University of Michigan

A connection between shareholders' portfolios and directors' tenures

Alexandr Moskalev*

This version: July 21, 2020

Abstract

In this paper, I present an evidence that mutual fund's portfolio structure matters for its voting decisions, and that director elections, the most common type of corporate elections, have delayed consequences for nominees' career prospects. In an event study of funds' mergers, I find that a merger affects the acquiring mutual fund's voting behavior. I observe higher chances of future non-nomination for directors with lower shareholder support. This result resonates with the literature on shareholder dissent. I find that low shareholder support is also associated with a notable decrease in the length of director's tenure at a company.

*I thank my advisers David Miller, Martin Schmalz, Uday Rajan, and Francine Lafontaine for their valuable advice. I am also grateful to UofM Yottabyte Research Cloud for providing computing resources.

1 Introduction

Do corporate elections matter? Every year millions of shareholders participate in tens of thousands of elections at thousands of shareholder meetings in the U.S. Yet less than 1% of director elections are contested,[1] more than 99% of auditor ratification votes receive support from greater than a half of voting shares outstanding,[2] and an ever rising block of shares is voted by widely diversified institutional investors.[3] In this paper, I analyze the structure of shareholder meetings, the effect of shareholder support on directors' tenure, and whether mutual funds take their portfolios into consideration when making voting decisions. I find that the level of shareholder support is positively associated with the length of director's tenure at a company and the probability of future nomination. I examine whether fund mergers, a possible source of shocks to mutual funds' portfolio composition, affect mutual funds' voting patterns. In an event study, I observe that a merger affects the acquiring mutual fund's voting behavior.

First, I study the composition of election issues at shareholder meetings. In a frequency analysis, I find that director elections and auditor ratifications make up more than 80% of all election issues and appear in 94% and 80% of all shareholder meetings respectively. A meeting's agenda composition and other meeting characteristics, like location and time, might affect shareholder participation (Van der Elst, 2011; Li & Yermack, 2016). Since a loss of shareholder support may partially come from non-participation of some shareholders (Nili & Kastiel, 2016; Jill E. Fisch, 2017; Cvijanovic et al., 2019), I choose director elections, as the most uniformly present election type, to study the effect of shareholder approval on. In an application of principal component analysis to the classification of shareholder meetings' compositions, I obtain a similar result: the presence of director elections on meeting agenda is one of the least important factors in distinguishing between different composition types of those meetings. This finding strengthens my view that director elections face one of the most representative samples of voting shareholders.

Second, I conduct a short review of competitiveness for the first few of the most popular election issue types. Using the data on director elections, I observe that in less than 1% of cases,

[1] Institutional Shareholder Services Voting Analytics database documents more than 18000 director election events in 2015 and only 107 of those correspond to directors in opposition slates.

[2] Data comes from ISS Voting Analytics database.

[3] Backus et al. (2019)

a management-proposed slate of director nominees is contested by an opposition slate. Moreover, Cai et al. (2013) find that the rare instances of director loosing an election almost always result in him/her staying on the board. A similar situation holds for auditor ratifications: in a less than 1% of ratification votes an auditor fails to secure more than a half of the outstanding voting shares as votes of support. Less numerous compensation election issues demonstrate a greater disagreement in shareholders' votes: in 12% of cases "Say-On-Pay" proposals receive support from less than a half of all voting shares outstanding.

Third, I focus on uncontested director elections as the most uniformly present agenda issue at shareholder meetings. Literature suggests that bad election performance at uncontested director elections does not lead to an immediate removal of the director from the board (Cai et al., 2009, 2013), yet there is evidence of a delayed effect (Iliev et al., 2015; Aggarwal et al., 2019). I test two hypotheses: *(a)* directors with low shareholder support refrain or are prevented from being nominated in the next election cycle at the company; and *(b)* directors with low shareholder support experience shorter employment spells at the company. I find both hypotheses to be supported by the data.

For the former hypothesis, using a logit regression, I find that a higher fraction of votes "For" out of all voting shares outstanding has a positive and significant relationship with the probability of director's nomination in the future. Aggarwal et al. (2019) find that greater percentage of dissent votes is related to higher chances of departing from the board, which is consistent with my results. My approach differs from theirs in capturing the effect of both dissent votes and shareholder apathy.[4]

I test the latter hypothesis using a time-varying Cox's proportional hazard model. I find that low shareholder support is associated with shorter director's tenure at the company. Moreover, the magnitude of the effect is amplified by majority voting requirement, board being staggered, and a positive ISS recommendation.

Fourth, I study the effect of mutual funds mergers on an acquiring funds' voting behavior. I find that a fund alters its voting pattern soon after a merger with another fund. Because mergers reshape the acquiring fund's portfolio structure, this study suggests that there might be an effect of portfolio structure on the voting behavior. Yet, mergers may also involve other adjustments to the acquiring fund that might cause this change in its voting behavior.

[4] I attribute shareholders' apathy to the non-voted shares.

I compare a fund's voting record with voting records of other funds at the same firms. This approach presents two hurdles: *(i)* since mutual funds are very diverse in terms of their portfolios and voting behaviors, a direct comparison with any single mutual fund is almost never possible; and *(ii)* a comparison based on a group of mutual funds typically leads to a missing data problem due to variation in the funds' portfolios. I overcome the first hurdle by constructing an artificial mutual fund, a synthetic control (Abadie et al., 2010), to which I then compare the voting behavior of the actual fund. To my knowledge, I'm the first to use the synthetic control method in studying corporate governance.[5] To deal with the second hurdle, I use the robust version of the synthetic control method proposed by Amjad et al. (2018).

Focusing on voting behavior of acquiring mutual funds before and after a merger, I observe a significant change in their voting patterns. To alleviate concerns that the effect might be caused by the timing of the mergers before/after the bulk of corporate elections happen or that it is just an artefact of the synthetic control method, I conduct a placebo study where I use the same set of merger dates but I replace the acquiring mutual funds with arbitrary non-merging ones. The placebo study shows no change in voting behavior which rules out the aforementioned concerns.

The dependence of voting behavior on portfolio structure is important because it contradicts the Fisher separation theorem (Fisher, 1930). The theorem establishes that shareholders should unanimously agree on the firm's profit maximizing production plan. The evidence of it not happening suggests that the price-taking assumption is likely violated and that mutual funds are internalizing the externalities that firms place on each other.

2 Election types

Shareholder meetings include a wide range of election agendas, yet more than 90% of all election issues fall into one of the top ten popular types. Director elections is by far the most popular election type: 7 out of 10 election issues are in this category. Typically, there are multiple directors up for election at a given annual shareholder meeting which inflates the number of director elections in comparison to other election issues. Table 1 presents counts of the most common election types.

[5] The synthetic control method was pioneered by Abadie et al. (2010) in their study of California's tobacco control program. The method gone largely unnoticed in finance literature (Atanasov & Black, 2016). A notable exception is the paper by Berger et al. (2020). Recently, the synthetic control method gained traction in voting behavior studies.

Table 1: Election agendas at shareholder meetings. Data comes from ISS Voting Analytics dataset for years 2003 - 2016.

Agenda general description	Count	Cumulative %
Elect Director	234305	69.64
Ratify Auditors	29577	78.43
Advisory Vote to Ratify Named Executive Office...	15323	82.99
Amend Omnibus Stock Plan	7025	85.08
Ratify X as Auditors	5669	86.76
Approve Omnibus Stock Plan	4122	87.99
Advisory Vote on Say on Pay Frequency	3536	89.04
Approve/Amend Executive Incentive Bonus Plan	2811	89.87
Elect Subsidiary Director	2465	90.61
Increase Authorized Common Stock	1885	91.17
Adjourn Meeting	1774	91.69
Amend Qualified Employee Stock Purchase Plan	1408	92.11
Declassify the Board of Directors	1360	92.52
Approve Merger Agreement	1330	92.91
Other Business	1072	93.23
Elect Director (Management)	930	93.51
Elect Directors (Opposition Slate)	903	93.77
Amend Articles/Bylaws/Charter-Non-Routine	882	94.04
Approve Qualified Employee Stock Purchase Plan	756	94.26
Reduce Supermajority Vote Requirement	643	94.45
Amend Stock Option Plan	624	94.64
Require Independent Board Chairman	608	94.82
Advisory Vote on Golden Parachutes	514	94.97
Political Contributions Disclosure	508	95.12
Require a Majority Vote for the Election of Di...	477	95.26
Approve Acquisition OR Issue Shares in Connect...	463	95.40
Approve Auditors and Authorize Board to Fix Th...	441	95.53
Amend Non-Employee Director Stock Option Plan	357	95.64
Company Specific-Equity-Related	336	95.74
Approve Reverse Stock Split	292	95.83
Change Company Name	282	95.91
Amend Articles/Bylaws/Charter – Call Special ...	274	95.99
Approve Stock Option Plan	266	96.07
Amend Non-Employee Director Omnibus Stock Plan	265	96.15
Company-Specific – Shareholder Miscellaneous	255	96.22
Restore or Provide for Cumulative Voting	236	96.29
Provide Right to Act by Written Consent	225	96.36
Approve Non-Employee Director Omnibus Stock Plan	223	96.43
Approve Repricing of Options	222	96.49
Proxy Access	219	96.56

While director elections comprise an overwhelming majority of issues recorded, other categories also appear frequently at shareholder meetings. In table 2, I present 40 most frequent election types at these meetings. Director elections appear in 94% of the meetings, followed closely by ratifying auditors at 80% of the meetings. Other frequent issues are compensation questions,[6] governance questions,[7] merger issues,[8] and proposals related to equity.[9]

2.1 Election types correlation

Companies follow a certain agenda structure at shareholder meetings. To discover that structure, I first study the correlation between different types of popular agenda items, typically present at shareholder meetings. Second, I use principal component analysis to characterize what components of shareholder meetings define the most important dimensions across which the content of one shareholder meeting is different from another.

Composition of shareholder meetings is studied in figure 1. Since companies may use somewhat different titles for similar agenda items, I classify all items that appear in at least 0.5% of meetings into 7 major purpose groups.[10] Then, I study how these groups correlate in appearance at shareholder meetings.

Correlation structure reveals two major kinds of shareholder meetings. The first kind includes annual meetings where shareholders elect directors and ratify auditors. This type is also likely to include questions on compensation and corporate governance. The second kind includes special meetings (non-regular, proxy contest, etc.) that deal with merger and acquisition issues as well as contested director elections. The majority of shareholder meetings falls into the first category,

[6] These include issues such as "Advisory Vote to Ratify Named Executive Officers' Compensation", "Amend Omnibus Stock Plan", "Approve Omnibus Stock Plan", "Advisory Vote on Say on Pay Frequency", "Approve/Amend Executive Incentive Bonus Plan", "Amend Qualified Employee Stock Purchase Plan", "Approve Qualified Employee Stock Purchase Plan", "Amend Stock Option Plan", "Advisory Vote on Golden Parachutes", "Amend Non-Employee Director Stock Option Plan", "Amend Non-Employee Director Omnibus Stock Plan", "Approve Stock Option Plan", "Approve Non-Employee Director Omnibus Stock Plan", "Approve Repricing of Options", "Performance-Based and/or Time-Based Equity Awards", among others.

[7] These contain such agendas as "Declassify the Board of Directors", "Require Independent Board Chairman", "Political Contributions Disclosure", "Amend Articles/Bylaws/Charter-Non-Routine", "Require a Majority Vote for the Election of Directors", "Reduce Supermajority Vote Requirement", "Amend Articles/Bylaws/Charter – Call Special Meetings", "Restore or Provide for Cumulative Voting", "Proxy Access", among others.

[8] Merger issues have "Approve Merger Agreement" and "Approve Acquisition OR Issue Shares in Connection with Acquisition" agenda names.

[9] Most common agenda names are "Stock Retention/Holding Period", "Increase Authorized Common Stock", "Company Specific-Equity-Related", and "Approve Reverse Stock Split".

[10] The exact composition of these groups is provided in the beginning of this chapter.

Table 2: Frequencies of occurrence of 40 most popular election agendas at shareholder meetings. Data comes from ISS Voting Analytics dataset for years 2003 - 2016.

Frequency	Agenda
0.9351	Elect Director
0.6751	Ratify Auditors
0.3493	Advisory Vote to Ratify Named Executive Office...
0.1556	Amend Omnibus Stock Plan
0.1287	Ratify X as Auditors
0.0937	Approve Omnibus Stock Plan
0.0810	Advisory Vote on Say on Pay Frequency
0.0619	Approve/Amend Executive Incentive Bonus Plan
0.0430	Increase Authorized Common Stock
0.0402	Adjourn Meeting
0.0319	Amend Qualified Employee Stock Purchase Plan
0.0305	Declassify the Board of Directors
0.0302	Approve Merger Agreement
0.0246	Other Business
0.0173	Approve Qualified Employee Stock Purchase Plan
0.0140	Amend Articles/Bylaws/Charter-Non-Routine
0.0139	Require Independent Board Chairman
0.0135	Amend Stock Option Plan
0.0116	Advisory Vote on Golden Parachutes
0.0112	Political Contributions Disclosure
0.0108	Require a Majority Vote for the Election of Di...
0.0103	Approve Acquisition OR Issue Shares in Connect...
0.0098	Approve Auditors and Authorize Board to Fix Th...
0.0080	Amend Non-Employee Director Stock Option Plan
0.0080	Reduce Supermajority Vote Requirement
0.0068	Company Specific-Equity-Related
0.0064	Change Company Name
0.0062	Amend Articles/Bylaws/Charter – Call Special ...
0.0061	Approve Reverse Stock Split
0.0060	Amend Non-Employee Director Omnibus Stock Plan
0.0058	Approve Stock Option Plan
0.0054	Restore or Provide for Cumulative Voting
0.0051	Provide Right to Act by Written Consent
0.0051	Approve Non-Employee Director Omnibus Stock Plan
0.0050	Proxy Access
0.0050	Company-Specific – Shareholder Miscellaneous
0.0048	Approve Repricing of Options
0.0046	Stock Retention/Holding Period
0.0046	Submit Shareholder Rights Plan (Poison Pill) t...
0.0042	Performance-Based and/or Time-Based Equity Awards

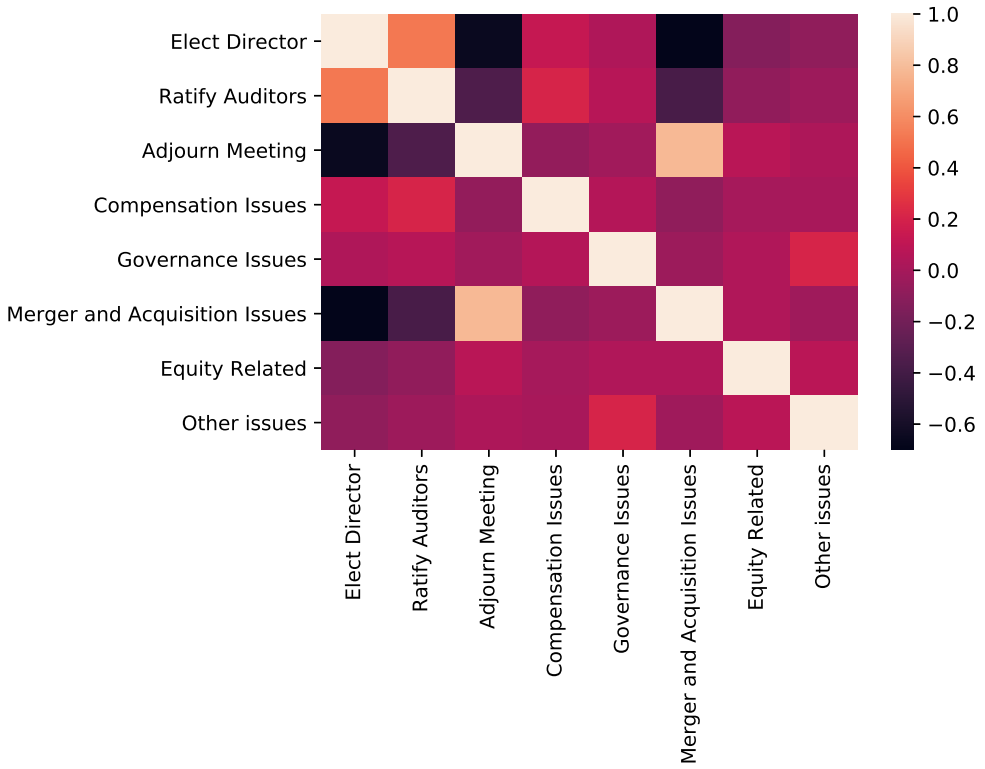

Figure 1: Correlation among the most frequent election agendas at shareholders' meetings.

with a much smaller portion falling into the second category. Some shareholder meetings exhibit features of both categories and cannot be easily classified into one specific kind.

2.2 Principal component analysis of shareholder meetings

Principal component analysis (PCA) allows me to mechanically discover the combinations of elections issues that differ the most between different kinds of shareholder meetings. In this section, I apply PCA to identify those combinations (principal components), to perform cluster analysis to identify distinct kinds of shareholder meetings, and to describe the differences between these kinds using principal component loadings. I find that shareholder meetings can be classified into four major categories: meetings which contain compensation and infrequent[11] election issues, meetings that contain none of those, and meetings that contain one or the other type of aforementioned election issues.

[11] Infrequent election agendas typically include shareholder-proposed and firm-specific issues.

To perform PCA for shareholder meetings composition I implement the following steps. First, for each shareholder meeting, I construct a vector that describes the types of elections present at the meeting. A component of this vector is equal to 1 if one or more elections of the corresponding type were conducted at the meeting and is equal to 0 if otherwise. The length of the vector is equal to the number of election types considered.[12] Second, for a collection of such vectors for all shareholder meetings, I perform mean removal for individual components. Since, by construction, each component has the same scale, I do not normalize the components and leave the variance of individual components unchanged. This approach enhances PCA's search for directions of highest variance by accounting for the natural differences in variances of individual vector's components.

Principal component analysis reveals that shareholder meetings can be classified into four major categories. While PCA does not endow those categories with a meaningful explanation of differences between them, a certain level of understanding can be reached by studying eigenvectors' (principal components) loadings. Using a graphical representation of PCA results for the first three principal components (see a score plot in fig. 2), I observe that four shareholder meeting categories arise from two splits. First, shareholder meetings are divided into two categories by the presence of compensation issues. Second, those two categories are subdivided in two halves each by the presence of infrequent election issues (these are typically firm-specific and shareholder-proposed issues). Very frequent election issues, such as director elections and auditor ratifications, do not play a substantial role in differentiating between various categories of shareholder meetings.

The first split happens in the space spanned by the two major principal components, and the second split happens along the third most significant principal component. The top left chart in figure 2 shows the first split. Two point clouds represent shareholder meetings classified into different categories by the PCA. A notable feature of this split is that clouds' internal structure is very similar. This could be explained in the following way: while categories split is driven by a major factor that is aligned well with the subspace spanned by first two principal components, other factors that explain less pronounced differences between shareholder meetings are not aligned

[12] Here, I consider the same election types that were used in the previous section in construction of the correlation diagram. While it is possible to perform PCA on the whole set of 389 different election types' descriptions available from the ISS Voting Analytics database, this would skew the results as descriptions are not perfect. The dataset contains multiple mutually excluding election descriptions (e.g. "Ratify Auditors" and "Ratify X as Auditors") that would cause artificial clustering of shareholder meetings as only one such description is used at a given shareholder meeting.

Table 3: Principal components' loadings for the Principal Component Analysis (PCA) of shareholder meetings' compositions. Original variables are sorted in a way that shows their importance according to the PCA: for each eigenvector I determine the most important original variable based on absolute loadings, then I sort the original variables by the order of eigenvectors based on this relation.

	Eigenvectors							
Original dummy variable	1	2	3	4	5	6	7	8
Compensation Issues	-0.86	0.49	-0.16	-0.03	-0.05	-0.01	-0.01	0.00
Ratify Auditors	-0.44	-0.64	0.22	0.07	0.58	-0.01	-0.10	-0.01
Other issues	0.01	0.31	0.90	-0.29	0.04	-0.06	0.04	0.02
Governance Issues	-0.05	0.05	0.29	0.93	-0.21	-0.06	-0.01	0.00
Equity Related	0.02	0.09	0.04	0.07	0.12	0.98	0.06	0.03
Elect Director	-0.20	-0.36	0.08	-0.10	-0.43	0.04	0.78	0.13
Merger and Acquisition Issues	0.13	0.25	-0.11	0.13	0.45	-0.13	0.30	0.76
Adjourn Meeting	0.12	0.25	-0.08	0.12	0.46	-0.10	0.53	-0.63

well with this subspace. Therefore, if these minor factors are independent of the major factor that drives the split, then both point clouds should have similar structures. Clouds' structures are determined by the projection of the minor factors on the subspace defined by the major principal components. Thus, I can identify the direction of the major factor's influence within the principal components' subspace as a vector, that if added to the one cloud's points would shift this cloud to overlap with the other one.

Using coherent point drift algorithm by Myronenko & Song (2010), I match the point clouds from the upper left plot in figure 2 and find that the difference between categories in the first split corresponds to a shift of the red cloud along the vector $[-0.86, 0.49]$ in the space of the first two principal components. Table 3 presents loadings of principal components on original variables. Using these loadings and the vector $[-0.86, 0.49]$, I compute loadings of the difference between categories as weighted combination of the first two principal components. The result is presented in table 4. A substantially higher weight is placed on compensation issues dummy. This result signals that inclusion of compensation issue(s) on shareholder meeting's agenda list produces the highest variation in shareholder meeting composition.

Second split happens mostly along the dimension of the third principal component. This split is driven by the less frequent election agenda issues that are not classified in the short list I'm using in

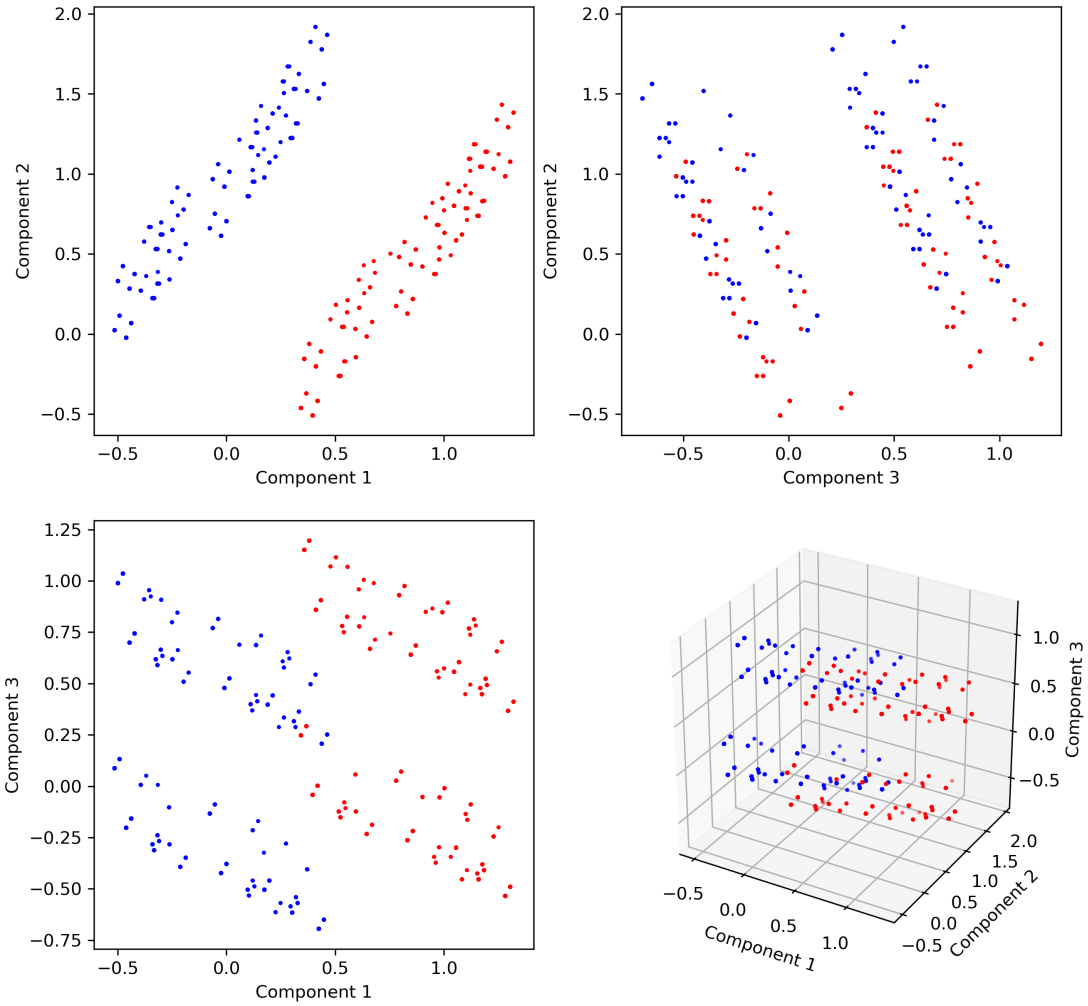

Figure 2: Score plot for the principle component analysis of shareholder meetings' composition. Components are ordered by the share of variance explained in descending order. The top left chart shows shareholder meetings' scores for the first two principle components. Two clusters are clearly present. Clusters are color-coded differently to track their evolution across projections at other combinations of principal components. Top right and bottom left charts present projections involving the third principal component. Both charts show that the third principal component splits the original clusters. Therefore, 4 different clusters are identifiable in the space spanned by the first three principal components.

Table 4: Loadings of the difference vector between shareholder meeting categories in the first split produced by the PCA. These loadings are computed as a weighted sum of the first two major principal components' loadings with vector $[-0.86, 0.49]$ providing the weights. Vector $[-0.86, 0.49]$ represents a difference between shareholder meeting categories in the subspace spanned by the first two principal components. The vector specifies a shift of red point cloud needed such that it would cover blue point cloud in the upper left plot in figure 2.

Original dummy variable	Weight	Absolute Weight
Compensation Issues	0.9751	0.9751
Other issues	0.1377	0.1377
Governance Issues	0.0686	0.0686
Ratify Auditors	0.0639	0.0639
Equity Related	0.0247	0.0247
Adjourn Meeting	0.0164	0.0164
Merger and Acquisition Issues	0.0102	0.0102
Elect Director	-0.0078	0.0078

this paper. While such issues individually have a frequency of occurrence at shareholder meetings of less than 0.5%, together those issues appear in 17.8% of meetings. This substantial proportion results in high standard deviation in presence of those rare election issues.[13] Therefore, presence of those election issues serves as a good differentiating factor between shareholder meeting categories.

Election issues with high variance of occurrence are more likely to be distinctive features of shareholder meetings. Table 5 presents summary statistics for shareholder meetings' agenda item types. Both compensation and "other" issues have comparatively high variance. Very common issues, like director elections, and quite rare, like equity related and merger and acquisition issues, have relatively small variances. Those are less likely to drive the separation of shareholder meetings into different categories. I do not conduct graphical analysis of shareholder meetings clustering beyond the first three principal components. Yet, principal component loadings in table 3 shed some light on influence of other election agenda types on meetings' composition.

Governance issues comprise a significant portion of the fourth principal component's vector. Having smaller standard deviation than compensation or infrequent issues, governance issues play a modest role in differentiation of shareholder meetings. Auditor ratifications and equity related issues are predominantly aligned with fifth and sixth principal components vectors respectively.

[13] Since all original variables here are dummies, the standard deviation is directly related to the mean as per Bernoulli distribution: $\sigma = \sqrt{p(1-p)}$. Standard deviation would be highest for election issues that were present in exactly half of all shareholder meetings.

Table 5: Summary statistics for shareholder meetings' agenda items. Variables are equal to 1 if corresponding agenda items were present at a shareholder meeting and 0 otherwise.

Agenda item present	mean	std
Elect Director	0.9387	0.2398
Ratify Auditors	0.8134	0.3896
Compensation Issues	0.5815	0.4933
Other issues	0.1780	0.3825
Governance Issues	0.0861	0.2805
Equity Related	0.0585	0.2346
Adjourn Meeting	0.0402	0.1965
Merger and Acquisition Issues	0.0401	0.1962

While auditor ratifications also appear in the first two principal component's vectors, analysis above clearly shows that they do not play a significant role in the first two splits between shareholder meetings' categories. Scree plot in figure 3 shows that fifth and sixth principal components explain proportion of original data's variance similar to the fourth principal component. Therefore, auditor ratifications, equity, and governance related issues are equally important in composition of shareholder meeting.

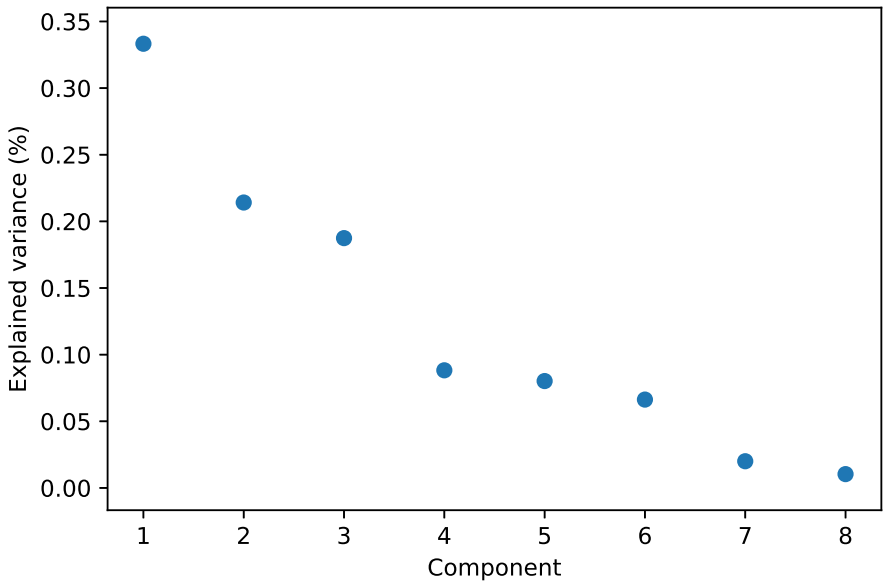

Figure 3: Scree plot for principle component analysis of shareholder meetings' composition. The first three components explain more than 73% of variance in the original data.

Lastly, director elections and merger and acquisition issues are mostly pronounced in the last two principal components' vectors. These issues do not introduce much differentiation in shareholder meetings. Director elections are present in 94% of shareholder meetings, while mergers and acquisitions get voted on in only 4% of meetings. Therefore, both types of elections have relatively small variance of occurrence, and they explain only a limited amount of variance in shareholder meetings' composition. Mergers and acquisition issues typically get accompanied by adjourn meeting votes. Figure 1 shows substantial positive correlation between these two types of elections issues. Adjourn meeting votes do not represent the biggest element in any one of the principal components' vectors. Thus it is likely that they do not contribute much to differentiation in shareholder meetings' composition either.

3 Electoral competitiveness

Corporate elections are not always binding, few are contested, and shareholder proposals are infrequent. Most popular agenda items, like director elections and auditor ratifications, do not provide a significant variation in outcomes. In fewer than 5% of cases for director elections and 1% for auditor ratifications proposals fail to secure votes in favor from more than a half of all outstanding voting shares. Less frequent issues, like "Say-On-Pay" votes, tend to feature greater share of cases with low shareholder support.

3.1 Director elections

Director elections are the most common type of election issues at shareholder meetings. Approximately 70% of all elections are of this type and about 94% of all shareholder meetings involve director elections. Yet, competitiveness of director elections is rather low: overwhelming majority of all director elections are uncontested, a significant portion of companies use plurality voting standard,[14] and very few director nominees lose elections and even then most of them become directors.

Director elections typically happen at annual shareholder meetings where a slate of director nominees is proposed for an election. In a very small number of cases, less than 0.4%, two slates

[14] Under a plurality voting standard, an uncontested nominee needs just one vote in favor in order to be elected.

are proposed: by the management and by the opposition. Companies use two methods for electing directors: majority and plurality voting standards. Under the plurality voting standard, a director nominee receiving the most votes in support wins the election. This method has a substantial drawback: in an uncontested election the nominee needs to receive just one vote "For" in order to get elected. An alternative method is the majority voting standard. This approach requires a winning nominee to secure more votes in support than votes against. Figure 4 shows the share of director elections requiring a winning nominee to pass 50% (or above) threshold. The growth in the last decade is attributed to the changes in voting practices of the S&P 500 companies, while smaller companies from Russell 2000 mostly stick to the plurality voting standard (see Council of Institutional Investors (2017) for details).

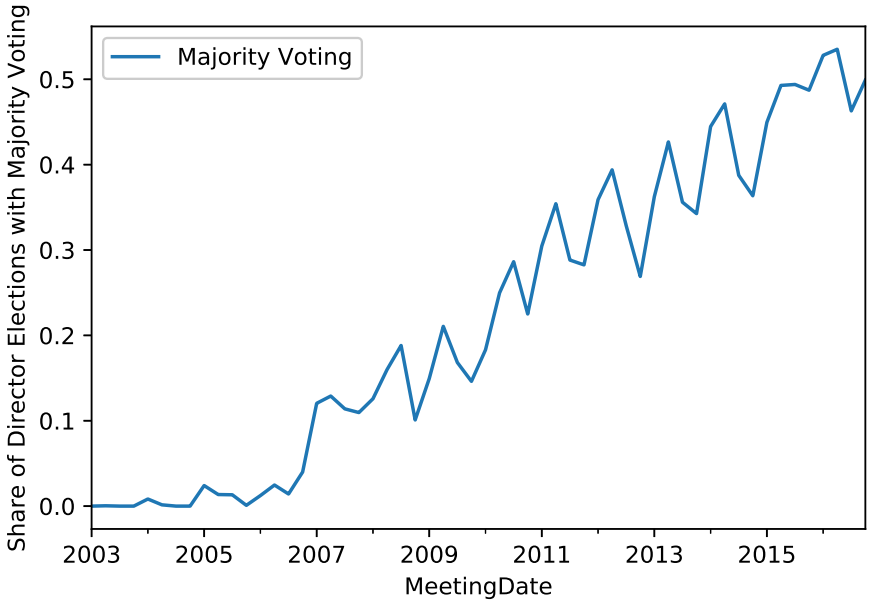

Figure 4: Share of director elections requiring winning nominee to pass 50% (or above) threshold. Data on threshold comes from the ISS Voting Analytics dataset. I compute the share by dividing the number of director elections with the threshold requirement by the total number of director elections in a given quarter.

Director nominees almost always enjoy a high support rate. I define support rate as the proportion of shares voted "For" to the total number of voting shares outstanding. This is a very conservative estimate, as less than 1% of companies use total shares outstanding as the base in their calculations. Figure 5 presents a density histogram for support rates at director elections.

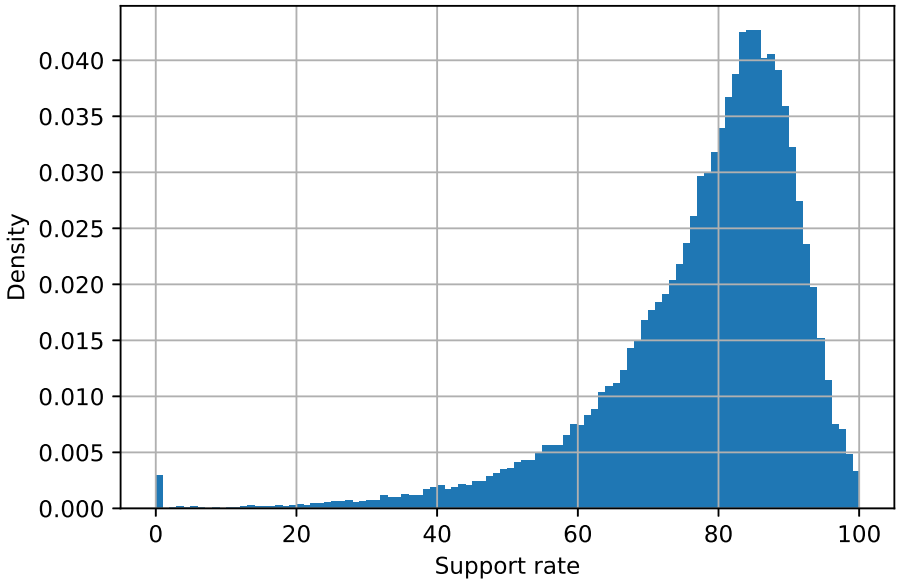

Figure 5: Density histogram of support rates at director elections. Support rate is defined as the ratio of votes cast "For" to the total number of shares outstanding (voting shares). Only 4.7% of director elections had support rate of less than 50% of shares outstanding.

The distribution has a heavy rightward skew. Only 4.7% of director elections received support of less than half of outstanding shares. Since most companies in the sample do not use the majority voting standard and the ones that do typically use votes cast as the base in their calculations, the chances of a director nominee to miss the threshold are even smaller. Cai et al. (2013) investigate director elections from 2004 to 2010 and find that from 105445 directors only 294 directors at 153 firms received less than 50% of votes "For". Moreover, only 14 firms adopted some form of the majority voting standard. Therefore, even if a company uses the majority voting standard, there is a very slim chance that a nominee does not meet the threshold.

3.2 Auditor ratifications

The second most frequent corporate elections' issue is seeking ratification from shareholders on auditor selection. Over 80% of shareholder meetings in the dataset include auditor ratifications. This election issue is widespread partially due to the Sarbanes–Oxley Act of 2002 that introduced new auditor approval requirements. The act requires exchange-listed companies to have an audit

committee that appoints and oversees the auditor. Corresponding SEC rules (SEC, 2003) permit shareholder ratification of auditor selection in compliance with Sarbanes–Oxley Act. The idea behind the ratification process is that shareholders could voice their concern with the audit committee's work, selection of a specific auditor, and audit fees. Auditor ratifications are non-binding.

The density distribution of the support rate[15] for auditor ratifications has a significant rightward skew. Less than 1% of ratification elections do not receive at least half of voting shares outstanding in "For" votes. Therefore, virtually all auditors put up for a ratification are successfully ratified by shareholders.

In 2009 SEC allowed NYSE to update Rule 452 (SEC, 2009). The update prohibited brokers from voting clients' shares in uncontested director elections if they did not receive voting instructions from their clients. Unlike with director elections, brokers were not prohibited to vote shares in auditor ratifications (and other routine matters) without clients' instructions. This might have incentivized firms to include auditor ratifications on shareholder meetings in order to reach a quorum.

Krishnan & Ye (2005) find that companies might avoid auditor ratification when shareholders are dissatisfied with the boards of directors. They also point out that the likelihood of including an auditor ratification to a shareholder meeting is positively associated with financial expertise of audit committees. Dao et al. (2008) show that shareholders are more likely to withdraw their support at an auditor ratification election when the auditor's tenure at the company is long.

While there is little evidence that auditors formally fail ratification elections at companies, low support rates and high levels of shareholder dissent may affect auditors' dismissals and resignations. Sainty et al. (2002), using pre Sarbanes–Oxley Act data, provide evidence that high degree of investor dissatisfaction is associated with a firm being more likely to change auditors. Barua et al. (2017) examine auditor dismissals using the auditor ratification voting data from 2011 to 2014. They find that the proportion of shareholder votes against auditors ratifications is associated with subsequent auditor dismissals.

[15] As before, I define the support rate as proportion of "For" votes among the the total voting shares outstanding.

3.3 Compensation issues

Votes of shareholder approval of executive compensation, "Say-On-Pay" votes, comprise the third largest category among corporate election issues. In 2011, the SEC introduced changes to Section 14A of the Securities Exchange Act of 1934 that require public companies to hold an advisory vote on compensation of company's named executive officers (NEO). The change was mandated by the Dodd-Frank Act, a comprehensive reform of financial regulation in the U.S. This change led to a tenfold increase in the number of "Say-On-Pay" votes conducted at shareholder meetings: for instance, the sample contains 215 such votes in 2010 and 2829 in 2011. This vote is meant to be an annual check of executive officers' compensation and is non-binding.

The practical purpose of this vote is to allow shareholders to voice their concerns with the level of NEO's compensation, NEO's performance during the past year, and to convey that information directly to firm's management. Literature finds that "Say-On-Pay" votes are beneficial for the firm. Iliev & Vitanova (2019) show that regular "Say-On-Pay" votes are valuable to shareholders. Cuñat et al. (2016) use pre Dodd-Frank era data to find that adoption of "Say-On-Pay" proposal leads to a 5% increase in the market value of a company. Robin Ferracone & Dayna Harris (2011) provide evidence that pay for performance disconnect, poor pay practices, and poor disclosure were the most common reasons to vote against in the failed "Say-On-Pay" votes in post Dodd-Frank era. Cotter et al. (2013) find that companies with low total shareholder return, inadequately high levels of executive pay, and companies with negative recommendations from ISS were faced with greater shareholder dissent at "Say-On-Pay" elections. The authors also note that despite the non-binding nature of these elections, companies that failed a vote undertook a change in their compensation schedules or engaged in additional communication with shareholders.

Figure 6 presents density histogram of "Say-On-Pay" votes' outcomes. Unlike director elections and auditor ratifications, "Say-On-Pay" elections have a sizeable share of cases (12%) where proposal was not supported by a half of all voting shares outstanding.

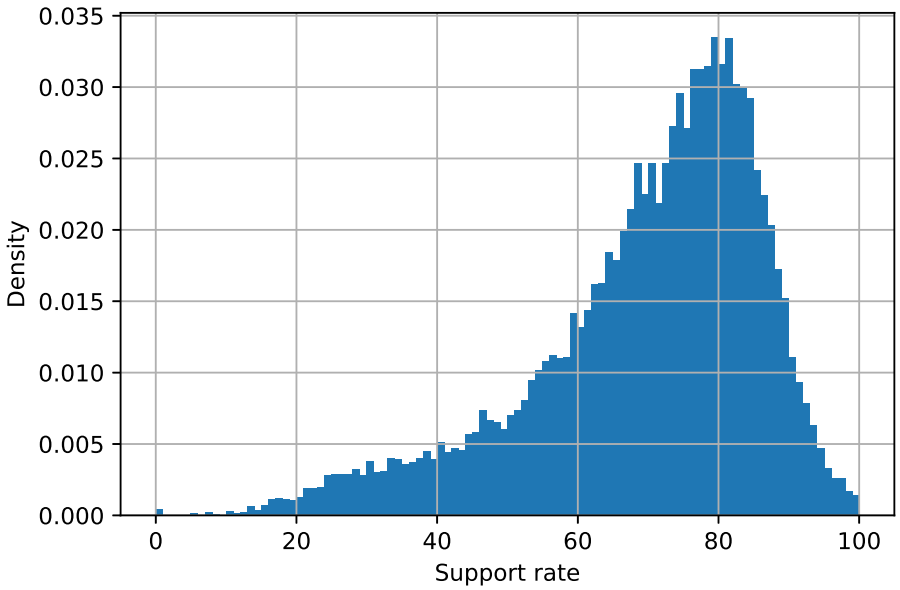

Figure 6: Density histogram of support rates at "Say-On-Pay" elections. Support rate is defined as the ratio of votes cast "For" to the total number of shares outstanding (voting shares). More than 12% of "Say-On-Pay" elections had support rate of less than 50% of shares outstanding.

4 Election results and director's job security

Director nominees very often receive high support rates in uncontested elections which makes losing an election highly improbable even under the majority voting standard. This might create an impression that uncontested director elections are a pure formality that does not affect nominee's chances of being elected as a director (Monks & Minow, 2004). In this section, I evaluate how election results are related to elected director's career prospects with a company. I find that low shareholder support more often precedes director's departure from the company. In a time-invariant Cox's proportional hazard model I do not find a significant relationship between average level of shareholder support and the length of director's tenure. When I account for the evolution of shareholder support rate and other covariates in a time-varying Cox's model, I find a significant and economically meaningful association between the support rate and the length of director's employment.

Directors value their reputation and might react in the loom of a low support vote (Grundfest, 1993). For contested elections, literature provides evidence that contested directors face a reduction in the number of directorships both in the targeted company and non-targeted companies (Fos & Tsoutsoura, 2014). Due to a high cost for activist shareholder, contested elections comprise less than 1% of all director elections. While uncontested elections do not pose a credible direct threat to nominees of losing directorships, elections' results serve as a signal of shareholder perception of the board and CEO performance. Fischer et al. (2009) find that firms with low board approval rates are associated with greater board and CEO turnover and lower CEO compensation. Guercio et al. (2008) study "just vote no" campaigns and find that such concerted actions of shareholders motivate boards to act in shareholders' interests.

4.1 Directorships' spells and election results data

Directors typically stay with a company for a number of years and participate in multiple elections. For the best possible coverage of election events, I reconstruct employment spells' lengths from the election data. I find that about a third of directors serve on staggered boards, while others participate in elections annually. Some directors experience transition of their boards between staggered/non-staggered structures.

The director elections data comes from the ISS Voting Analytics dataset. I merge it with the ISS Directors dataset to obtain directors' characteristics. Unfortunately, the match covers only about 40% of directors' election events. Therefore, I first rely on the Voting Analytics dataset to identify directors' employment spells. A detailed description of the procedure is available in the Appendix.

The Voting Analytics dataset contains 234305 director election events at 5616 companies for the years 2003 - 2016. This corresponds to 65788 identified director-company employment spells. Out of these, 19657 spells contain just a single election event. This is likely due to director being elected just once at a particular company.[16] 22437 spells were censored as the next expected election in a spell would not have been captured if it was to occur after 2016.

[16] Some portion of these events might also be related to underrepresented companies in the ISS Voting Analytics dataset. As well as spells that ended in the first year (3 years) or started in the last year (3 years) of observable data.

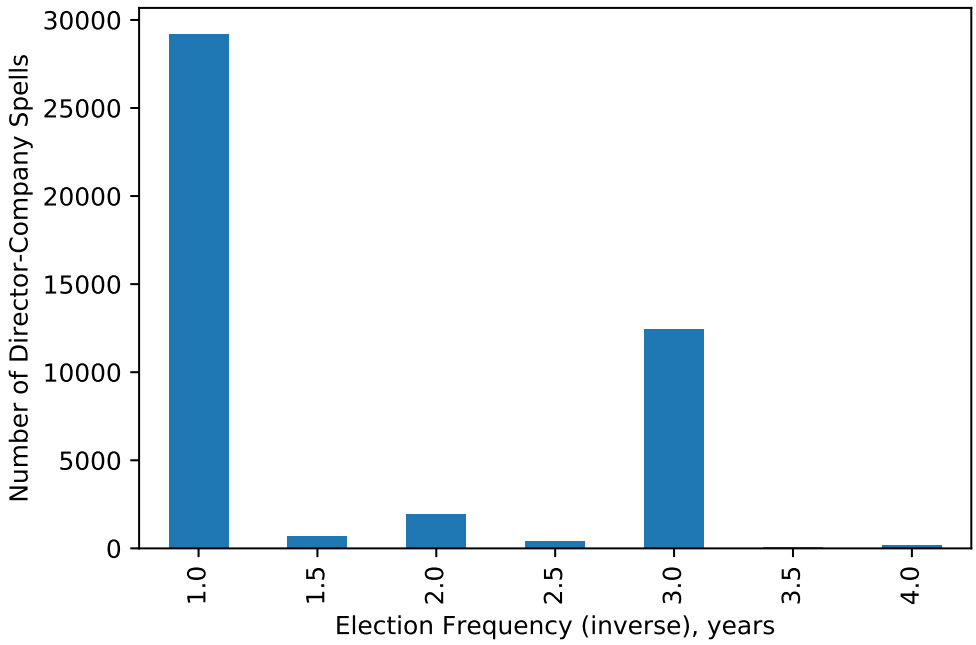

Figure 7: Election frequency (inverse) of director elections computed at the level of Company-Director spells. Years on horizontal axis represent the time between nominations of the same person for a director position at the same company. Election frequency of a spell is computed as the median of all elections' intervals belonging to the spell. The non-integer numbers correspond to spells having multiple different election intervals with no clear median.

The frequency of director elections varies by company. A substantial part, 28% of director-company spells with two or more elections, of director elections happened at companies with staggered boards. This manifests in long waiting periods between nominations of the same person (typically, 3 years). Figure 7 presents the distribution of election frequencies for director-company spells. Election frequency of 2 years likely represents employment spells at companies transitioning between staggered and non-staggered boards of directors.

Directors' employment spells substantially differ in duration. Figure 8 shows the distribution of employment spells durations. As expected, shorter spells are more numerous in the data. Therefore, it is probable that director turnover is higher among board members with less experience at a company. Spells at companies with staggered boards cause 6, 9, and 12th bars to be noticeably higher than their neighbours. Figure 9 demonstrates that almost every election bears a risk to be the last one for a director at a company. As directors virtually never formally lose an election if nominated, the last election precedes a decision of leaving company's board of directors.

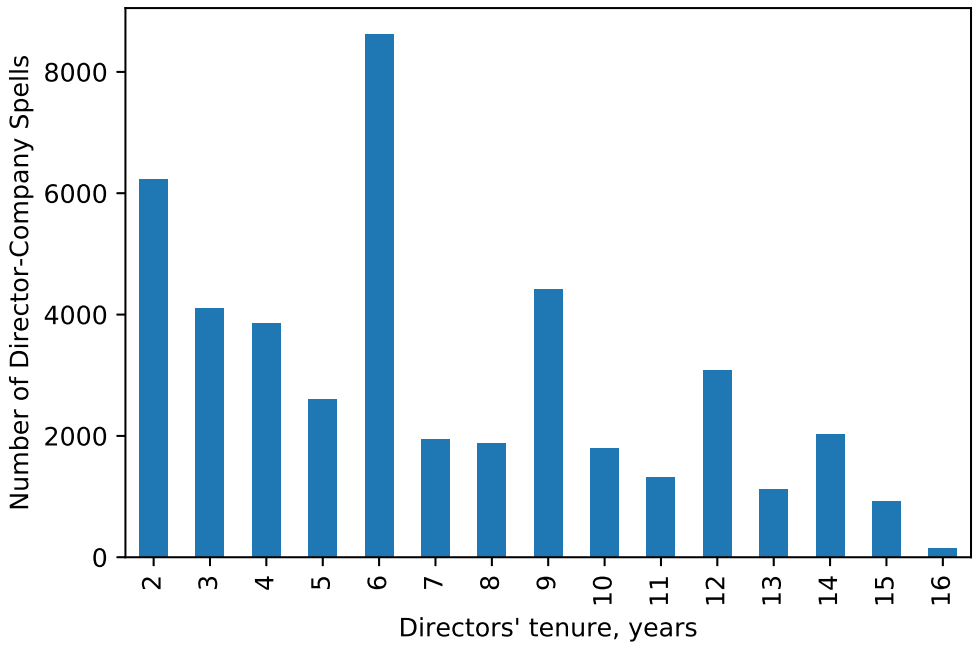

Figure 8: Tenure of directors' employment spells computed using ISS Voting Analytics data. Spell length is computed as a difference between the spells' maximum and minimum years of election plus the median time difference between elections in the spell. Due to the nature of procedure used, one-year-length spells are not identifiable as they only include one election. Three-year-spells are underestimated here due to the absence of 1-term directors from staggered boards in this statistic. Results in this bar chart are only representative of the sample used. Censoring occurs since only a limited timeframe is available for study. Actual directors' employment spells are likely to be longer.

4.2 Election results and future nominations

Director elections do not seem to prevent nominees from getting on the boards yet their results do not go unnoticed. I find that low shareholder support predicts the event of director leaving the company. Director with higher shareholder support at the last election has a higher chance of participating in the next election. The magnitude of this relationship is comparable to the effect associated with director being a member of compensation or audit committees.

To understand the effect of election results on director's tenure at a company, I consider a simple model of directors nomination. I suppose that directors and nomination committees make the decision regarding further nomination for a continuing director partially based on his/her last election results. That is, director may not want to re-elect, if he/she expects a weak support from shareholders. While this weak support is almost surely would be sufficient for a formal victory, a

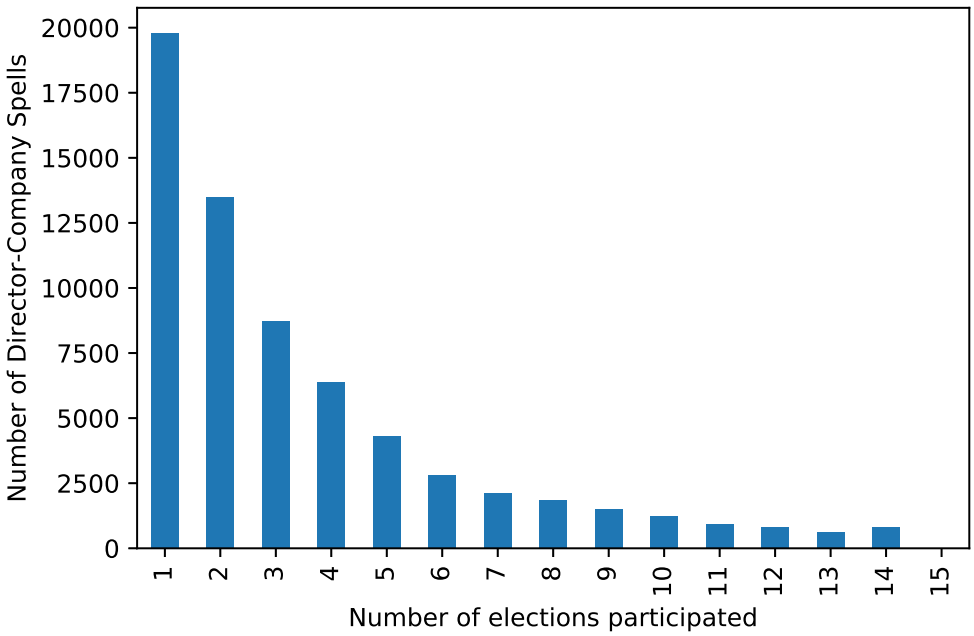

Figure 9: Number of elections a director participates in during his/her employment spell at a company. Bar chart represents results for the dataset in use. Due to censoring, actual numbers are likely to be higher.

lower than his/her peers result might be a negative signal for the nominee's directorships at other firms. At the same time, nomination committee might have similar career concerns and, therefore, avoid nomination of unpopular directors. Less popular nominees might also compromise board's defenses against activist shareholder's efforts to engage in a proxy fight.

For every director-company spell in the sample, I identify the last election a director participated in. I remove all censored spells from the sample because this simple model does not account for censoring. Using an election as a unit of measurement and within the framework of logit regression model, I regress an indicator of an election being the last one for a director on his/her performance in this election, ISS recommendation, and director's and company's characteristics. Table 6 presents the results.

The first, base model, specification only includes election results and a few election-specific characteristics. I consider the percentage of votes "For", support rate, among total outstanding voting shares as a measure of shareholder approval. Directors with higher support rates are more likely to be nominated in the next election cycle at a company. A one standard deviation increase

Table 6: Directors abandoning future nominations for board elections at companies. Dependent variable is a dummy equal to 1 if election is the last one for a director candidate at a company. Censored employment spells are excluded from all samples. Support rate reflects the percent of votes "For" among total voting shares outstanding.

	Base model	Director controls	Company controls	Kitchen Sink
	(1)	*(2)*	*(3)*	*(4)*
Support Rate, %	-0.013^{***}	-0.010^{***}	-0.012^{***}	-0.012^{***}
	(0.001)	(0.004)	(0.001)	(0.004)
Staggered Board	1.632^{***}	2.845^{***}	1.595^{***}	2.822^{***}
	(0.087)	(0.274)	(0.101)	(0.308)
Majority Vote req.	0.602^{***}	0.998^{***}	0.438^{***}	1.045^{***}
	(0.080)	(0.172)	(0.093)	(0.203)
ISS "For" recommendation	-0.073	0.057	-0.016	0.011
	(0.070)	(0.230)	(0.085)	(0.272)
Support Rate × Staggered Board	-0.002	-0.010^{***}	-0.001	-0.010^{***}
	(0.001)	(0.003)	(0.001)	(0.004)
Support Rate × Maj. Vote. req.	0.004^{***}	-0.007^{***}	0.005^{***}	-0.007^{***}
	(0.001)	(0.002)	(0.001)	(0.003)
Support Rate × ISS "For" rec.	0.003^{***}	0.002	0.002	0.003
	(0.001)	(0.004)	(0.001)	(0.004)
log(Spell Length)	-1.311^{***}	-1.367^{***}	-1.346^{***}	-1.410^{***}
	(0.015)	(0.032)	(0.018)	(0.036)
Director's characteristics				
Director's Age		-0.102^{***}		-0.101^{***}
		(0.016)		(0.019)
(Director's Age)^2		0.001^{***}		0.001^{***}
		(0.000)		(0.000)
Director's Share, %		0.013^{***}		0.012^{**}
		(0.004)		(0.005)
Nominating Committee memb.		-0.057		-0.077
		(0.128)		(0.136)
Governance Committee memb.		0.035		0.050
		(0.128)		(0.136)
Compensation Committee memb.		-0.143^{***}		-0.147^{***}
		(0.030)		(0.034)
Audit Committee memb.		-0.191^{***}		-0.186^{***}
		(0.030)		(0.034)

Table 6, continued

	(1)	*(2)*	*(3)*	*(4)*
Employed as CEO		−0.164**		−0.229***
		(0.073)		(0.083)
Employed as VP		−0.630*		−0.625*
		(0.348)		(0.351)
Other employment controls	No	Yes	No	Yes
Company's characteristics				
log(Total assets)			0.039***	−0.026***
			(0.005)	(0.010)
Return on assets, %			−0.003***	−0.005***
			(0.000)	(0.002)
Book to market ratio			0.000	−0.060*
			(0.000)	(0.032)
Leverage			−0.009	0.001
			(0.008)	(0.015)
Constant	1.585***	3.749***	1.309***	4.020***
	(0.068)	(0.567)	(0.087)	(0.652)
Observations	105196	30622	79589	24674

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

in the support rate, 14 p.p., is associated with 21% increase in the odds of being nominated next time. This effect is comparable in magnitude to the effects of compensation or audit committees' membership, or director being employed as a CEO. In all four specifications I observe the same sign and similar magnitudes of this effect.

The staggered board dummy carries a substantial coefficient, but this is an artificial effect coming from the mechanics of staggered boards: a director, sitting on a board, does not participate in elections every year. This significantly reduces the number of nominations for these directors over their employment spell at a company in comparison to non-staggered boards' directors at other companies. Therefore, an election for a staggered board director is intrinsically more likely to be the last one. A similar outcome is observed for the majority voting requirement. As large number of companies transitioned from plurality to majority voting requirement over the sample's timespan, many director spells have ended under the new requirement while they were primarily lasting under the old requirement. Thus, the monotonous adoption of majority voting standard likely stands behind the significant positive coefficient here.

Surprisingly, a favourable ISS voting recommendation does not seem to have an effect on director's decision to participate in further company's elections.

Interaction terms of the support rate with the dummies described above produce mixed results. The support rate's effect is amplified at companies with staggered boards but only when controlling for director's characteristics. The interaction with the majority voting requirement has a similar dynamic: a higher support rate increases the chance of a future nomination when I control for the director's characteristics. The positive ISS recommendation interaction with the support rate does not have a significant effect anywhere except the base model specification where the effect is small.

Notably, the spell length has a substantial positive effect on the probability of participation in future elections. The longer a director stays on a board, keeping everything else constant, the greater chances are that he/she will be nominated at the next elections. This effect is present in all four specifications considered.

In the second specification I add director's characteristics to the base model. I find that the director's age has a "parabolic" relationship to the chances of future nomination. Younger and older directors have smaller chances of being nominated in comparison to middle-aged directors. The director's share in a company negatively affects his/her nomination chances, yet the effect is rather small as directors typically do not hold more than a fraction of a percent of company's shares. Membership in compensation and audit committees is associated with an ample increase in chances of future nomination. The same holds true for directors being employed as a CEO or a VP.

In the third specification I include company's characteristics to the base model. A higher return on assets seems to positively affect the director's chances of participation in future elections. The effect of the size of a company does not have a stable sign and depends on inclusion of director's characteristics. Other company's controls do not produce results that are consistently significant.

Finally, I use "kitchen sink" regression as my fourth specification. For most of the variables considered, I obtain the same signs and comparable magnitudes of coefficients. The variable of interest, director's support rate, remains significant and maintains its sign across all four specifications.

4.3 Election results and directors tenure

A low shareholder support is also associated with shorter director employment spells. In a survival analysis, I find that higher shareholder support is related to longer duration of director's employment at a company when I account for temporal evolution of the shareholder support level and the company's and director's characteristics. Notably, a survival analysis done in averages does not lead to a significant effect of shareholder support level on employment spell duration.

The survival analysis provides a capability to account for director-company spells that are censored due to the limited scope of the data sample.[17] This approach allows me to mitigate influence of possible biases that might have been introduced in the previous analysis by spell selection due to censoring. Since the survival analysis deals with employment spell's length as its main dependent variable, I adjust the hypothesis accordingly. The above analysis of decision to exit shows that a lower support rate is associated with a higher probability of not participating in future elections. A reasonable extension of this result could be a hypothesis that low support rates go in conjunction with reduction in the employment spell's length.

I use Cox's proportional hazard model to implement a survival regression. It features separation between the influence of static covariates and a population-level baseline hazard function in modeling of an individual's hazard. Moreover, this model allows me to estimate the effect of covariates without the need to estimate or assume a specific form of the baseline hazard function. As many covariates vary over the duration of a director-company spell, I also consider Cox's time varying proportional hazard model. Therefore, I study the relationship between support rates and employment lengths using the survival analysis in two settings: with static and time-varying covariates.

The analysis with static covariates involves the use of a statistic that maps values of a set of time-varying variables into their static counterparts. I chose to use the mean as such statistic for all variables. In an unreported analysis, I find that the mean support rate of a director at a company is either not significantly related to his/her employment spell's length or the magnitude of such relationship is not economically meaningful.[18] In this analysis I consider regression specifications

[17] More than 34% of spells in the sample are censored.

[18] I find the mean support rate as an average of all positive support rates of a director at all elections he/she participated in at the company.

that include director and company controls, as well as, all and none of those. In addition, I construct other statistics that summarize director's support: the mean excess support in comparison to his/her peers, the last support rate, and the last excess support in comparison to historic performance of the director herself/himself.[19] In all but one case, I do not find a significant and meaningful effect on director-company's spell length.[20]

The lack of results in a static covariates approach in this case is likely related to the inability of simple statistics to convey meaningful information about the director's election performance. For instance, the average support rate might not be easily comparable across the companies and employment spells that are too distant in time. At the same time, averaging of company's and director's time variant characteristics severely reduces their informativeness in the regression. That is, for example, a director's age becomes less relevant for longer spells, a company's return on assets means much less for career prospects of a specific director when averaged over many years, and within spell covariation between explanatory variables vanishes after averaging.

To address the repetitive nature of elections in company-director spells, I utilize Cox's time varying proportional hazard model. Formula 1 describes how time changing covariates are embedded into the model.

$$h(t|x) = b_0(t) \exp\left(\sum_{i=1}^{n} \beta_i (x_i(t) - \overline{x_i})\right), \tag{1}$$

where $h(t|x)$ is the conditional hazard function, $b_0(t)$ is the baseline hazard, $x_i(t)$ are the time-varying covariates, and β_i are the survival regression coefficients. For every director-company spell, I assume that covariates are updated at the time of the director's election and then they stay the same until the next election of this director happens.

The analysis with time-varying covariates provides evidence that a higher support rate is linked to longer duration of director-company spells. Table 7 demonstrates results of four different specifications: base model, models with director's and company's controls, and a "kitchen-sink" model. The support rate has a significant coefficient in all four specifications, and it has a substantial

[19] The mean excess support in comparison to director's peers is computed as a difference between the director's support and the mean directors' support in a given election year averaged over all election years the director participated in. The last support rate corresponds to the support rate of the director in the last election she/he participated in at the company. The last excess support rate is computed as a difference between the director's last support rate and his/her average support rate.

[20] A significant and economically meaningful effect has been found for the last excess support rate variable in specification with controls for director's and company's characteristics.

magnitude in all but the base model specification. Among 3 other specifications, an increase of one standard deviation in the support rate, is associated with more than a 6% decline in the hazard rate. When coupled with a staggered board, the effect grows to a 14% decline. A positive ISS voting recommendation and a majority voting requirement contribute an additional 2% each to this support rate effect.

A staggered board effect measures at around 38% reduction in the hazard rate. This is likely due to a large number of directorships at non-staggered boards that do not last longer than 1 or 2 terms. Therefore, being on a staggered board even for a single term delivers a sizeable impact on the length of director's tenure. The majority voting requirement is also associated with longer directorships with the effect being in the neighbourhood of 8%.

A positive ISS recommendation does not seem to have a substantial effect on its own. Only in the base model it delivers a 11% decrease in the hazard function, while in other specifications the effect loses its significance.

The director's age, in this analysis, has a negative influence on employment spell duration. A 10-years change in age translates into a 4.5% increase in hazard function. Unlike in the nomination analysis above, a compensation committee membership does not have a significant effect on the spell's length. An audit committee membership has a positive effect on the spell's duration as before.

Directors at larger companies enjoy longer employment spells. While a higher return on assets increases duration of directorships, the effect is rather small: less than a half-percent decrease in hazard function per a percent increase in the return on assets. Higher book-to-market and leverage ratios reduce length of employment spells, but this effect only persists in the company's controls specification and disappears in the "kitchen-sink" regression.

5 Portfolio composition and voting behavior

In a world where firms are price takers, Fisher separation theorem (Fisher, 1930) establishes that all shareholders, no matter what portfolios they hold, should unanimously agree on the firm's production plan that maximizes its profit. In the real world, price taking assumption is unlikely

Table 7: Survival analysis of director-company spells' duration using Cox's time varying proportional hazard model. The table presents estimates of β_i coefficients for the following model of conditional hazard function: $h(t|x) = b_0(t)\exp\left(\sum_{i=1}^{n}\beta_i(x_i(t)-\overline{x_i})\right)$, where $b_0(t)$ is the baseline hazard and $x_i(t)$ are the time-varying covariates.

	Base model	Director controls	Company controls	Kitchen Sink
	(1)	*(2)*	*(3)*	*(4)*
Support Rate, 100%	-0.022^{***}	-0.477^{***}	-0.301^{***}	-0.551^{***}
	(0.004)	(0.096)	(0.025)	(0.110)
Staggered Board	-0.464^{***}	-0.467^{***}	-0.534^{***}	-0.493^{***}
	(0.013)	(0.042)	(0.016)	(0.047)
Majority Vote req.	-0.082^{***}	-0.106^{***}	-0.066^{***}	-0.072^{**}
	(0.012)	(0.028)	(0.015)	(0.032)
ISS "For" recommendation	-0.118^{***}	-0.039	0.001	-0.018
	(0.012)	(0.063)	(0.017)	(0.071)
Support Rate × Staggered Board	-0.551^{***}	-0.573^{***}	-0.534^{***}	-0.599^{***}
	(0.017)	(0.053)	(0.020)	(0.059)
Support Rate × Maj. Vote. req.	-0.223^{***}	-0.160^{***}	-0.164^{***}	-0.133^{***}
	(0.016)	(0.036)	(0.019)	(0.041)
Support Rate × ISS "For" rec.	-0.020^{***}	-0.197^{***}	-0.130^{***}	-0.197^{**}
	(0.004)	(0.072)	(0.020)	(0.082)
Director's characteristics				
Director's Age / 100		0.388^{**}		0.458^{**}
		(0.180)		(0.208)
(Director's Age)^2 / 10000		0.514^{***}		0.567^{***}
		(0.152)		(0.175)
Director's Share, 100%		-0.008		-0.006
		(0.010)		(0.011)
Nominating Committee memb.		-0.014		-0.015
		(0.029)		(0.033)
Governance Committee memb.		-0.020		-0.020
		(0.029)		(0.033)
Compensation Committee memb.		-0.040		-0.030
		(0.025)		(0.029)
Audit Committee memb.		-0.102^{***}		-0.098^{***}
		(0.024)		(0.028)
Director's employment controls	No	Yes	No	Yes

Table 7, continued

	(1)	*(2)*	*(3)*	*(4)*
Company's characteristics				
log(Total assets)			-0.069^{***}	-0.086^{***}
			(0.003)	(0.008)
Return on assets, %			-0.003^{***}	-0.005^{***}
			(0.000)	(0.001)
Book to market ratio			0.063^{***}	0.025
			(0.005)	(0.028)
Leverage			0.041^{***}	0.009
			(0.004)	(0.014)
Observations	222830	33859	149875	26061

$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

to be satisfied, and we may observe a shareholder behavior that is not compatible with the firm's profit maximization objective.

In this section, I study the effect of mutual funds mergers on voting behavior of acquiring funds. In particular, in an event study I demonstrate that a merger with another fund causes a noticeable change in how the acquiring fund votes the shares it holds. Since a merger is likely associated with a change in the acquiring fund's portfolio, this study suggests that there might be an effect of portfolio structure on the fund's voting behavior. At the same time, mergers may also lead to other adjustments for the acquiring fund that might cause the change in its voting behavior.

Portfolio endogeneity presents a substantial hurdle in the analysis of shareholder's voting behavior. Since shareholders may vote both with their shares and with their feet (Admati & Pfleiderer, 2009), the direct comparison between voting behavior and portfolio structure might produce spurious results. For example, investors, like mutual funds, may follow certain sets of principles to select assets into their portfolios and to vote their shares. Therefore, groups of mutual funds having similar principles could create a correlation between their portfolio structure and their voting record.

My analysis builds on the assumption that the reasons for a merger of mutual funds are not directly related to their voting behavior. Literature finds that a poor target fund performance is a significant factor for within-family mergers. Jayaraman et al. (2002) find that eliminating funds with high cost structures and disguising poor fund performance are the likely reasons for

within-family mergers, while building a larger set of investment objectives is a probable goal for across-family mergers. Fund families are likely to sell unique portfolios to other mutual fund families in order to stay focused (Zhao, 2005). McLemore (2019) finds that fund's past performance is not significantly related to the likelihood of it being an acquiring fund. Khorana et al. (2007) find that when a target fund's board has many independent directors the chances of a merger for an underperforming fund are higher. I have not been able to find studies that cover voting behavior of merging mutual funds.

5.1 Mutual funds mergers and voting data

The mutual funds' mergers data comes from the CRSP Mutual Fund database. I find 1346 fund mergers that happened from 2009 to 2016.[21] For each acquired fund the database provides the date of a merger and the acquirer information. I use it to construct the set of funds that survived the merger (acquirers) and experienced a shock to their portfolio.

The mutual funds' votes come from the ISS Voting Analytics database. For every acquiring fund I collect all its votes within a two-year timespan (one year prior and one year post merger). The voting behavior analysis involves learning the differences between votes of the fund in question in comparison to votes of the other funds. Thus, I also collect the votes of other mutual funds at the meetings where the acquiring fund was actively present.

5.2 Synthetic control method

I analyze an acquiring fund's voting behavior by comparing it to the behavior of other funds that vote at the same companies. This poses a challenge as mutual funds are different from each other, hold non-identical portfolios, and typically do not exhibit identical voting patterns. I find that synthetic control approach fits the problem well, and I use it to construct an artificial, "synthetic", mutual fund that tracks the voting behavior of the acquiring fund before a merger (treatment). This allows me to reconstruct a counterfactual case where the would-be acquiring fund is not treated by a merger. Then, I use this synthetic control to find a difference in voting behavior of the acquiring fund after the treatment in comparison to the counterfactual case.

[21] My choice for the time interval is explained by the mapping I created between CRSP Mutual Fund and ISS Voting Analytics databases. While the mapping works for a greater timespan, from 2009 to 2016 the match is substantially better than for other years.

Abadie et al. (2010) introduce synthetic control method in their study of California's tobacco control program. I also adopt the factor model they propose as I find it suitable for a study of funds' voting behavior. In particular, let Y_{it}^N be the voting decision of a non-treated fund-i at an election enumerated by a timestamp t. Consider the following factor model

$$Y_{it}^N = \delta_t + \boldsymbol{\theta}_t \boldsymbol{Z}_i + \boldsymbol{\lambda}_t \boldsymbol{\mu}_i + \epsilon_{it}, \tag{2}$$

where δ_t is an unknown common time-varying factor affecting funds' votes, $\boldsymbol{Z}_i$ is a vector of observed time-independent covariates, $\boldsymbol{\theta}_t$ is a vector of unknown parameters, $\boldsymbol{\lambda}_t$ is a vector of unobserved common time-dependent factors, $\boldsymbol{\mu}_i$ is a corresponding vector of unknown factor loadings, and ϵ_{it} represents the error term with zero mean.

In this paper, I interpret time as an indexing axis for the election events a fund participates in.[22] Thereby, I can come up with the following rationalization for the variables involved. The vector $\boldsymbol{Z}_i$ represents the observed characteristics of a mutual fund that do not change with time and are not affected by a merger.[23] For example, these can be fee structure, published investment strategy, fund's management and the board of directors. To account for a differential impact of fund's covariates on its voting decision at a particular election, vector $\boldsymbol{\theta}_t$ contains unknown weights that apply to the covariates in $\boldsymbol{Z}_i$. Since $\boldsymbol{\theta}_t$ is time-dependent, these weights can be election-specific which allows for a great deal of flexibility in accounting for fund-specific covariates' effect on the fund's voting behavior. In a similar fashion, vector $\boldsymbol{\lambda}_t$ contains unobserved election-specific characteristics that affect fund's voting decision. A corresponding vector of unknown weights, $\boldsymbol{\mu}_i$, reflects how mutual funds are taking into account those election-specific covariates. Finally, variable δ_t takes care of election-specific effects that uniformly affect funds' voting decisions.

The synthetic control method uses a pool of J donors, mutual funds not involved in a merger ($i = 2, ..., J+1$), to construct an estimate of the counterfactual outcome, $\hat{Y}_{1t}^N = \sum_{j=2}^{J+1} w_j Y_{jt}^N$, for the treated unit, the acquiring mutual fund ($i = 1$). The construction involves a set of weights, $w_2, ..., w_{J+1}$, that are tuned in order to match the pre-intervention voting path (3) of the acquiring

[22] Without loss of generality, I assume that every election issue can be assigned a "time" that uniquely identifies it. Then election and company covariates can be embedded into the "time-dependent" variables.

[23] Since I track acquiring fund's behavior only within a fixed time window of 2 years, slow changing characteristics of a mutual fund can be treated as time-invariant within this model's framework.

fund and its observed covariates (4) as close as possible.

$$\sum_{j=2}^{J+1} w_j Y_{j1} = Y_{11}, \quad \sum_{j=2}^{J+1} w_j Y_{j2} = Y_{12}, \quad ... \quad \sum_{j=2}^{J+1} w_j Y_{jT_0} = Y_{1T_0}, \tag{3}$$

$$\sum_{j=2}^{J+1} w_j \boldsymbol{Z}_j = \boldsymbol{Z}_1, \tag{4}$$

where T_0 is the last election before the merger.[24] It may not always be feasible to find a set of weights such that the sets of equations 3 and 4 hold exactly. In such cases, an approximate solution is sought. The synthetic control method does not specify how to find a tradeoff between better approximation of one system of equations over the other and vice-versa. Since in this section I concentrate on a qualitative study of voting behavior, I focus solely on the pre-merger voting path match and I ignore matching on funds' characteristics when searching for the synthetic control's weights.

The benefit of using the synthetic control method over a diff-in-diff regression or a similar model is the absence of the parallel trend assumption. Abadie et al. (2010) show that weights $w_2, ..., w_{J+1}$ can only fit (approximately) the systems of equations 3 and 4 with a high number of pre-intervention periods if these weights approximate $\boldsymbol{\mu}_1$ through a weighed sum of $\boldsymbol{\mu}_j$, $j \in \{2, ..., J+1\}$. That is, if there is a non-linear trend in voting behavior of a mutual fund of interest, this trend will be picked up by non-linearities in behavior of mutual funds in the donor pool. Therefore, the synthetic control method accounts for the influence of unobserved election-specific characteristics in the estimate of acquiring fund's voting behavior in the counterfactual case.

One drawback of the synthetic control method is the requirement that every fund in the donor pool has to have a voting history that completely covers all votes of the acquiring fund. Since mutual fund portfolios almost never overlap exactly, an additional step is needed before I can apply the method.

[24] Here, for the sake of notational simplicity, I assume that elections are enumerated by integers that represent a time sequence.

5.3 Robust synthetic control method

To overcome the problem of missing data in the donor pool of mutual funds, I use the robust synthetic control method developed by Amjad et al. (2018). The idea behind this method is to perform a spectral decomposition of funds' voting histories and then inverse this procedure to impute missing voting data. This way I can reconstruct the would-be votes of a mutual fund from the donor pool at companies that are not in its portfolio.

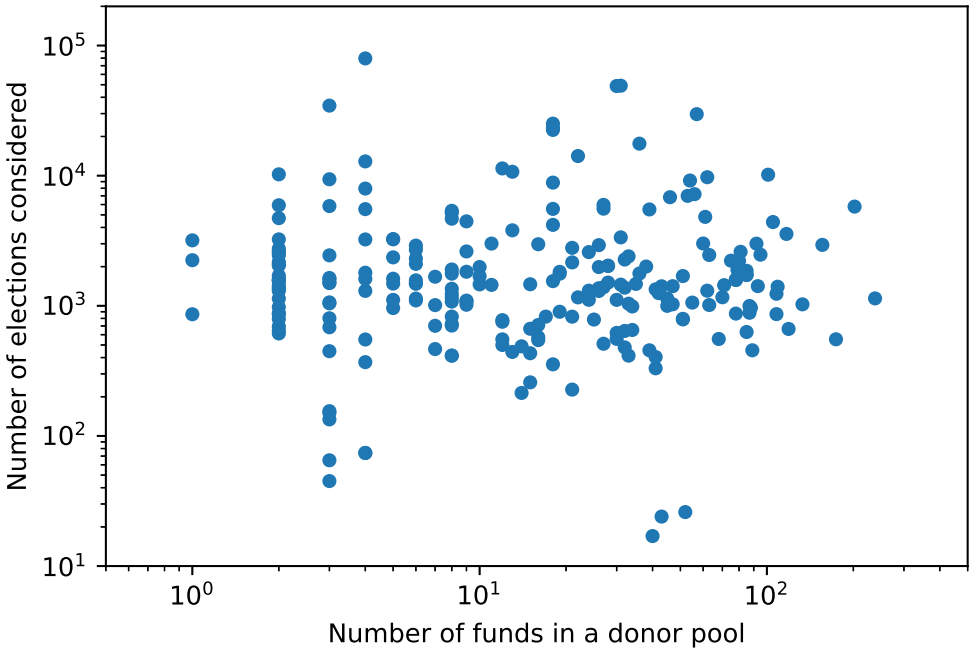

Figure 10: Sizes of donor pools and considered vote-paths for the acquiring funds' merger events. Vote-paths are tracked based on the elections an acquiring fund participated in over a two-year window around the merger date. Funds in the donor pool are required to have votes in at least 50% of both pre- and post-merger elections.

The spectral decomposition relies on a well-balanced sample of donor funds. For every acquiring fund in the sample, I construct a donor sample and conduct a separate robust synthetic control analysis. At the first step, I determine all elections within a two-year span the acquiring fund participated in. Then, I collect votes of all other funds that have participated in any of those elections. At the second step, I prune the set of the other funds participated by leaving only those that have voted in at least 50% of elections before and after the merger date. Next, I remove acquiring funds with donor pools of fewer than 4 funds from consideration. Figure 10 presents the

number of funds in a donor pool and the number of elections considered for the merger events at acquiring funds. For the majority of mergers, the voting path consists of more than a thousand votes cast by the acquiring fund and the corresponding donor pool contains more than ten donors.

5.4 Merger's effect on voting behavior

Acquiring mutual funds experience a significant change in their voting behavior right after a merger. I track changes in voting behavior of a mutual fund by comparing it to an implied behavior of such fund in a counterfactual case where the merger never happens. In particular, using the weights computed by robust synthetic control method, I compute the implied voting path of the acquiring fund.

$$\hat{Y}_{1t}^N = \sum_{j=2}^{J+1} w_j \hat{Y}_{jt}^N, \tag{5}$$

where $\hat{Y}_{jt}^N$ is an estimate of numerically encoded vote of fund-j at election-t. $\hat{Y}_{jt}^N$ is a product of the robust synthetic control method and is based on the observed part of the fund-j's voting-path, Y_{jt}^N. I set $Y_{jt}^N = 1$, if fund-j voted "For", $Y_{jt}^N = -1$, if the fund voted "Against", "Abstain", or "Withhold", and I use $Y_{jt}^N = 0$ to reflect a recorded "Do Not Vote". If I can not find a recorded vote of the fund-j at election-t, I leave Y_{jt}^N as missing value for the spectral decomposition to impute.

I compute the difference in voting behavior between an acquiring mutual fund's voting-path and the counterfactual case as an absolute difference between the encoded vote of the acquiring fund and its implied voting-path. I adjust the computed difference by a factor of $\frac{1}{2}$, so it can be interpreted as a share of cases in disagreement on a scale from 0 to 1. The resulting vector of differences turns out to be very noisy for any individual acquiring mutual fund. I group the computed differences into weekly intervals by the elections' dates. Then, I use a weighted average to compute a single measure of voting disagreement within a weekly period along with a 95%-confidence interval. The weights are inversely proportional to the number of election events an acquiring fund participated in. Weighting scheme has a purpose of preventing the few funds with high number of votes cast from skewing the results of averaging.

Figure 11 presents a clear jump in voting behavior disagreement between acquiring mutual funds and their corresponding synthetic controls. In the weeks before a merger, the disagreement level measures at around 8%, while by the end of the first few weeks after the merger it spikes

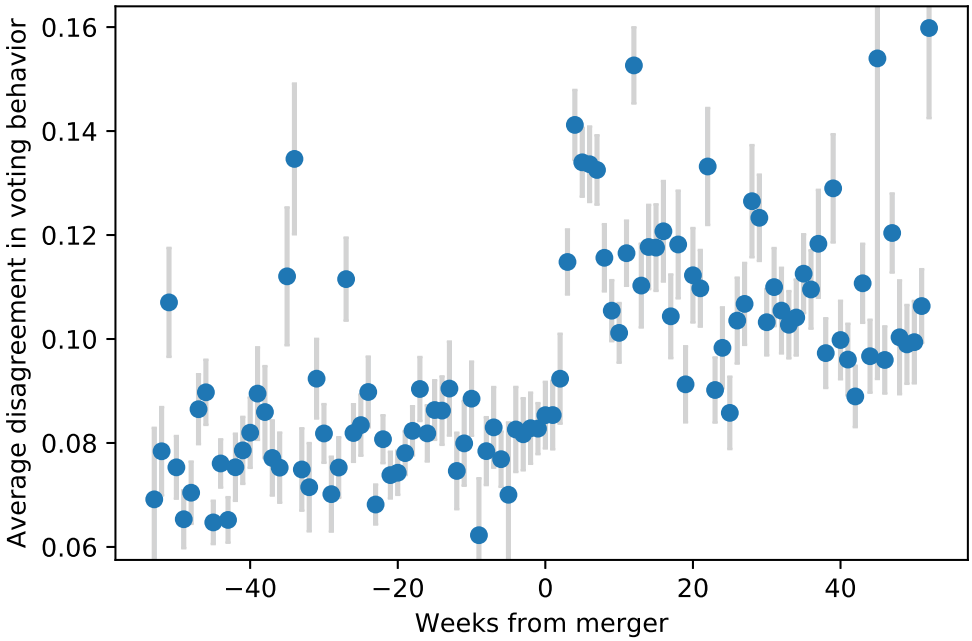

Figure 11: The average disagreement in voting behavior between acquiring funds and their corresponding synthetic controls. The disagreement is computed on a scale $[0, 1]$ as a half of an absolute difference between encoded fund's and its control votes. Averaging involves a weighting scheme to prevent acquiring funds with extensive vote-paths from dominating the results. Weights are inversely proportional to the number of votes an acquiring funds has. 95% confidence intervals are depicted in gray and are computed separately for each week's value.

to 14% and then consolidates at the level of 11%. It is hard to judge what happens after a few months from the merger, as long-term predictions with synthetic control method are less reliable when pre-intervention histories are short.[25]

5.5 A placebo study

The synthetic control method may only use the pre-merger voting path to construct the control's weights. This raises a credible concern that if overfitting happens then we can see a spike in voting behavior disagreement just because the synthetic control performs badly on the unseen data. Another problem could be caused by timing of mutual funds' mergers. I observed a substantial heterogeneity in placement of funds' merger dates with respect to the dates of shareholder meetings.

[25] While some merger events have very extensive pre-merger voting-paths, others have limited numbers of acquiring fund's votes recorded. Averaging of a heterogeneous set of post-intervention estimates likely leads to worse estimates at long time-horizons as the weighting scheme prefers estimates with smaller number of votes and, consequently, shorter histories.

This heterogeneity could lead to an artificial jump in disagreement simply due to a merger being scheduled, for instance, just before a month with the highest number of shareholder meetings.

To address the concerns above, I implement a placebo study where I replace acquiring mutual funds with arbitrary funds that did not experience mergers. The nature of the study allows me to include more data points than the original study could by considering more than one arbitrary fund per one merger date. This substantially reduces variance in the resulting graph. Figure 12 presents results of the placebo study.

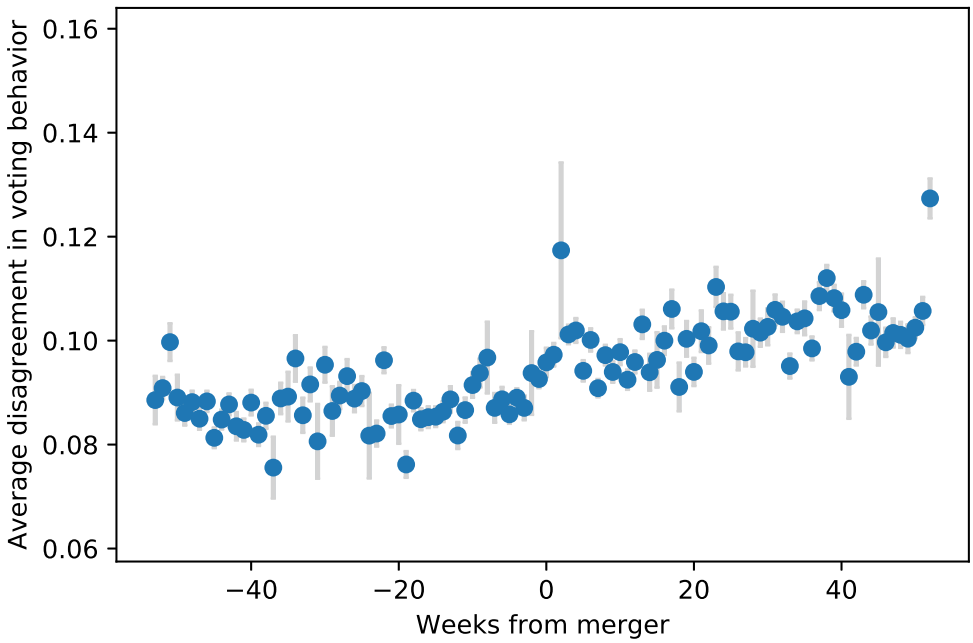

Figure 12: A placebo study of the average disagreement in voting behavior of mutual funds after mergers. The study involves the actual merger dates, but the acquiring funds are replaced by arbitrary non-merging funds. The disagreement is computed on a scale $[0, 1]$ as half of an absolute difference between encoded fund's and its control votes. Averaging involves a weighting scheme to prevent the funds with extensive vote-paths from dominating the results. Weights are inversely proportional to the number of votes a funds has. 95% confidence intervals are depicted in gray and are computed separately for each week's value. To reduce variance of the computed values, multiple arbitrary funds were considered per one merger date.

The study shows no jump at a merger date. This result strengthens the validity of the jump in the actual study. A notable feature of placebo test is an upward trend for the post-merger disagreement values. This trend is likely a result of the drift in funds' portfolio structures that happens

over time. Another reason could be the method's limited ability to predict the counterfactual case's outcome at longer time intervals.

6 Conclusion

In my analysis of shareholder meetings, I find that director elections and auditor ratifications appear at more than 94% and 80% of shareholder meetings respectively, and together they comprise more than 80% of all recorded election events in the ISS Voting Analytics dataset. Using principal component analysis, I establish that the presence of director elections on shareholder meeting's agenda is one of the least significant factors that distinguish between different compositions of shareholder meetings. This makes director elections a good candidate for further study as those almost uniformly appear across shareholder meetings. Then, I find that the two most frequent election issues, director elections and auditor ratifications, have skewed distributions of election tallies. Less than 4.7% of director elections and less than 1% of auditor ratifications received support from less than half of shares outstanding.

For uncontested director elections, I test two hypothesis of delayed effects of election results on a director's career prospects. First, I find that low shareholder support predicts an event of director leaving the company. This result is coherent with Aggarwal et al. (2019) who find a similar result for a greater percentage of shareholder dissent votes. Second, I discover that low shareholder support is associated with shorter director-company spells. This result is comparable in magnitude to the effect of an audit committee membership.

Finally, in an event study, I find that a merger with another mutual fund causes the acquiring fund to change its voting behavior. Since mergers are likely to modify portfolio structure, this study suggests that portfolio composition affects voting behavior. At the same time, mergers may introduce many other modifications to the acquiring fund that might be responsible for the change in its voting behavior.

References

Abadie, A., A. Diamond, & J. Hainmueller (2010) Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program. *Journal of the American Statistical Association* **105**, 493–505.

Admati, A. R. & P. Pfleiderer (2009) The "Wall Street Walk" and Shareholder Activism: Exit as a Form of Voice. *Review of Financial Studies* **22**, 2645–2685.

Aggarwal, R., S. Dahiya, & N. R. Prabhala (2019) The power of shareholder votes: Evidence from uncontested director elections. *Journal of Financial Economics* **133**, 134–153.

Amjad, M. J., D. Shah, & D. Shen (2018) Robust Synthetic Control. *Journal of Machine Learning Research* **19**, 1–51.

Atanasov, V. & B. Black (2016) Shock-Based Causal Inference in Corporate Finance and Accounting Research. *Critical Finance Review* **5**, 207–304.

Backus, M., C. Conlon, & M. Sinkinson (2019) Common Ownership in America: 1980-2017. *NBER Working Paper No. 25454*, 56.

Barua, A., K. Raghunandan, & D. V. Rama (2017) Shareholder Votes on Auditor Ratification and Subsequent Auditor Dismissals. *Accounting Horizons* **31**, 129–139.

Berger, E. A., A. W. Butler, E. Hu, & M. Zekhnini (2020) Financial integration and credit democratization: Linking banking deregulation to economic growth. *Journal of Financial Intermediation*, 100857.

Cai, J., J. L. Garner, & R. A. Walkling (2009) Electing Directors. *The Journal of Finance* **64**, 2389–2421.

Cai, J., J. L. Garner, & R. A. Walkling (2013) A paper tiger? An empirical analysis of majority voting. *Journal of Corporate Finance* **21**, 119–135.

Cotter, J. F., A. R. Palmiter, & R. S. Thomas (2013) The First Year of 'Say on Pay' Under Dodd-Frank: An Empirical Analysis and Look Forward. *Geo. Wash. L. Rev* **81**, 2013.

Council of Institutional Investors (2017) FAQ: Majority Voting for Directors. *Website Brochure*, 1–10.

Cuñat, V., M. Giné, & M. Guadalupe (2016) Say Pays! Shareholder Voice and Firm Performance. *Review of Finance* **20**, 1799–1834.

Cvijanovic, D., M. Groen-Xu, & K. E. Zachariadis (2019) Free-Riders and Underdogs: Participation in Corporate Voting. *SSRN Electronic Journal*.

Dao, M., S. Mishra, & K. Raghunandan (2008) Auditor Tenure and Shareholder Ratification of the Auditor. *Accounting Horizons* **22**, 297–314.

Fischer, P. E., J. D. Gramlich, B. P. Miller, & H. D. White (2009) Investor perceptions of board performance: Evidence from uncontested director elections. *Journal of Accounting and Economics* **48**, 172–189.

Fisher, I. (1930) *The Theory of Interest: As Determined by Impatience to Spend Income and Opportunity to Invest It.*

Fos, V. & M. Tsoutsoura (2014) Shareholder Democracy in Play: Career Consequences of Proxy Contests. *Journal of Financial Economics* **114**, 316–340.

Grundfest, J. A. (1993) Just Vote No: A Minimalist Strategy for Dealing with Barbarians inside the Gates. *Stanford Law Review* **45**, 857.

Guercio, D. D., L. Seery, & T. Woidtke (2008) Do boards pay attention when institutional investor activists "just vote no"?. *Journal of Financial Economics* **90**, 84–103.

Iliev, P., K. V. Lins, D. P. Miller, & L. Roth (2015) Shareholder Voting and Corporate Governance Around the World. *The Review of Financial Studies* **28**, 2167–2202.

Iliev, P. & S. Vitanova (2019) The Effect of the Say-on-Pay Vote in the United States. *Management Science* **65**, 4505–4521.

Jayaraman, N., A. Khorana, & E. Nelling (2002) An Analysis of the Determinants and Shareholder Wealth Effects of Mutual Fund Mergers. *The Journal of Finance* **57**, 1521–1551.

Jill E. Fisch (2017) Standing Voting Instructions: Empowering the Excluded Retail Investor. *Minnesota Law Review* **82**, 11–60.

Khorana, A., P. Tufano, & L. Wedge (2007) Board Structure, Mergers and Shareholder Wealth: A Study of the Mutual Fund Industry. *Journal of Financial Economics* **85**, 571–598.

Krishnan, J. & Z. S. Ye (2005) Why Some Companies Seek Shareholder Ratification on Auditor Selection. *Accounting Horizons* **19**, 237–254.

Li, Y. & D. Yermack (2016) Evasive shareholder meetings. *Journal of Corporate Finance* **38**, 318–334.

McLemore, P. (2019) Do Mutual Funds Have Decreasing Returns to Scale? Evidence from Fund Mergers. *Journal of Financial and Quantitative Analysis* **54**, 1683–1711.

Monks, R. A. G. & N. Minow (2004) *Corporate Governance* (3rd ed.).Blackwell Pub.

Myronenko, A. & X. Song (2010) Point-Set Registration: Coherent Point Drift. *IEEE Transactions on Pattern Analysis and Machine Intelligence* **32**, 2262–2275.

Nili, Y. & K. Kastiel (2016) In Search of "Absent" Shareholders: A New Solution To Retail Investors' Apathy. *Delaware Journal of Corporate Law* **41**, 55–104.

Robin Ferracone & Dayna Harris (2011) Say On Pay: Identifying Investor Concerns. *Council of Institutional Investors*, 1–32.

Sainty, B. J., G. K. Taylor, & D. D. Williams (2002) Investor Dissatisfaction toward Auditors. *Journal of Accounting, Auditing & Finance* **17**, 111–136.

SEC (2003) Standards Relating To Listed Company Audit Committees. *Securities and Exchange Commission*.

SEC (2009) Order Approving Proposed Rule Change. *Securities and Exchange Commission*.

Van der Elst, C. (2011) Revisiting Shareholder Activism at AGMs: Voting Determinants of Large and Small Shareholders. *SSRN Electronic Journal*.

Zhao, X. (2005) Exit Decisions in the U.S. Mutual Fund Industry. *The Journal of Business* **78**, 1365–1402.

Appendix

Director spells

An important step in studying the effect of election outcome on director turnover is identifying director employment spells. Unfortunately, the ISS Directors dataset covers only about 40% of firm-director pairs in the ISS Voting Analytics aggregate election results dataset. At the same time, the aggregate election results dataset provides a detailed description of agenda items that in the case of director elections includes the full name of director nominee. Therefore, I implement director's name matching procedure within each company to identify his/her spell.

At the first step, I use regex to extract directors' names from election agenda descriptions.[26] I also remove titles that follow the names, e.g. Ph.D., M.D., etc.

At the second step, I focus on each company separately to identify which director elections across the years correspond to the same person. I assume that no director was a nominee more than once per year,[27] and that there might be gaps between the elections of the same person.[28] While typically a person appears under an exactly identical name, some times there might be deviations in spelling and auxiliary names (nicknames) attached to his/her name. To overcome this issue, I consider the matching problem as multidimensional clusterization problem that allows for a some amount of noise to be present.

I use Levenshtein distance to compute the difference (distance) between the names in the pool. A distinctive property of this measure, unlike other string distance measures, is that it is a metric distance. That is, it satisfies the triangle inequality which in turn, allows me to "place" directors' names in a multidimensional space to perform a cluster analysis.

For cluster analysis I use Ordering Points To Identify the Clustering Structure (OPTICS) algorithm. It is closely related to a better known Density-based spatial clustering of applications with noise (DBSCAN) algorithm. Unlike DBSCAN, OPTICS is better suited for finding clusters in data of varying density. Directors' names in a pool can be represented by a set of points in

[26] Agenda descriptions for director elections are very well standardized. To extract directors' names in 99.98% of cases a regex expression with only 4 starting statements was required. The expression was `"(?:Elect +Directors{0,1}|Elect|Reelect|Director) +([\W \w ]+?)(?: as[\W \w ]+)*$"`.

[27] An exception from one-election-per-year assumption are elections with "Pending" vote result status.

[28] For example, some companies have staggered boards of directors. Thus, a director might be elected for a few years and will not appear in the next year's nominee list.

a metric space with help of multidimensional scaling. The OPTICS algorithm implementation in Python allows me to directly use a pre-computed distance matrix which removes the need of using multidimensional scaling. To prevent spurious clusters from appearing in companies with just few director elections, I limit the maximum Levenshtein distance to 7 between two samples for them to be considered being in the same neighborhood.

Cluster analysis produces a two-part result. The first part is list of sets of directors' names where each set corresponds to one person based by his/her name similarity. The second part is a list of names that were difficult to match with any particular director's names set.

I use the following post-processing procedure in order to improve on the result of cluster analysis. First, I analyze the minimal Levenshtein distance between the name sets in the first part. If two cluster-identified directors have very small (less than 3) distance between the name sets and no overlap in the election years I join them together in one set and treat as a single person. This corrects for clustering algorithm behavior that multiple exact repetitions of a director's name lead to a wrongful rejection of a sightly different spelling of the same person's name. Second, I loop over the names in the unmatched set and see if these can be attributed to an already identified person. If no association is possible, I designate a new director persona for such name.