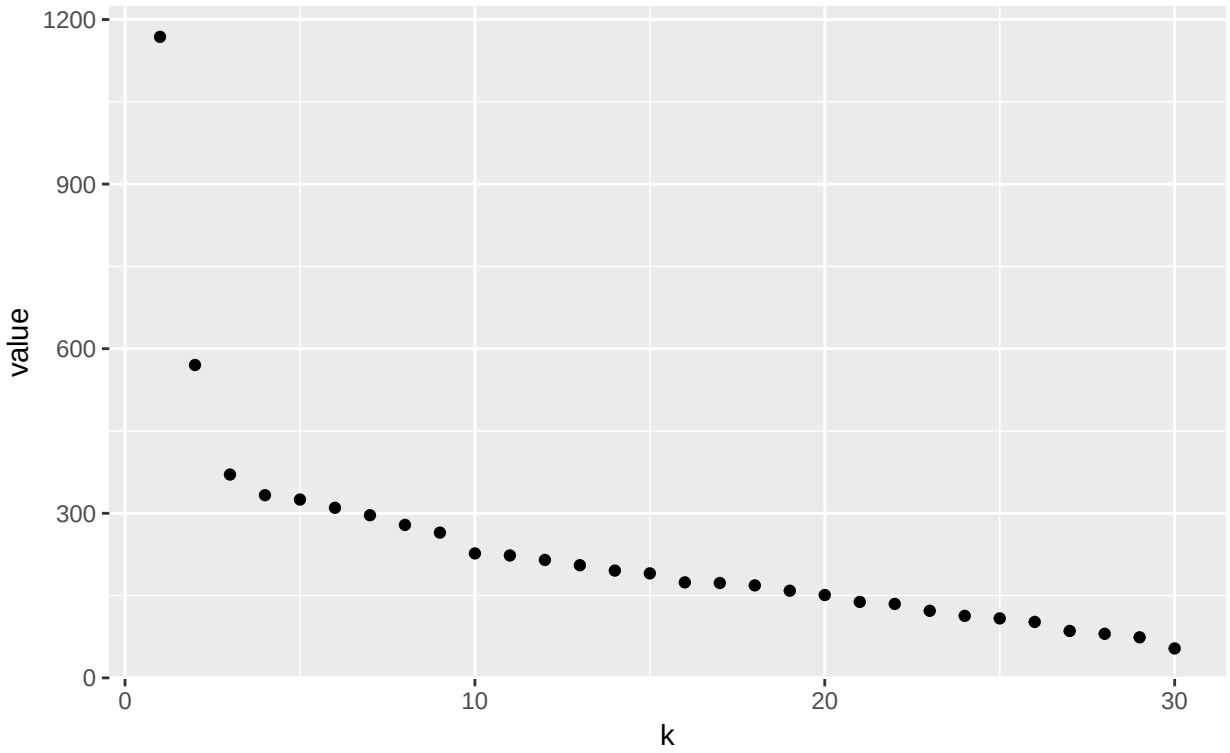

Figure 1: Scree Plot

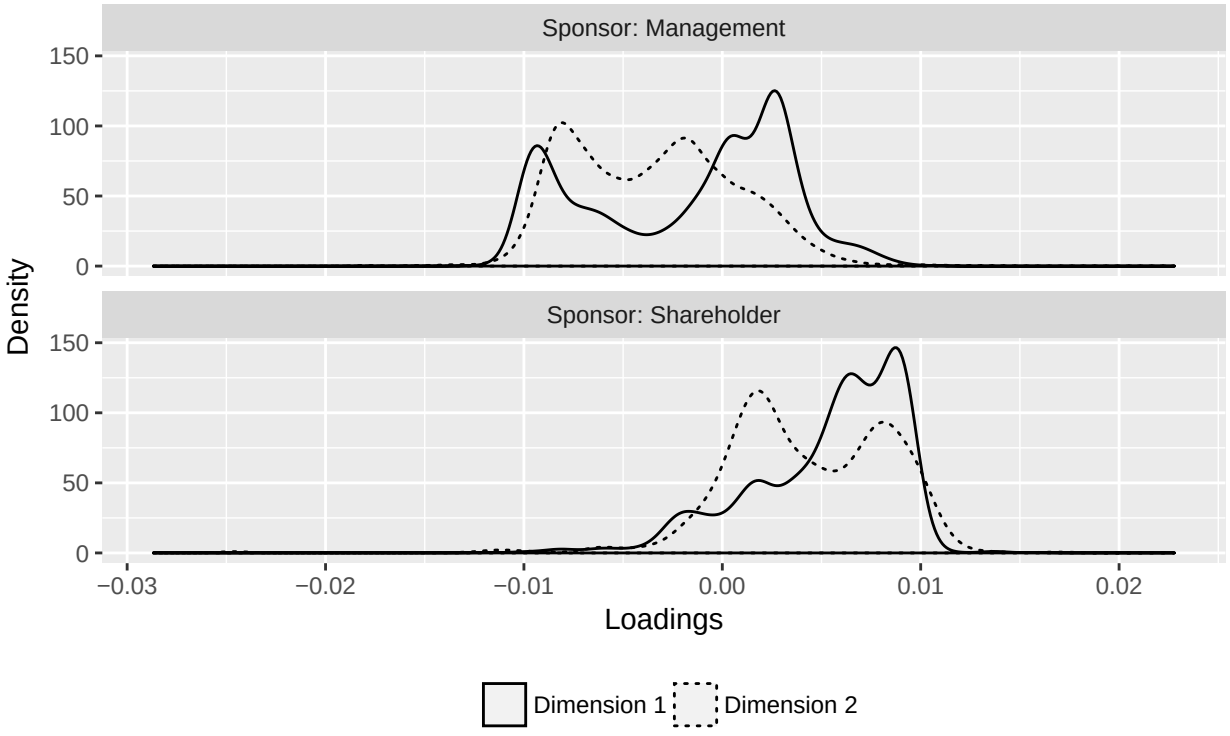

Figure 2: Distribution of loadings across proposals

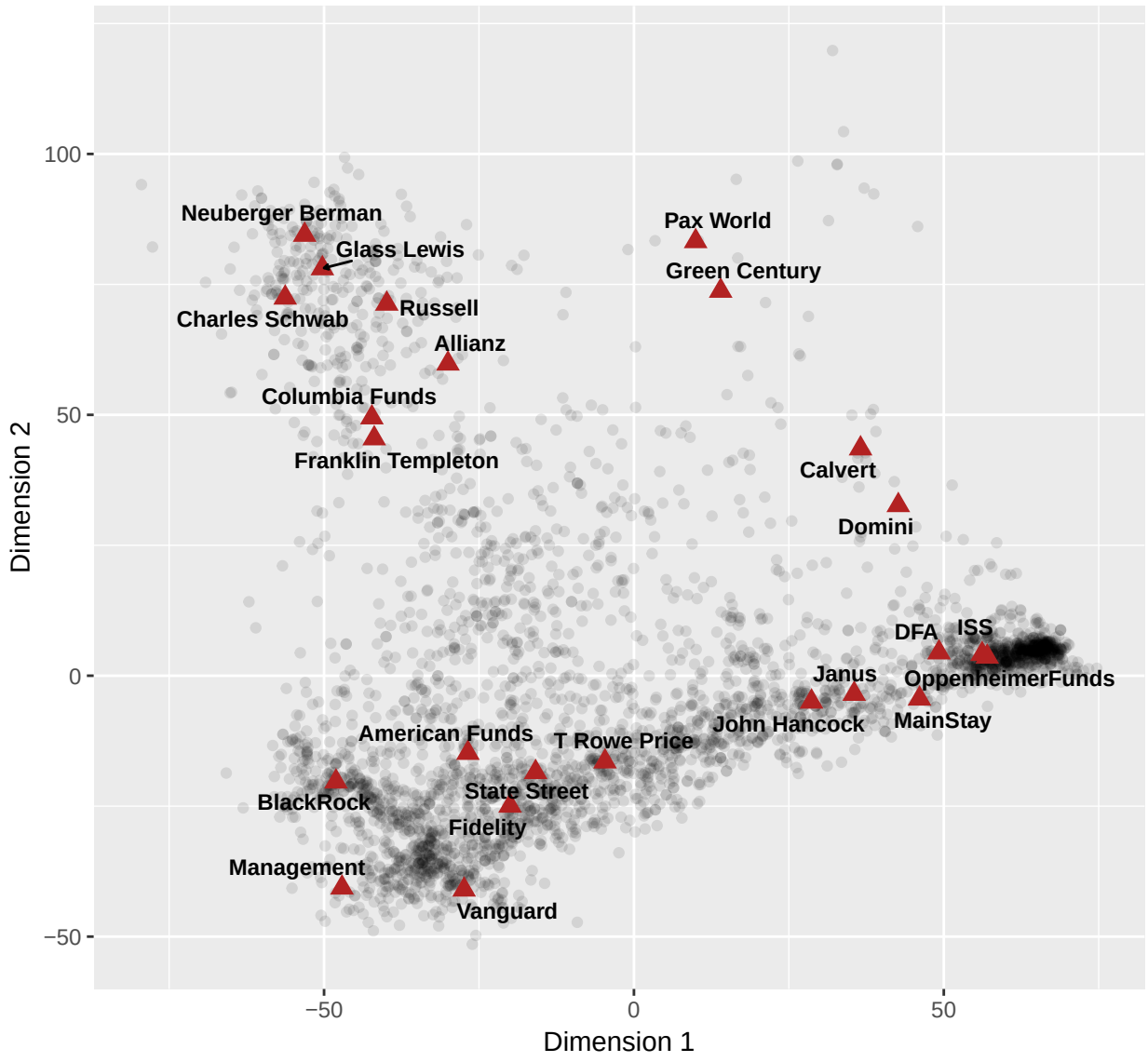

Figure 3: Dimension 1 vs. Dimension 2

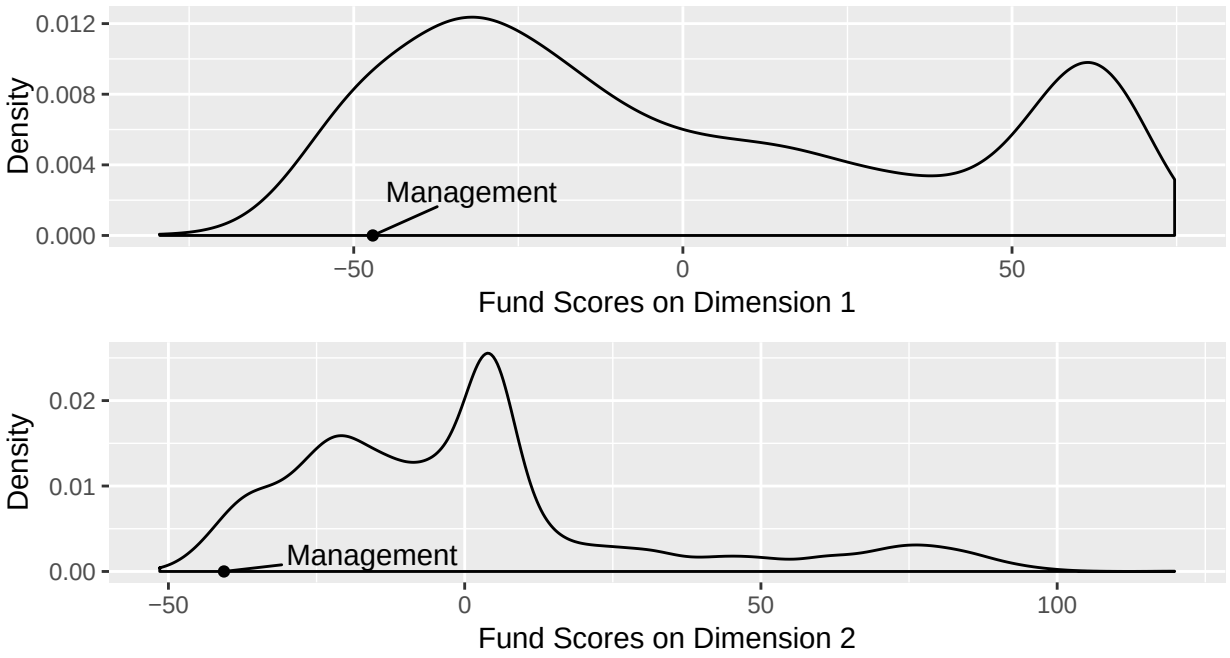

Figure 4: Univariate Densities of Scores on Dimensions 1 and 2

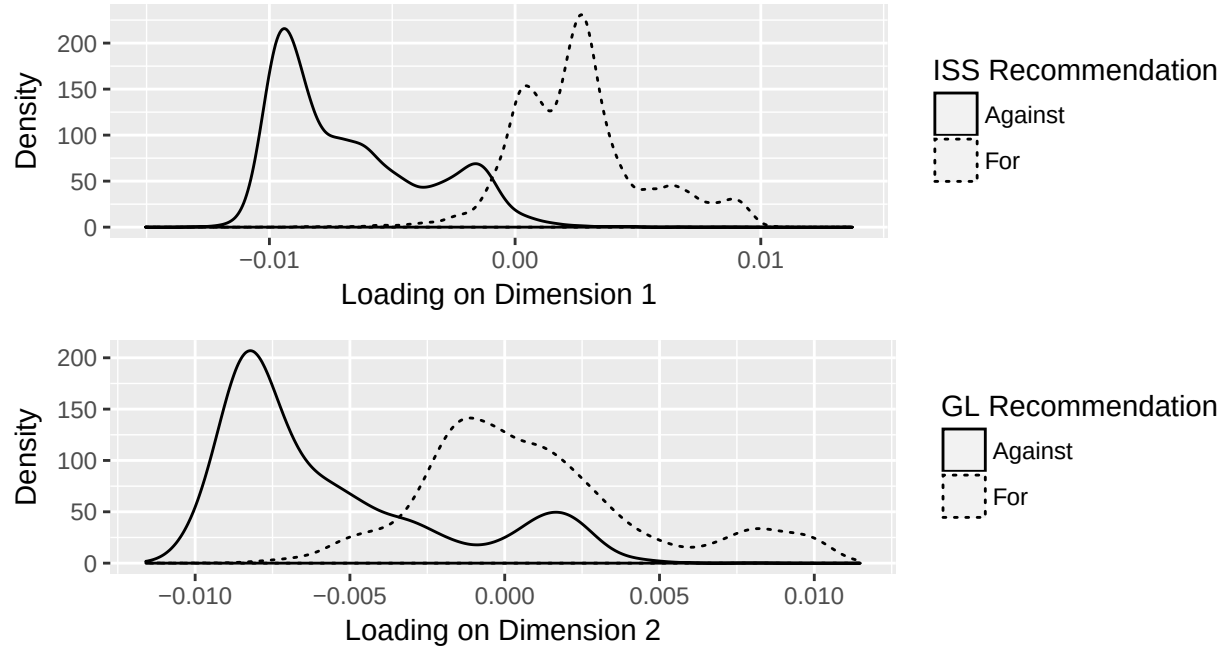

Figure 5: Distribution of proposal loadings on Dimension 1 and Dimension 2 by proxy advisor recommendation

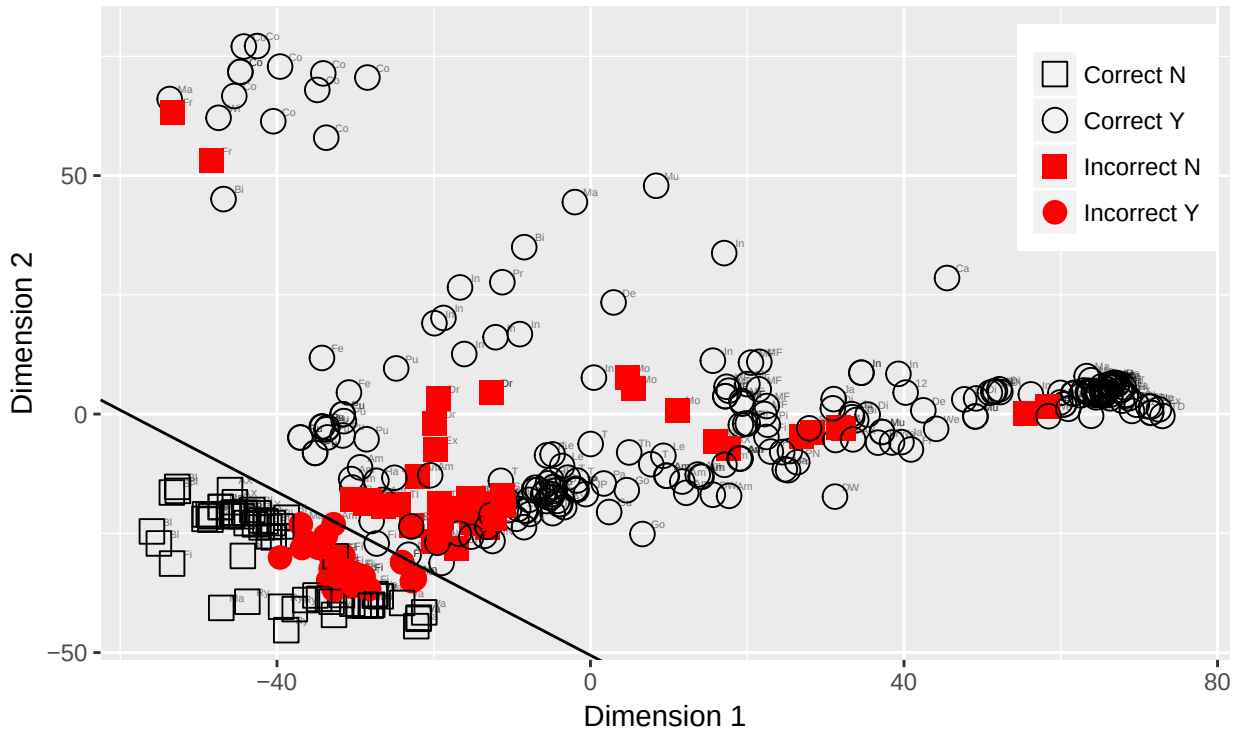

Figure 6: Dissident Nominee for Director at DuPont

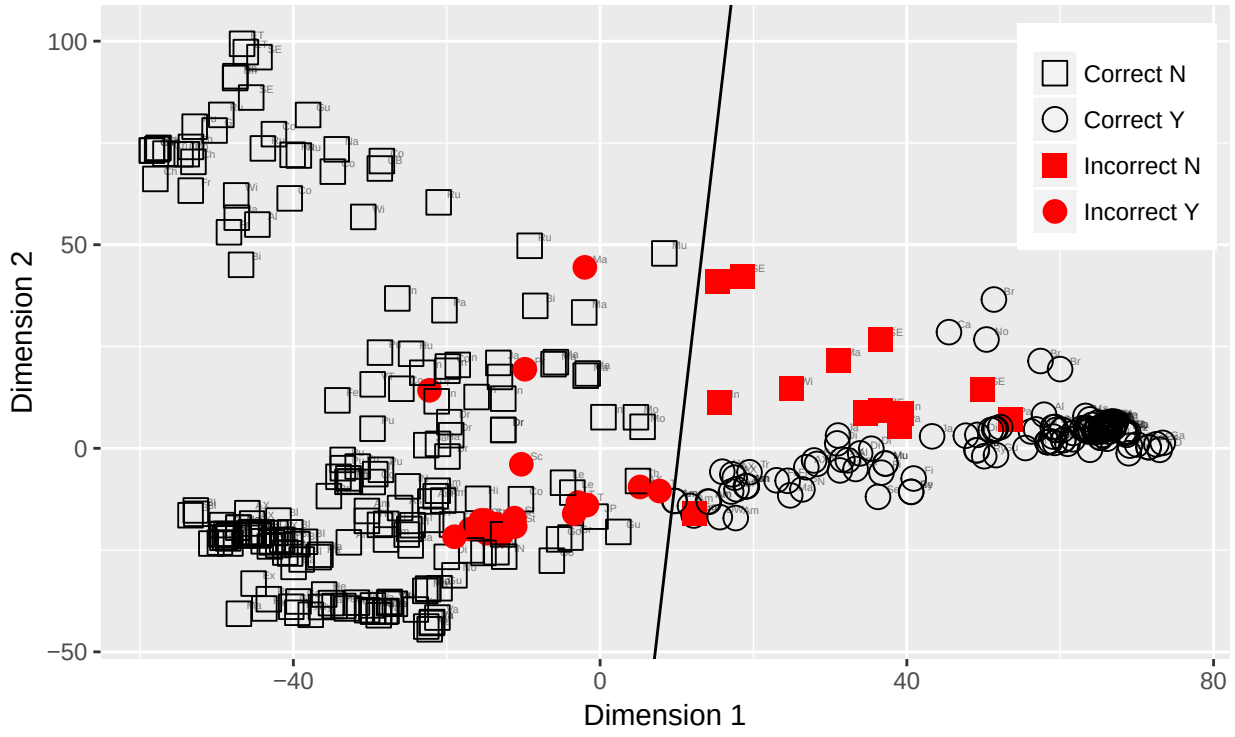

Figure 7: A Shareholder Proposal on Exec. Comp. at Waste Management, Inc.

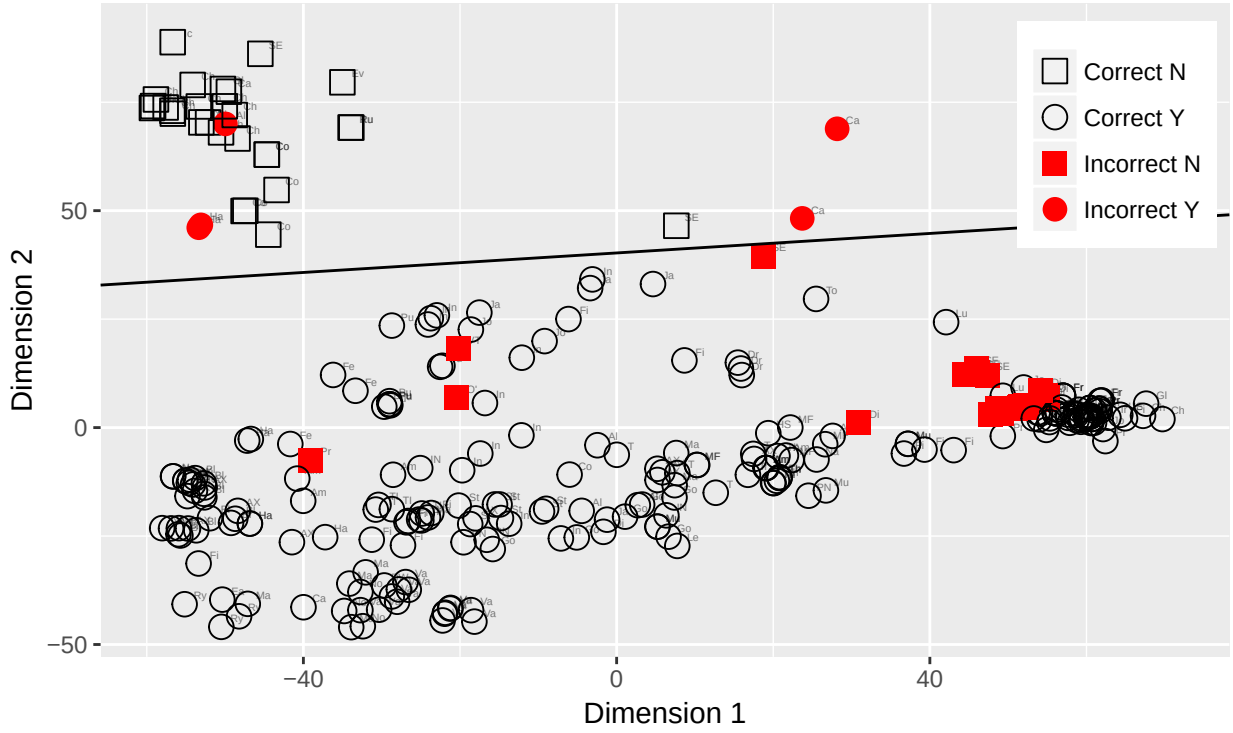

Figure 8: A Say-on-Pay Proposal at PolyOne Corporation

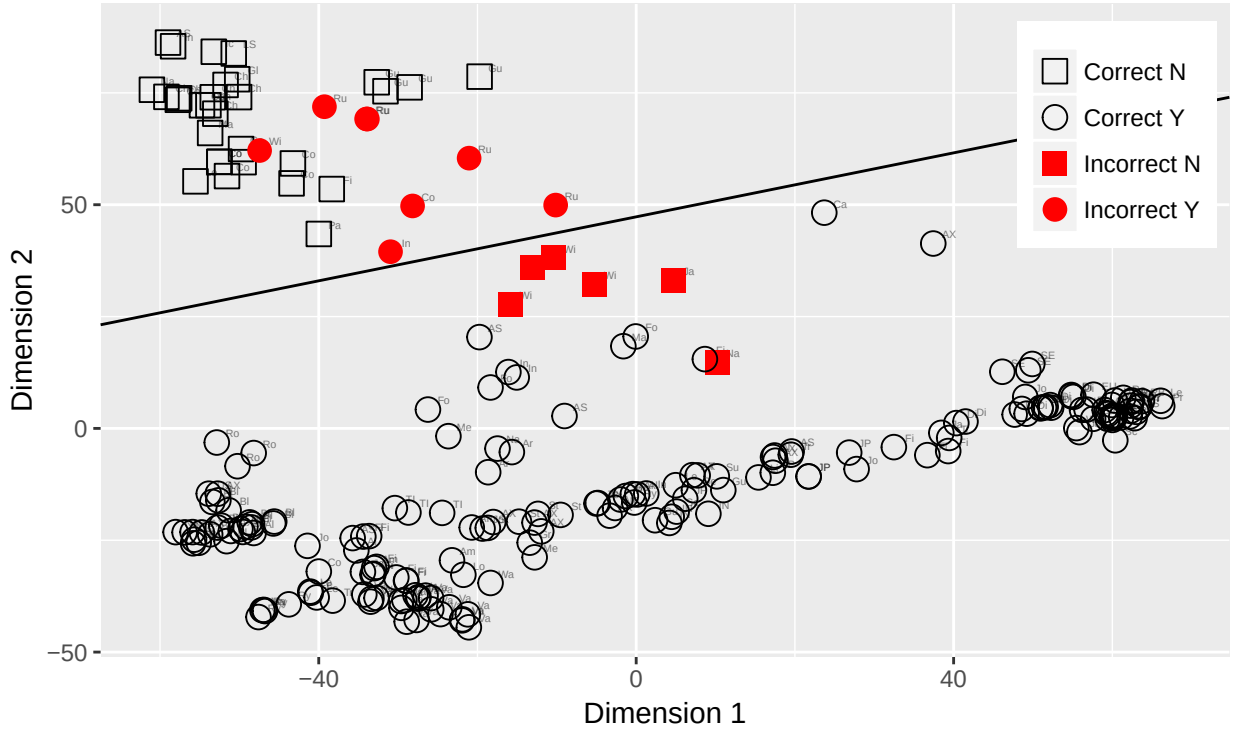

Figure 9: An Uncontested Director Election at Avnet, Inc.

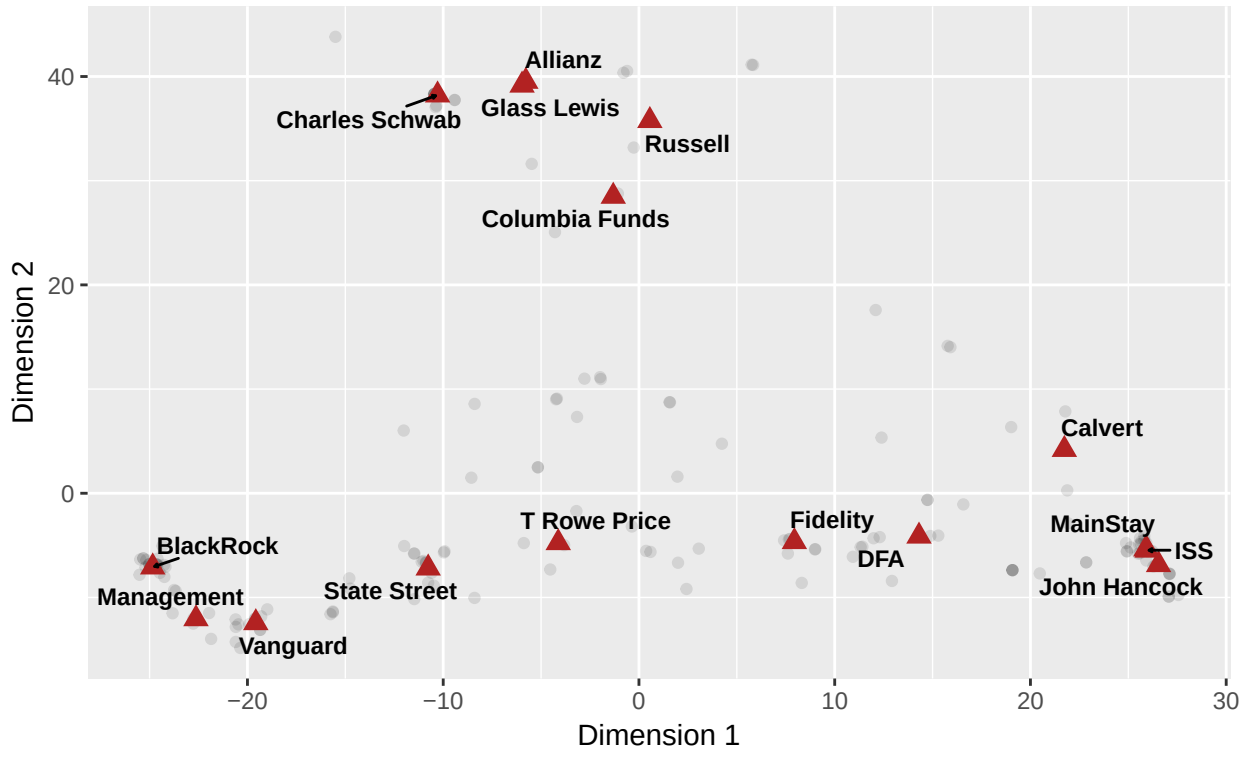

Figure 10: Preference Estimates for S & P 500 Funds

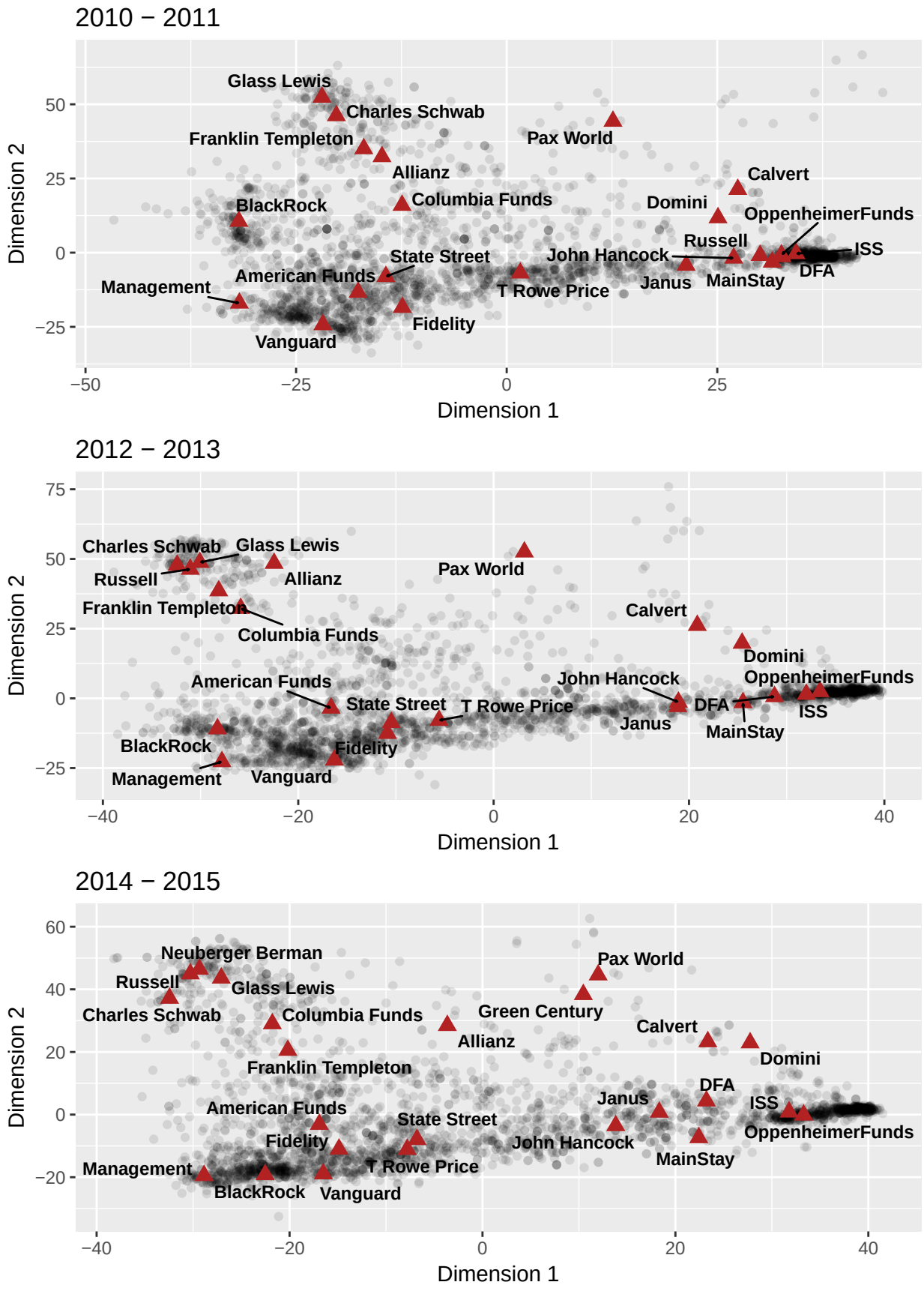

Figure 11: Preference Estimates Over Time

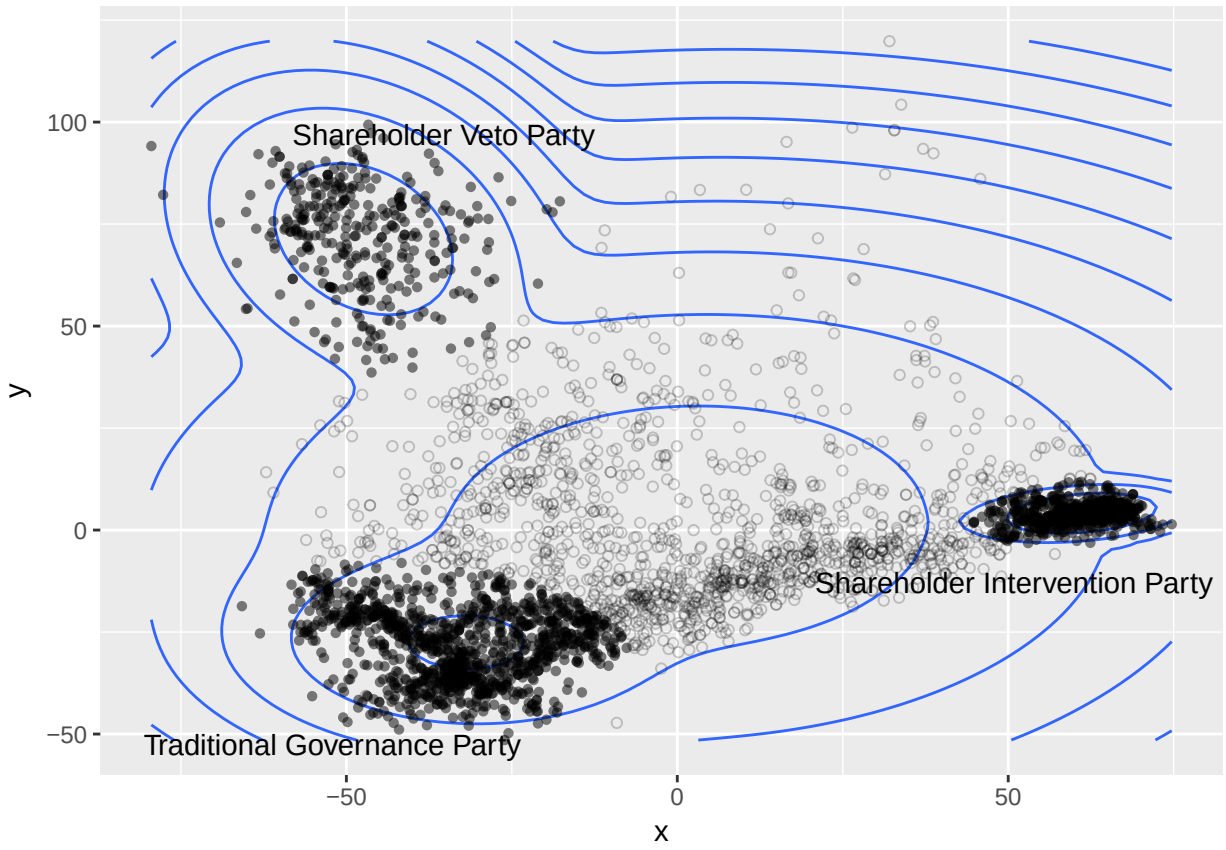

Figure 12: The Parties

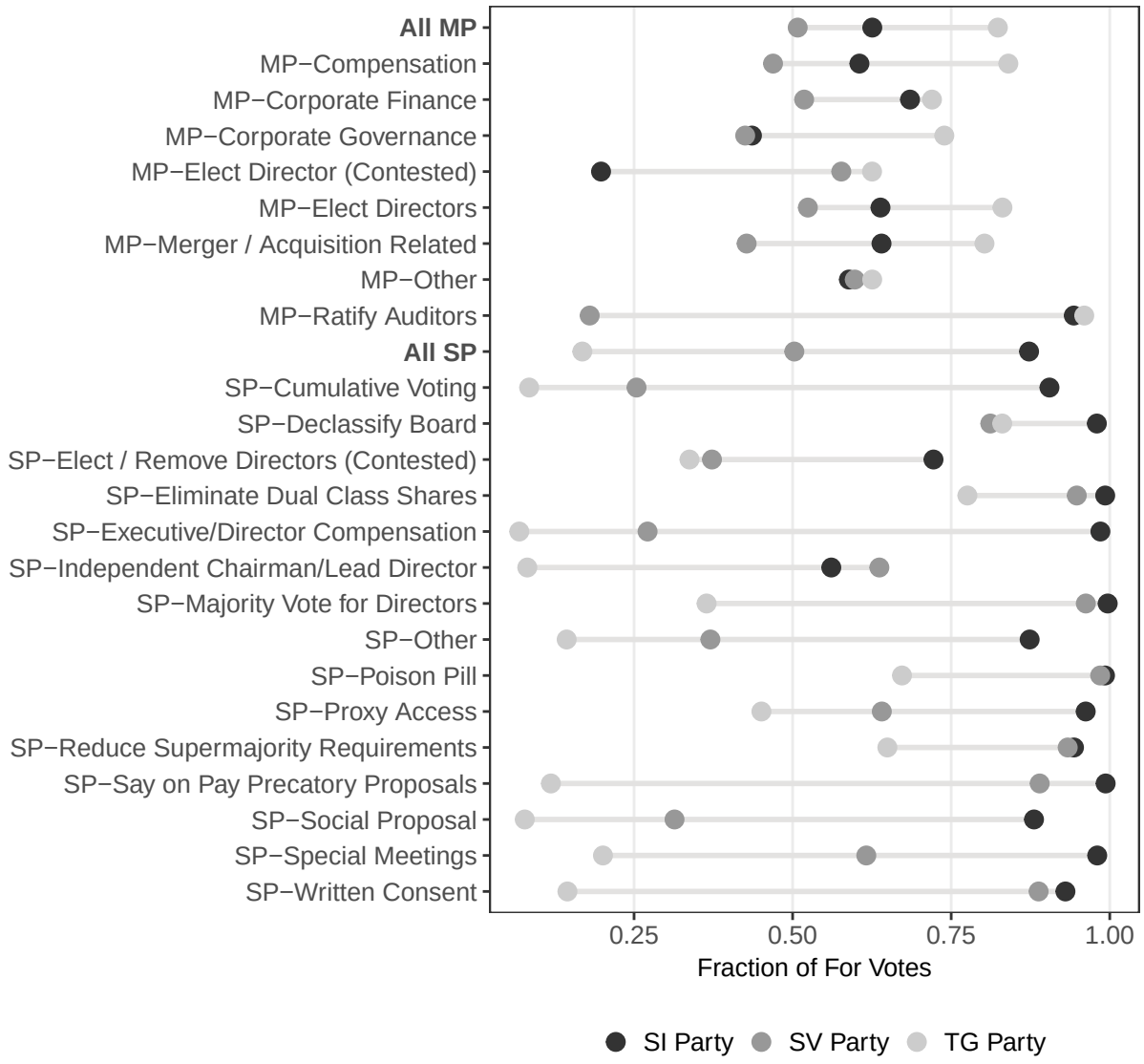

Figure 13: Fraction of Funds in Party Voting For; Estimation Sample

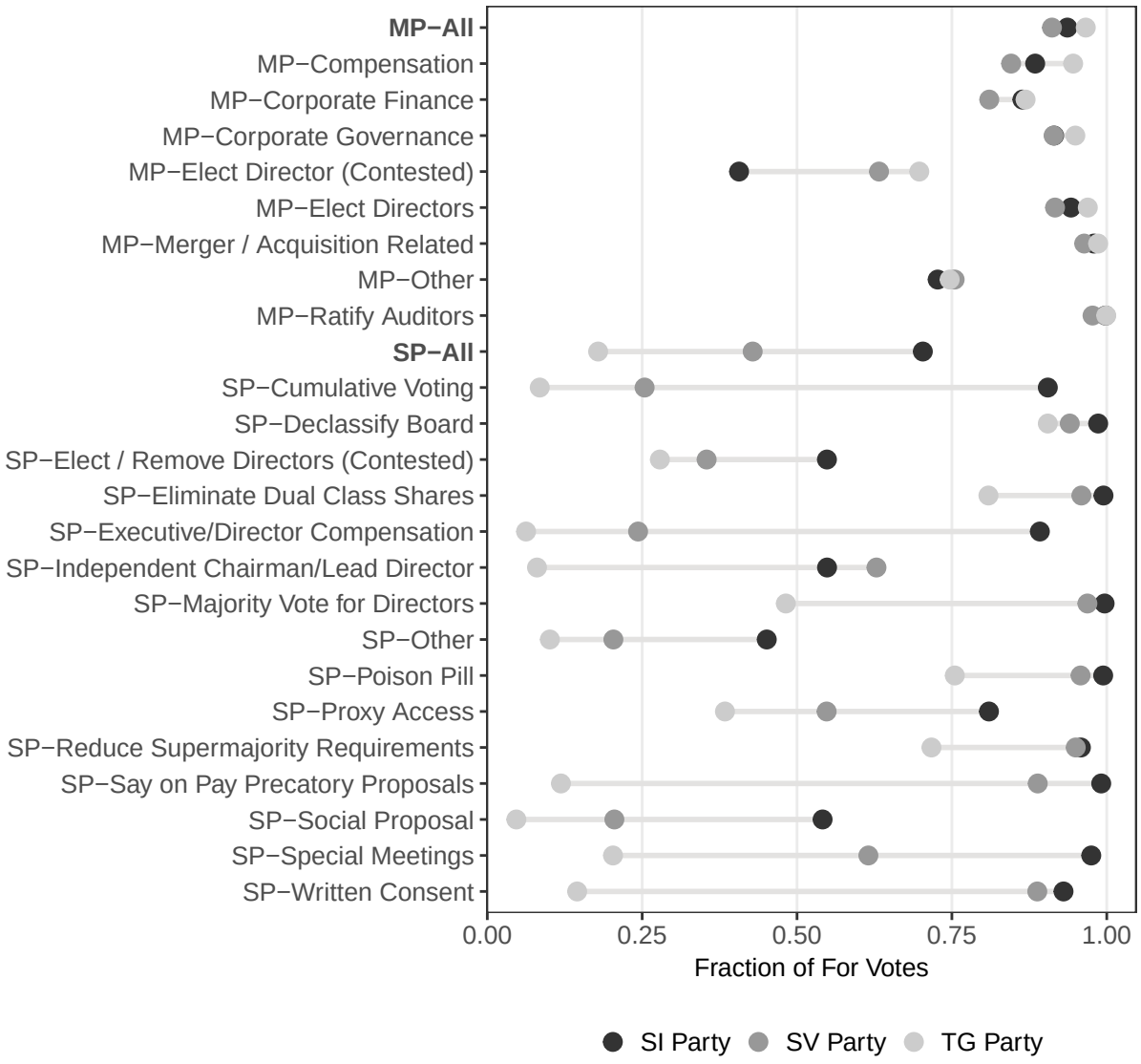

Figure 14: Fraction of Funds in Party Voting For; Full Sample

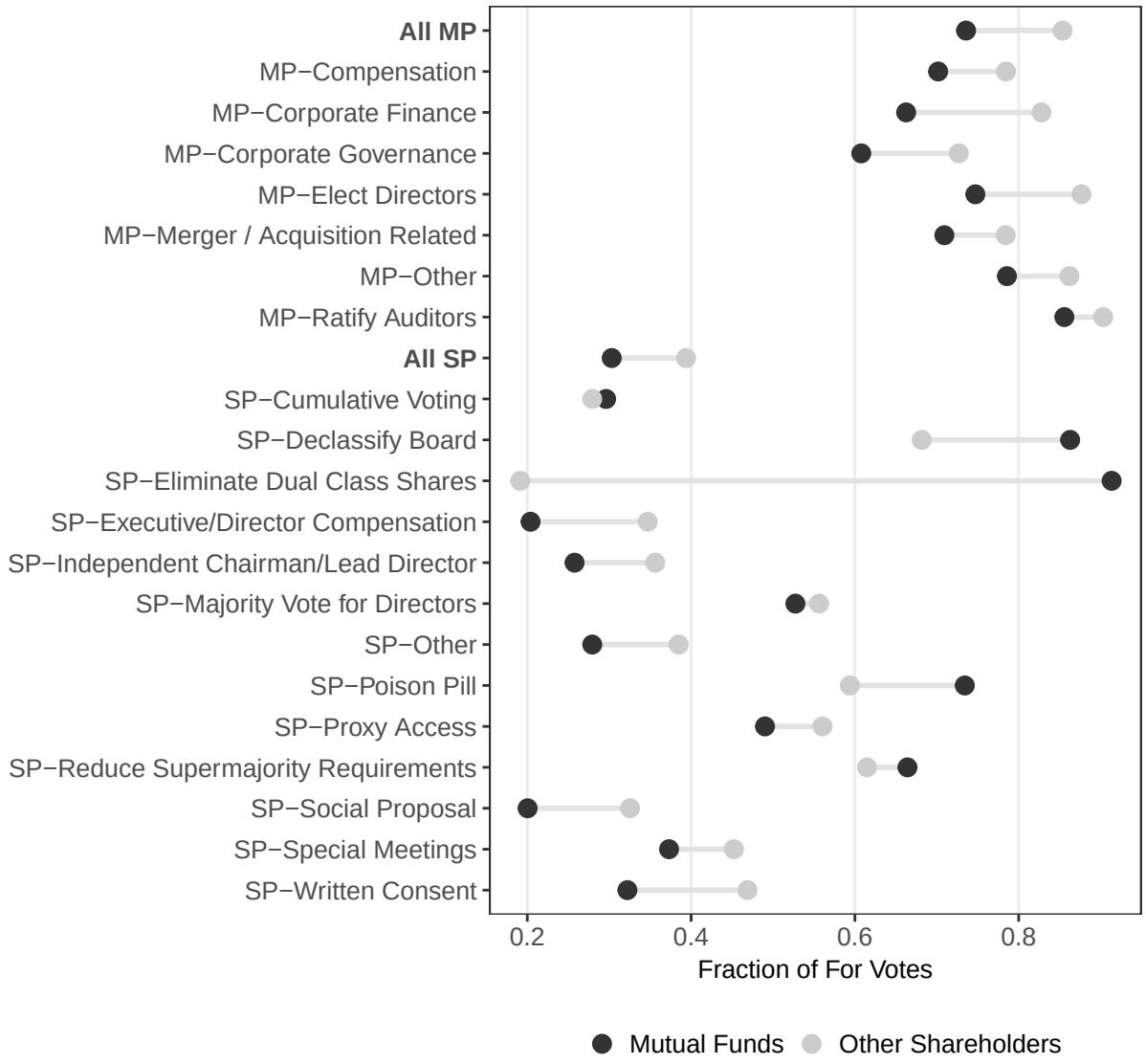

Figure 15: Fraction of Shares Voted in Favor: Mutual Funds vs. Other Shareholders