The London School of Economics and Political Science

Shareholder Activism:
The Interactions Between Firm Meetings And Asset Markets

D I S S E R T A T I O N

A thesis submitted

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by

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

I declare that my thesis consists of 32,336 words.

I can confirm that chapter I was the result of my third year paper I undertook at LSE Department of Finance.

Abstract

My thesis aims to investigate how different financial markets (equity lending, option, and stock) could work together to separate cash flow rights and voting rights, how different agents (large shareholders, activist investors, and managers) choose their optimal action with the existence of such markets, and the consequences of their actions.

In Chapter I, I document the empirical relevance between equity lending and call-and-put option trading markets for the separation of voting rights and cash flow rights. I explore the cross-sectional and time series variation of the voting price and lending/option-trading volume in the two markets around the firm meeting voting record date, the time when voting shares holding is registered for the firm meeting. Price-wise, voting rights are in general higher measured by option trading than in the equity lending market, however lower during director elections. Volume-wise, there exists an observable increase in options trading volume before firm meetings, especially for non-regular filings. These facts reveal that shareholder activism generally exists before controversial meetings and voting rights are in high demand in one market or another before firm meetings.

In Chapter II, I investigate the price and quantities associated with firm voting rights in two markets that facilitate voting rights trading around the firm's meeting voting record date. I show there exists a cross-substitution between the two markets regarding voting rights trading. With a lower supply of shares in the equity lending market, I found increasing institutional investors' abnormal buy in the shares trading market, and simultaneously, lower price of voting rights. I introduce exogenous variation of equity lending supply through total passive institutional holding. Such evidence supports the prevalence of empty voting practice before firm meetings.

In Chapter III, I examine the impact of shareholder activism on firm valuation and managerial behavior through a particular channel: management proposals. I study the theoretical implication of the management rent-seeking motives if we consider the manager’s project searching monitored by a large share-holder and hence, causing the manipulation of management proposal voting at firm meetings. With such an understanding, I explore the impact of shareholder rejecting management proposals. As analysed by the theory, the higher private benefit, the higher management proposal manipulation at the firm voting, and hence, causing empirical endogeneity problem. Thus I introduce a novel souce of exogenous variation, pre-meeting call option trading volume, which is shown to cause more management proposal failures. With this instrument, I find diverging effects of shareholder activism and managerial initiative. Private benefit leads to managerial value creation in total, and is associated with lower non-CEO executive turnover; on the contrary, activism leads to large 7 days cumulative abnormal returns and is associated with higher non-CEO executive turnover, showing that activism does have a counter-effect on management rent-seeking at a cost. In this

chapter, I measure managerial private benefit through reversing the option-constructed voting premium and find that this helps with identifying the effect of managerial voting manipulation.

To conclude, I find that empty voting is a widely existing practice and is shown, both theoretically and empirically, to be associated with firm outcomes. Both firm management and activists employ them in different fashion and different markets. Highlighting the role of such practice helps with introducing additional empirical evidence relating to the analysis of corporate governance in general.

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Contents

Voting Rights Trading Before Firm Meetings: Stylized Facts

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Abstract

This paper argues that the equity lending and option hedging markets jointly contribute to the short-term market for corporate votes. Linking data from equity lending, stock price, and options trading around Russell 3000 firm meeting record dates, I document the following facts about US public firms. First, voting premium, as constructed through buying voting shares and hedging using options, is in general higher than equity lending fee but lower before director elections. Second, in the cross-section, the trading volume of both markets tends to increase along with the rising price, however, such a relation is less seen within-proposal types. Third, vote trading through option hedging appears to be a dynamic process, with options trading occurring before shares trading, especially in the case of non-regular filings. These facts provide evidence, mostly consistently, that pre-meeting votes trading before US public firms exist and explain part of a firm's equity risk premium.

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1 Introduction

The issue of firm's voting rights trading has become salient in recent years with the growth of institutional ownership and lack of legal regulations. A widely used technique of voting rights trading is empty voting, which is to separate economic ownership from voting rights in a firm's shares. A recent case happens in April 2022, with the battle for control of Generali, Italy's largest insurer (FT (2022)). Two camps were involved: the establishment faction, who is with the current management, and the activist group, whose agenda is to replace the CEO of the firm to push for higher growth. Right before the proxy fight, the two camps applied different ways of empty voting: the activist group preferred voting shares hedged with equity collar, while the establishment group resorted to the equity lending market to boost their voting stake. From this event, questions arise such as, are there any differences in terms of choice of the empty voting instrument based on shareholder's position? If the no-arbitrage condition would hold, then there is a law of one price about the value of voting rights. Thus the discrepancy, if it exists, should reflect the differential motivation of shareholders about the specific meeting agenda.

Aside from the anecdotal stories, past studies have established the fact that on average, the price of votes in the shares trading market is higher than the price of votes in the equity lending market. Christoffersen et al. (2007) found that the price of votes is on average zero in the equity lending market, while Kalay et al. (2014) found a positive value of vote price in the shares trading market using option hedging technology. Recent literature mostly elaborate the discussions based on results of these two papers (Levit et al. (2021),Speit & Voss (2023)), and there exists detailed discussions regarding the incentives and actions of activist investors before firm meetings that could explain such a difference.

Whilist the identification exercise establishes the facts on a precise ground, one might still wonder about the variance and heterogeneity in terms of the joint discussion of the two markets. The main reason is that differential shareholder motivations might also be meeting-specific, and hence, the drivers of the pre-meeting voting rights trading might vary. This paper focuses on elevating the empirical facts documenting the heterogeneity in terms of the comparison between the price of voting rights through equity lending and share trading with option hedging. Compiling relevant data from the equity lending market, shares trading, and options market, I compare the standardized measurements of voting prices and proxies for trading volume from Christoffersen et al. (2007) and Kalay et al. (2014). With this rich set of data, the comparison is straightforward: I abstract away from causal methods and put together the descriptive statistics (mean and standard errors of the mean) between two markets in plots to provide intuitive empirical evidence about the heterogeneity. Consistent with previous literature, I show that in the major US firms, pre-meeting voting rights trading exists, and varies across firm meeting characteristics. The following facts are stressed that

expand the existing empirical evidence:

Fact 1 Voting premium and equity lending fee are of the same magnitude but in different shapes of distribution.

Fact 2 Both measures rose during the 2008 financial crisis.

Fact 3 Both measures rose with special meetings, shareholder-initiated proposals, proposals associated with stock options, mergers and acquisitions, director election, and controversial ISS/management recommendations.

Fact 4 Voting premium is in general higher than the equity lending fee, however, when proposals are about director elections, equity lending fee is higher than the voting premium.

Fact 5 Equity lending utilization, which is a noisy proxy for equity lending volume, is higher when the equity lending fee is higher in the cross-section.

Fact 6 Option trading volume is higher when the voting premium is higher in the cross-section, conditional on special meetings, approve merger agreements, and management proposals.

Fact 7 On the contrary, option trading volume stays low when the voting premium is higher in the cross-section, conditional on shareholder proposals, and management/ISS disagreement.

Fact 8 For non-regular filings (special meetings and shareholder-initiated proposals), call option trading volume rises right before the voting record date. Correspondingly, there is a dip in the voting premium right before the voting record date, which rises back on the date.

In section 2, I re-introduce the voting premium measurement by Kalay et al. (2014), and show how it is conceptually equivalent to equity lending as a function for the short-term market for voting rights, decoupling from cash flow rights. Both methods could achieve separated voting rights from the economic position for a pre-specified period around the voting record date before firm meetings, the date when eligible voting positions of each shareholder are registered for the meeting.

I explain the joined sample in section 3. The sample combines existing financial datasets. The meeting date and characteristic information is from ISS voting analytics 2002-2013; the option price and volume information are collected from the OptionMetrics database, and the equity lending fee and utilization information are from DataExplorers. I show in detail how to standardize the data to obtain comparable measurements. I construct a difference $Diff$ measure between the fees in the two markets based on the standardized measurements to explore the fees' cross-sectional heterogeneity. Across a longer time horizon, both measures tend to rise during 2008. This fact can be best explained by higher opposition to managerial entrenchment during the financial crisis, as good governance technology became scarce along with increasing resource scarcity and conflicts of interest.

After empirically establishing the link between the two markets, in section 4, I formally introduce the

empirical evidence as described above. To provide evidence that the measurements reflect information about governance and voting power, and at the same time, provide more information about the variation of the voting premium, I explore the cross-sectional variation of the price, volume, and price difference measurements across different meeting, proposal, proponent, management/ISS disagreement, and voting results. The facts point to the direction that, with a more contentious agenda, voting rights trading activities are more significant. Specifically, the average call option trading volume is higher in the cross-section with a more contentious agenda. This is of concern for two reasons. First, to separate voting rights from cash flow rights, selling call option foregoes cash flow rights when the underlying voting equity's price is above the strike price. For activist investor who'd like to acqu

(Burkart & Lee (2013)). Second, as put option, similar to short selling, are usually associated with earning shorting profit from bearish strategy or hedging, call option trading volume better reflects the votes trading motives. A more prominent evidence is the time series of option trading volume. I show that, around firm meeting voting record dates, there exists a spike in the call option trading volume for all types of meetings, and is especially significant for meetings with non-regular filings (special meetings and shareholder-initiated proposals). This spike arises more likely from the vote trading motives. The reason is that around the voting record date, there isn't any significant realized change in the voting result or volatility of stock price (Fos & Holderness (2022)), and hence, the spike could be best explained by voting rights cash flow separation motives.

Literature Review As the above empirical facts show, voting rights trading plays an important role in corporate governance dynamics around pre-meeting record date. Past literature has discussed the topic of voting record date votes trading in mainly three dimensions.

The option constructed voting premium method starts from Kalay et al. (2014). The method uses the difference between actual stock price and an option portfolio, which replicates the cash flow rights associated with the stock, to measure the value of voting rights. The author mentioned that this is a short-term measurement given by the option pair maturity length, as compared to conventional empirical measurements such as dual class shares price difference, which represents the value of voting rights if held indefinitely. In the same line, Karakas & Mohseni (2021) shows firms with staggered boards tend to have higher voting premium, as staggered boards are associated with higher managerial entrenchment. This paper provides further evidence that, when disagreement is higher (management/ISS; management/shareholders), Kalay et al. (2014)'s method of the constructed voting premium is higher.

The main counter-argument to the measurement reflecting the voting premium is that the residual in the put-call parity reflects something else. For example, Martin (2017) shows that the option implied equity premium lower bound tends to increase around the 2008 crisis. Although this paper has yet to fully separate

the market risk premium from the value of voting rights, I provide two arguments supporting the voting premium interpretation. First, the fact that the put-call parity residual correlates with measurements of market risk premium does not contradict the value of voting rights. The uncertainty is brought about by the contentious voting events, and the expected post-meeting stock return is determined by the voting result and hence, voting power by the opposing party. Second, as argued before, the call option trading volume tends to be higher around the contentious meeting date, along with rising voting premium. The call option tends to be a less useful instrument to hedge against market risk in the downtime. Thus, the fact that the call option market is still highly liquid supports the voting premium interpretation.

On the equity lending market, Christoffersen et al. (2007) examined the equity loan trading around firms meeting record dates. The author showed a spike in equity loan trading volume around the voting record date, while the loan fee did not increase. The authors explain the phenomenon by information aggregation motives induced vote trading. Aggarwal et al. (2015) shows that consistent with Christoffersen et al. (2007), around the voting record date, there is a dip in equity lending supply and a spike in equity lending utilization. Institutional investors recalling voting rights in the equity lending market can best explain the evidence. This paper provides further evidence about the equity lending fee and trading volume around the voting record date. I show that, although the voting premium and equity lending fee are shown to be correlated both in the time series and cross-section, there are cases when there is more active trading in the equity lending market. Around proxy contests, removing existing directors, and electing directors(opposite slate), equity lending fees and utilization are higher both in the cross-section and compared to voting premiums in the shares trading market. One possible explanation is the higher level of preference aggregation around director elections, and hence, the rising fee along with rising utilization. The market structure of the equity lending market helps with preference aggregation in this type of voting context since the OTC market forces direct trading between the vote-demander and the vote-seller, while the exchange market is intermediated.

2 Why are the two measures conceptually equivalent?

Typical measurements of voting premium in the shares trading market includes block trade premium, dual-class premium, and option replication. Kalay et al. (2014) mentioned that the previous two could be regarded as the value of votes if the owner holds them till infinity. Option replication measurement, on the other hand, represents the value of votes till the maturity date of the replicating option pairs, since after that date, the voting right will be sold definitely. Thus the option replication method and equity lending method are two short-term methods of obtaining votes around the voting record date (the date when the votes ownership for the upcoming meeting is registered), and are often seen in the empty voting practices (both methods give eligible voting rights to the vote buyer).

Following Kalay et al. (2014), measurement of the voting premium in the shares trading market uses:

$$Vote_t(T) = (S_t - \hat{S}_t(T))/S_t \tag{1}$$

where

$$\hat{S}(T) = C(T) - EEP^{div}_{call} - P(T) + EEP^{div}_{put} + PV(K) + PV(Div) \tag{2}$$

In the equations above, S_t represents underlying stock price at time t, T represents the replicating put and call option pairs' maturity date. EEP stands for the early exercise premium.

Method 1: Suppose there is a shareholder of the firm, with V shares, demanding votes. He chooses to buy one stock, sell one synthetic stock constructed using put-call parity as in (2). The distribution of cash flow rights and control rights' allocation over time in this trade is presented in the following table:

Before buying (t=0)	**Purchase date (t=1)**	**Option expire (t=2)**
	Voting rights	
V	V+1	V
	Cash flow	
0	-$(S_1 - \hat{S}_1)$	0

As to measurement of value of votes in the equity lending market, i.e. the equity lending fee, according to Aggarwal et al. (2015), most equity loans are open ended, meaning that there are no specific maturity date, and are rolling on a daily basis. The lending fee that we observe in the data comes from average annualised fee.

Method 2: Suppose the shareholder with V shares goes in another way: he borrows voting shares from equity lending market and return it after voting.

Before borrowing (t=0)	Borrowing date (t=1)	Return date (t=2)
	Voting rights	
V	V+1	V
	Cash flow	
0	-C	C(1+r)

Nicolae et al. (2001) describes the institutional details of fees in the lending market. The following notation is a simplification of their description. S_t refers to stock prices while C refers to the value of the collateral. Usually C= $S_1 \cdot K$ where K is a constant multiplier. Usually $r < r_{market}$, and thus C($r_{market} - r$) makes up of the equity lending fee at $t = 2$. The rate is usually negotiated on the borrowing date, and thus the time frame of price determination between the two methods is the same as well. Voting record date is between $t = 1$ and $t = 2$. Comparing the two tables, we can see that the two methods are accompanied with very similar results in terms of separating cash flow rights and voting rights.

If the trades are carried out correctly, and there are no violation of contracts, then separation of voting rights and economic positions should be achieved successfully. However, as the lending market and shares trading market also serve other purposes, there might be other strategic differences in terms of the interaction between voting and the underlying asset prices. Consider them below.

From t=1 to t=2, S_t either goes up or down. **Method 1** is not subject to any price changes, as at $t = 2$, the options either expire or are executed, and all positions are cleared. **Method 2** gives borrower an opportunity to short sell. If the voter is pessimistic about firm's value in the short future (perhaps after firm meeting), then he could benefit from immediately short sell after executing the voting right, buy shares after stock price going down, and return. In this case, the cash flow table is altered so that the shorting profit is also accrued into the borrower's hand. What's even worse, the pessimistic ones could borrow voting shares, vote in the direction to decrease stock value, short sell, and buy back after firm meeting result comes out. (Known as the downside of empty voting practices, documented in Hu & Black (2006) and modelled in Brav & Mathews (2011).) This is the main argument as to why the two methods are different: the second method gives borrowers an additional right to earn short selling benefit. [1]

The last case worth particular concern so let's zoom in on its price implication. We know that in the shares trading market, the dual class premium can be interpreted as the rational expectation of changing the voting outcome in the positive direction (Levit et al. (2021)). In the lending market, it could be the reverse: the voting premium comes from the rational expectation of changing the voting outcome in the negative direction. The difference here is that the rise in voting demand (in order to benefit from 'voting down') is not reflected in demand for voting shares; instead, the rise in voting demand is reflected in the

[1] 1. This argument would give the implication that the voting fee in the equity lending market should be higher than in the shares trading market, quite contrary to the empirical finding in the later section. 2. If the difference purely comes from the shorting opportunity unrelated to voting, then the difference is out of the question of this study, as shorting demand is orthogonal to the voting demand.

shorting demand, and hence, revealed in the equity lending fee. This part is deviating from Brav & Mathews (2011) as they assume the cost of empty voting to be exogenous.

Arbitrage. One natural question to ask is, since the two method separates the voting rights and shareholder rights in the same way, is it possible to make an arbitrage profit out of the voting rights, if there exists a price discrepancy? Suppose that $S_1 - \hat{S}_1 > C(r_{market} - r)$: the voting premium in the shares trading market is greater than the price of votes in the equity lending market. To make a profit from this price difference, one could buy the low value of the voting rights through borrowing shares and pay the equity lending fee, sell the borrowed shares in the shares trading market, and in the meantime buy the replicating portfolio, which by the option maturity date would deliver the stocks needed to return to the lender in the equity lending market. Thus at $t = 1$, one could make an arbitrage profit measured at the following level:

$$Diff = S_1 - \hat{S}_1 - C(r_{market} - r). \tag{3}$$

In the following empirical section, I will show the distribution of this arbitrage profit conditional on different types of meetings, proposals, proponent, and voting result.

Holding period. When we use the real measure of the value of the votes, it is important that the two measurements are comparable in the practical sense. The voting premium measure (1) gives the present value of the voting opportunities from t to T. The equivalent price of votes in the equity lending market should be the lending fee of the shares loan initiated from t ending at T. As the equity lending fee are quoted as annual rates and rolling day to day, it is important to convert them to equivalent rates with same holding period as the voting premium measure.

3 Data and Sample Construction

To directly compare the prices in the equity lending market and shares trading market using the measures specified before, I compile a sample of meeting record date fee information. For every voting record date in the ISS voting results 2002-2013, I constructed a window 10 trading days around the voting record date, and link with the corresponding voting premium measure and equity lending fee information. I keep observations that have price information in both markets. Then I keep the price information closest to the voting record date. For discussion of the price information solely, I keep one observation per meeting. This leaves a sample of 5,408 observations. Later, for discussion across agenda items (which are multiple in one meeting), I expand the sample to one agenda per observation.

American option pairs are constructed from OptionMetrics. Before linking with meeting information, I

keep option pairs closest to the money (meaning the strike price is very close to the underlying price at the option trading day), with the highest volume and the least time to maturity.

The calculation of the option constructed voting premium follows specification (2). Aside from the option prices, the early exercise premium and present value of dividend are calculated separately. The within-option pair maturity dividend information is collected from OptionMetrics and is discounted to the given option pair price date. Since dividend might influence American option exercise timing, this part of early exercise premium due to dividend need to be substracted from the voting premium calculation. The early exercise premium is calculated following Kalay et al. (2014). I simulate the stock price binomial tree with dividend from the target voting premium date till the option maturity date, and calculate the corresponding American and European option price; the difference between the two is the required early exercise premium. Putting the option pair price, dividend early exercise premium, and present value of dividend together, and the voting premium is obtained.

Lending fee comes from DataExplorers. It provides firm level daily equity value weighted average lending fee for trades starting within 1, 3, 7 30 days and all current trades. To better matching with the short term nature of the voting premium measure, I chose the variable VWAF 1 Day, which is the value weighted average of all new trades on the most recent business day.

To allow the equity lending fee directly comparable with the corresponding voting premium measure, I standardize the equity lending fee (which was originally in annualized terms) to the corresponding voting premium measurement's derivatives' time to maturity. Following the notation of equation (1), it was $T - t$.

$$Std\_LendingFee = LendingFee \cdot \frac{T-t}{360} \tag{4}$$

This sample construction method means that we are comparing **method 1** and **method 2** with t=1 very close to the voting record date, and t=2 the option pair maturity date T. As I'm choosing option pairs with the lowest length of maturity, this method assumes **method 1** buy votes, vote, and sell immediately after the voting record date by executing the option. The corresponding lending fee should be the average lending fee at t=1.

There is a shortcoming of this comparison practice. Since the equity lending fee is negotiated at the beginning, there is no way to separate the **method 2** carried out by returning immediately after the voting record date, and that returned after the meeting outcome. Thus, there are potential longer votes holding in the equity lending market included in the average of the equity lending fee.

To show the level of discrepancy and hence, the arbitrage profit from trading voting rights in the two markets, I provide summary statistics of the observation-by-observation price difference, $Diff_{it}$, as shown

in equation (3).

Aside from the price level comparison, this following section also provides the trading volume level variations. The reason for doing this is, as mentioned by Christoffersen et al. (2007), there might exist negotiated transfers of voting shares in the equity lending market in order to enhance information aggregation. If such things happen, we would expect that there are large trading volumes in the equity lending market, with little change in the equity lending fee.

The ideal way to compare the trading volume in the two markets is to show the trading volume of the replicating portfolio trading volume and the equity lending market's trading volume around the voting record date. However, this is not achievable on both sides. In the equity lending market, DataExplorers does not provide daily equity lending volume; the closest measure is utilization, which is the value of assets on loan from lenders divided by total lendable value.[2] In the shares trading market, as the voting premium replicating portfolio is composed of shares, put and call options, and each of them has its own separate trading market, it's impossible to provide a precise measure of the trading volume of the replicating portfolio; instead, I provide the trading volume of the put and call options in the replicating portfolio. In this way, although the trading volumes in both markets are not comparable, we could observe the cross-sectional variation of the trading volumes in each market across different types of meetings.

Direct comparison. First, directly compare the distribution of the voting price information in both markets. Figure 1 shows the result. Comparing the top left panel and the lower panel, we can see that the two measurements in the two markets are of relatively the same scales, ranging from -1 to 1 percent. Equity lending fees around voting record dates are more stable and less volatile while voting premiums in the shares trading market vary across a wider range. By its very own nature, equity lending fees are mostly positive while there are negative values of voting premiums in the shares trading market. Table 1 also provides a quantitative description of the two measurements. The equity lending fee is on average 6 basis points while the voting premium is on average 10 basis points. This shows that the two measurements are in general comparable. The following subsections will provide a comparison of prices observation by observation. In terms of options trading volume, the majority of put and call option trading volume is concentrated in a relatively small region with a magnitude less than 10^{-6}, where put volume is relatively less than call trading volume; however, in the extreme region, put volume tends to be higher than call volume.

Across years, there are certain periods where meetings might have common features, and across quarters, there may be seasonal features. If it is true that there exists an arbitrager of voting rights across two markets, then the two measurements should co-move based on these variations. Figure 2 shows the variation of the two measurements across time. As highlighted by the red circle, it does seem that during the 2008 crisis

[2]The difference between utilization and trading volume is that the former is a level variable, while the latter is a flow variable. Thus the utilization would be more stable than trading volume, as the former is the aggregation of the latter.

period, the two measurements tended to increase in both level and volatility. This increase in fees might arise from more contentious meetings (and thus higher voting demand), or higher risk premiums in the equity lending market. No matter whether the fees are rising due to voting reasons, we see that they are correlated, and aligned with the prediction of no-arbitrage conditions of voting rights.

4 Stylized Facts

This section provides empirical facts about comparing the price of votes in the two markets. To sum up section 2, when there exists pre-meeting votes trading, the price of votes should be equivalent, however, if the short-selling opportunity is particularly high, as if the short selling is correlated with certain meeting proposals, then the equity lending fee might be higher. The following subsections provide direct comparison and variation on meeting, proposal, proponent, and voting results to provide evidence for section 2.

Conditional on the meeting & proposal types. Figure 3 shows the comparison of the two measurements across different meeting types. In the sample, the most frequent meeting types are annual and special, as shown in the bottom right panel.[3] The two measurements are higher around special meetings, as shown in the top left panel. This result is intuitive, as special meetings are more contentious and thus the voting demand should be higher around special meetings. In terms of the discrepancy between the two measurements, the top right panel shows the 95% confidence interval for the mean of the arbitrage profit. The voting premium in the shares trading market is around 5 bps higher in level around annual meetings, while 10 bps higher in level around special meetings. In both cases, the differences are significant. Given the level of price of votes, this discrepancy is not negligible. **This result is against the intuition in section 2 and documents the fact, which also shows up in the later sections, that the voting premium in the shares trading market is higher than the price of votes in the equity lending market, especially when the meeting is more contentious and thus the price of votes is higher.**

The bottom left panel provides a cross-sectional comparison of the standardized trading volume of the price of votes in the two markets. Comparing the options trading volume, we can see that during the special meetings, the options are traded more frequently, consistent with the higher voting premium in the shares trading market. The utilization in the lending market doesn't vary across meeting types. This might be due to either the stable feature of the utilization measurement, or lower transaction volume in the equity lending market. The latter is consistent with the lower price of votes in the equity lending market. Although the utilization measure provides very imprecise information about trade in the equity lending market, we

[3] Unfortunately, ISS voting analytics does not provide much information about proxy fights, which are mostly about changing CEO/board of directors. As in the sample, proxy contests have only 47 observations, the measurements are very volatile and not directly comparable with the results of other meetings.

can see that at least there isn't a large amount of negotiated transfer of voting shares in the equity lending market.

Figure 4 shows the comparison of price of votes across different proposal types. In the sample, I keep the proposals that have more than 50 observations. The most frequent proposals that happen during regular and special meetings are those about the CEO/employee compensation, and also about changes in the plan of stocks. We can see that there are slight variations across proposals in terms of the level of the price of votes and the discrepancies. In the top left panel, the price of votes seems to be higher around 'Adjourn Meeting', 'Amend Stock Option Plan', 'Approve Merger Agreements', 'Approve Acquisition', and 'Declassify Board of Directors' ('Adjourn Meeting' and 'Approve Merger Agreements' made up of the majority of special meetings).

The equity lending fee appears to co-move with the voting premium in the shares trading market in the cross-section in general, however, in some cases, discrepancy is more significant. The discrepancy seems to be the largest when the meeting proposals are 'Adjourn Meeting', 'Approve Merger Agreement', and 'Approve Repricing of Options'. [4] However, in terms of trading volume, in the cross-section, it generally the case that proposals with a higher price of votes also have higher trading volume, especially in the case of 'Approve Merger Agreement': both the options trading volume and equity lending utilization are significantly higher than usual. In reverse, the equity lending fee is higher, which results in significantly negative difference in the fee, when the meeting proposals are about director elections, shown to the right of the graphs. This result shows that there isn't a perfect no-arbitrage situation in the shares trading and equity lending market even in the case when the voting is more contentious. I also test this result statistically in table 3: I run the cross-sectional regression of the voting premium versus equity lending fee price difference on a dummy variable indicating 'director elections'. I found that with a electing director proposal, the price discrepancy decreases by 0.12% controlling for firm fixed effects. It seems that in terms of director election, the equity lending market tends to be more active as a function for votes. This might be due to the fact that large brokers and institutional investors tends to concentrate on this market, and during director election, these entities tends to stress there role as a votes holder through retrieving shares or lending to the vote demanders.

As this section shows that **'Adjourn Meeting'**, **'Amend Omnibus Stock Plan'**, **'Approve Merger Agreements'** and **'Declassify Board of Directors'** are more important and contentious, in the following sections, I will provide interactions between these proposals with proponents of votes and voting results.

[4] Speit & Voss (2023) provides a theoretical explanation of this price discrepancy: as the hedging operation can happen before votes buying, sellers in the shares trading market could anticipate the votes trading motives through the buys' hedging operations, and charge a price accordingly. This could partially explain the higher prices if arbitrage is impossible, and is consistent with the empirical finding of 'Approve Merger Agreement', as by the anecdotal story, when mergers are brought on the agenda, hedge funds buy the target firm's voting shares to push for a lower price merger, as hedge funds are also holders of the bidding firms.

Conditional on the proponent of the vote. ISS Voting Analytics database also provides information on whether the meeting is sponsored by management or individual shareholders; and also information on ISS and management recommendations.

In Figure 5, price of votes across proponents of votes are shown. On the sponsors (entity that submits the proxy ballot questions or proposals), ISS Voting Analytics presents them as either 'Management' or name of the individual/ institutional shareholders. I summarise the items that are not 'Management' as 'Shareholders'. This is of concern since shareholder-initiated proposals are considered to be more contentious. In the sample, shareholder sponsored proposals are much less than management, with only around 200 observations. Shareholder sponsored proposals' voting premium are on average 5 bps higher than management sponsored proposals. However, the equity lending fee doesn't co-move with voting premium in the shares trading market in terms of the proponent condition. The discrepancy between trading and lending market's price of votes is on average above 10 bps when proposal is shareholder initiated, and significantly different from 0. In terms of trading volume, shareholder initiated proposals on average are preceded by lower trading volume of options, while no difference with management in terms of utilization in the equity lending market. This is inconsistent with price discrepancy in the shareholder initiated proposals. This is diverging from results in the previous section, and shows that the higher voting premium before shareholder initiated proposals is arising from seller's unwillingness.

Figure 6 shows the result for the types of management recommendations. In the ISS Voting Analytics data, management recommendations have the following types: 'Abstain', 'Against', 'Do Not Vote', 'For', 'None', 'One Year', 'Two Years', 'Three Years', and 'Withhold'.[5] To match the recommendations with the most common priors, I categorize the 'For', 'One Year', 'Two Years' and 'Three Years' as 'For', and the rest of them as 'Not For'. Then I interact the recommendations with proponent of votes: shareholder or management sponsored proposals. It is very common that management would recommend 'For' in management sponsored proposals and 'Not For' in shareholder sponsored proposals. It is very rare when management recommend 'Not For' in management sponsored proposals, or recommend 'For' in shareholder sponsored proposals. When management recommend 'Not For' in management sponsored proposals, the voting premium is on average higher, along with with the trading volume of the options on average lower;the equity lending fee is not on average higher with the voting premium, resulting in a positive price discrepancy. When management recommend 'For' in shareholder sponsored proposals, the results are reverse; equity lending fee is higher than the voting premium, and thus a significant negative price discrepancy; the equity lending market utilization also rises along with the equity lending fee.

[5] 'Abstain' means not casting the vote; 'Withhold' is similar, just that the voter is against the proposal, however the proposal is unlikely to be opposed, so he could resort to withhold the vote to express dissatisfaction. 'One Year', 'Two Years' and 'Three Years' refer to the voting result where 'Advisory vote for Say on Pay frequency' are voted for, with the corresponding say on pay vote frequency.

Figure 7 shows the result for the types of ISS recommendations. ISS (the institutional shareholder services) advice hedge funds, mutual funds and similar organizations regarding shareholder votes. In the data, the ISS recommendations have the following types: 'Abstain', 'Against', 'Do Not Vote', 'For', 'None', 'One Year', 'Refer', and 'Withhold'. Again, to match the ISS recommendations with the most common priors, I categorize the 'For' and 'One Year' as 'For', and the rest of them as 'Not For'. Then I interact the ISS recommendations with shareholder or management sponsored proposals. In terms of management proposals, when ISS recommend for management, the voting premium is higher than equity lending fee, which on average isn't significantly higher; the trading volume of the option pair in the case of 'For Management' is cross-sectionally significantly higher, a puzzling fact. In terms of shareholder sponsored proposals, the equity lending fee is on average higher than voting premium when ISS recommend not for shareholder sponsored proposals. The equity lending utilization is also cross-sectionally higher in this case.

ISS recommendation provides more observations that are against the meeting proposals, creating cases where ISS and management disagree with each other. I keep the observations where either management or ISS recommend for or against the meeting proposals, and divide them by four categories. Figure 8 shows the comparison between the two prices conditional on the four categories. In terms of levels, when ISS and shareholder disagrees (corresponding to the middle two categories), the voting premium in the shares trading market is obviously higher. However, the equity lending fee doesn't co-move with the voting premium. It is the highest when management is for the proposal while ISS is against the proposal; however, when the ISS is for the proposal while management is against proposal, equity lending fee does not rise comparing to the high level of the voting premium in the shares trading market. This causes the discrepancy of the two measures conditional on this case. In terms of volume, option trading volume does not seem to be the higher when the voting premium is high, showing that the voting demand does not rise in the shares trading market when ISS and management disagree. Utilization in the lending market in this case is the highest when management recommend for while ISS recommend against, corresponding to the highest equity lending fee.

Conditional on voting results. Usually, more closed voting results reflect that the meeting is more contentious, and there should be variation in terms of the price of votes across different voting results. I calculate the distance between the simple voting result: voted for/(voted for+voted against) and the vote requirement, and divide them by the 5 categories, as shown in Figure 9. It does seem that the closer the vote, the higher the voting premium in the shares trading market, however, this is not the case for the equity lending fee, leaving the discrepancy to be high when the voting result is close. In terms of volume, the options trading volume does not seem to be co-moving with the voting premium, however it is generally the case with the equity lending utilization.

I then interact the close votes with important proposals, as shown in Figure 10. For votes that have distance to voting thresholds "0-0.1", I categorize them as "Close Vote"; otherwise, I categorize them as "Non Close Vote". It is not clear pattern that close votes are accompanied with higher voting premium and trading volume; on the contrary, for 'Adjourn Meeting' and 'Amend Omnibus Stock Plan', it seems that the direction is reversed. It is only the case when the proposal is 'declassify the board of directors'. This shows that the higher voting premium of these important proposals does not come from higher voting demand, because if it is so, the effect would be amplified by interacting with the voting result.

Interacting the "Pass/Fail" result with management recommendations, the results are shown in Figure 11. In this case, the voting premium and equity lending fee co-move together. The voting premium is the highest when management is against the proposal, and the proposal is passed. The trading volume of options in the shares trading market isn't correspondingly significantly higher. Reversely, when management is for the proposal, and the proposal is failed, the voting premium is the lowest, while the equity lending fee is the lowest.

Interacting the "Pass/Fail" result with ISS recommendations, the results are shown in Figure 12. The voting premium is higher when ISS is against the proposal, but proposal passes; also when ISS is for the proposal, but the proposal fails. In both cases, the option market volume seem to be lower, while the equity lending utilization rises when ISS against but passed, along with the rise in equity lending fee. Thus the vote demanders seem to resort more to equity lending market when ISS is against the proposal.

Summary and interpretation. Table 2 provides a summary description of the pre-meeting votes trading in the two markets across different types of the meetings. The table includes items that have abnormal cross-sectional voting rights trading behavior. In general, there are three types of idiosyncrasies. First, high voting premium, high options trading volume and low lending fee. This happens in the following cases: first, special meeting; adjourn meeting proposals; approve merger agreements; management initiated proposals; and close votes. Second, high voting premium, low options trading volume and high lending fee. This happens when proposals are amend omnibus stock plan, shareholder initiated proposals; management recommendation and ISS recommendation disagrees; passed votes with management/ ISS against. Third, low voting premium, low option trading volume, high equity lending fee and equity lending utilization. This happens when proposals are about director elections, and when management recommend for shareholder proposals and ISS recommend not for shareholder proposals.

These facts shows that it is not always the case that people arbitrage away the price difference of firm's voting rights in the equity lending market and shares trading market. There exists price discrepancy that changes conditional on different scenarios.

Time series dynamics. Fos & Holderness (2022) documented voting record date stock trading behav-

ior and show that not all of the voting record date information is notified to all shareholders; for non-regular votes (special meetings and shareholder-initiated proposals), it is more likely that voting record date information is revealed. This section examines the time series of the volume and price around the voting record date across regular and non-regular votes. Figure 13 shows the trading volume. Call options trading volume surges, in general, a few days before the voting record date, and it is especially the case when meeting type is non-regular, consistent with the cross-sectional results before; put option trading volume seems to be very volatile around the voting record date for non-regular filings. I test the standardized volume on an event dummy indicating if the time falls into a window around the voting record date (-3,0). The result is shown in table 4 and table 5. I find that in the whole sample, on average, the event dummy is associated with higher call trading volume by 0.0004, even when controlling for proposal fixed effect. Interacting the event dummy with the non regular filings, similar with figure 13, I find that the majority of the spike in the call trading volume arises from non regular filings. However, when winsorizing the volume of extreme values 1%, I don't find positive abnormal call trading volume around the voting record date; on the contrary, a significant negative effect appears, which attenuates for no-regular filings. This means that extreme values largely drive the spike of findings for regular filings. Similarly, for put option trading volume, I find slightly significant positive values for event-day put-option trading volume when it comes to non regular filings, however meagre effect for regular filings. When winsoring the sample of extreme put option trading volume (0.01), I find similar effects as call option trading volume. This shows that both options traded in a similar fashion around the voting record date. Figure 14 shows the variation of the voting premium measurement. As opposed to the option trading volume, the non-regular filings voting premium is lower before the voting record date and surges on that date, especially when compared to the regular filings. This shows that the trading of the option and stock is not parallel across time.

Price-volume. Figure 15 presents results about the voting record date voting premium - option trading volume relationship. In general, the voting premium is flat around call-and-put option trading volume. Even at the extreme end of the trading volume, there isn't a significant slope around the higher trading volume. If higher option trading volume results in a change in the option price, this result shows that the shares trading price is parallel to the option trading price, leading to on average less responsive volume-price scheme.

5 Conclusion

With a series of existing papers on the corporate votes trading market, this paper argues that there exists interaction and heterogeneity between the equity lending and option trading markets in terms of the market for corporate votes. With this evidence pointing to the direction that the trading of the claims is motivated

by influencing corporate policies, we see that a firm's share price reflects not only the present value of the future cash flows, but also the prominent shareholder's preferences and willingness to pay for the rights to influence. Thus this paper shows that the design of the voting rights, and the market through which it is allowed to be traded, does have a strong influence in corporate policy-making, and thus should be taken into account in the relevant studies.

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Figures and Tables

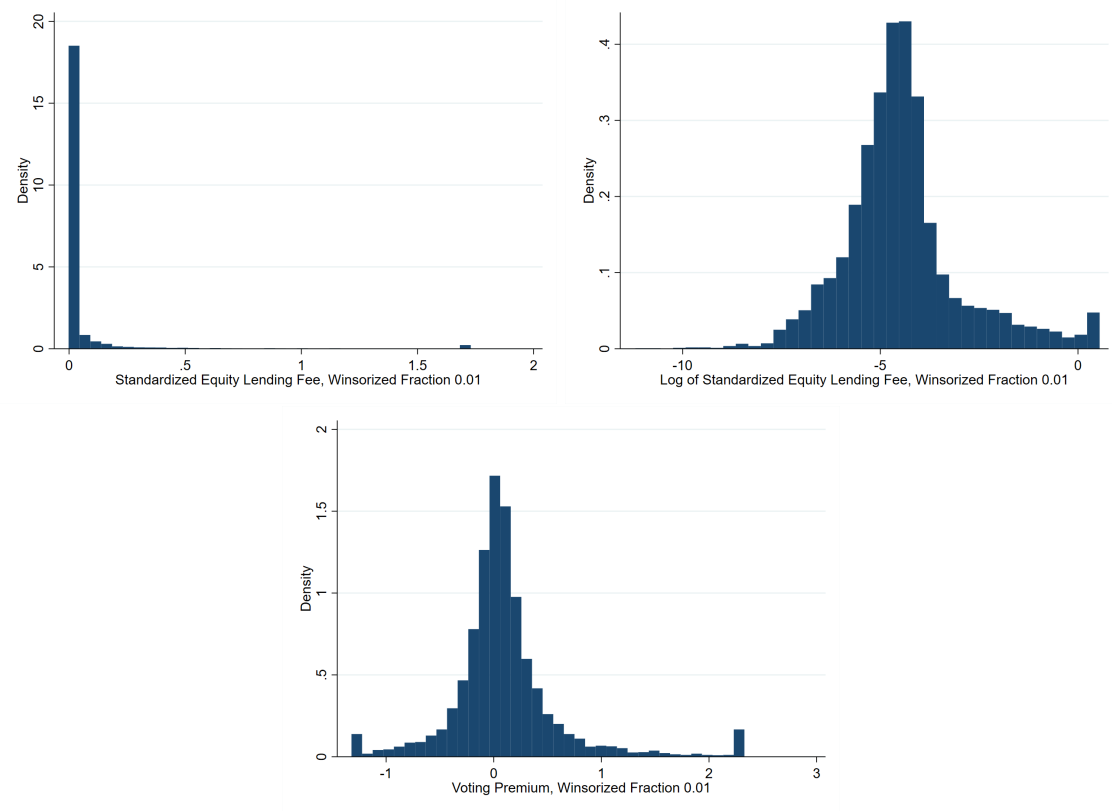

Figure 1: **Direct comparison of the voting price in the two markets.** This figure presents the distribution of measurements of price of votes in the equity lending market and shares trading market around voting record date. The top left panel shows the distribution of absolute equity lending fee standardized to the maturity length of corresponding option pairs. The top right panel shows the distribution of logarized equity lending fee. The lower panel shows the distribution of the absolute level of voting premium measurement (1). Both measures are in percentage terms, and are winsorized at 1% level.

Table 1: **Summary Statistics.**

This table provides summary statistics of the voting price and trading volume in the two markets. Std_LendingFee is the standardized equity lending fee as in (3). Voting_Premium is the voting premium measurement in the shares trading market, as in (1). Both measures are in percentage terms, and are winsorized at 1% level. For the bottom two rows, the 50% and 90% percentiles are reported.

	No. Obs.	Mean	Std. Dev.	Min	Max
Std_LendingFee	5,408	0.0626	0.2286	-0.0020	1.7293
Voting_Premium	5,408	0.0976	0.5211	-1.3219	2.3287
	No. Obs.	Min	50%	90%	Max
Call Volume	5,387	7.47×10^{-10}	3.61×10^{-7}	4.10×10^{-6}	0.0458
Put Volume	5,387	6.40×10^{-10}	2.55×10^{-7}	2.49×10^{-6}	0.0763

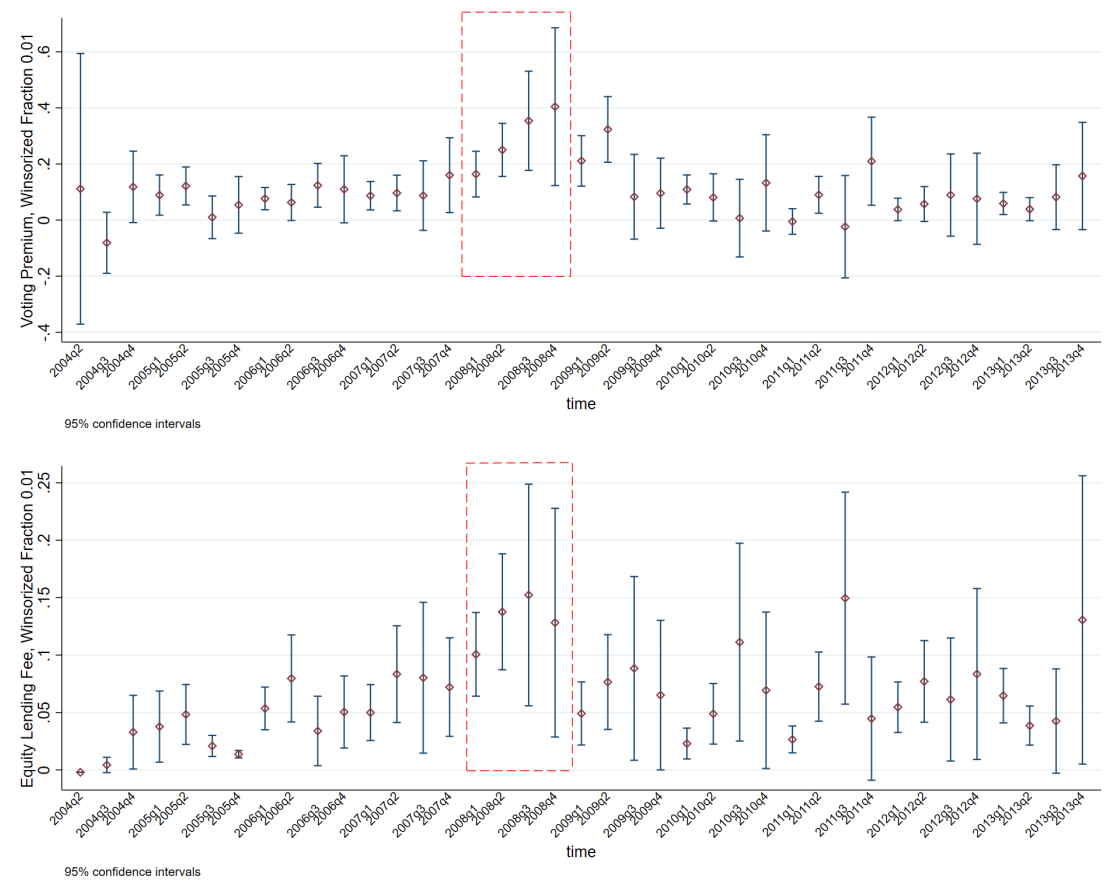

Figure 2: **Time series of the voting price in the two markets.** This figure presents the time series variation of measurements of price of votes in the equity lending market and shares trading market around voting record date. In both graphs, the red diamond symbol shows the mean while the blue line shows the 95% confidence interval. The top panel shows that of the absolute level of voting premium measurement (1). The bottom panel shows that of the absolute equity lending fee standardized to the maturity length of corresponding option pairs. Both measures are in percentage terms, and are winsorized at 1% level.

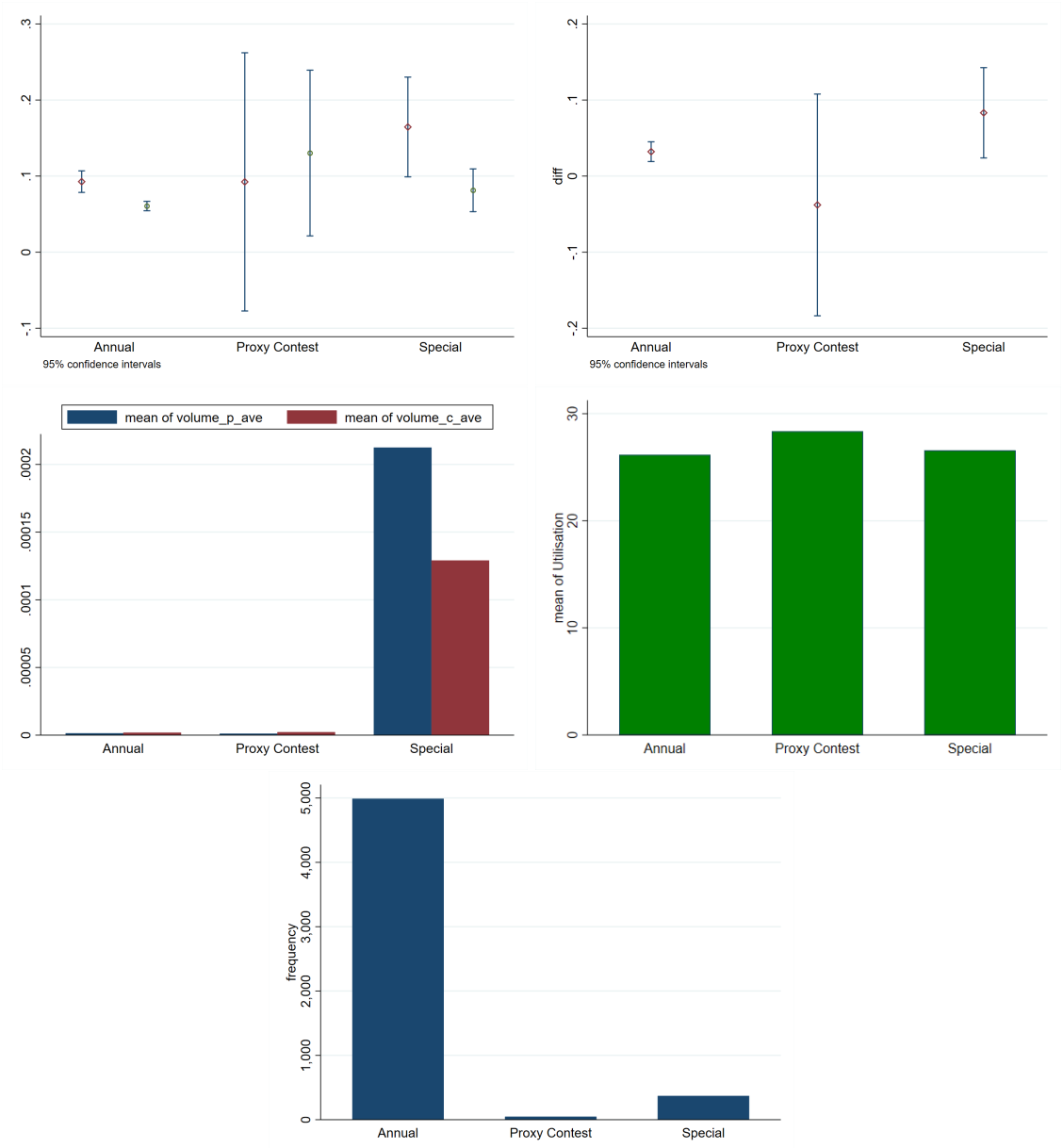

Figure 3: **Price of votes in two markets across meeting types.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. Both measures are in percentage terms, and are winsorized at 1% level. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put, call options of the corresponding type of meetings, standardized by total number of shares outstanding. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding type of meetings.

Figure 4: **Price of votes in two markets across proposal types.** Standard figure notation follows the above. The second row left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The second row right panel shows the volume of the voting record date put, call options of the corresponding type of meetings, with proposal type 'Approve Merger Agreement', as opposed to the middle left panel. The third row shows the corresponding utilization. The bottom panel shows the frequency of corresponding type of agendas.

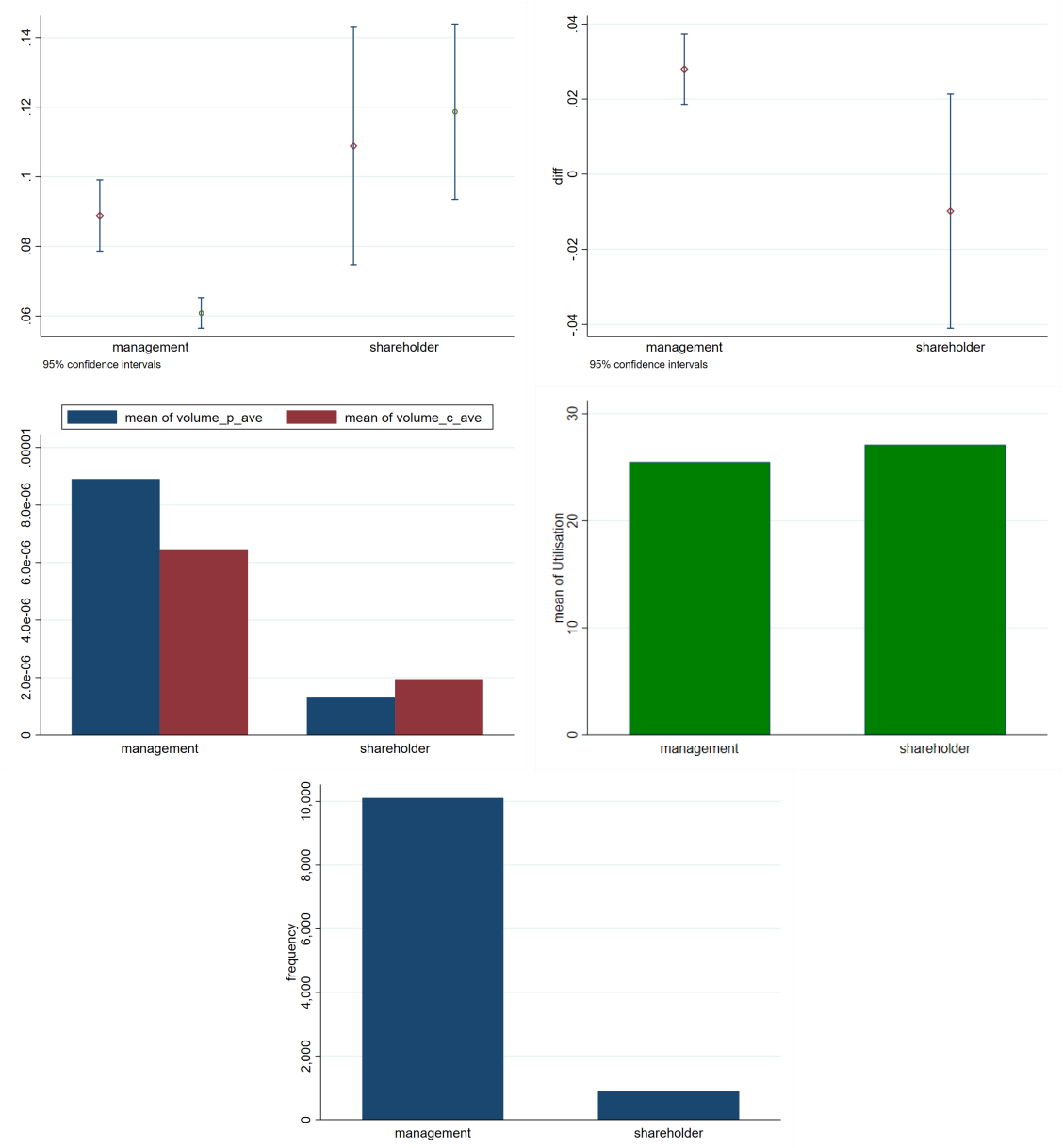

Figure 5: **Price of votes in two markets across proponents of votes.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put, call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. The bottom panel shows the frequency of corresponding type of sponsors.

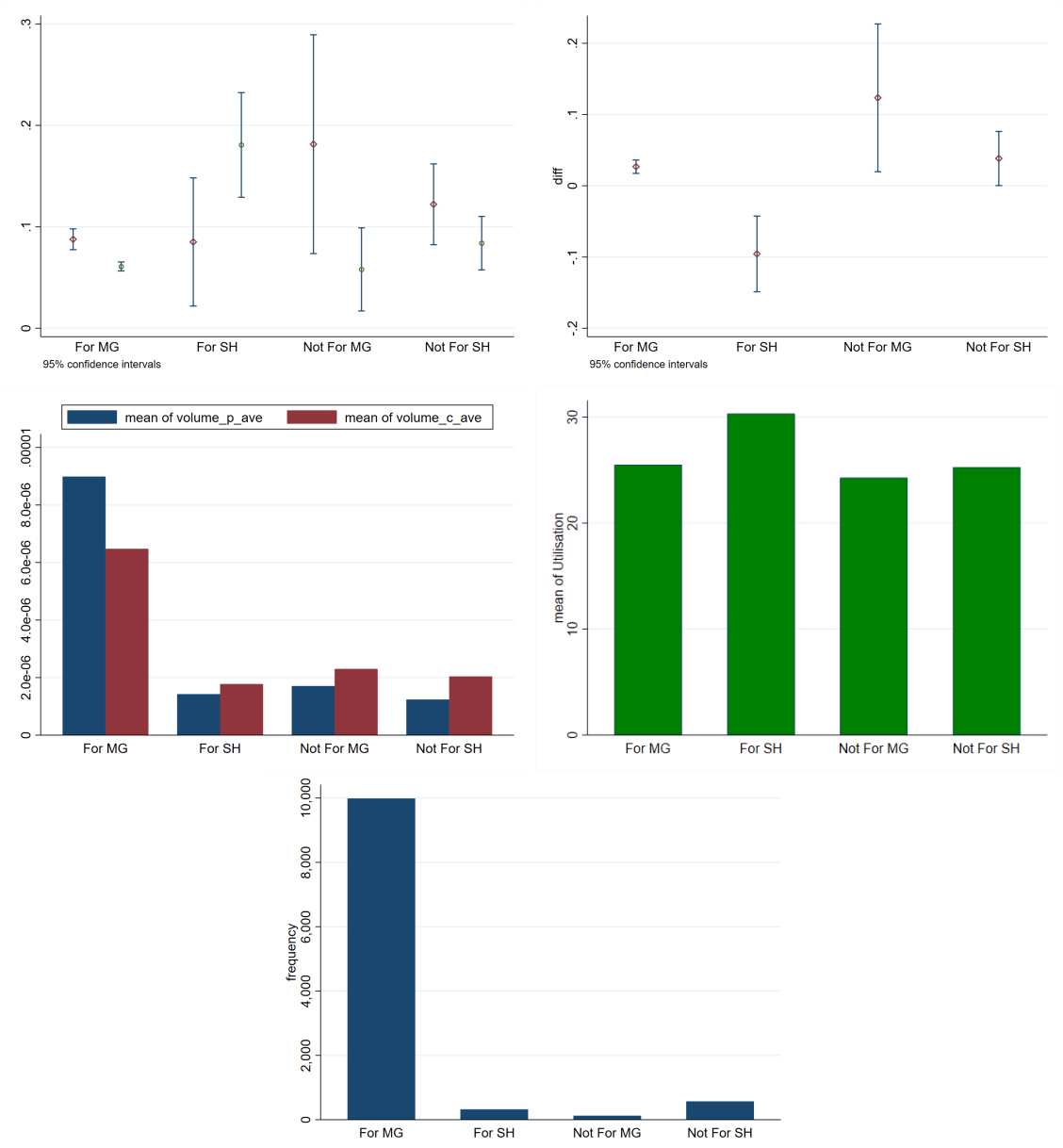

Figure 6: **Price of votes in two markets across proponent of votes and voting result.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the raw data, the management recommendations have the following types: "Abstain", "Against", "Do Not Vote", "For", "None", "One Year", "Two Years", "Three Years", and "Withhold". To match the management recommendations with the most common priors, I categorize the "For", "One Year", "Two Years" and "Three Years" as "For", and the rest of them as "Not For". "MG" stands for management proposals while "SH" stands for shareholder proposals. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding type of management recommendations.

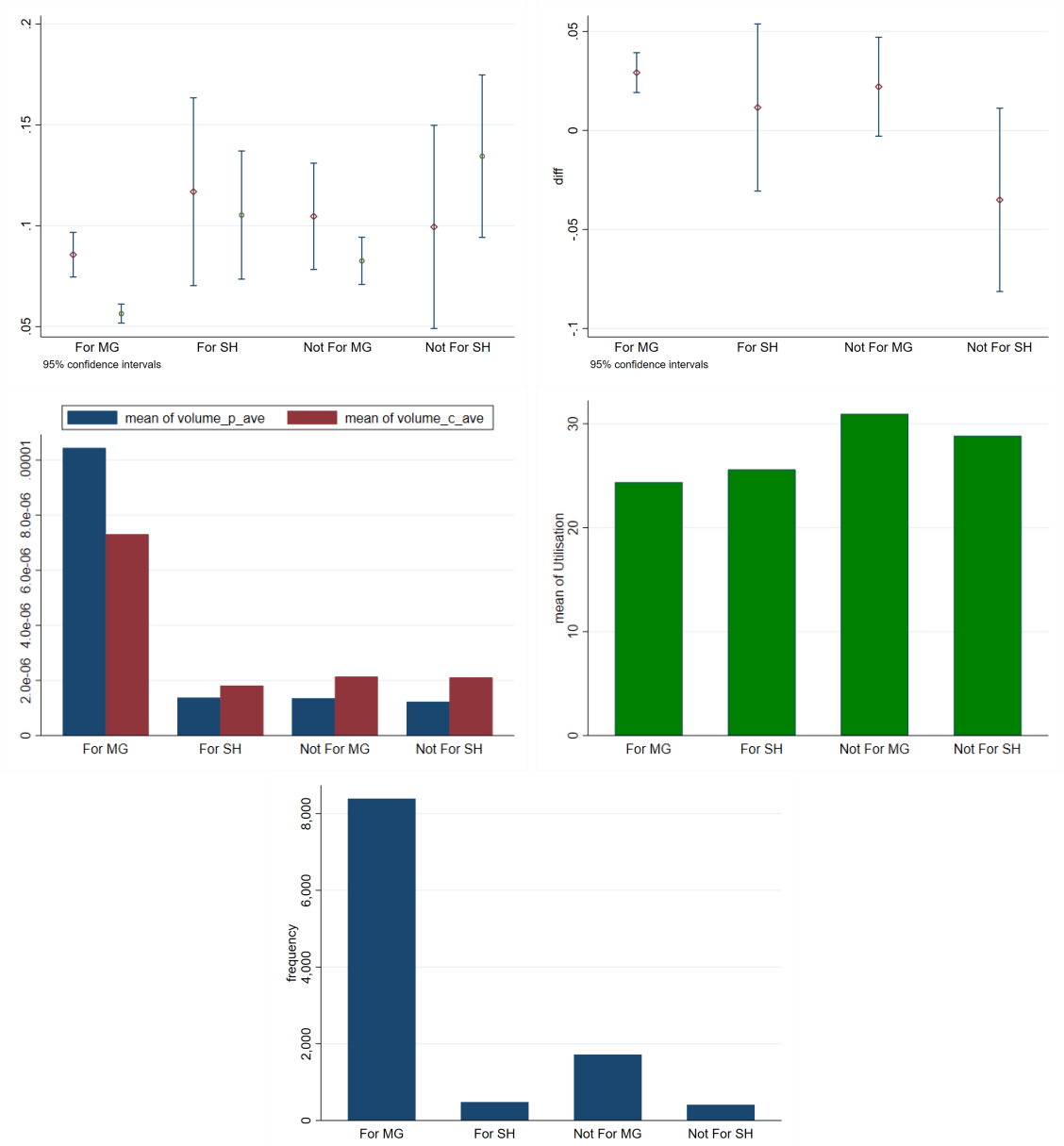

Figure 7: **Price of votes in two markets across types of ISS recommendations.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the raw data, the ISS recommendations have the following types: "Abstain", "Against", "Do Not Vote", "For", "None", "One Year", "Refer" and "Withhold". To match the ISS recommendations with the most common priors, I categorize the "For", and "One Year" as "For", and the rest of them as "Not For". "MG" stands for management proposals while "SH" stands for shareholder proposals. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding type of ISS recommendations.

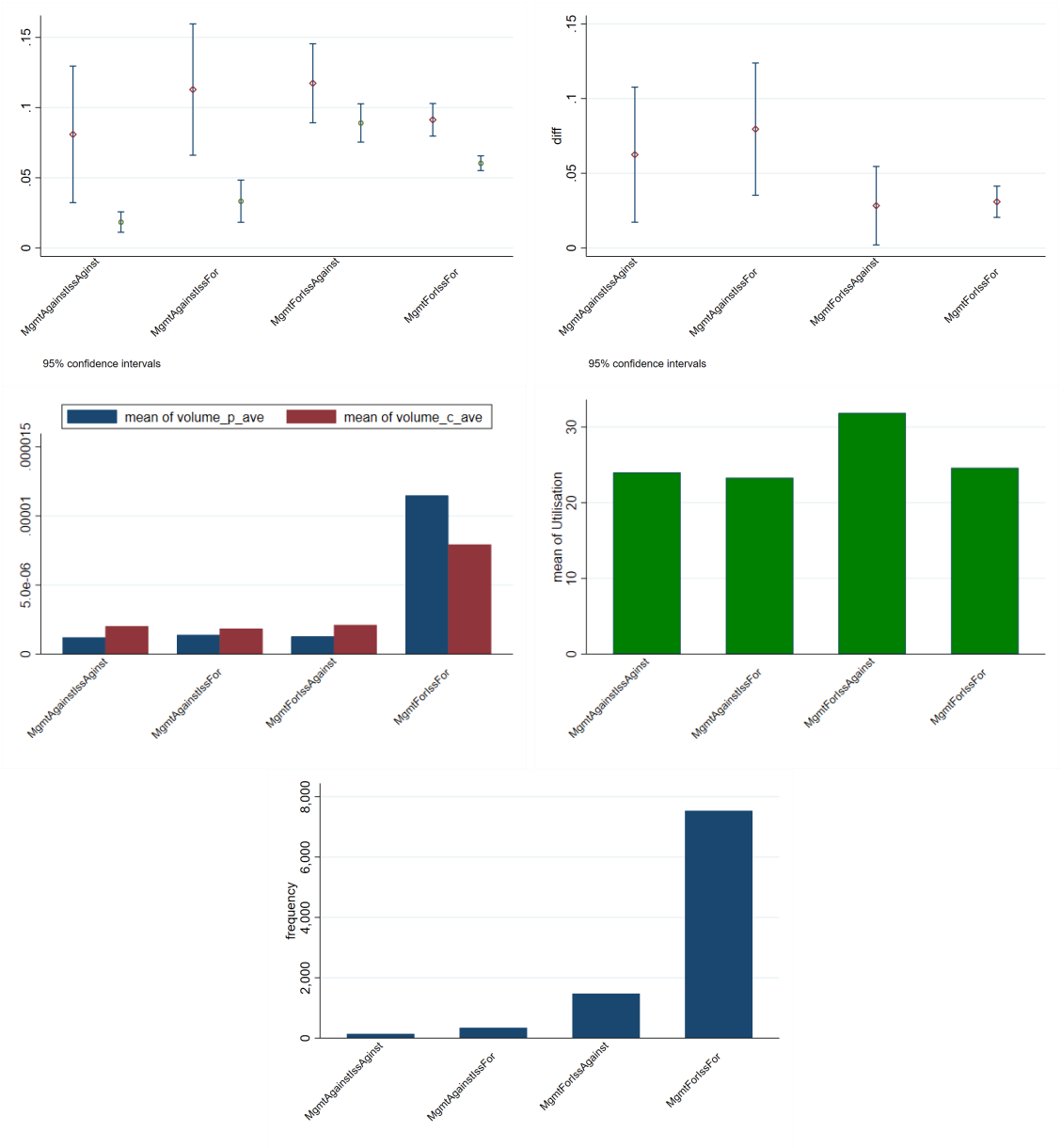

Figure 8: **Price of votes in two markets when ISS and management agree or disagree.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding ISS and management agreement or disagreement.

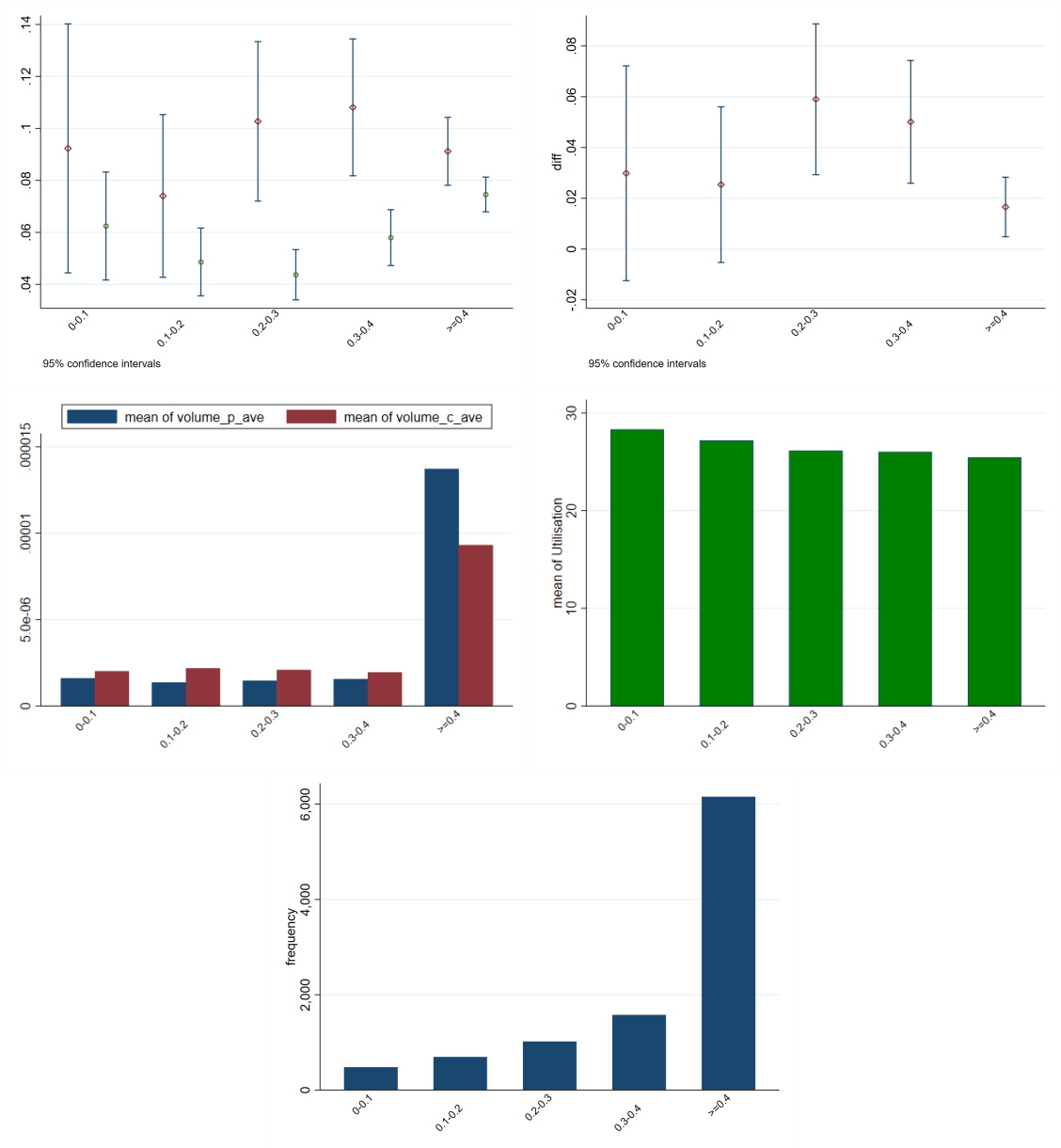

Figure 9: **Price of votes in two markets across distance to voting thresholds.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding category of distance to voting thresholds.

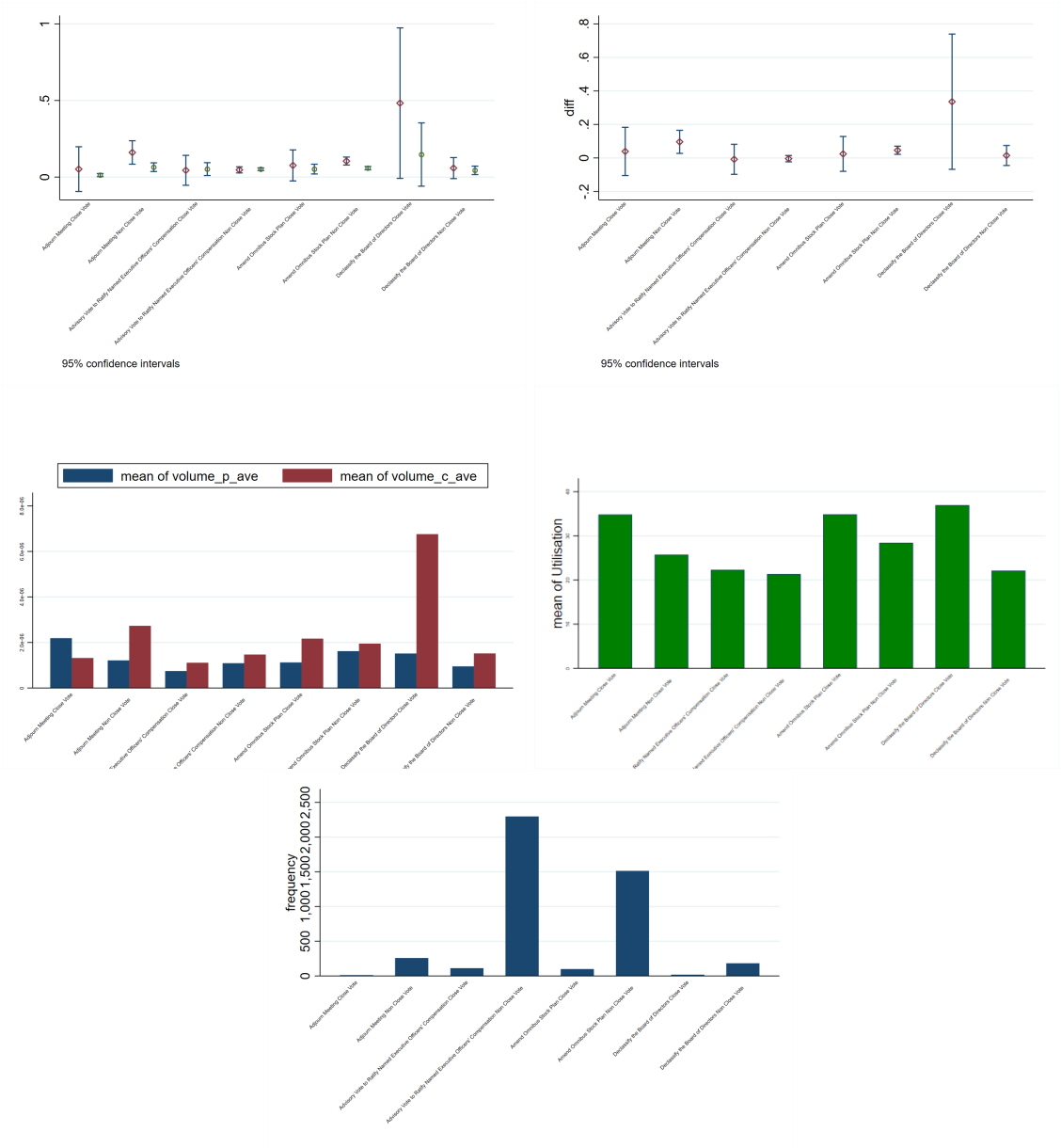

Figure 10: **Price of votes in two markets across voting results and important proposals.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. I categorize votes that have distance to voting thresholds 0-0.1 as close votes; otherwise they are regarded as non close votes. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding type of voting result & agendas.

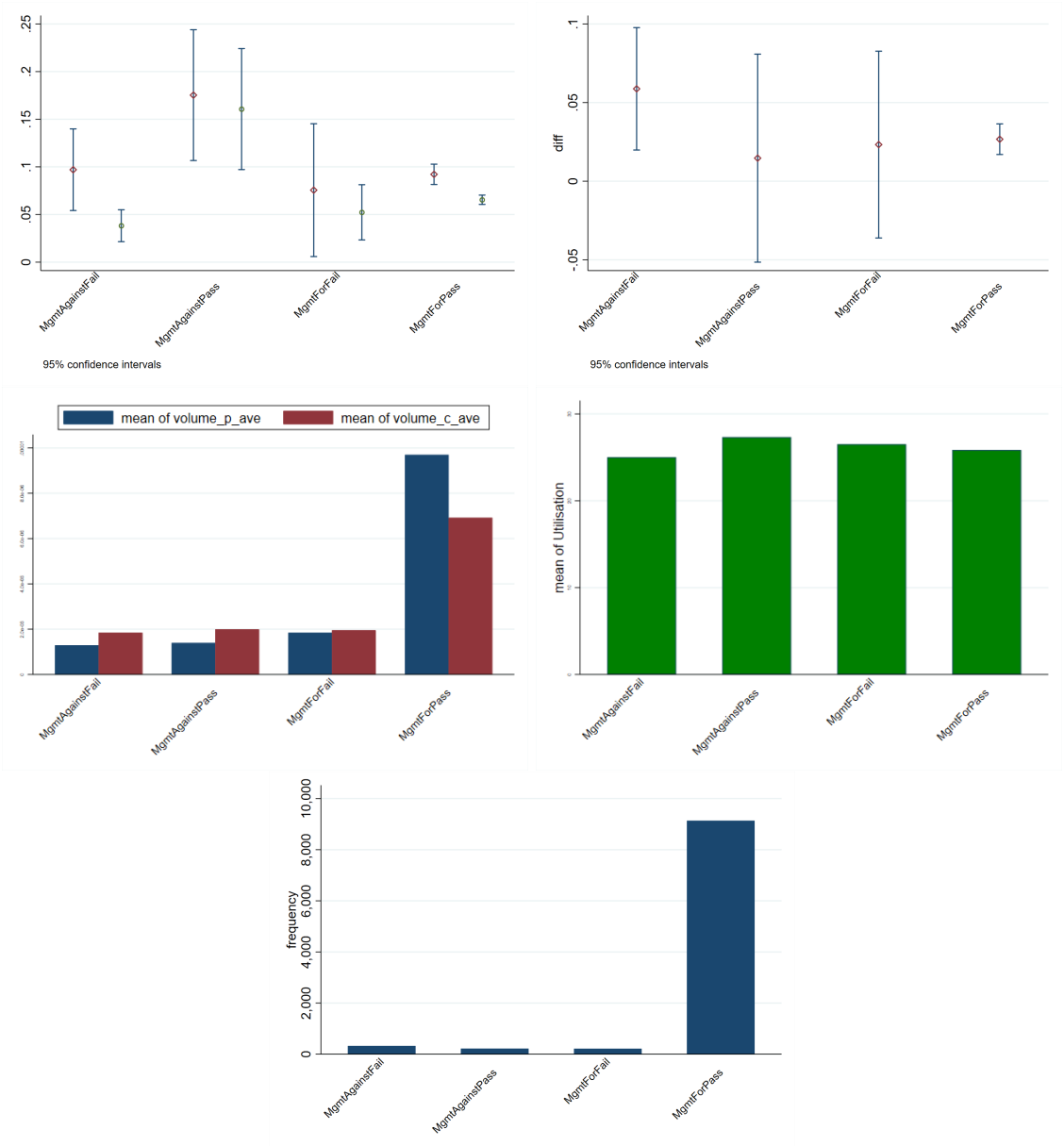

Figure 11: **Price of votes in two markets across management recommendations and voting results.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding type of voting result & management recommendation.

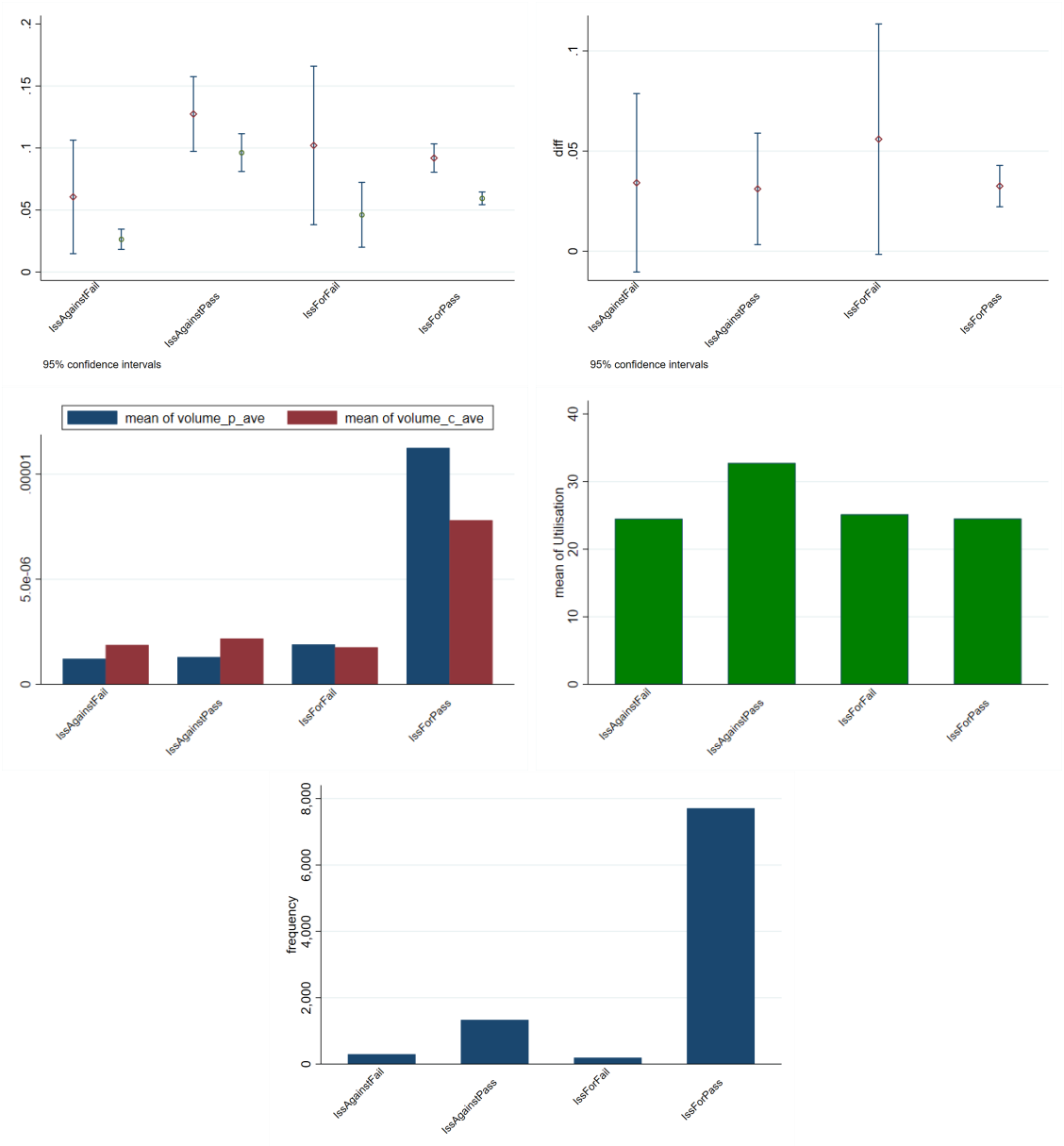

Figure 12: **Price of votes in two markets across ISS recommendations and voting results.** This figure presents the comparison of price of votes in the equity lending market and shares trading market around voting record date. In the top left panel, the red diamond symbol shows the mean of voting premium in the shares trading market, the green circle shows the mean of equity lending fee, while the blue line shows the 95% confidence interval. Both measures are in percentage terms, and are winsorized at 1% level. The top right panel shows the mean and 95% confidence interval of the difference between the voting premium measure in the shares trading market and equity lending fee, represented in equation (3) as the $Diff$ measure. The middle left panel shows the volume of the voting record date put and call options of the corresponding type of meetings. The middle right panel shows the equity lending market utilization of the corresponding type of meetings. Utilization is in percentage terms. The bottom panel shows the frequency of corresponding category of voting result & ISS recommendation.

Table 2: **Description of meetings that have abnormal voting rights trading.**

This table provides description of meetings that have abnormal voting rights trading. In the table, + means that particular type of meetings have on average higher value in the corresponding column cross-sectionally, while − means the reverse.

Classifications	Items	Voting Premium	Option Trading Volume (Call)	Option Trading Volume (Put)	Equity Lending Fee	Equity Lending Utilization	$Diff$
Meeting Types	Special Meetings	+	+	+			+
Proposal Types	Adjourn Meeting	+	+				+
	Amend Omnibus Stock Plan	+					+
	Approve Merger Agreements	+	+	+	-	-	+
	Elect Director (Management)	-			+		-
	Elect Director (Opposition Slate)				+		-
	Elect Director (Remove Existing Directors)	+	-		+	+	-
Proponent of votes	Shareholder	+			+	+	-
	Management	+	+	+	-	-	+
	Management ## Management not for	-			-		-
	Shareholder ## Management for	-			+	+	-
	Management ## Management for	-	+	+	-		+
	Management ## ISS for		+	+	-	-	+
	Shareholder ## ISS not for				+		-
	Management For ISS Against	+			+	+	-
	ISS For Management Against	+			+	+	+
Voting Result	Close Votes	+	+				
	Close Votes ## Declassify the Board of Directors	+	+		+	+	+
	Passed ## Management Against	+			+	+	
	Failed ## Management For	-			-		
	Passed ## ISS Against	+			+	+	
	Failed ## ISS For				-		+

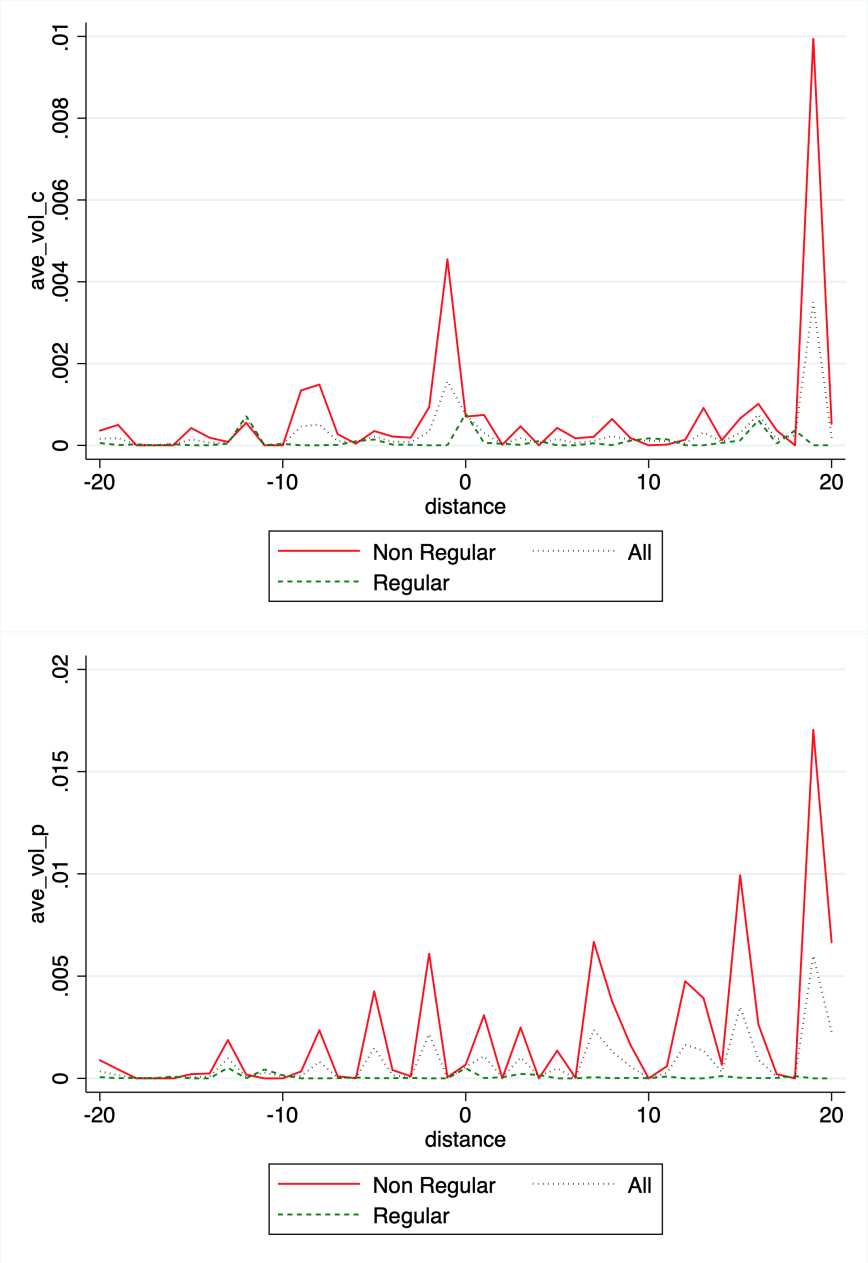

Figure 13: **Put and call option trading volume around the voting record date.** This figure presents the average put and call option trading volume of the corresponding company's shares, standardized by the number of shares outstanding, around the voting record date. Non Regular includes special meetings and shareholder initiated proposals. In both panels, red solid line represents the Non Regular proposal filings, including shareholder initiated proposals and special meetings; green dash line represents the regular filings, while the grey dot line represents all filings. The top panel shows the call option trading volume time series, while the bottom panel shows the put option trading volume time series.

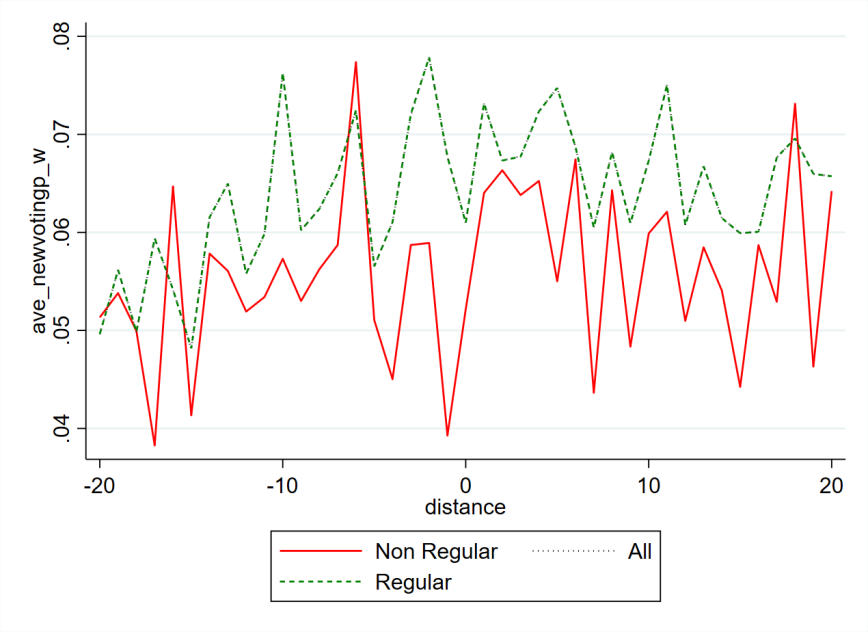

Figure 14: **Standardized voting premium around the voting record date.** This figure presents the mean of the corresponding company's voting premium across time, standardized by the corresponding share price, around the voting record date. Non Regular includes special meetings and shareholder initiated proposals. In both panels, red solid line represents the Non Regular proposal filings, including shareholder initiated proposals and special meetings; green dash line represents the regular filings, while the grey dot line represents all filings.

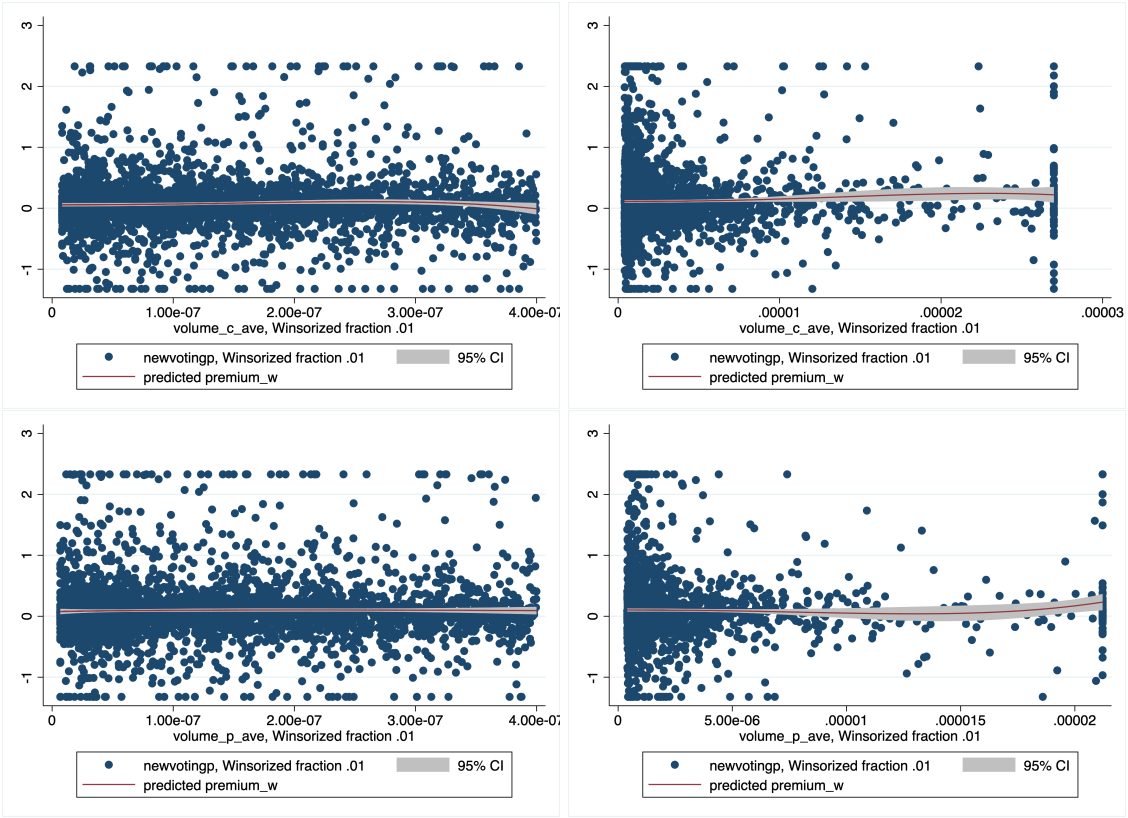

Figure 15: **Voting Premium across voting record date option trading volume.** This figure presents the mapping between the call and put option trading volume (x-axis) and the winsorized voting premium (y-axis). The top two panels are call option trading volume while the bottom two panels are put option trading volume. The red line is the fractional polynomial fitted line of the scatter plot. Left panels show trading volume below 4×10^{-7} while right panels show trading volume above 4×10^{-7}.

Table 3: $Diff$ **measure around director elections.**

This table provides cross-sectional regression results with a dummy variable indicating if the agenda types are 'Elect Director(Management)', 'Elect Directors (Opposition Slate)', or 'Remove Existing Directors'. The third column corresponds to standard error clustered at the firm level. The regression specification is the following:

$$V_{it} = \beta Director_{it} + \alpha_i + \epsilon_{it}$$

	(1)	(2)	(3)
Director	-0.141***	-0.123***	-0.123
	(-6.31)	(-3.98)	(-1.43)
Obs.	9,342	9,048	9,048
Firm FE	No	Yes	Yes
R^2	0.004	0.452	0.452

Table 4: **Call options trading volume around voting record date**

This table provides regression results with a dummy variable indicating if the observation falls around the voting record date (-3,0). In the bottom panel, the trading volume is winsorized at 1% level. The regression coefficient is the following:

$$Volume_{it} = \beta_1 Event_{it} + \beta_2 Event_{it} \times NonRegular_{it} + \epsilon_{it}$$

Panel A	(1)	(2)	(3)
Event	0.0005**	0.0004**	0.000
	(2.19)	(2.10)	(-0.06)
Event × Non Regular			0.001***
			(2.97)
Obs.	434,954	434,954	434,954
Proposal FE	No	Yes	Yes
R^2	0.000	0.001	0.001
Panel B	(1)	(2)	(3)
Event	$-6.65 \times 10^{-8***}$	$-7.34 \times 10^{-8***}$	$-1.08 \times 10^{-7***}$
	(-3.32)	(-3.71)	(-4.41)
Event × Non Regular			$1.46 \times 10^{-7***}$
			(3.56)
Obs.	434,954	434,954	434,954
Proposal FE	No	Yes	Yes
R^2	0.000	0.022	0.023

Table 5: **Put options trading volume around voting record date**

This table provides regression results with a dummy variable indicating if the observation falls around the voting record date (-3,0). In the bottom panel, the trading volume is winsorized at 1% level. The regression coefficient is the following:

$$Volume_{it} = \beta_1 Event_{it} + \beta_2 Event_{it} \times NonRegular_{it} + \epsilon_{it}$$

Put	(1)	(2)	(3)
Event	-0.000	-0.000	-0.001
	(-0.23)	(-0.24)	(-1.17)
Event × Non Regular			0.002*
			(1.66)
Obs.	434,954	434,954	434,954
Proposal FE	No	Yes	Yes
R^2	0.000	0.000	0.000
Put	(1)	(2)	(3)
Event	$-2.40 \times 10^{-8*}$	$-2.89 \times 10^{-8**}$	$-5.90 \times 10^{-8***}$
	(-1.66)	(-2.01)	(-3.32)
Event × Non Regular			$8.53 \times 10^{-8***}$
			(2.87)
Obs.	434,954	434,954	434,954
Proposal FE	No	Yes	Yes
R^2	0.000	0.016	0.016

Voting Rights Trading before Firm Meetings: a Tale of Two Markets

Yue Wu *

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Abstract

This paper empirically tests if the equity lending market's searching friction influences firms' voting rights trading before firm meetings in the shares trading market before firm meetings. First, this paper shows that there exists a substitution between the two markets in terms of demand for votes. Institutional investors buy fewer voting shares when the supply of lendable shares in the equity lending market is high. However, the substitution effect decreases when testing on activist investors or when the event is activist-driven. Second, this paper uses the option pricing method to measure the voting premium in the shares trading market. Then this paper shows that the exogenous change in the equity lending market's supply also negatively affects the voting premium in the shares trading market, aligned with the prediction of the substitution effect. To deal with the possible endogeneity caused by the voting demand and shorting demand, the firm's total passive holding instrumental variable strategy is applied to estimate this substitution effect causally. Overall, the findings of this paper suggest that alleviating the searching friction in the equity lending market mitigates institutional investor's influence through voting shares trading.

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1 Introduction

Similar to political elections, shareholders' power can be exercised through firm meetings in the corporate world. Shares carry voting power, from one-share-one-vote to shares with multiple voting rights. Bearing the similarities with political elections, shareholder democracy is inherently different in some respects, since there exist markets for corporate voting shares to be traded from hand to hand.[1] Moreover, the voting power could be traded separately from the economic interest, either partially or entirely. There are mainly two markets to realize this. The first is the equity lending market, where shareholders could borrow voting shares and vote, since borrowed shares are legitimated to vote in firm meetings. The second one is the shares trading market, together with the options trading market, where shareholders buy voting shares directly and sell the equivalent economic position using options that do not carry voting rights - a technique known as empty voting. In recent years, with the growth of institutional ownership, voting power is less concentrated in the traditional controlling shareholders, especially for public firms. Activist hedge funds are the most prominent examples for such tradings. In the case of buying votes in the equity lending market, in 2002, Laxey Partners, a British hedge fund that owned 1% of British Land, aimed to oust its then chairman. It boosted its voting stake to 9% by borrowing more than 40 million shares before the voting record date[2] (Scannell (2007)). For buying votes in the shares trading market, Hu & Black (2006) documented the Perry Corp, a hedge fund. Without significant initial holding, Perry bought 9.9% of Mylan to push Mylan to approve a merger with one of Perry's portfolio firms, King Pharmaceuticals. This position is built mainly for voting purposes because Perry had fully hedged the market risk associated with this position.

In terms of trading votes solely, these two markets are conceptually equivalent since they both allows the transfer of the voting rights while the economic positions are unaffected. By borrowing, voting, and then returning, the vote demander only needs to pay the borrowing fee and return the economic position after voting. Through buying and selling an equivalent synthetic position replicated by options, voting, and exercising/selling the options in the replicating portfolio, the

[1] That is to say, recognizing that the modern corporation is an economic (not a political) entity, votes are distributed by number of shares owned, not by the number of owners. (Watkins (2007))

[2] A record date is a date announced by the company as the official date you must be an owner on the company's records in order to participate in the annual meeting and corporate election. In the case of lending, under standard lending arrangements, the stock borrower has voting rights but no economic ownership, while the stock lender has economic ownership without voting rights.

vote demander is paying the difference between the actual share price and the synthetic stock (the voting premium) and does not own the entire economic position related to the voting right after exercising/selling the options. If it is true that the two markets are equivalent in every aspect, then vote demanders would be indifferent between these two markets, and voting power should have the same value. However, past empirical studies show that the value of votes is significantly higher in the shares trading market than in the equity lending market: votes on average sell for around ten basis points in the shares trading market while less than two basis points in the equity lending market (please refer to literature review section for details).[3] It seems that the trading of voting shares is mostly active in the normal shares trading market.

The motivation of this paper is to ask if the equity lending market's trading frictions have a spillover to the firms' voting rights trading in the normal shares trading market. Answering this question would reveal the importance of taking into consideration the equity lending market's trading friction when explaining the value of voting rights with or without the presence of activist investors.[4] To answer this question, this paper establishes the fact that there exists a cross-substitution effect in terms of demand for votes in the equity lending and shares trading market. In other words, this paper is testing if there are more voting shares purchased and a higher price of votes in the shares trading market when the supply of a firm's votes in the equity lending market decreases. When supply decreases, search friction goes up, it takes a much longer time to obtain votes in the equity lending market, and thus it would be more efficient to buy voting shares in the stock exchange.

This paper causally estimates the effect of a change in the firm-level equity lendable supply on votes trading in the shares trading market. Causal identification is needed because the shift in the equity lendable supply might be endogenous to the demand for the firm's votes and the shorting demand. With higher voting demand, lenders would retrieve more shares. Thus, voting demand might affect the equilibrium supply of shares in the equity lending market and the equilibrium demand of shares in the shares trading market at the same time. Higher shorting demand induces lower equilibrium lendable supply. If more shares were loaned out before the meeting record date period because of the higher shorting demand, fewer shares would be available on the market in

[3]This difference is not likely to be arising from option market transaction costs, which is pointed out in Kalay et al. (2014): across groups of different option spreads, the average voting premium doesn't vary.

[4]For the latter, Levit et al. (2021) has a theoretical explanation of the difference between the two markets. Please refer to the literature review section for details.

the meeting record date period. Higher shorting, and hence lower lendable supply in the equity lending market, might co-exist with higher buying in the shares trading market[5], which confuses with the substitution effect that we are trying to identify. An instrumental variable strategy is applied in addition to observable covariates to proxy voting demand in the regression in case the observable confounders don't fully capture the variation in voting demand. To deal with this, I use the firm's total institutional passive holding (as a fraction of the total number of shares outstanding) as the instrumental variable for the firm-level lendable equity supply to introduce exogenous variation to the explanatory variable. Knowing that such a substitution effect exists, we would also expect that the price of votes in the shares trading market should be related to the change in supply in the equity lending market.

In order to both explore different types of institutional investor's pre-meeting votes trading behavior and in the meantime, make sure that the effect is related to voting purposes, I construct the sample using Thomson Reuters s34 institutional manager's voting shares holding data and only keep the observations around firms' meeting record dates. Firm-level equity lendable supply from IHS Markit is linked with the sample. The final sample consists of around 5000 meetings of 1805 firms with 4228 managers from 2004 to 2013. To study the effect of equity lendable supply on institutional investor's vote-buying behavior, the confounding effect of voting demand and shorting demand needs to be ruled out in the causal estimation. The main instrumental variable used is the firm's total passive fund holding (as a fraction of the firm's total number of shares outstanding). Passive holding provides an exogenous variation to the firm-level lendable supply because it tracks major index holdings, which is less likely to be directly related to institutional vote-buying before the firm meeting. However, it is related to the equity lendable supply, because passive holders are the major lenders in firm shares. This global IV provides exogenous variation in the firm-meeting level to identify the substitution effect on votes buying. As it provides variation in a wide range across firm and time, the global IV could also be applied to tests in subsamples. Another implication of the substitution effect is that change in lendable supply in the equity lending market would affect the price of votes in both markets, and thus, the voting premium in the shares trading market. To identify this price effect, the global IV mentioned before could also be used to provide

[5]One famous example would be GameStop. In January 2021, Reddit users collectively bought shares of GameStop, pushing the firm's shares to go up against short sellers' expectations. The major shorters, wall street hedge funds, responded by increasing shorting (Wikipedia (2021)).

exogenous variation in the equity lending supply.

I first show that there exists a substitution effect in terms of demand for votes between the equity lending market and shares trading market. I use a 2SLS estimation framework with the firm's total passive fund holding as IV for the explanatory variable, equity lendable supply in the first stage. I use a voting share abnormal buy measure to proxy for institutional managers' demand for votes to minimize the impact of economic interest-driven trends. A 10% exogenous decrease in the equity lendable supply leads to an average 0.17% significant increase in individual institutional managers' demand for votes in the shares trading market.[6] This effect still holds with similar magnitude when the observable proxies for voting demands are controlled for. I reconfirm that this result could be interpreted as trading for votes instead of other economic purposes in two ways. First, robustness checks in the out-of-sample window are performed. No similar effects are found in the out-of-sample window. Thus the negative relation between equity lendable supply and institutional voting shares abnormal buy only holds around pre-meeting record date, when the votes trading activity frequency is considered to be the highest. Second, around the pre-meeting record date, I check the effect of equity lendable supply on institutional manager's non-voting shares abnormal buy, and no similar substitution effect is found.

Concerning different types of investors, meetings, and proposals, the level of voting demand differs, we expect to see a difference in the significance of substitution effect across these types. I identify hedge funds as activist investors, who tend to strategically buy an significant amount of votes before firm meetings in order to swing the voting outcome, as discussed by Brav et al. (2008). I show in the cross-section that prior to firm meetings, activist investors are buying more than average. This difference is especially high before special meetings, meetings with a close voting outcome, and meetings with proposals to approve mergers & acquisitions. I also show in the time series that the increase in abnormal voting shares holding tends to decrease after firm meetings, consistent with the intuition that the pre-meeting vote trading strategy, in the share trading market, should be buy-vote-sell. I then examine the substitution effect in the subsamples of such events and investors. Counter-intuitively, I find zero substitution effect before special meetings, and in particular concerning approve $M\&A$ proposals. I find a slightly significant

[6]Lendable supply measure has an average of 25% of the total number of shares outstanding. The abnormal buy measures the percentage change in share holdings. It serves as the proxy for voting demand, and has an average of 1% in the whole sample and has an average of 5% in the subsample where abnormal buy is greater than 0, in which we obtain this regression estimate.

substitution effect for activist investors. This result is counter-intuitive because we expect to more easily identify substitution effect when the demand for votes is high. The explanation is that since activists are more targeted and strategic, they might strictly prefer one market to another before certain events.

For the second part of the paper, I show that there also exists a price effect. An exogenous decrease in equity lending supply leads to an increase in the voting premium in the shares trading market. The same total passive holding as global IV is applied in this identification exercise. To measure the price of votes in the shares trading market, I use the voting premium measurement introduced in Kalay et al. (2014): since options don't carry the value of voting rights, the difference between the actual stock price and the synthetic stock price constructed using options should measure the value of votes. A 10% exogenous decrease in the equity lendable supply leads to an average 0.067% significant increase in voting premium in the shares trading market.[7] This effect still holds with similar magnitude when different observable controls for the voting demand are included. This again confirms that vote demanders resort to both markets.

Parallel to the subsample results in the substitution effect, I also test the price effect across voting proposals. The result is partially consistent with the subsample result in the substitution effect. Most importantly, the price effect also holds significantly around annual meetings but does not hold around special meetings, or when the meeting proposal is 'approve merger agreements', where activist behavior appears most frequently.

Previous literature has studied separately votes trading in the equity lending market and shares trading market before firm meetings. Christoffersen et al. (2007) showed that there exists active votes trading in the equity lending market around firm meeting record dates. Aggarwal et al. (2015) showed that institutional investors tend to recall shares loaned out before firm meetings in order to vote. Although they were documenting different entities demanding votes in the equity lending market (borrower of votes versus votes holder), they both showed that the equity lending market plays an important part in the excess demand for votes before firm meetings. For vote-buying activities, Kalay et al. (2014) measured the value of votes in the shares trading market and found that this measure increases around firm special meetings, periods of hedge fund activism, and M&A events. This price increase reflects the change in shares trading activity related to voting

[7]The voting premium measured by Kalay et al. (2014) has an average 0.1% out of the price of shares.

purposes. Bethel et al. (2009) examined institutional investors' shares trading before merger record dates and found that they on average buy shares.

This paper contributes to the above literature in two ways. First, I show that there exists substitution between votes borrowing in the equity lending market and votes buying behaviors in the shares trading market. When there is an exogenous increase in supply in the equity lending market, there is a decrease in equilibrium price and votes-buy in the shares trading market. This is the first time that such a relationship has been documented. Second, I reconfirm and explore pre-meeting institutional vote trading by showing the cross-sectional abnormal holding difference between different institutional investors (activist versus others) around voting record dates. Specific implementation and results are stated in the following paragraphs.

Why is this question economically meaningful to be studied? First, positive analysis of the pre-meeting votes trading needs supportive facts. By understanding how votes are traded in both the shares trading and equity lending market, one could analyze the related voting and value mechanisms after votes trading. Second, on the normative side, studying the economics of voting rights helps us to gain more insights into how to regulate the vote-trading market better for overall shareholder welfare and corporate governance efficiency.

The rest of the paper is organized as follows. Section two introduces the institutional background on the two markets for votes. Section three reviews past literature on the economics of firm voting rights. Section four develops the hypotheses. Section five introduces the empirical method. Section six describes the data and sample construction process. Section seven and eight presents test results. Section nine concludes.

2 Institutional Background

This section elaborates on the transfer of voting rights and institutional structure in the equity lending and shares trading markets. According to Nicolae et al. (2001), in the equity lending market, typically, there exist large brokers. An equity borrower could directly contact brokers, and brokers could either check their inventory or contact potential lenders, who typically are fund managers. If there is a limited supply, the search cost could be higher. The broker may take a longer time to search for a lender or offer "partial fills". When the transaction happens, the

borrower passes to the lender cash collateral, typically 102% of the market value of borrowed shares. The lender rebates some interest on the collateral at an agreed rate. In the case when the collateral is securities, the borrower pays a fee instead of rebates. There are a lot of issues relating to the lending fee information. Not all lenders report their pricing, especially for those in control of in-demand stocks, as noted by the SEC. Due to the open rolling basis, lenders have the right to recall shares, and when the firm tends to recall frequently, this raises the risky aspect of their business (SecuritiesFinanceTimes (2022)). In terms of lending fees, the major factors are the interest rate (for the time value of the collateral) and the specialness of the stock (when the stock is in high demand, the fee usually tends to have a sharp increase to over 100 bps). Because of the asymmetric feature of the fees, for this study, to capture the difficulty for the vote demander to search for votes, I use the gross lendable quantity of the stock on the equity lending market, instead of the fee.

The voting right passes from the lender to the borrower during the transaction. After exercising the voting right, the borrower returns the shares to the lender, and reimburses the lender for the dividends or other distributions during the lending period. This market thrived in 2006 after the SEC incepted regulation SHO, which relieves short sell constraint by ruling that "no price test shall apply to short sales". (Campello et al. (2016))

Market makers and broker-dealers intermediate the shares trading market. Compared to the equity lending market structure, the shares trading market has more types of intermediaries and hence is more efficient in terms of matching and transactions. The direct supplier of shares in the shares trading markets are firms that issue shares. During a transaction, buyers incur explicit and implicit costs. Explicit costs are commissions; implicit costs include bid-ask spread - compensation for market makers for illiquidity (larger traders, though, could negotiate with dealers directly for a lower price), and the price impact of a trade. (Keim & Madhavan (1998), PwC (2012))

During the process of buy-vote-sell, the vote buyers hedge, at least partially, economic position using options, then the voting rights would be in the hands of the vote buyers before options' execution. The only cash flow-related cost is the opportunity cost of the share prices going up. During the process of borrow-vote-return, the voting rights are in the hands of the vote buyers before returning the shares. The only cash flow-related cost is the opportunity cost of the share prices going down. If both strategies are happening in a short horizon (especially before the meeting

result comes out), we could expect the share price to go up and down in equal probabilities. Thus the two markets are equivalent in trading the voting right.

3 Literature Review

This paper speaks to the general voting premium literature. There is a gap in the estimated value of voting premium between equity lending and shares trading markets. On the equity lending side, Christoffersen et al. (2007) examined 'record-date' equity loan fees and shows that votes on average sell for zero. They explain that the lenders in this case are not selling the votes; they are just passing the votes to others. This is because they do not know how to cast those votes, passing to the ones, who have similar preferences but know more and could vote in the right direction, would be preferred. Aggarwal et al. (2015) found loan fee to be increasing at around two basis points in level around the voting record date relative to the normal non-voting record date level. On the shares trading side, Kalay et al. (2014) calculated the voting premium using the price of shares minus the value of a synthetic stock constructed through options. They found the value of votes to be around ten basis points for annual meeting record dates and higher for special meetings. This value is similar to the voting premium calculated using dual-class shares [8].

Levit et al. (2021) modelled the minority blockholder and dispersed shareholder's behavior to generate a voting premium. Their paper explains the difference in voting premium between the shares trading market and the equity lending market. They assume that voting rights and cash flow rights are bundled together in the shares trading market, while they can be separated in the equity lending market. Thus blockholder who wants to benefit from the economic interest of the power to change voting outcome would strictly prefer the shares trading market than the equity lending market. This paper differs from their paper in two ways. First, votes can be separated from cash flow rights even in the shares trading market. This can be achieved through options hedging as mentioned by Kalay et al. (2014): an investor could buy voting shares, and at the same time sell the same amount of synthetic stock replicated using put-call parity (one share can be replicated by buying one call, selling one put at the same strike price, and buying a risk-free asset at the same value as the present value of the synthetic stock). Second, aside from short-term

[8] As votes carry value, when a firm issues both voting shares and non voting shares, the difference between the value of both could be also used to measure the voting premium.

economic interest, shareholders are also concerned about other things: environmental, social, and governance proposals of public firms are receiving public attention through the news. The types of institutional investors who aggregate the opinions of households or other reputations concerned investors should also be interested in purchasing additional voting power, especially when such proposals generate long term returns from the perspective of the investor. In these cases, the value of votes rises before the firm meeting because demand for votes for long-term, non-pecuniary interests, or social welfare increases instead of Levit et al. (2021)'s view of votes as a short term value-generating asset.

There is a line of literature on the effect of votes trading on corporate governance efficiency. Christoffersen et al. (2007) argued that the equity lending market enhances information aggregation at firm meeting since informed shareholders could borrow votes at a low fee. Brav & Mathews (2011) showed that, in total, the existence of the equity lending market enhances the overall efficiency despite empty-voting existing. Malenko & Maug (2021) modelled the feedback loop between pre-meeting shares trading and rational expectation of the voting outcome. They argued that although trading aligns shareholder base with firm policies, extreme shareholders (those who have the largest private value towards certain proposal outcomes deviating from the common values) might gain more weight when there is more liquidity and decrease average shareholder welfare. These papers show that pre-meeting votes trading influences a firm's later performance and governance. This paper relates to their paper in documenting the relationship between the equity lending market and the shares trading market, and thus when further discussing about votes trading on corporate governance efficiency, this relationship needs to be taken into account.

This paper also relates to search in the equity lending market. Nicolae et al. (2001) modelled search in the equity lending market and pointed out that the existence of search cost gives the lender market power to charge a lending fee. Kolasinski et al. (2013) empirically tested the relationship between borrower search cost and supply curve. This paper differs from their paper in the sense that, when considering the equity lending market as a market for votes, the borrower has the option to resort to the shares trading market when facing a high search cost.

4 Hypotheses

The main agents being studied are institutional investors. There are two distinct types of institutional investors in terms of their incentives to engage in voting: activist shareholders[9], who are considered to have the strongest incentive to demand votes and push for the target voting outcome; equity lenders, who usually hold passive portfolio strategies tracking indices,[10] and are the major suppliers of the shares in the equity lending market. Other institutional investors might also be interested in voting purposes, for example, large holders of the firm, whose votes matter and votes buying are impactful at the margin.

On the supply side of the equity lending market, lenders post the shares available to be lent out. Institutional investors as lenders decide how many shares to be posted on the equity lending market. Lending out shares earns an extra fee; however, the opportunity cost is the part of the voting power loaned out. The equity lending market is over-the-counter, and thus some search process happens before lenders and borrowers are matched.

Before firm meetings, the number of votes held by shareholders is registered on the meeting record date. Thus we expect to see an increase in demand for votes before the meeting record date. All institutional investors may demand votes. Since the passive ones cannot adjust their position, they could choose to retrieve their lendable supply. Since the decision is based on the trade-off between the voting power loaned out, and the equity lending fee, the level of voting shares supply in the equity lending market varies in the intensive margin. On the other hand, different firms have different levels of passive holding. The more passive holding, the more supply of lendable shares. Other institutional investors may gather votes either through buying shares or searching for lenders. The decision should be made based on both the lending fee and the search cost. The activists usually demand more votes and are able to swing the company's voting results.

For a benchmark case, consider the market without activist shareholders and search cost. **Assume** that the supply curve is upward sloping in both markets.[11] In a market without any

[9] Note that here the term 'active' is not confused with active portfolio managing strategy; here it refers to actively engaging with firm governance.

[10] Although their portfolio strategy is passive, it is shown in Appel et al. (2016) that they are still concerned about firm governance.

[11] This assumption is reasonable for both markets. For equity lending market, Aggarwal et al. (2015) found that institutional investors tend to recall more shares when the equity lending fee is lower and vice versa, implying an upward sloping supply curve around voting record date. For shares trading market, although there isn't direct evidence about the supply curve, we can infer from the increase in the voting premium around voting record date that at least the supply curve isn't entirely flat.

frictions, we should expect institutional investors that demand votes to resort to both markets. If the price of one market goes up due to an exogenous decrease in supply in that market, then vote buyers could resort to the other market, increasing demand in the other market and pushing the price of both markets to be the same again. This substitution effect is shown in figure 1. Initially, the prices in both markets are the same at p. When there is an exogenous decrease in supply from s to s', the price of votes in the lending market goes up. Those who demand votes find cheaper options in the trading market, thus reducing demand in the lending market and increasing demand in the trading market. This would form a new equilibrium price p' higher than p in both markets. In the trading market, the equilibrium vote-buying quantity should be increasing.

With the mechanism introduced above, the price of votes in both markets should be the same. However, in the lending market, those who demand votes face search costs. This is shown in figure 2: demand in the lending market is lower because of the search cost, and thus price in the lending market should be lower than the trading market.

In the case where there exist activist shareholders who drive voting demand, the situation might be similar. Activist shareholders before important meeting usually demand a lot of voting shares. This makes votes highly demand driven in both markets, and hence, we expect to see significant substitution effect for activist shareholders, and especially, before activism events.[12]

The principal focus of this paper is the following hypotheses:

Hypothesis 0: In terms of voting in firm meetings, there exists full market segmentation between equity lending market and shares trading market, and thus demand for votes in the shares trading market wouldn't be affected by the change in supply in the equity lending market. In Duffie & Strulovici (2012), it's mentioned that two asset markets might be segmented caused by the lack of intermediaries to move investors' capital between the two markets. Given that the voting rights markets are dependent on the asset markets, there might be similar reasons that make it difficult for vote demanders to resort to both markets. It's also important to distinguish between the demand for votes and the economic interest. The demand for votes in the shares trading market is essentially the demand for voting shares. However, through hedging the economic position using options, the demand for votes could be separated from the

[12]Activist shareholders' objectives, as documented by Brav et al. (2008), include 5 broad categories: first, target undervalued firms; second, change firms' payout policy or capital structure; third, change firms' business strategies: operational, spin-off and mergers and acquisitions; fourth, sale of the target firm; last, target firm's governance.

demand for the whole shares. I address this using the empirical method section of the abnormal buy measure defined below.

Around the voting record date, with an exogenous decrease in supply of the voting shares in the equity lending market, we can derive the following hypotheses:

Hypothesis 1: Around the voting record date, institutional investors in general increase their voting shares holding when it is harder to borrow votes in the equity lending market. This hypothesis corresponds to the benchmark case with the presence of search cost. Ex-ante, the substitution effect still holds with search cost, balancing the equilibrium price relationship between the two markets.

Hypothesis 2: In the event where activist institutional investors drive voting demand, the substitution between the lending market and shares trading increases. As mentioned before, activist have the highest incentives to demand votes and usually demand votes in a large magnitude. If the vote buying activities in the two markets are mainly driven by the activist, we should expect to see stronger substitution effect.

Hypothesis 3: The voting premium is higher in the shares trading market, corresponding to the decreasing supply of votes in the equity lending market and increasing demand in the shares trading market.

First, we know that the prices of votes in the equity lending and shares trading markets are balanced with the rejection of **H0**. This could be seen in figure 1: an exogenous decrease in the supply of the lendable shares in the equity lending market would lead to the price of votes in both markets rising, assuming the supply curve in the shares trading market is upward-sloping and unaffected by the exogenous increase in the equity lending supply. In the presence of search cost, a similar effect should still exist, but with a different magnitude, as the search friction might lead to a nonlinear relationship between the drop in equilibrium quantity and the change in lendable supply. For example, in figure 2, with buyers also influenced by the searching frictions (perhaps it's not timely to obtain votes), then they would resort to the trading market, pushing the voting premium in the shares trading market to be higher. This helps in explaining the price difference in both markets, and also the comparative statistics: when the search cost is higher in the equity lending market, the voting premium tends to increase in the shares trading market.

5 Empirical Method

To test the above hypotheses, three things are expected to be shown in the data: First, there exists a substitution effect in terms of votes in the two markets. When there is an exogenous decrease in supply in the lending market, we should expect to see an increase in the equilibrium quantity of votes buying in the trading market. Second, conditional on the first being true, the substitution effect is stronger conditional on the case where activists drive the market. Third, the way voting premium in the shares trading market react to the lending market is consistent with the substitution effect. There is a negative relation between supply in the equity lending market and voting premium in the shares trading market.

Consider the benchmark case in figure 1 (in the case with constant search cost across time and firm, the analysis is the same). To test the cross-substitutional effect, in the main specification, we need to quantify the voting demand curve in the shares trading market. For the purpose of hypothesis testing, I separate the quantity from the price of a vote and test in two specifications about the effect of an exogenous change in supply in equity lending market, while include the observable characteristics of a voting demand function. This helps with a more precise estimation of the main effect.

$$Q^*_{trading,it} = -\beta_q S^*_{lending,it} + \chi_{it} + \epsilon_{it} \quad \text{(Substitution effect)}$$

$$V^*_{trading,it} = -\beta_v S^*_{lending,it} + \chi_{it} + \epsilon_{it} \quad \text{(Price effect)}$$

Here $V^*_{trading,it}$ represents the equilibrium voting price; $S^*_{lending,it}$ and $Q^*_{trading,it}$ represent the equilibrium equity lending supply and voting demand quantities. χ_{it} represents firm meeting characteristics to approximate the variation in the demand for votes across different firm i and time t, and ϵ_{it} is a well-behaved error term. The above hypotheses imply βs' values:

$$\textbf{H0} : \beta_d = 0;$$

$$\textbf{H1} : \beta_d > 0;$$

$$\textbf{H2} : \beta_d, activist > 0;$$

$$\textbf{H3} : \beta_p > 0.$$

H0 is mutually exclusive with **H1**, and thus through rejecting **H0** and checking whether the estimator is positive or negative, we could verify if **H1** is true; we can test **H2**, **H3** in the similar way, and **H2** implies that $\beta_{d,activist} > \beta_d$. To proxy for $S^*_{lending,it}$, I use the net supply of lendable stocks. Net lendable supply measures the ratio of stocks placed by company investors in the equity lending market and not yet loaned out. This measurement is found by Aggarwal et al. (2015) to be reducing around voting record date, and the magnitude of reduction increases with decreasing equity lending fees. Thus it is a good proxy for the equilibrium supply level in the equity lending market given a corresponding fee. To proxy for $Q^*_{trading,it}$, I use an institutional investor's abnormal buy measure:

$$AbnormalBuy = \frac{Holding_0 - Average(Holding_{-1}, ..., Holding_{-4})}{Average(Holding_{-1}, ..., Holding_{-4})}$$

This measure is similar to abnormal hedge fund holdings defined by Chen et al. (2019). In the main test for substitution effect, I use abnormal buy calculated based on voting shares holding. Abnormal buy measure is needed to reduce the effect caused by event-driven holding adjustment trends, thus better reflecting the funds' voting demand separated from economic interest.

Although Kalay et al. (2014) showed that firm votes bear value at any point in time, we expect the substitution effect is the strongest, and thus, most easily identifiable around the meeting record date. The demand for votes is expected to be highest around this date in both markets because the voting record date is when ownership of the votes is recorded to be exercised. Thus this paper's test is set up around firm meeting record date. See figure 3 for the timeline of the test relative to important firm dates. The event window is set around firm meeting record dates in which the proxies for equilibrium price and quantities are selected. For example, when testing the substitution effect using abnormal buy as the proxy, we choose $Holding_0$ that falls into the event window, and $Average(Holding_{-1}, ..., Holding_{-4})$ as the control.

There are several empirical challenges to identify the substitution effect and price effect using the proxies as mentioned above. First, the voting demand might influence the net lendable supply measure. This reverse causality would lead to instability in regression estimates. Second, the impact of short-selling demand is entangled with voting demand. This is problematic when short-

selling demand is positively correlated with shares buying activities in the shares trading market. As mentioned in the introduction section, this could happen during a short squeeze event. Such an event is not driven by the substitution effect of votes trading in the two markets, however could be misidentified as so. This paper uses an instrumental variable strategy to address the endogeneity problem of using the lendable supply to identify the substitution/price effects with heavy reference to Campello & Saffi (2015). Global IV could introduce exogenous variation in the whole sample for the substitution effect. Passive ownership could be used as a global instrumental variable for the lendable supply proxy. As passive ownership (portfolio strategy that pegs the weight on each stock to the mainstream market indices such as Russell 1000/2000) constitutes the majority of equity market lending, and passive holders are most willing to lend out their shares for extra profit, there exists a correlation between passive ownership and lendable supply (similar to the assumption about a fixed proportion of passive holding loaned out in the hypotheses section before). However, as shifts in passive ownership mainly depend on the underlying index weight change, it's not straightforward that these shifts would correlate with demand for votes and the short-selling demand.[13] As both the exclusion restriction and relevance hold, passive ownership should suffice as an IV for this test. [14]

Second, conditional on activists driving the voting demand, the substitution effect increases. This could be shown through the same identification strategy before. I identify hedge funds as activist shareholders.[15] Firm special meetings and meetings to approve mergers are typical events when activism occurs, and other types of meeting proposals about electing directors, CEO compensation, and shareholder payout policies are also related.

Third, I need to show that the voting premium is higher in the shares trading market than

[13]It is mentioned before that passive owners would retrieve shares loaned out when the voting demand is high, which drives the predictions of the alternative hypothesis. The exclusion restriction still holds if the major variation in total passive holding comes from index weight difference, as the index is considered as independent of the voting demand. The robustness section also provides supporting evidence of this. To avoid causing unnecessary confusion, in this paper, I refer to the instrument, total passive institutional holding, as total passive fund manager's holding, while the dependent variable as the institutional investor's abnormal buy.

[14]In the robustness section, I examined the relevance between total passive fund holding and voting demand, which is plausibly correlated. The regression yields no significant correlation between the two.

[15]Hedge funds are considered as having different incentives in terms of activist agendas compared to that of other institutional investors, less beholden to the management of the firms. They are shown to generate high announcement period abnormal returns. There is a line of literature that studies hedge fund activism: Brav et al. (2008) documented significant abnormal returns around activism announcement; Bebchuk et al. (2015) studied long term effect of hedge fund activism and found no reversals in the abnormal returns; Brav et al. (2015) found hedge fund activism improves firm productivity in the long term. In these papers, the activist hedge fund sample is constructed mainly from SEC form 13D. Investors that acquire more than 5% of public firm securities are mandated to report to this file.

the equity lending market. The voting premium is calculated following Kalay et al. (2014). First, construct a synthetic stock through rearranging the put-call parity for American options:

$$\hat{S}(T) = C - EEP^{div}_{call} - P + EEP^{div}_{put} + PV(K) + PV(Div)$$

$\hat{S}(T)$ denotes the synthetic stock constructed using the American put-call option pair that matures at time T. On the right-hand side, C, P denotes the American call and put options just mentioned. $PV(K)$ stands for the present value of the put-call option pair's strike price. $PV(Div)$ stands for the present value of dividends of the underlying stock that are expected to be distributed between the present and the option mature times. EEP stands for the early exercise premium of American options. Since American options can be exercised early, they carry a premium compared to European options with the equivalent underlying asset. This premium needs to be considered when the input in the put-call parity is the American option and hence in the value of the synthetic stock.

The intuition is that this synthetic stock only replicates the cash flows that the shareholders are entitled to, but does not give the holders the right to vote. Thus the value of the voting rights could be proxied by the difference between the actual stock price and the synthetic stock price. The standardized voting premium is the following:

$$Vote = (S - \hat{S}(T))/S$$

By choosing the option pair that matures at T, we calculate the normalised value of the voting rights in the next T days.[16]

6 Data

To construct the event window as shown in figure 3, firm meeting information is needed. I use ISS voting outcome to construct the sample, which provides Russell 3000 firms' meeting dates, proposals, and characteristics from 2002 to 2013. See table 1 for descriptive statistics. Around

[16] Kalay et al. (2014) mentioned that the value of voting rights is a non-decreasing function of the time to maturity of the option pairs. With a longer time to maturity, there is a higher chance of a voting event. The data section describes the sample selection method to avoid the standardization problem concerning time to maturity.

85% of the observations in the sample are annual meetings. Less than 10% are special meetings. Special meetings are happening outside of the regular annual meeting time and are usually held to decide on controversial proposals. Panel B of table 1 shows this: aside from adjourn meetings, around 40% of special meetings are 'approve merger agreements', and the rest ones that appear commonly in special meetings are 'increase authorized common stock' and 'amend omnibus stock plan'. The frequency of meetings is relatively higher in the latter half of the sample, and thus time effect should be taken into the regression consideration. In addition, panel B of table 1 shows the purpose of the meetings in the sample. There are, in general, three types of meeting agendas: decisions on shareholder/ executive compensations, decisions on board elections, and firm operational business. The variation of the meeting characteristics will be controlled for in the regressions.

After identifying the time frame of the sample, this paper first explores the substitution effect between votes borrowing and votes buying before firm meetings. Ideally, this requires data on institutional investor's daily (or even higher frequency) trading around meeting record date. The closest data meeting this demand in frequency is ANcerno, which provides daily institutional trading information. However, as this study is interested in exploring the substitution effect of individual fund, and also the difference between the effects of activist and other types of institutional investors, Thomson Reuter s34 institutional manager holding data is more suitable. TR s34 provides manager's voting and nonvoting shares holding information, which is more precise for the question of this study. It is also more suitable compared to TR s12 mutual fund holding data, as it is the fund manager that should be regarded as the information holder and decision maker, instead of the mutual fund, in the context of voting. The downside of this dataset is low frequency. It reports the end of quarter institutional manager holdings. In order to deal with the low-frequency data problem, I only choose meetings with record dates that are within ten trading days away from the end of quarter s34 report dates so that the observations more accurately reflect pre-meeting vote trading behavior, as shown in figure 3.

On the explanatory variable side, equity lending data from IHS Markit is used. It provides firm-level daily equity lending supply, demand, and fee information. See table 2 for summary statistics of the sample period equity lending data. The market is reasonably sized with on average 25% of the firm's total number of shares outstanding being available to be loaned out. This market starts

to thrive after 2006. When merging equity lending data with TR s34 holdings, around half of the s34 holding-meeting firm observations could be matched with equity lending data. This could be arising from firm identifier mismatching or because half of the firms are not on the equity lending market.

The second part of the paper focuses on the voting premium. Following Kalay et al. (2014), the synthetic stocks can be constructed using options with 90 days or less to expiration from the OptionMetrics database. It also provides the stock price and dividends of the underlying stocks and zero-coupon interest rates. We could calculate the early exercise premium in the following ways. First, we can calculate the corresponding theoretical American and European prices using the binomial tree method with the information on the stock prices, strike, interest rate, implied volatility, option time to maturity, and dividend time and amount. Then the difference between the two gives the early exercise premium of the American options. I set the steps of the binomial trees to be 1000, and this method doesn't consider the voting event's impact on the early exercise.

Following Kalay et al. (2014), I kept close-to-the-money, least time to maturity, and the highest volume option pair. The reasons for this sample selection method are threefold. First, although the early exercise premium can be proxied using the binomial tree method introduced before, the value of the early exercise due to an unexpected voting event is not considered. Thus by choosing option pairs that have the least time to maturity, we minimize the part of early exercise premia that couldn't be calculated. Second, the voting premium varies with the time to maturity of the option pair, and thus there is a standardization problem. To avoid this issue, I directly choose the synthetic stock within the event window around the voting record date. By doing this, we know that the value difference between the actual stock and synthetic stock comes from the voting record date demand for votes and is thus less influenced by the option time to maturity. By choosing the least time to maturity, we also avoid the probability of another voting event falling into the time span. Third, the option pair close to the money and with the highest volume could avoid stale prices and short selling costs.

Table 3 shows the descriptive statistics of the voting premium in the shares trading market. Panel A gives an overview of the sample of voting premiums around the voting record date. The sample option pairs' time to maturity ranges from 2 to 60 days, with an average of 31 days. The average voting premium is 0.10% of firm value in this sample. The value of voting rights

in the shares trading market is significantly positive in the sample. Then I look at the voting premium across time. Panel B shows the subsample summary statistics of the voting premium across different years. There exists variation of voting premium from 2004 to 2013. It increases from 2006 to 2009, and after which it starts to decrease. It seems that the voting premium is higher during the period of the financial crisis. As we expect that more contentious meetings have higher voting demand, I examine the voting premium across different meeting and proposal types, the result of which is shown in panel C. There are higher voting premiums around special meetings, but not so for other types.

7 Test Results on Substitution Effect

This section presents the empirical result of testing for the substitution effect using passive ownership as the global IV. Firstly, I examine **H1** for the substitution effect of all institutional investors. Then I examine the difference in the significance of the substitution effect across different types of meetings and investors.

7.1 Substitution effect: global instrumental variable estimation

To test for **H1**, we need to identify the substitution effect in corporate votes in the equity lending and shares trading markets. This requires examining the effect of lendable supply on institutional investors' abnormal buy. As mentioned in the empirical methods section, lendable supply is affected by the demand for votes (which is rising before firm meetings) and shorting demand. To deal with this endogeneity issue, the main identification strategy uses the firm's percentage of passive holding as an instrumental variable for lendable supply. This global IV introduces measurable exogenous variation to the lendable supply that is considered to be not related to the demand for votes and shorting demand. Passive owners are fund managers that follow a passive strategy, adjusting their portfolio weights according to major market indices such as Russell 1000 / 2000.[17] Because the indices' weights are unlikely to affect demand for votes directly, the exclusion restriction is satisfied; in the meantime, as passive owners are the leading lenders in the equity lending market, the inclusion restriction is also satisfied. Figure 4 gives such an example: it shows

[17] Russell 3000 index contains the 3000 largest US companies by market capitalization. Out of it, the top 1000 composes Russell 1000 index, and the bottom 2000 composes Russell 2000 index.

firms' lendable supply and voting shares abnormal buy around the Russell 1000 / 2000 index threshold. After ranking the firms by CRSP market capitalization, we see from the top panel of 4 that the probability of falling into Russell 2000 starts to increase around the threshold.[18] The middle panel shows that there is an observable increase in lendable supply around the threshold. This is because the firm's passive holding tends to increase when included in the Russell 2000. As stated in Appel et al. (2016), passive mutual fund holding of stocks at the top of Russell 2000 is 66% higher than that of stocks at the bottom of Russell 1000. The lower panel shows that when lendable supply is higher because of exogenous reasons such as the firm's higher passive holding, institutional abnormal buy tends to be lower.

For the testing purpose of this subsection, the following specification adapted from the baseline models introduced in the empirical method section is applied. The global IV, voting demand controls, and fixed effects are added in this specification.

I use Bushee & Noe (2000)'s 13F fund manager investor classification to identify passive fund managers. According to Bushee & Noe (2000), there are three groups of institutions: 'transient' with high levels of portfolio turnover and diversification; 'dedicated' with large stakes in firms and low portfolio turnover; 'quasi-indexers' with low portfolio turnover and highly diversified holdings. The 'quasi-indexers' ownership are regarded as the closest proxy of passive ownership, and thus a firm's passive ownership is calculated as the sum of the 'quasi-indexers' ownership standardized by total number of shares outstanding.

The 2SLS first-stage regression is the following:

$$Lendable\ Supply_{it-14} = \delta Passive_{i,t} + \lambda' \boldsymbol{X_{i,t}} + \mu_t + \kappa_j + \xi_{itj} \tag{1}$$

Where

$$Lendable\ Supply_{it} = \frac{Lendable\ Quantity_{it}}{Shrout_{it}} \tag{2}$$

And

$$Passive_{it} = \frac{\Sigma Passive\ Ownership_{ijt}}{Shrout_{it}} \tag{3}$$

In the above measurements, $Shrout_{it}$ is the total number of shares outstanding of firm i at

[18] This jump is not a sharp one on the 1000 / 2000 threshold. This is because FTSE Russell does not rank firms based entirely on CRSP market capitalization, and there are some unobservable adjustments.

time t. $Lendable\ Supply_{it-14}$ measures the firm-level borrowing constraint 14 days before the record date. It is calculated through total lendable quantity standardized by the same firm's total number of shares outstanding. It is shown in Aggarwal et al. (2015) that in the equity lending market, the time when the supply of lendable shares starts to decrease, lending utilization starts to increase, and the lending fee starts to increase is around 14 dates before the voting record dates. $Passive_{it}$ serves as an instrument for $Lendable\ Supply_{it-14}$. Here I'm using $Passive_{i,t}$ instead of $Passive_{i,t-14}$ because the passive ownership is calculated using 13F institutional holding data, which is quarterly and can only be matched with t and not $t-14$. The second stage is:

$$Q_{ijt} = max(\beta \widehat{Lendable\ Supply}_{it-14} + \gamma' \boldsymbol{X_{i,t}} + \theta_t + \phi_j + \epsilon_{ijt}, 0) \tag{4}$$

The dependant variable Q_{ijt} represents fund manager j's demand for votes, and is measured by institutional investor j's voting shares abnormal buy around firm i's meeting record date t. $\widehat{Lendable\ Supply}_{it-14}$ is the predicted value of $Lendable\ Supply$ based on the first stage estimation.[19] $\boldsymbol{X_{i,t}}$ approximates the demand for votes. The most reasonable candidates are the factors that account for more contentious voting events. I choose indicators for special meetings ($Special_{it}$), meetings with a close voting outcome($Close_{it}$), shareholder-sponsored meetings($Shareholder_{it}$), and proposals on say-on-pay($Say\ on\ pay_{it}$) and mergers and acquisitions($Merger_{it}$). θ_t represents time-fixed effects. As there is growth in fund ownership and equity lending over time, in this specification, I use year-quarter fixed effects to control for general variation in time. ϕ_j represents manager fixed effects. By controlling for manager fixed effect, we can see, within manager, the effect of exogenous variation in lendable supply on equilibrium voting demand.

The second stage follows a nonlinear structure as in Tobin (1958). Although the linear 2SLS component within the max operator would, in some cases, yield negative results, we know that the demand for votes would never be negative. Thus the max operator adds to the implication of **H1** that the exogenous change will affect vote-buying only when the predicted value is above 0.[20] Given this estimation structure, let us consider the dependant variable measured by $AbnormalBuy$. We

[19] Although in the second stage, the higher dimensional fund level dependant variable is regressed on the lower dimensional instrumented explainatary variable, the rank condition isn't violated, as in the first stage, the $Lendable\ Supply_{it-14}$ and $Passive_{i,t}$ are of the same dimension.

[20] A strict estimation of this model requires non-parametric analysis. However, to reject the null that $\beta = 0$, linear 2SLS estimation would be sufficient. Suppose that we estimate the model using linear 2SLS while there is influence through the observations centering around 0 ($Q_{itj} = 0$ is equivalent to $\beta = 0$ in the linear 2SLS estimation). If the result still reject $\beta = 0$, we would be statistically confident that this result holds true.

know that $AbnormalBuy$ actually reflects two things: the voting demand and the adjustment in the economic position. Suppose we observe $AbnormalBuy < 0$, we would know that the fund manager sells and would not be interested in voting. This observation would fall into the region of the model where $Q_{itj} = 0$. If $AbnormalBuy > 0$, it could be that $Q_{itj} = 0$ or $Q_{itj} = \beta \widehat{Lendable\ Supply}_{it-14} + \gamma' \boldsymbol{X_{i,t}} + \theta_t + \phi_j + \epsilon_{ijt}$. Thus for testing **H1**, we could consider only the case where $AbnormalBuy > 0$.[21]

The result is shown in table 4. The 2SLS first stage result, as shown in panel A, indicates that passive ownership provides exogenous variation to the amount of lendable equity supply. In all subsamples and columns, the effects of $Passive_{it}$ on $Lendable\ Supply_{it-14}$ are highly significant, and 10% increase in a firm's passive ownership leads to a roughly 5% increase ($= 0.5 \times 10\%$) in lendable equity supply showing that around 50% of passive holder's shares are loaned out. As $Passive_{it}$ and $Lendable\ Supply_{it-14}$ are constructed using the same denominator, this means that half of the increase in passive holding is lent out. As the F statistics of the first stage regressions are all very high (above 10), it's unlikely that there are any weak instrument problems.

The second stage causally tests the substitution effect of the exogenous change in lendable supply on institutional investor vote buy. When $Q_{itj} > 0$, i.e., in the subsample where there exists vote-buying, the instrumented value of lendable supply has a significant negative impact on institutional investors' vote buy. Column (1) shows that a 10% exogenous decrease in the lendable supply is associated with an average 0.17% increase ($= 0.017 \times 10\%$) in individual institutional manager's demand for votes in the shares trading market. The effect is very similar when the set of $\boldsymbol{X_{i,t}}$ is included in the regression, as reported in column (2). After accounting for the variation in voting demand, the magnitude of substitution effect slightly decreases in magnitude to 0.12% ($= 0.012 \times 10\%$), but still significant. Suppose an institutional investor holds 5% of a firm's shares, this effect means with increasing search cost in the equity lending market (10% as a reasonable range), abnormal buy increases by 5 basis points. The significance shows that on average there is substitution effect, however, the substitution is not very sensitive to the gross supply of shares in the equity lending market. We can also see that the indicator for special meetings and proposals for 'advice on say on pay frequency' and 'approve merger agreement' significantly account for the

[21] The purpose of applying Tobit model is that, when observations are centering around 0, we need to consider more about the nonlinear structure. Thus through keeping only observations $AbnormalBuy > 0$, we are selecting the subsample that are less centering around 0 and more around the linear component. This method makes the linear 2SLS estimation to be more precise.

voting demand out of the set of controls. The coefficients on these estimates are all significantly positive, showing that the voting demand increases when such types of meetings and proposals happen. This is consistent with the prediction of the original model. In the whole sample, the effect loses its significance, possibly due to the influence of the selling observations.

This global IV estimation rejects **H0** and is consistent with the prediction of **H1**; there is a substitution effect between the equity lending market and shares trading market in terms of demand for votes. When there is an exogenous increase in supply in the equity lending market, there is a decrease in institutional investors' voting demand in the shares trading market.

The idea of using firms' total percentage of passive holding as global IV is that, this measurement is unrelated to demand for votes in the shares trading market (exclusion restriction), but accounts for variation in supply in the equity lending market (inclusion restriction). However, when using institutional manager's $AbnormalBuy$ as the measurement of demand for votes, one may question that there is reverse causality that $AbnormalBuy$ might account for firms' total percentage of passive holding. There are two reasons that it might not be the case. First, if the reverse causality holds, we would see a strictly positive relationship between the two measurements: higher $AbnormalBuy$ from the control to event window would lead to higher event window firm's passive holding. However, it is not the case in the direction of the substitution effect that we are trying to identify. Second, a robustness check on this global IV in the next subsection also reveals that the exclusion restriction holds in the sample around the voting record date.

7.2 Robustness on the global instrumental variable

The global IV identification strategies shown above are subjected to criticisms such as the IV is not exogenous, and the IV and dependant variable could relate mechanically. Suppose it is true that the substitution effect identified above arises from a mechanical reason: the abnormal buy measure is constructed using institutional ownership and the passive holding measure is also constructed using institutional ownership, and thus the two variables might correlate automatically because of algorithm trading. In that case, it could happen at any point in time that the higher $Passive_{i,t}$, the lower $AbnormalBuy_{itj}$. This section tries to rule out such possibilities by showing that there is not a similar relationship between the dependant variable and IV when regressing the abnormal buy on IV two quarters after the event window.

The position of the robustness check in the timeline is shown in figure 3. Since annual meetings usually happen once per year, choosing a robustness sample to be two quarters after the event window avoids the possibility of falling into the event window of another meeting. Panel A of figure 4 shows that, within the robustness check window, around the Russell 1000/2000 threshold, there is not an obvious pattern of institutional voting shares abnormal buy change arising from the increase in passive holding through falling into the Russell 2000 index.

By directly regressing the institutional voting shares abnormal buy on firm's percentage passive holding during a regular time away from the meeting, we could test if there is a direct mechanical relationship between the two variables. The robustness check specification is the following:

$$Q_{itj} = max(\alpha + \beta Passive_{i,t} + \gamma' \boldsymbol{X_{i,t}} + \theta_t + \phi_j + \epsilon_{itj}, 0) \tag{5}$$

Where t is two quarters after the event window as shown in figure 3. The result is shown in panel B of table 5. We can see that there is no significant negative relationship between the institutional abnormal buy and passive holding IV in the subsample where abnormal buy is greater than 0, different from the substitution effect we identified from table 4. In the case of the whole sample, there is a significant positive relationship which is quite possibly mechanical. Comparing this to the insignificant whole sample results in table 4, we can see that it might be that the substitution effect and the mechanical effect cancel each other out. Because of this, we could be more confident to say that the substitution effect identified before comes from the influence of $Passive_{it}$ through $Lendable\ Supply_{it-14}$ on Q_{itj}, instead of a direct mechanical influence of $Passive_{it}$ on Q_{itj}.

7.3 Subsamples: substitution effect across different events and investors

The above results provide evidence for **H1**: in general, there exists a substitution effect between the equity lending market and shares trading market for institutional investors. However, since there are different types of institutional investors with varying degrees of incentives to vote, also before different types of meetings and proposals, the demand for votes in the two markets might differ, it's worth exploring the magnitude of substitution effect in the subsamples of investors, meeting, and proposal types.

Activist investors are the most prominent voters. I first provide some preliminary evidence of

pre-meeting activist versus other institutional investors' abnormal buy evidence in the time series and cross-section. Figure 4 plots voting shares abnormal buy of institutional investors of different points in time around the meeting record date. When looking at all institutional investors' voting shares abnormal buy around firm meetings, there are moderate ups around -4,0,4 and 8, possibly mainly due to rising demand for vote before annual meetings. When restricting the sample to hedge funds around special meetings, hedge fund abnormal buy jumps from 0.013 to 0.029 when it comes to the quarter-end that is 10 trading days away from the record date (which is regarded as falling into the event window), showing that activist institutional investors do tend to buy more before firm special meetings. Moreover, this abnormal buying activity tends to decrease to normal levels gradually after the meeting, again consistent with the perception that there is an optimal level of voting shares holding. [22]

$$Q_{itj} = hf_{itj} + x_{it} + hf_{itj} \cdot x_{it} + \theta_t + \phi_j + \epsilon_{itj} \tag{6}$$

For the purpose of identifying activist investors, cross-sectional evidence of hedge fund voting shares abnormal buy is tested in the specification (6). Q_{itj}, same as before, denotes institutional manager j's abnormal buy for firm i at meeting time t. hf_{itj} is a dummy variable that equals one if the institutional manager is a hedge fund manager. x_{it} is a dummy variable indicating if the meeting is a certain type (special, a close meeting result, shareholder initiated, advice on say on pay, approve mergers). These dummy controls correspond to the previous regression's proxies for voting demand. This regression solely examines the votes buying in the shares trading market to provide evidence that hedge funds trade differently from other investors and are more active in terms of vote purchasing. The interaction term highlights the difference brought about by hedge funds' for the specific type of meeting.

Table 6 shows the result of regressing all institutional investors' voting shares abnormal buy around the meeting record date on the above-mentioned set of dummy variables and interaction terms. Compared to average institutional investors (the net buy level of which is captured by the estimation on the controls and fixed effects), hedge funds buy more voting shares significantly, which is reflected in the positive coefficient estimation of the dummy for the hedge fund. This term

[22] In Appendix figure 6 I show that the result is robust to abnormal buy measures with different lengths of the control group.

also has a significant positive estimation when including the interaction term for the hedge fund and special meeting dummies, as shown in column (1). When including interaction terms of other dummies, we find that, similarly, hedge funds tend to buy more when the voting result is close to the voting threshold and when the meeting proposal is 'approve merger agreement'. This result is plausible because a close vote shows a more contentious meeting, before which the vote buyers might need more votes. For shareholder-initiated proposals, hedge funds do not appear to buy more significantly. When the meeting proposal is 'advisory vote on say on pay frequency', hedge fund appears to be buying less than the average institutional investors. This might be because other types of institutional investors are more active in terms of this proposal.

Knowing that hedge funds tend to be more actively purchasing shares in the shares trading market, now let's examine the significance of substitution effect in the subsamples, which also serves as tests for **H2**. The results are shown in table 7. The top and middle panel tests the substitution effect between the two markets of different meeting proposals. The top panel focuses on proposals that occur most frequently at annual meetings, while the middle panel focuses on proposals that frequently take place at special meetings. We can see that the significance of substitution varies across the proposals. It is significant before 'advisory vote on say on pay frequency'. Through this proposal, shareholders could vote on current and future executive compensation and have a voice on firm governance. Thus it's intuitive that the voting demand, and hence, the substitution effect is significant for this proposal. For proposals that are most frequent in special meetings, the substitution effect varies too. It is prominent before adjourn meetings, but not other proposals. It is noteworthy that although hedge funds buy a great deal of voting stock in the shares trading market before 'approve merger agreements', we did not see any magnitude of the substitution before meetings about this proposal. Similarly, looking at the bottom column, although hedge funds are on average buying a lot before special meetings, we do not observe substitution effect before special meetings, which has 40% of the proposals to be 'approve merger agreements'. Substitution effect across investors' types is also examined. There is weak substitution in hedge funds pre-meeting votes trading in general. It seems to be driven by 'approve merger agreement', because when restricting the sample to be without 'approve merger agreement', the weak substitution effect disappears (There is no direct test for hedge funds around 'approve merger agreement' because of the limited sample size).

This result above is not fully consistent with **H2** ex-post. We do observe some degree of the substitution effect for the activist investors, but the effect is not greater than the general level of the substitution effect. To put it mathematically, we do find $\beta_{d,activist} > 0$ holds true, but there is no evidence that $\beta_{d,activist} > \beta_d$. Especially in the event where activist drives the voting demand, for example, 'approve merger agreement', we observe no substitution effect. The possible explanations are as follows. First, activist shareholders usually demand many voting shares, which would generate a short-term price impact on the shares trading market around the voting record date. It's up to the activist to determine if this result is in favor or not. In the case of 'approve merger agreement', a hedge fund might need the stock price to go up for other shareholders to be more optimistic about the merger deal. In other cases, it might not be so. Second, activist shareholders are more certain about the voting result. If the result is supposed to generate short-term price impact after meeting, then shares trading is more in the interest of activist shareholders (going back to the case of Levit et al. (2021)). If the result is about other things (for example changing directors, or approving shareholder-initiated proposals), borrowing votes through the equity lending market might be easier. Because of the above two reasons, activist shareholders might be more targeted and less sensitive to the given price of votes. Hence, there is less substitution effect when activist shareholders drive the voting demand.

7.4 Does substitution effect also appear on non voting shares? A further evidence

In addition to the robustness check before, another way to show that previous tests for the substitution effect are, in fact, trading for votes is to perform similar global IV estimation on institutional investors' non-voting share holdings. If **H1** holds true, we would expect that the substitution effect only occurs on the sample constructed solely on voting shares holding. Thus there wouldn't be similar effects on the sample constructed on firms' non-voting shares holding. As the Thomson Reuters S13 dataset provides separate information on institutional managers' voting and non-voting shares holding, this test can be implemented in the same way as before, except for using non-voting shares holding to calculate abnormal buy.

Through testing for specification (1) and (4), changing Y_{itj} to $AbnormalBuy^{non-voting}$, the result is shown in table 8. In the subsample where $Y_{itj} > 0$, we observe no significant substitution

effect with and without controls for voting demand. It is also noteworthy that in table 4, the significant effect of some controls ($special_{it}$, $say\ on\ pay_{it}$, and $merger_{it}$) on voting shares abnormal buy also loses significance. Instead, $Shareholder_{it}$ gains significance in the sample of non-voting shares abnormal buy. There is a significant positive effect in the whole sample, possibly due to mechanical reasons. Thus this result, alongside the robustness check before, confirms that the substitution effect identified before arises from trading for voting purposes.

8 Test Results on Voting Premium

This section is devoted to testing **H3**. The first subsection shows that the price effect holds. When there is an exogenous increase in supply in the equity lending market, there should be a decrease in the voting premium in the shares trading market. This further confirms the link between the two markets.

8.1 Price effect: global instrumental variables estimation

To show that the price effect holds, similar with identifying the substitution effect, there might be problems that when the voting demand isn't captured by the controls entirely, the voting premium in the shares trading market will be negatively correlated with the change in supply in the equity lending market because of the rising voting demand. The same firm's total percentage passive holding instrumental variable strategy could introduce exogenous variation in the equity lending supply. As the voting premium is not directly related to the firm's total passive holding, the exclusion restriction holds. The relevance follows the same argument as the previous section.

The regression framework, similar with before, is a 2SLS estimation with the inclusion of a instrumental variable $Passive_{it}$ that calculate firm i's end of quarter total percentage passive TR s34 fund holding in the first stage to instrument for $Lendable\ Supply_{it-14}$.

Thus the 2SLS first-stage regression follows the similar structure as before:

$$Lendable\ Supply_{it-14} = \delta Passive_{i,t} + \lambda' \boldsymbol{X_{i,t}} + \mu_t + \xi_{it} \tag{7}$$

The slight difference is that the sample is at firm level, since the voting premium is a firm level measure. For the second stage, the dependant variable is changed to the voting premium measure

to identify the price effect:

$$V_{it} = \beta \widehat{Lendable\ Supply}_{it-14} + \gamma' \boldsymbol{X_{i,t}} + \theta_t + \epsilon_{it} \tag{8}$$

Where V_{it} stands for the voting premium measure $Vote$ in the shares trading market introduced in the empirical section before. β measures the influence of exogenous change in *Lendable Supply* in the equity lending market on the voting premium in the shares trading market.

The result is shown in table 9. Panel A shows that on the firm level, $Passive_{it}$ is highly correlated with $\widehat{Lendable\ Supply}_{it-14}$, making it a valid instrumental variable in this regression framework. Panel B shows a significant price effect in the second stage: a one percent increase in the lendable supply leads to around a significant 67 basis points decrease in the level of voting premium. This relation reflects the hypothesised 'law of one price'. The result is robust to different types of controls for the voting demand. After controlling for all proxies of voting demand, the price effect reduced slightly but remained at the same level of significance.

This global IV estimation on the price effect rejects **H0** and is consistent with **H3**. When there is an exogenous increase in supply in the equity lending market, there is a significant decrease in the price of votes in the shares trading market. In this section, the exclusion restriction holds naturally, since there is no direct channel between the voting premium measurement and firm's total passive fund manager holdings.

8.2 Subsamples: price effect across different events and investors

The above results confirm evidence for **H3**. Parallel to section 7.3, since before different types of meetings and proposals, the demand for votes in the two markets might differ, we should expect different degrees of significance of price effect in the subsamples of meeting and proposal types. I examine this using the same regression framework as in (7) and (8).

The results are shown in table 10. The proposal types included in the table are parallel to that of table 7, except for replacing column (9) with "qualified employee stock purchase plan" due to a lack of observations for 'amend articles'. Again, the significance varies across the proposals. In general, the price effect appears most significantly in annual meetings and annual meetings' proposals, but not in special meetings, parallel to the result in table 7. Across proposals, the price

effect isn't significant before 'advisory vote on say on pay frequency', which is not consistent with the result in table 7. It isn't significant before 'approve merger agreements', which is consistent with the result in table 7: although hedge funds buy a great deal before special meetings, we don't observe the price effect before special meetings. The interpretation of this result is similar to section 7.3.

9 Conclusion

Shareholders' voting rights carry value. In the past empirical studies, different measurements of the value of voting rights yield different results. In the theoretical paper of Levit et al. (2021), the dual-class shares premium (voting premium calculated through the difference of prices between the voting shares and non-voting shares) is explained as the present value of the rational expectation of the change carried by the voting power. However, there is still part of the voting premium unexplained: the price of votes that can be separated from the economic stake of the shares. This part of votes can be replicated either through borrowing shares in the equity lending market or buying shares in the shares trading market along with options hedging. Considering the similarity between the roles of the two markets in terms of trading voting rights, I answer the following question in this paper: in terms of voting rights before shareholder meetings, is it true the equity lending market and shares trading market are substituting each other? Do people resort to both markets as if they are indifferent between votes in the two markets? To answer this question, solely examining correlation doesn't suffice, as the price and quantities of votes in both markets are endogenous to the overall voting demand and shorting demand in the equity lending market. Thus causal inference exercise is needed.

This paper answers the above question by examining the impact of the equity lending market's lendable supply (of shares, and hence, of votes) on the share trading market's price and quantities of votes. To deal with the endogeneity issues, I use the firm's percentage of total fund manager passive holding as an instrumental variable to introduce exogenous variation to the explanatory variable: lendable supply. I measure the demand for voting shares using institutional investors' abnormal buy in the shares trading market. For the first part of the paper, I find that, in general, institutional investors' voting share buying activity is inversely related to an exogenous change in

firm-level equity lendable supply. This evidence is consistent with the substitution effect in terms of votes between the two markets, and thus, the price of voting rights in the two markets should be the same. For activist investors that demand votes in a large magnitude, and especially before special meetings and approve merger agreements, such an inverse relationship isn't significant. This might be arising from activists' targeted votes purchasing behavior.

For the second part of the paper, I study the effect of an exogenous change in equity lendable supply on the voting premium in the shares trading market. This part provides a more direct evidence on votes trading in the shares trading market, as the voting premium by Kalay et al. (2014) directly measures the value of votes whose economic position associated has already been hedged by options. Consistent with the first part, I also find the voting premium in the shares trading market to be inversely related to an exogenous change in the supply in the equity lending market. Again, before special meetings and approve merger agreements, such an inverse relationship isn't significant.

To further confirm the effectiveness of the instrumental variable strategy, I provide two pieces of evidence. First, when performing similar tests in an out-of-sample window which is not around the voting record date, I don't find a significant negative relationship between the instrumented lendable supply and institutional abnormal buy. So it's not likely that the relationship is mechanical. Second, I also don't find a significant negative relationship when performing similar tests while using a non-voting share abnormal buy measure. This evidence is consistent with the alternative hypothesis that people resort to both markets to demand votes.

This paper provides evidence for the fact that people resort to both markets when it comes to terms with demanding votes before firm meetings. This makes one step in understanding the relationship between the equity lending market and the shares trading market as markets for corporate control. For further studies on this topic, several questions need to be addressed. As the measurements of the value of votes between two markets are very different, on what basis could the values be comparable, and is there actually a significant difference? If there is, what are the potential frictions, other than the economic position that is causing the difference? Several potential frictions are transaction costs, the difference in market structures, and the difference in the length of votes holding terms. These are some avenues to be explored in further empirical studies.

Aside from the principal question, there are also some other questions that arise from this study. First, is the supply of voting rights in the shares trading market related to the supply of the voting rights in the equity lending market? If it is so, then the equilibrium might be different from the alternative hypotheses of this paper. Second, activist investors tend to focus on one market. Potential explanations are back to the case of Levit et al. (2021), or market segmentation (difficult to move capital between the two markets), or some strategic reasons like price impact. How do those motives vary across different proposals? And how does that affect overall shareholder welfare and corporate governance efficiency? These are some questions that demand additional modelling effort.

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Figures and Tables

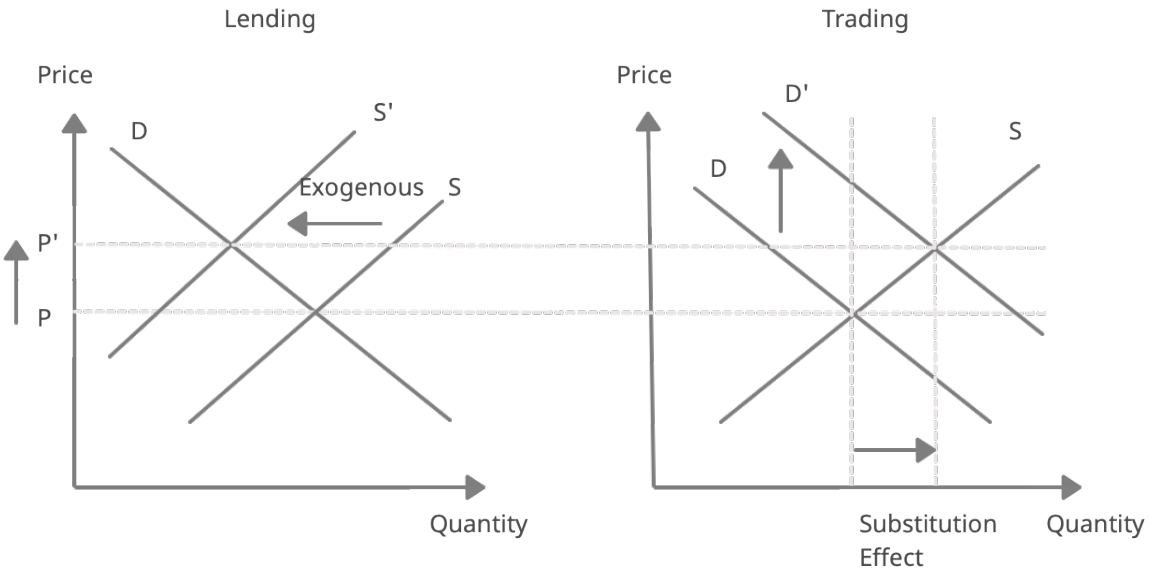


Figure 1: Benchmark case

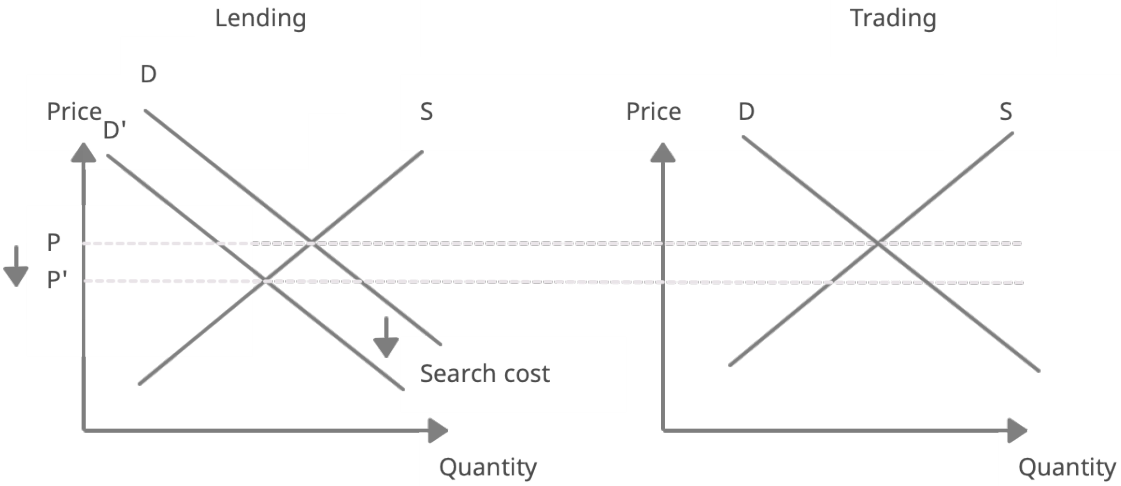


Figure 2: Case with search cost

Table 1: **Number of meetings by types and agenda**

Table 1 provides a brief summary of the number of meetings from the ISS voting results dataset from November 14 2002 to November 22 2013. Panel A reports the number of meetings in each year and each type. There are six types of meetings: Annual meeting; Annual/Special; Special; P C (Proxy Contest); Bondholder; Court and W C(Written Consent). Panel B reports the number of meetings by different meeting agendas. Note that only agendas that happen with high frequency (>500 observations in the sample) are reported. Besides total number of meetings in each agenda, Panel B also reports the number of meetings in type (annual, special, proxy contest) with respect to the corresponding agenda.

Panel A. Meeting Types by Year								
Year	No. Meetings	Annual	An/Sp	Special	P C	Bondholder	Court	W C
2002	110	94	0	16	0	0	0	0
2003	2618	2433	0	142	34	0	0	9
2004	3031	2720	0	253	54	0	0	4
2005	2864	2595	0	213	56	0	0	0
2006	3010	2648	0	291	71	0	0	0
2007	3135	2549	0	464	117	0	5	0
2008	4060	3285	2	472	295	0	6	0
2009	4500	3675	11	410	387	0	12	5
2010	4345	3742	13	375	200	0	15	0
2011	9046	8302	30	412	300	0	0	2
2012	5850	5176	29	363	280	0	1	1
2013	5939	5040	36	482	369	4	0	8
total	48508	42259	121	3893	2163	4	39	29

Panel B. Meeting Agenda frequency by Types (Agenda that has observations>500)				
Agenda	total	Annual	Special	P C
Adjourn Meeting	1256	214	996	32
Advisory Vote on Say on Pay Frequency	3176	3144	2	22
Advisory on Named Executive Officers' Compensation	8206	8090	6	90
Amend Articles/Bylaws/Charter-Non-Routine	623	494	89	32
Amend Omnibus Stock Plan	5412	5266	109	29
Amend Qualified Employee Stock Purchase Plan	1183	1145	16	20
Amend Stock Option Plan	603	583	16	0
Approve Merger Agreement	1006	103	887	14
Approve Omnibus Stock Plan	3336	3209	95	29
Approve Qualified Employee Stock Purchase Plan	603	596	5	2
Approve/Amend Executive Incentive Bonus Plan	2253	2227	13	10
Declassify the Board of Directors	1166	1119	13	10
Elect Director (Management)	594	2	0	592
Elect Directors (Opposition Slate)	596	1	0	595
Elect Subsidiary Director	2079	2079	0	0
Increase Authorized Common Stock	1582	1314	252	12
Other Business	915	840	68	6

Table 2: **Descriptive statistics of equity lending market**

Panel A shows the descriptive statistics of the equity lending market. Lendable supply is calculated using specification (2). Fee is in basis points and is calculated using value weighted average fee for all new trades on the most recent business day. Utilisation is the ratio of shares on loan divided by total supply of shares (shares on loan and lendable shares). Panel B shows the number of matched and not matched number of firm meeting observations (matching with equity lending data). Blue represents not matched and orange represents matched.

	Panel A: Equity Lending Characteristics					
	Obs	Mean	Median	Std Dev	10th Per.	90th Per.
Lendable Supply	633744	0.2508	0.2556	0.0981	0.1137	0.3693
Fee	616460	55.21	10.14	307.9	5	45.51
Utilization	633744	19.58	12.39	19.94	1.65	49.23

Panel B: Matched versus Nonmatched Number

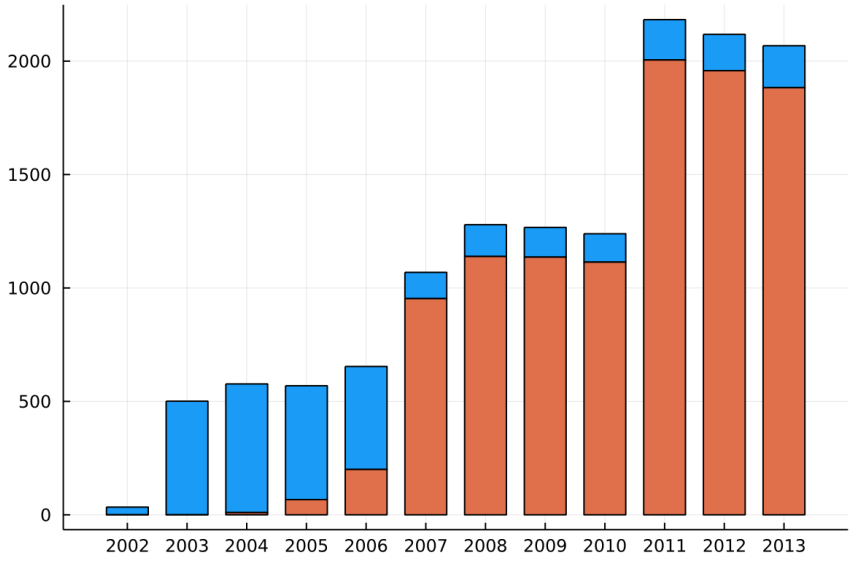


Table 3: **Descriptive statistics of the voting premium**

This table presents summary statistics of firms' voting premium around the voting record date. The method to obtain this premium is shown in section 5. Panel A shows the voting premium of the whole sample of firms around the voting record date appeared in ISS voting results from 2004 to 2013. Panel B shows similar results separated by years. Panel C summarizes the voting premium of firms across different types of meetings. "Special" represents special meetings; "Close" represents meetings with voting result within 5% interval of total votes casted around the voting requirement; "Shareholder" represents proposals that are initiated by shareholders; "Say on Pay" represents meeting proposals that are advice on say on pay. "Merger" represents meeting proposals that are approve merger agreements. In the whole sample, the voting premium is winsorized at 1% level. CI denotes confidence interval of the mean.

	Panel A: The Average Firm, 2003 to 2014					
	N	Mean	Lower CI(5%)	Upper CI(95%)	Min	Max
	2,284	0.10%	0.08%	0.12%	-1.62%	2.87%
	Panel B: Value of Voting Rights across Years					
Year	N	Mean	Lower CI(5%)	Upper CI(95%)	Min	Max
2004	5	0.04%	-0.19%	0.27%	-0.19%	0.39%
2005	16	0.02%	-0.13%	0.17%	-0.50%	1.02%
2006	50	0.05%	-0.04%	0.14%	-1.62%	1.68%
2007	224	0.12%	0.09%	0.15%	-0.97%	1.52%
2008	248	0.23%	0.15%	0.31%	-1.62%	2.87%
2009	217	0.26%	0.18%	0.34%	-1.62%	2.87%
2010	258	0.10%	0.04%	0.16%	-1.38%	2.87%
2011	456	0.05%	0.00%	0.10%	-1.62%	2.87%
2012	412	0.03%	-0.01%	0.07%	-1.62%	2.87%
2013	398	0.08%	0.04%	0.12%	-1.62%	2.87%
	Panel C: Value of Voting Rights across Meeting Types					
Types	N	Mean	Lower CI(5%)	Upper CI(95%)	Min	Max
Special	108	0.15%	0.04%	0.26%	-1.30%	2.87%
Close	46	0.03%	-0.11%	0.17%	-1.33%	2.87%
Shareholder	88	0.11%	0.01%	0.21%	-1.07%	1.96%
Say on Pay	206	0.09%	0.01%	0.17%	-1.62%	2.87%
Merger	32	0.03%	-0.16%	0.22%	-1.30%	2.87%

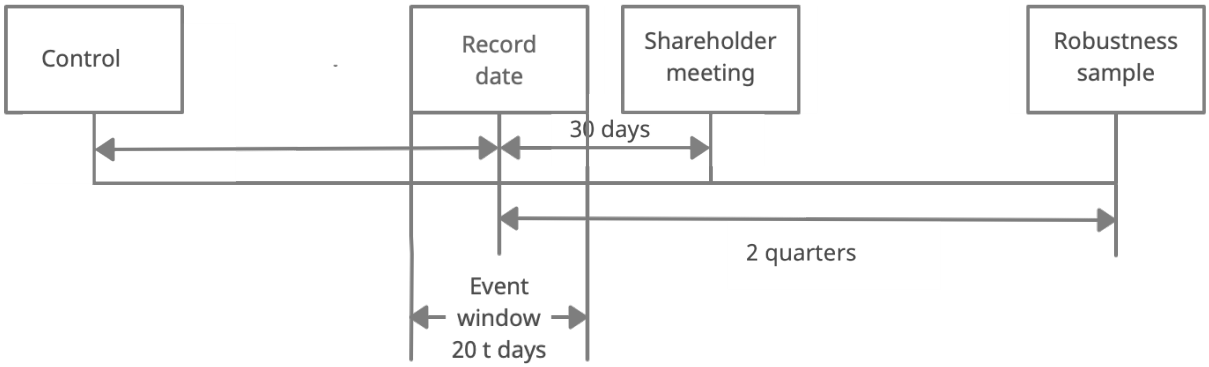


Figure 3: **Identification set up** The event period is ten trading days before and after the voting record date. The voting record date is on average 30 days before the meeting date. In the main regression framework, the control group is the average of the past 4 quarter's holding after record date. The robustness check sample is two quarters after the firm meeting record date.

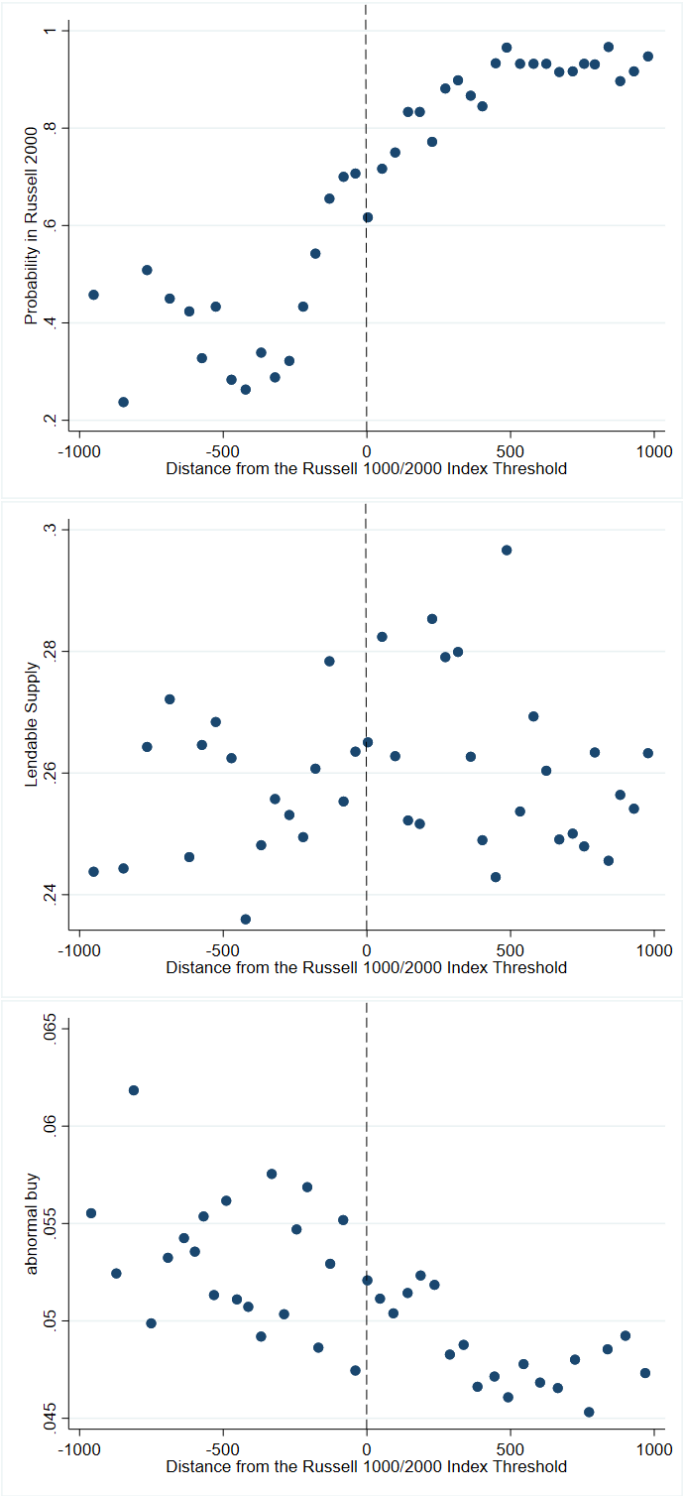


Figure 4: **Around Russell 1000/2000** This figure shows the institutional behavior around Russell 1000/2000 index threshold in the regression sample. The top figure shows the probability of certain crsp ranking firms fall into Russell 2000 index. The middle figure shows the level of lendable supply. The bottom figure shows the level of institutional abnormal buy within the subsample where the winsorized abnormal buy is positive. The sample covers ISS US firm meetings during period 2002-2013. In the middle and bottom figure, each dot corresponds to the average of observations within bins of size 40.

Table 4: **Institutional managers' voting shares abnormal buy and equity lending supply**

In this table, panel A tests specification (1) while panel B tests specification (4), with the dependant variable voting shares abnormal buy. Column (1) and (2) tests on the subsample where Q_{ijt}, the abnormal holding of institutional investor j is greater than 0. Column (3) and (4) tests on the whole sample. *Lendable Supply*$_{it-14}$ is defined as in specification (2). *Special*$_{it}$ indicates if the meeting type is a special meeting. *Close*$_{it}$ equals to 1 if the voting result is within 5% interval of total votes casted around the voting requirement. *Shareholder*$_{it}$ equals to 1 if the meeting is shareholder-sponsered. *Say on pay*$_{it}$ equals to 1 if the meeting proposal is advice on say on pay. *Merger*$_{it}$ equals to 1 if the meeting proposal is approve merger agreements. All regressions include year-quarter and manager fixed effects. Abnormal buy is winsorized at 1% level. T-values are reported in brackets.

Panel A: First stage

Instrumented Var:	*Lendable Supply*$_{it-14}$			
Subsample:	$Q_{itj} > 0$		Whole Sample	
	(1)	(2)	(3)	(4)
Passive$_{it}$	0.469***	0.467***	0.463***	0.461***
	(603)	(598)	(700)	(694)
Obs.	434,093	434,093	605,969	605,969
Meetings	4,993	4,993	4,998	4,998
$F-Stat$	363,124	60,792	490,195	82,104

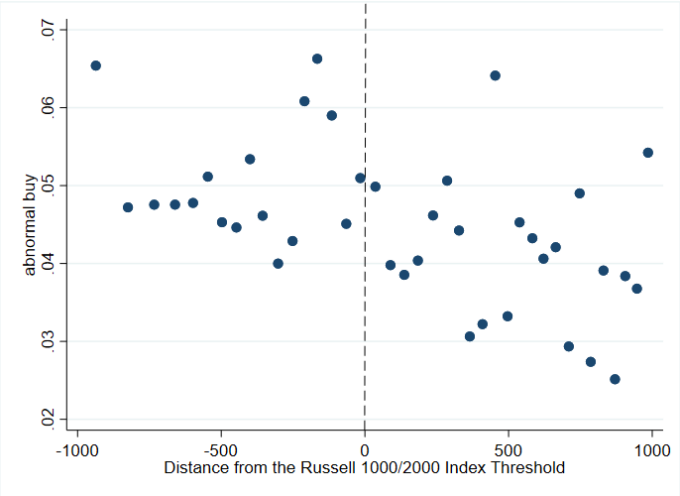
Panel B: Second stage

Subsample:	$Q_{itj} > 0$		Whole Sample	
	(1)	(2)	(3)	(4)
$\widehat{Lendable\ Supply}_{it-14}$	−0.017***	−0.012***	-0.004	-0.002
	(-4.41)	(-3.03)	(-1.57)	(-0.83)
Special$_{it}$		0.013***		0.005***
		(9.24)		(6.43)
Close$_{it}$		0.001		-0.000
		(-0.63)		(-0.31)
Shareholder$_{it}$		0.001		-0.000
		(0.97)		(-0.52)
Say on pay$_{it}$		0.002*		0.001
		(1.92)		(0.94)
Merger$_{it}$		0.009***		-0.001
		(4.21)		(-0.52)
Obs.	434,093	434,093	606,197	606,197
Meetings	4,993	4,993	4,998	4,998
Adj.R^2	0.147	0.148	0.033	0.033

Table 5: **Robustness check: institutional managers' voting shares abnormal buy and firms' passive holding**

Panel A of this table shows the level of institutional voting shares abnormal buy within the subsample where the winsorized abnormal buy is positive. The sample is taken within the robustness window, i.e. 2 quarters after firms' meeting record dates. In panel B, column (1) and (2) tests on the subsample where Y_{ijt} is greater than 0. Column (3) and (4) tests on the whole sample. $Special_{it}$ indicates if the meeting type is a special meeting. $Close_{it}$ equals to 1 if the voting result is within 5% interval of total votes casted around the voting requirement. $Shareholder_{it}$ equals to 1 if the meeting is shareholder-sponsered. $Say\ on\ pay_{it}$ equals to 1 if the meeting proposal is advice on say on pay. $Merger_{it}$ equals to 1 if the meeting proposal is approve merger agreements. All regressions include year-quarter and manager fixed effects. Abnormal buy is winsorized at 1% level. T-values are reported in brackets.

Panel A: Around Russell 1000/2000: robustness



Panel B: Robustness check result

Subsample:	$Q_{itj} > 0$		Whole Sample	
	(1)	(2)	(3)	(4)
$Passive_{it}$	-0.002	-0.002	0.008***	0.008***
	(-1.32)	(-1.36)	(11.0)	(11.0)
$Special_{it}$		0.007***		0.006***
		(5.88)		(8.24)
$Close_{it}$		-0.000		−0.002**
		(-0.24)		(-2.38)
$Shareholder_{it}$		0.002		0.000
		(1.62)		(0.12)
$Say\ on\ pay_{it}$		0.002***		0.001***
		(3.06)		(2.60)
$Merger_{it}$		0.007**		0.001
		(1.98)		(0.39)
Obs.	148,565	148,565	321,702	321,702
Meetings	4,996	4,996	4,998	4,998
$Adj.R^2$	0.144	0.144	0.031	0.031

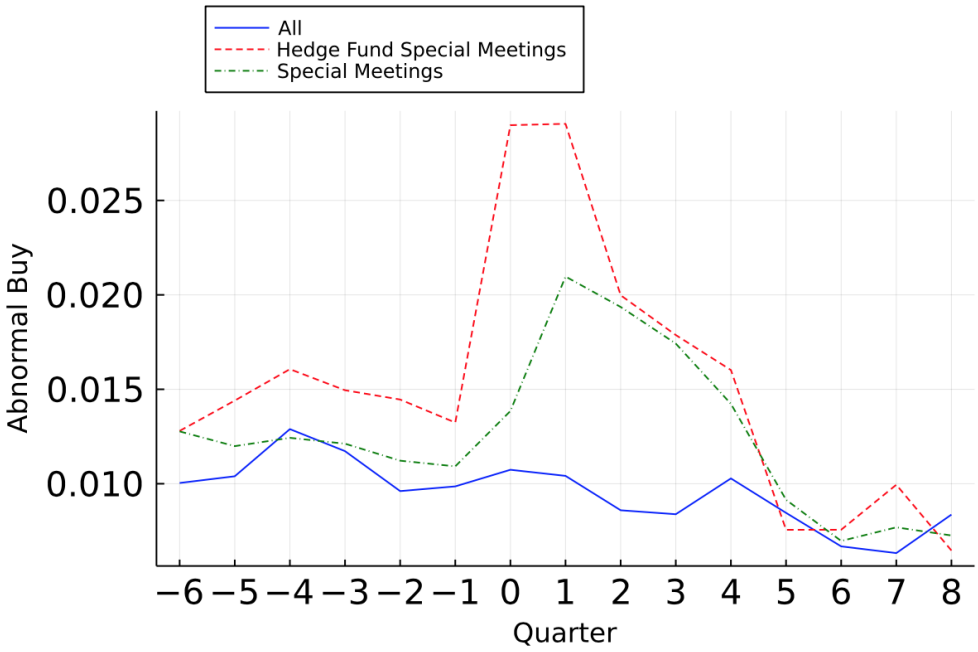


Figure 5: **Institutional investors' average voting shares abnormal buy around firm meeting record dates** This figure shows the average of measure of institutional investors' abnormal buy around firm meeting record dates. 0 represents the end of the quarter that is 10 trading days away from record date, and -1 represents 1 quarter before, et cetera. The sample covers ISS US firm meetings during period 2002-2013. The blue solid line represents all (within Thomson Reuters 13F database) institutional investor's abnormal buy around all firm meetings, the green dash-dot line represents all institutional investor's abnormal buy around special meetings, and the red dash line represents hedge fund's abnormal buy around special meetings.

Table 6: **Cross section: hedge fund versus all institutional managers' voting shares abnormal buy**

This table tests specification (6) within the event window around voting record date. x_{it} is the type of meeting or agenda included in each column of this table. Column (1) represents special meetings; column (2) uses an indicator variable *close* that equals to 1 if the voting result is within 5% interval of total votes casted around the voting requirement; column (3) shareholders initiated proposals; column (4) advice vote on say on pay frequency; column (5) approve mergers and acquisitions. Abnormal buy is winsorized at 1% level. T-values are reported in brackets.

x	special meetings	close	shareholder	say on pay	mergers & acquisitions
	(1)	(2)	(3)	(4)	(5)
hf	0.008	0.008	0.008	0.009	0.012
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
x	0.004***	-0.001	-0.000	0.000	0.001
	(5.24)	(-0.97)	(-0.55)	(0.77)	(1.36)
hf · x	0.020***	0.009**	-0.004	-0.003*	0.031***
	(8.11)	(2.09)	(-1.50)	(-1.70)	(7.42)
Obs.	316,871	316,871	316,871	316,871	316,871
Meetings	4,998	4,998	4,998	4,998	4,998
$Adj.R^2$	0.033	0.033	0.033	0.033	0.033

Table 7: **Institutional managers' voting shares abnormal buy around different types of meetings and agendas**

This table tests specification (5) on different subsamples. Column (1) approve omnibus stock plan; column (2) approve/amend executive incentive bonus plan; column (3) advisory vote on say on pay frequency; column (4) advisory on named executive officer's compensation; column (5) amend omnibus stock plan; column (6) adjourn meetings; column (7) increase authorized common stock; column (8) approve merger agreement; column (9) amend articles/bylaws/charter-non-routine; column (10) other business; column (11) annual meetings; column (12) special meetings; column (13) hedge fund; column (14) investment horizon greater than 0.5; column (15) subsample with hedge fund excluding 'approve merger agreement' proposals. Abnormal buy is winsorized at 1% level. T-values are reported in brackets.

	Proposal types				
Subsample:	Approve Omnibus	Executive Bonus	Advice on Say on Pay	Executive Compensation	Amend Omnibus
	(1)	(2)	(3)	(4)	(5)
$\widehat{Lendable\ Supply}_{it-14}$	0.004	-0.015	-0.043^{***}	-0.009	-0.013
	(0.29)	(-0.75)	(-2.83)	(-1.22)	(-1.25)
Obs.	10,247	6,201	10,360	50,343	22,341
Meetings	379	203	447	1,643	813
$Adj.R^2$	0.134	0.135	0.228	0.191	0.132
	Proposal types				
Subsample:	Adjourn Meetings	Increase Common	Mergers & Acquisitions	Amend Articles	Other Business
	(6)	(7)	(8)	(9)	(10)
$\widehat{Lendable\ Supply}_{it-14}$	-0.136^{***}	-0.018	-0.000	-0.094	-0.021
	(-2.18)	(-0.55)	(-0.00)	(-0.84)	(-0.96)
Obs.	1,980	4,386	2,012	265	4,611
Meetings	91	138	89	21	185
$Adj.R^2$	0.214	0.115	0.315	0.248	0.162
	Meeting types		**Investor types**		
Subsample:	Annual	Special	Hedge Fund	Investment Horizon >0.5	Hedge Fund w/o merger
	(11)	(12)	(13)	(14)	(15)
$\widehat{Lendable\ Supply}_{it-14}$	-0.140^{***}	0.027	-0.027^{*}	0.000	-0.020
	(-3.45)	(1.06)	(-1.70)	(0.02)	(-1.29)
Obs.	136,863	6,126	9,882	37,295	9,706
Meetings	4,767	278	4,767	4,940	4,678
$Adj.R^2$	0.147	0.212	0.095	0.135	0.098

Table 8: **Institutional managers' non-voting shares abnormal buy and equity lending supply**

In this table, panel A tests specification (1) while panel B tests specification (4), with the dependant variable non voting shares abnormal buy. Column (1) and (2) tests on the subsample where Y_{ijt}, the non voting shares abnormal holding of institutional investor j is greater than 0. Column (3) and (4) tests on the whole sample. *Lendable Supply*$_{it-14}$ is defined as in specification (4). $Special_{it}$ indicates if the meeting type is a special meeting. $Close_{it}$ equals to 1 if the voting result is within 5% interval of total votes casted around the voting requirement. $Shareholder_{it}$ equals to 1 if the meeting is shareholder-sponsered. *Say on pay*$_{it}$ equals to 1 if the meeting proposal is advice on say on pay. $Merger_{it}$ equals to 1 if the meeting proposal is approve merger agreements. All regressions include year-quarter and manager fixed effects. Abnormal buy is winsorized at 1% level. T-values are reported in brackets.

Panel A: First stage				
Instrumented Var:	$LendableSupply_{it-14}$			
Subsample:	$Q_{itj} > 0$		Whole Sample	
	(1)	(2)	(3)	(4)
$Passive_{it}$	0.585***	0.580***	0.582***	0.577***
	(362)	(357)	(387)	(381)
Obs.	525,972	525,972	605,969	605,969
Meetings	4,997	4,997	4,998	4,998
$F-Stat$	130,941	22,058	149,400	25,184
Panel B: Second stage				
Subsample:	$Q_{ijt} > 0$		Whole Sample	
	(1)	(2)	(3)	(4)
$\widehat{LendableSupply}_{it-14}$	−0.014	−0.011	0.023***	0.019***
	(-0.80)	(-0.60)	(2.75)	(2.18)
$Special_{it}$		0.007		-0.003
		(1.58)		(-1.45)
$Close_{it}$		-0.002		-0.001
		(-0.43)		(-0.59)
$Shareholder_{it}$		0.007***		0.004***
		(2.29)		(2.24)
Say on pay$_{it}$		0.006*		0.001
		(1.88)		(0.84)
$Merger_{it}$		-0.001		−0.011***
		(-0.11)		(-3.57)
Obs.	525,972	525,972	605,969	605,969
Meetings	4,997	4,997	4,998	4,998
$Adj.R^2$	0.083	0.083	0.029	0.030

Table 9: **Voting premium in the shares trading market and equity lending supply**

In this table, panel A tests specification (7). Panel B tests specification (8), with the dependant variable voting premium in the shares trading market. Column (1)-(7) corresponds to specifications with different proxies for the voting demand. $Special_{it}$ indicates if the meeting type is a special meeting. $Close_{it}$ equals to 1 if the voting result is within 5% interval of total votes casted around the voting requirement. $Shareholder_{it}$ equals to 1 if the meeting is shareholder-sponsered. $Say\ on\ pay_{it}$ equals to 1 if the meeting proposal is advice on say on pay. $Merger_{it}$ equals to 1 if the meeting proposal is approve merger agreements. All regressions include year-quarter fixed effects. Voting premium is in percentage terms, and is winsorized at 1% level. T-values are reported in brackets.

Panel A: First stage							
Instrumented Var:	$LendableSupply_{it-14}$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Passive_{it}$	0.453***	0.449***	0.452***	0.453***	0.452***	0.452***	0.449***
	(42.9)	(42.4)	(42.9)	(42.9)	(42.8)	(42.8)	(42.2)
Obs.	2,283	2,283	2,283	2,283	2,283	2,283	2,283
Meetings	2,283	2,283	2,283	2,283	2,283	2,283	2,283
$F-Stat$	1,843	927.3	921.2	921.0	921.6	922.4	309.0
Panel B: Second stage							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\widehat{Lendable\ Supply}_{it-14}$	−0.698***	−0.683***	−0.691***	−0.698***	−0.691***	−0.707***	−0.669***
	(-3.70)	(-3.57)	(-3.66)	(-3.70)	(-3.65)	(-3.73)	(-3.49)
$Special_{it}$		0.042					0.088
		(0.66)					(1.24)
$Close_{it}$			-0.076				-0.074
			(-0.89)				(-0.86)
$Shareholder_{it}$				-0.015			-0.006
				(-0.23)			(-0.10)
$Say\ on\ pay_{it}$					0.045		0.046
					(0.87)		(0.89)
$Merger_{it}$						-0.086	-0.155
						(-0.81)	(-1.29)
Obs.	2,283	2,283	2,283	2,283	2,283	2,283	2,283
Meetings	2,283	2,283	2,283	2,283	2,283	2,283	2,283
$Adj.R^2$	0.024	0.024	0.024	0.024	0.024	0.024	0.024

Table 10: **Voting premium around different types of meetings and agendas**

This table tests specification (8) on different subsamples. Column (1) approve omnibus stock plan; column (2) approve/amend executive incentive bonus plan; column (3) advisory vote on say on pay frequency; column (4) advisory on named executive officer's compensation; column (5) amend omnibus stock plan; column (6) adjourn meetings; column (7) increase authorized common stock; column (8) approve merger agreement; column (9) amend qualified employee stock purchase plan; column (10) other business; column (11) annual meetings; column (12) special meetings. Voting premium is in percentage terms, and is winsorized at 1% level. T-values are reported in brackets.

	Proposal types			
Subsample:	Approve Omnibus	Executive Bonus	Advice on Say on Pay	Executive Compensation
	(1)	(2)	(3)	(4)
$\widehat{Lendable\ Supply}_{it-14}$	-0.253	-1.595^{*}	0.112	-1.23^{***}
	(-0.40)	(-1.75)	(0.14)	(-3.47)
Meetings	148	93	204	728
$Adj.R^2$	-0.047	0.164	-0.007	0.066
	Proposal types			
Subsample:	Amend Omnibus	Adjourn Meetings	Increase Common	Mergers & Acquisitions
	(5)	(6)	(7)	(8)
$\widehat{Lendable\ Supply}_{it-14}$	-0.339	-1.398	1.707	0.586
	(-0.76)	(-0.76)	(0.93)	(0.29)
Meetings	400	20	66	24
$Adj.R^2$	-0.003	0.267	-0.162	0.011
	Proposal types		**Meeting types**	
Subsample:	Employee Stock	Other Business	Annual	Special
	(9)	(10)	(11)	(12)
$\widehat{Lendable\ Supply}_{it-14}$	-2.064	-3.428^{***}	-0.763^{***}	-0.004
	(-1.52)	(-2.94)	(-3.89)	(-0.00)
Meetings	26	69	2154	101
$Adj.R^2$	0.690	0.089	0.024	0.036

Appendices

A Notes on this paper's data cleaning method on Russell 1000/2000

Russell 1000/2000 index constituents and weights are not publicly available, and thus this paper uses indirect ways to identify relevant variables. I list them below:

1. $R2000_{it}$: DataExplorers provides an indicator on whether the firm-date observation is within Russell 2000 index or not;

2. $band_{it}$: FTSE Russell's website provides the upper and lower market cap bound of the banding after 2009; for 2007 and 2008, the banding thresholds are estimated using linear projections based on after 2009 banding thresholds ;

3. Russell 1000/2000 cutoff is available on FTSE Russell's website after 2009; before 2009, the cutoff can be inferred through Bloomberg's record of historical Russell index constituents. **Note that the actual Russell 1000/2000 cutoff is much lower than CRSP market capitalization ranking's 1000/2000 cutoff (usually between 2000-3000). Thus it's not advisable to directly use CRSP market cap ranking to construct an approximation of the index.**

B Robustness of the institutional Abnormal Buy measure

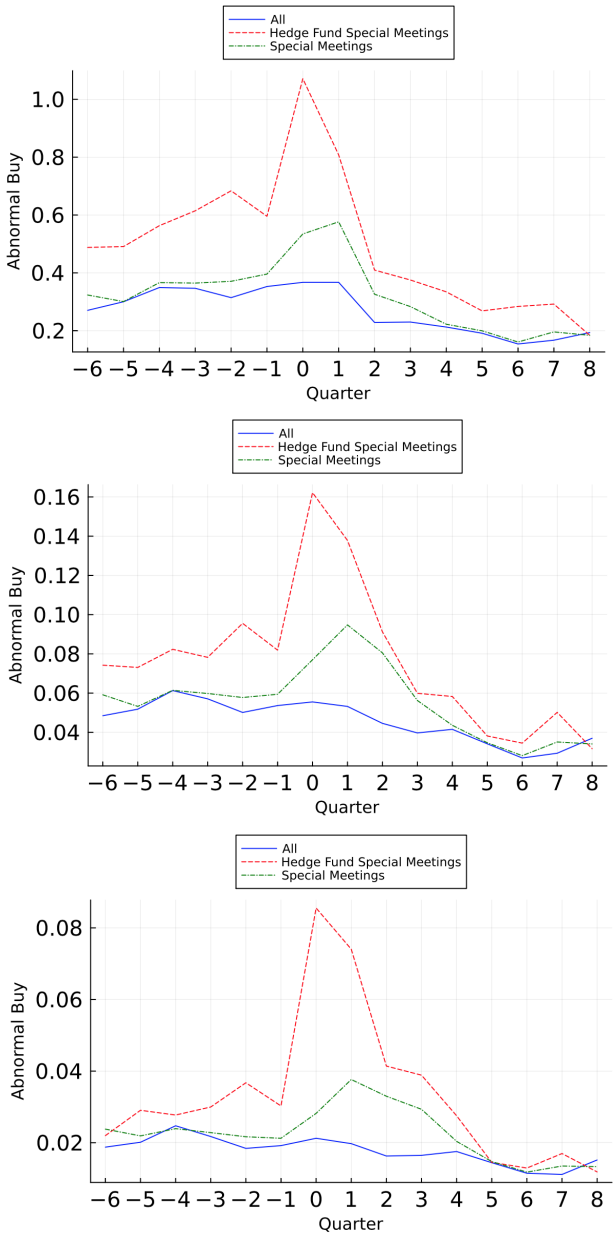


Figure 6: **Institutional investors' average voting shares abnormal buy around firm meeting record dates** This figure shows the average of measure of institutional investors' abnormal buy around firm meeting record dates. 0 represents the end of the quarter that is 10 trading days away from record date, and -1 represents 1 quarter before, et cetera. The sample covers ISS US firm meetings during period 2002-2013. The blue solid line represents all (within Thomson Reuters 13F database) institutional investor's abnormal buy around all firm meetings, the green dash-dot line represents all institutional investor's abnormal buy around special meetings, and the red dash line represents hedge fund's abnormal buy around special meetings. The top figure shows the abnormal buy with the previous quarter as control group; the middle figure shows the average of previous 2 quarters as control group; the bottom figure shows the average of the previous 3 quarters as control group.

Does Shareholder Activism Curb Management Rent-seeking? Examining Management Proposals

Yue Wu*

January 8, 2024

Abstract

This paper examines whether rejecting management proposals influences managerial turnover and shareholder welfare. Existing literature established that management proposals' frequency is discontinuous around the passing/failing voting threshold. I analyze this management voting selection problem with a large shareholder monitoring model. Higher managerial private benefit leads to more risky proposals' submission, but in the meantime, induces more monitoring and selection. I document a concave pattern of advisory vote failure frequency ranked by the degree of managerial private benefit empirically. To identify the causal effects of rejecting management proposals, I introduce a novel source of plausible exogenous variation, pre-meeting call options trading volume spikes, which is associated with a higher probability of management proposal failure. Consequently, this increases non-CEO executive turnovers two years after by 38.9%, and leads to a negative 7-day cumulative abnormal returns, by 18.7%. The higher turnover is consistent with the ordinary least squares regression evaluating the effect of management proposal failures, with controls for model-predicted managerial self-selection probability. In the context of management proposal voting, activism disrupts short-term shareholder welfare and leads to long-term structural change.

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1 Introduction

Managerial discretion leads to management rent-seeking: managers divert rents from making decisions on the firm's activities (Stiglitz & Edlin (1993)). A voting event in the firm meeting provides an environment both for the management to initiate discretion, and for shareholders to restrict managerial rent-seeking behavior. Of all agendas, manager-sponsored proposals take up the majority, and are mostly about compensation and governance issues. Shareholders, on the one hand, could have a disciplinary effect by voting down managers' proposals if they are harmful to shareholder welfare. On the other hand, managers still have some discretion over this voting event, as the likely inability of every prominent shareholder to obtain precise information about management's proposal leaves managers potential rent. Indeed, this trade-off is reflected in ISS (2023*b*)'s report: analyzing the management proposals, in 2022, there is a spike in the CEO's golden parachute payment value, coinciding with an increase in the say-on-golden-parachute proposal failure rate.

Thus, it is crucial for shareholders to know how effective their voting power could curb managerial rent-seeking, and enhance shareholder welfare. A direct evaluation of the effect of failing is problematic because of a known managerial self-selection problem. First documented by Listokin (2008), and recently elaborated in detail by Babenko (2019), there exists a significant discontinuity around the passing threshold of managerial proposal voting. As shown in figure 1 and 2, the management proposals are indeed bunching on the right side of the management proposal voting outcome. In figure 2, the discontinuity is higher for managerial stock option plan decisions, as compared to advisory votes. The potential explanation lies in the above-mentioned managerial discretion over proposals put forward: a manager could choose to withdraw the proposal before a firm meeting or self-select into a more certain success with the design of the proposal. In this case, passed managers are more likely to be those who can influence the votes, and thus the effect of failing would be under-estimated in the simple OLS regression. Thus it remains an empirical challenge to evaluate the actual effect of rejecting management proposals, and what would be the potential gains and losses brought about by shareholder activism before firm voting.

As opposed to shareholder proposals, management proposals are rarely rejected. For the sample 2003 - 2013, only 12.54% of management proposals were rejected. It is well-accepted that managerial manipulation causes the lack of no votes. (Listokin (2008), Cvijanović et al. (2016),

Babenko (2019)). However, the literature has yet to quantify the manipulation effect of managers, which is crucial for the valuation exercise. The result of the voting is not simply yes or no, and there are actually four types of results: vote withdrawn; vote failed; vote passed with managerial manipulation, and vote passed without managerial manipulation. In the data, we could observe the directly withdrawn, failed, and successful votes; however, we couldn't observe if a vote was manipulated or not. Nor could we observe the manager's anticipation of his shareholder support, based on which she makes the decision to withdraw or manipulate. Thus a direct comparison of the effect of pass/fail voting results does not reflect the impact of shareholder activism, as the difference in the outcome of interest includes not only the effect of unanticipated voting results, but also the effect of manipulation: the yes and no results in management voting are not symmetric anymore.

This paper provides a simple model that explains the managerial proposal manipulation problem. I dissect the manipulation problem by arguing that a large shareholder effort exists to acquire information about the project's profitability before the proposal is sent to vote (Burkart et al. (1997)). In the model, the large shareholder is willing to investigate because of his large voting equity holding, and thus, during the voting process, he can influence the voting outcome with his superior information. This explains the managerial **self-selection** in the voting outcome. However, due to incomplete information, there are chances that the manager can put up a proposal without the large shareholder's profit filter. When this happens, the proposal selection depends on managerial discretion, and if the manager's interest isn't perfectly aligned with maximizing profit for the firm, due to the managerial private benefit, then **rent-seeking** behavior occurs: projects that aren't optimal for the shareholders are put up for a vote, and could pass for a chance.

To fit this model with the voting context, I resort to the theoretical framework of Cvijanović et al. (2016) to understand the decision process of managers. After putting forward a proposal, a manager could anticipate shareholder support through canvassing votes. After that, she will decide whether to withdraw and renegotiate a more acceptable proposal to shareholders. The decision is based on the private benefit she could obtain from the approval of the proposal, and the reputation cost associated with failure. The introduction of the reputation cost helps explain the internal withdrawal of management proposals, when the managerial private benefit is relatively lower, or the manager is unable to make sure if the project is profitable or yields private benefit.

A particularly interesting and practical feature of the model is that the managerial private benefit can be empirically qualified through reinterpreting Kalay et al. (2014)'s voting premium measurement: the discrepancy between share price and a synthetic portfolio of a stock constructed using options should reflect the loss in the share value due to the managerial private benefit, and thus, the managerial private benefit should be inversely related to the voting premium measurement at the lower end. Starting with the fact that the voting premium measurement exhibits reasonable variation across different management proposal types, which tends to be higher for 'approve/ amend omnibus stock option plans', and lower for 'declassify the board of directors', empirical mapping between the private benefit and management proposal passing/failing probability plausibly exists. Ranking the frequency of failed proposals by the voting premium measurement, I document a concave graph of management proposal failure frequency for the managerial advisory votes[1], with a higher level of failed frequency of management proposals when the private benefit is higher, showing the influence of the role of both reputation cost and managerial private benefit in management proposal voting. This expands the result of Babenko (2019)'s, who finds that for special meetings, the managerial influence is higher along with a higher value of a vote, compared to annual meetings. As another supporting evidence of the significance of reputation cost in the voting context, I resort to an exogenous variation brought about by CEO retirement age. For firms with CEOs about to enter the retirement age window (63-65), I show that management proposals are more likely to fail, with 2.5% increase in failing probability controlling for insider ownership. I consider this as a result of changing reputation cost, as in the pre-retirement age, CEOs anticipate short term, and hence would have fewer concerns for reputation, and would likely put forward more proposals not perfectly congruent with maximizing shareholder's profit.

This simple model allows for parameter estimations of the function, and would be helpful for a precise dissection of the selection problem. I start with a reasonable guess of the parameter set, and map the empirical measurement of private benefit to the model-predicted managerial self-selection probability. This estimated effect helps with analyzing the effect of selection in the causal identification later.

Within this theoretical framework, I continue to examine the impact of shareholder activism. For identification, I provide novel and plausible routes of exogeneity that correlate with a higher

[1]Managerial advisory votes appear the most frequently among all proposals.

rate of proposal failure: pre-voting-record-date call options trading volume spikes. As well explained by theory, such tradings induce shareholder activism (Burkart & Lee (2013), Speit et al. (2023)), mainly due to their signaling effect. Indeed, I found empirical relevance between the call option trading volume and the probability of management proposal failures, especially in the region with high trading volume. This source of variation also leads to a higher approval/ amend omnibus stock plan proposals failure rate, showing the wide applicability of its instrumental effect.

With the above identification strategy, I examine the effect of a higher management failure rate induced by shareholder activism, which helps to provide causal evidence about the theoretical framework of managerial initiative versus rent-seeking and shareholder welfare. First, I test the effect of higher management proposal failure on the probability of non-CEO executive turnover. Failure of the votes leads to losses of the management's reputation. For career decisions, executives choose between the rent they could extract and the potential costs. Thus failure of management votes results in changes in executive turnover if the level of exogeneity is high enough. As a result, the incumbent has a shorter horizon to extract rents. As reputation is a long-term cost, I examine the non-CEO executive turnovers in the next four years. Second, I test the effect of higher management proposal failure on shareholder welfare. As explained by the framework, failing the proposals alone would not bring value enhancement, as proposals with higher private benefits do not directly result in losses of security benefits. However, the fact that shareholder activism leads to higher management proposal failure has effects on shareholder welfare. On the one hand, a rejection of the proposals with security benefits leads to shareholder value loss. on the other hand, dispersed shareholders might object to the proposals for non-profit reasons, for example, environmental and social concerns. An overall dissatisfaction towards a proposal leads to selling due to disagreement. These contrasting purposes aggregate to the overall uncertainty regarding the effect of activism on shareholder welfare. For the measurement, I focus on the event date abnormal return, which reflects the value of the proposal, and 7 days cumulative abnormal returns, which take into account shareholders selling due to disagreement and thus reflect the shareholder welfare perspective.

Due to the known managerial self-selection problem, simple OLS does not provide an informative estimate of the effect of the managerial proposal passing/failing, as managers with higher private benefits tend to self-select away from the management proposal failure, leading to a down-

ward bias in the OLS estimates. For the effect of executive turnover, with option trading volume spike, I find that rejection leads to a 38.9% higher probability of non-CEO executive turnover two years after, amplifying the estimate from simple OLS, showing that a failure unexpected by management does cause an effect in the long term. I also examine the effect in terms of shareholder welfare. I found that option-induced management proposal failures lead to a large negative 7-day cumulative abnormal return: 18.7% lower than passed proposals. In terms of the valuation of the proposals, activism does not result in significant immediate stock market returns, mostly because the signals occur days before the meeting date, and thus reform the market's expectation about the proposal's value before the firm meeting. In terms of the heterogeneity of the treatment effect, I found that option-induced shareholder activism is more prominent for management with a lower probability of self-selection in voting, both in terms of non-CEO executive turnover and 7 days cumulative return. This is likely due to the higher reputation cost brought about by shareholder activism, which influences the management with less private benefit first.

As a comparison, I also instrument the management proposal failure with the CEO retirement window, the exogenous variation for the reputation cost, and hence, more management proposals filing, and hence, failure. I found that the effect of failure on executive turnover is amplified by retirement-age CEOs in the 2SLS specification, however, it is a more complicated direction compared with previous evidence. With the CEO entering the retirement age window, the effect of management proposal failure leads to a lower probability of executive turnover within 2 years by 10.4%, with a reversal of the effect 3 years after the meeting, with higher executive turnover by 27%. Whilst the long-term turnover likely arises from a breach of reputation along with failure, the evidence about short-term turnover is a novel result. In the parallel literature about executive turnovers, increasing uncertainty and competition leads to higher executive turnover. Such effect mostly appears in management with a lower probability of self-selection in voting, and thus potentially due to higher turnovers for the passing of the proposals due to the executives' distaste. The divergence also shows up concerning abnormal returns. In the retirement age sample, the proposal failure leads to an immediate negative abnormal return on the meeting day, and is amplified with the retirement age 2SLS specification: proposal failure leads to a lower meeting date abnormal return by 0.8%. This result shows the average effect of the managerial initiative is value-enhancing. The 7-day cumulative abnormal stock market reaction is not significant to

management proposal failures, as the failures are not induced by external forces, and hence, no significant disagreement.

The model allows for a dissection of managerial self-selection and rent-seeking. I empirically analyze it by controlling for the probability of proposal selection and the interaction between failure and selection. Such a specification allows for the effect of selection when the proposal gets passed, and thus leads to a less biased estimate of the effect of failure. Indeed, I find that in the OLS specification with controls for selection, the effect of failure is amplified and mostly consistent with the 2SLS specification. For the CEO sample above age 40, OLS finds that failure leads to 5.1% significantly lower executive turnovers within 1-2 years for proposals with less selection, while in the options trading sample, OLS finds that failure leads to 74.2% significantly higher executive turnovers for management with a higher probability of self-selection. In terms of shareholder welfare, failure leads to higher 7 days cumulative abnormal returns for management with a lower probability of proposal failure in the retirement age sample (1.3%). This result shows that shareholder welfare is higher after failing the management proposal with higher uncertainty at the firm meetings and is consistent with Babenko (2019)'s finding.

The paper is organized as follows. Section 2 gives a comprehensive review of the literature surrounding the question of this study. Section 3 explains the institutional background of firm meetings and proposal contents. Section 4 describes the data and the sample characteristics. Section 5 introduces the mini-model analyzing the information structure relating to the design of the management proposal and the equilibrium proposal selection and failure rate. Section 6 presents the stylized facts relating to the theoretical results of the model. Section 7 introduces the methodology to deal with the endogeneity of managerial proposal voting. Section 8 examines the results of the empirical test in section 7. Section 9 concludes.

2 Literature Review

This paper focuses on analyzing and providing solutions to the existing selection problem. In this section, I review the major moving parts around management proposals' voting, which are affluently documented in the past literature.

Management Proposal. Management proposals' votes are documented in the past literature

as easily influenced by managers. Listokin (2008) documented discontinuity around the voting threshold of management proposals. They explain that the manager's information about the shareholder's voting support leads to discontinuity. This paper follows the same line and specifies that the costly effort of the managers is to win the large shareholder's votes, whose main goal is to maximize firm profit. Babenko (2019) provides a systematic study of the mechanisms by which management could influence the result of management proposals to the yes side: through meeting adjournment and selective campaigning; on the contrary, effective shareholder communication can reduce such managerial influence. The theoretical part of this paper deviates from Babenko (2019) also considering the implicit managerial self-selection process, and argues that such a process causes a lack of 'no' votes in the management proposal voting. Cvijanović et al. (2016) also studies the particular channel of managerial influence on votes: through the business ties between manager and mutual fund. They argue that the effect of management influence is stronger before shareholder proposals than management proposals, and hence, the latter could be a counterfactual as the test on the former. This paper draws testable predictions based on Cvijanović et al. (2016)'s realistic framework. However, instead of focusing on managerial influence, this paper focuses on identifying the proposals less likely to be influenced or withdrawn. There is very limited literature on the withdrawal of proposals, and most of them are about shareholder-sponsored proposals. Bauer et al. (2012) studies shareholder proposals' sponsor identity, and their link with proposal withdrawals. They show that institutional ownership is positively related to withdrawal likelihood, while CEO ownership is negatively correlated. Although this paper studies management proposals instead, these variables would be expected to have a similar effect on the management proposal voting.

Private Benefit. Kalay et al. (2014) constructs a form of market-based measurement of the value of voting rights using options to capture cash flow rights. It is further argued and verified in Karakaş & Mohseni (2021) that this measurement reflects the incumbent's private benefit of control arising from managerial entrenchment. Specifically, as argued by the authors, the voting premium is a lower bound of the private benefit measurement. This paper expands this interpretation by arguing that the negative end of the Kalay et al. (2014) measurement should more correctly reflect the managerial private benefit. This paper shows empirically that there is a direct link between the empirical private benefit measurement and proposal failure rate, based on the theoretical prediction of Burkart et al. (1997).

Shareholder Activism. This paper focuses on the form of shareholder activism that brings opposition to the incumbent management, which is the treatment in the empirical specification. Burkart & Lee (2013) and Speit et al. (2023) discuss theoretically how the activist investor could overcome the dispersed shareholder's free-riding problem through the signaling effect of options trading. This provides a rationale for another form of exogeneity focusing on the activist investor.

CEO turnover. There are a series of papers on the effect of CEO turnover. Hazarika et al. (2012) shows that forced CEO turnover positively affects firms' earnings management. Jenter & Lewellen (2015) studies the impact of retirement-age CEOs on the probability of the firm being acquired. This paper follows the same line and argues that the retirement age CEOs, who have shorter expected horizons, tends to submit more proposals that are not more likely to fail. Meyerinck et al. (2022) studies the reputational effect of forced executive turnovers. They found that directors in a firm with a forced executive turnover are more likely to suffer from reputation loss in other firms. This paper argues that the reputation cost brought about by the voting failure causes long-term non-CEO executive turnovers, consistent with the empirical measurement of board reputation using the number of directors.

3 Institutional background

Management proposals are brought up in firm meetings. In general, there are three types of firm meetings: annual, special, and proxy fights. Companies comply with the SEC proxy rules (SEC (2023)) and disclose the high-ranking executive's compensation when there's an election of the directors. The election of directors usually occurs once a year. Proxy fights are meetings that include contested director elections: slates of directors proposed by the current board, and slates of dissident director candidates are to be elected. As it's widely documented that proxy fights are the direct cause of executive turnovers, this paper excludes such observations in the sample.

Listokin (2008) mentions the process of generating management proposals at the firm meeting: canvass shareholder support before submitting the proposal; and put forward a proposal when management is more certain of a successful outcome. This means that the withdrawal of the management proposal could happen before or after the proposal submission, and hence, could be unobservable by data. The existing voting results datasets' observable withdrawn votes should

only be reflective of the submitted proposals, and wouldn't be representative of the full managerial selection problem.

Management proposals, in general, are binding: once passed, the implementation is certain. This is a key feature that's different from the shareholder proposals. Out of those submitted, frequently occured ones are about executive compensation. Amend/Approve omnibus stock plan is the type of proposal that usually awards employees of the company, in most cases executives, stock or options. These types of awards provide incentives for the agents to exert more effort. The compensation is linked with performance and could carry effective voting rights. The only cases when this is not true are advisory say-on-pay votes. According to the Dodd-Frank Act in 2011 (SEC (2011)), the companies subject to the proxy rules are required to hold say-on-pay votes at least once every three years. For companies in the TRAP program (Troubled Asset Relief Program), say-on-pay votes are required to be held annually. It is up to the company's board of directors about executives' compensation, while the board may consider the result of the say on pay votes and initiate communication with the shareholders.

In terms of the timeline, although there aren't direct statistics about the timing of management proposal submission, the process won't be swift. For example, ISS (2023*a*) explains that for ISS (the proxy advisor) to review shareholder proposals, there is a submittal window of no shorter than 30 days, at the beginning of which a notice must be filed. While the design and submission of the proposals are more up to the management and the board, the process before the firm meeting could be influenced by some external forces. Right before the firm voting record date (on average 50 days from the meeting date), the time when the voter's number of voting shares are registered for the firm meeting, activist investors might try to influence the voting outcome through trading votes.

4 Data

4.1 Data source

To study this question, there are four variables of concern: private benefit, voting results, managerial turnover, and stock market performance. The measurement of private benefit requires the daily stock price and dividend information, from CRSP, and American option price, from

OptionMetrics. The details of the calculation are in the same line as Kalay et al. (2014).

Voting results come from ISS voting analytics, which provides 2004-2013 Russell 3000 firms' voting information. From this dataset, we could observe the voting results, whether a vote is withdrawn or not, whether a vote is shareholder or manager-sponsored, voting requirements, ISS recommendation, et cetera. Figure 1 shows the distribution of management proposal's realization of shareholder support: I plot the frequency of the management proposals by the percentage of votes voted for (over the voting base[2]). For the closely contested management proposals, across the zero voting threshold, there exists a noticeable jump in the frequency of proposals. It is consistent with the evidence from Listokin (2008). Table 1 details the most frequent proposals in each bin around the voting threshold. It seems that in terms of the voting results of management proposals, the content of proposals varies. Rejected proposals are less than accepted proposals. Proposals passed or failed by a narrow margin differ from proposals that head for a steady pass or failure. Four proposals constantly arise across the voting threshold: 'Advisory Vote to Ratify Named Executive Officers' Compensation (the say on pay vote); 'Amend Omnibus Stock Plan'; 'Approve Omnibus Stock Plan', and 'Declassify the Board of Directors'. In terms of these management proposals, management is less able to influence the voting results, or somehow would like to put forward these proposals without withdrawing them.

To show that the expected managerial horizon influences the choice of management proposal strategy, I resort to CEO age and tenure information. The turnover sample is constructed from the Compustat Execucomp database. Aligned with the voting results database, the executive sample is from 2002 to 2014 and covers information about the top five to nine executives of firms in the S & P 1500 universe. The database provides information about the executive age, tenure, date joined and left the company, and whether a CEO or not.

A set of covariates associated with firm and executive attributes, as appeared in previous literature, are taken into account: on the firm level, book asset, and whether the firm pays a dividend or not; and on the executive level, age, tenure, and insider ownership. All variables related to firms are from Compustat.

Following the literature, I use the Fama-French plus momentum four-factor models as a bench-

[2]Voting base are in general three types: "F+A" means voting base contains failed and passed votes; "F+A+AB" means voting base contains failed, passed, and absent votes; "Outstanding" means voting base contains total number of shares outstanding that are eligible to vote. Information about the voting base is available on ISS voting analytics.

mark for abnormal returns. WRDS website provides a direct calculation of provided event date abnormal returns. The estimation window is 200 trading days, with a minimum of 15 days to be included in the sample. 50 days between the estimation window's end and the event window's beginning. I obtained abnormal returns for the meeting date and seven days cumulative returns CAR(0,7).

4.2 Sample and Descriptive statistics

The details of linking options and stock prices to ISS voting analytics are the same as Kalay et al. (2014). To capture the option price information around the voting record date, before linking with meeting information, I keep option pairs closest to the money (meaning the strike price is very close to the underlying price at the options trading day), with the highest volume and the least time to maturity. I choose a window of 20 days (-10,+10) around the voting record date to join with the option pair information, and pick the option pair closest to the meeting record date

To study the association between meeting proposals and CEO attributes, two datasets need to be joined together: the ISS voting analytics and Compustat Execucomp. As one firm has several executives who cover multiple periods of firm meetings, I take voting analytics as the master data and join with the firm's executive information for each proposal; in that way, for each proposal, every executive's information of that firm is kept. This means that turnover within one year of a proposal is within two years of another proposal, and is treated separately.

Regarding the technical details of joining, ISS voting results identify firms through ncusip while Compustat Execucomp identifies firms through gvkey and cusip. Thus, to link the two datasets together, I convert both ncusip and gvkey into permno, and join them together. The CRSP/Compustat Merged database provides the link from gvkey to permno; CRSP also provides tools to translate ncusip to permno. Stata's joinby command provides a pairwise combination between proposals and executives. To avoid the fault cases when the permno does not represent the actual firm at that time, I use Stata's matchit function to give a similarity score between the cusip from the Execucomp dataset and the ncusip from the ISS voting results dataset. I keep the observations that have a similarity score above 0.6. To keep all the active executives in the firm around the voting record date, executives who joined the company/became CEO after the voting record date and left the company/CEO before the voting record dates are eliminated. Of

all the management proposals, only those that could be joined with executive information are kept. This sampling method avoids keeping those proposals with which we don't know if there are retirement-age CEOs or not. This creates a combined sample of one proposal-executive per observation.

I also created a similar sample with only CEOs for the study of CEO horizon. I identify CEOs by creating a dummy variable indicating one if either the date of "BECAMECEO" or "LEFTOFC" (left the current position as CEO) exists, meaning that at some time, the executive is a CEO of the firm. The dataset is joined similarly, but cleaned by the CEO's joining date and leaving date.

To examine the effect of management proposals on executive turnover, I proxy for such turnover information from the maximum between the date when the executive left the company, and the date when the CEO left his or her position. Similarly, the executive joined date is the maximum between the two, so the tenure of an executive at the meeting year could be obtained from the meeting date and joined date.

To deal with the mismatching dimensionalities and ensure that results are robust, samples of both firm-proposal-CEO, and firm-proposal are created and tested. The firm-proposal-CEO level sample has one CEO proposal per observation (and thus, proposals are duplicated), and this sample is created in order to control for CEO individual-level characteristics. To study the effect of meetings on executive turnover, and, at the same time, avoid duplicating proposals causing estimation biases in the empirical evidence, the firm-proposal level sample is created. As this sample is one observation per proposal, turnover is recorded as yes when at least one executive turnover event occurred within a certain period after the proposal's meeting record date. All control variables are winsorized at 1% level.

Table 2 provides descriptive statistics of the joined sample. On the one-proposal-per-observation sample, there are in total 18,022 management proposals. Those are the observations from the voting results database that could be linked with the Execucomp database, and thus, we would know for sure if there would be an executive turnover occurring after those proposals' voting. Out of those proposals, there are 447 cases of withdrawals and 373 cases of failures. Most of the observations could be linked with the firm-level controls, and the summary statistics are listed in table 2. On the one-proposal-executive-per-observation sample, there are 182,239 observations, so on average, one proposal is linked with ten executives' information. Turnover is rare if we take it that

the Execucomp database is exhaustive of all turnover events. Around 10% of the meetings are linked with executive turnover events, and there are 3,538 executive turnovers within one year of meetings with management proposals. All control variables are lagged one year before the voting record date. This captures the turnover tendency earlier than the proposal drafting phase. This sample is collapsed to a proposal-level sample for executive turnover information. In Panel C, the proposal-CEO level sample gives CEO demographics. On average, the CEOs are in their later stage of lives, with a mean age of 56, and ten years of tenure within the firm. CEO's insider ownership is on average 2.76%, a relatively small percentage to have a strong influence in the firm.

5 Managing Proposals: Theory

This section analyzes the selection problem of management proposals' voting affluently documented by literature. As discussed in the introduction section, the management proposal selection problem can be broken down into three aspects: 1. observable discontinuity around management proposal voting threshold 2. non-negligible no votes and rejected management proposals; 3. non-observable withdrawn proposals caused by managerial self-selection.

This mini-model is a combination of Burkart et al. (1997) and Cvijanović et al. (2016)'s theory section, and aims to pin down the manager and large shareholder's actions before management proposal voting. In Cvijanović et al. (2016), the manager has the option of both influencing the shareholder support base and withdrawing and recasting. It is never rational for managers to put forward a proposal in a voting event if the manager isn't 100 percent sure that the proposal will pass.[3] This framework is helpful for analyzing selection problem aspects 1 and 2; however, as it's difficult to measure manager's anticipated voting support and influencing activities for management proposals, I expand this influencing step with the set-up designed by Burkart et al. (1997), who models the interaction between manager's project selection and large shareholder monitoring. This expansion helps with explaining aspects 2 and 3, and is practical as the model parameter could be quantified using data.

The model features three steps of management-shareholder actions. The timeline is shown in figure 3. The manager is risk-neutral; her voting equity holding is assumed to be 0. Outside

[3]The analytical framework in Cvijanović et al. (2016) explains why using management proposal as a counterfactual to the diff-in-diff setting in studying the effect of mutual fund business ties on shareholder proposal voting. As clarified by the authors, management proposals are generally more difficult to influence.

shareholders' holding distribution is assumed to be the following: α for the large shareholders and $1-\alpha$ for the dispersed shareholders. All shareholders are risk-neutral, and their interests are congruent. There are N+1 projects that bring security benefit Π^i and private benefit b^i; $i \in \{0, 1, 2, ..., N\}$. As in Burkart et al. (1997), the project pay-off is presented in the following way:

$\Pi^0 = b^0 = 0$;

$\Pi^i < 0, b^i < 0$ for $i = 1...N-2$;

$\Pi^{N-1} = \pi, b^{N-1} = b$ with probability λ, $\Pi^{N-1} = \pi, b^{N-1} = 0$ with probability $1-\lambda$;

$\Pi^N = 0, b^N = 0$ with probability λ, $\Pi^N = 0, b^N = b$ with probability $1-\lambda$.

Suppose at the initiation date t=0, management makes a searching effort $e \in [0, 1]$ with cost $\frac{1}{2}e^2$. This enables her to learn the project payoff at $t = 1$ with probability e. large shareholder makes a monitoring effort E with cost $\frac{1}{2}E^2$. The monitoring effort is such that conditional on the manager's successful search, large shareholders could be informed of the project payoff with probability E.

At $t = 1$, the manager chooses a project to be voted upon at the upcoming meeting. The project selection is contingent upon the large shareholder's approval. Given the endogenous choice of effort e and E, according to Burkart et al. (1997), there are three possible outcomes:

1. If both are uninformed, project 0 will be chosen;

2. If only the manager is informed, she will choose to enjoy b with certainty; that is, she will choose either project $N-1$ or N, whichever that yields b, knowing the realization of the payoff. This leads to probability λ of the realization of π;

3. If both are informed, the large shareholder chooses project $N-1$ to maximize profit.

This project selection round explains selection problem 3: given large shareholder's monitoring effort, it's impossible that projects with negative security benefits will be drafted. Given the project selected by the manager and large shareholder, the manager's proposal was drafted to put up for voting at the upcoming meeting. The value of the proposal is a function of (Π, b).

Still at t=1, with the proposal drafting, through canvassing shareholder votes, management learned her support base S_A, which is the anticipated percentage of shareholders voting for the proposal. As there would be bias in the management's information about her support, there is canvassing noise $\epsilon \in [-\delta, \delta]$. Thus the actual shareholder support would be $S_R = S_A + \epsilon$. Extreme

values of S_A lead to certain outcomes irrespective of the canvasing noise ϵ. $S_A - \delta \geq \frac{1}{2}$ leads to a sure thing; $S_A + \delta \leq \frac{1}{2}$ leads to a lost cause. If $S_A - \delta < \frac{1}{2} < S_A + \delta$, the proposal is contestable.

As the large shareholder has monitored and approved the drafted proposal when both are informed, it's reasonable to assume that the projects approved by the large shareholder have already received his approval at the voting. Thus, I make the following assumption about the manager's anticipated voting support for the drafted proposal:

Assumption 1

Manager perfectly observes if the large shareholder is informed or not;

If the large shareholder is uninformed, $E[Pr(S_R \geq \frac{1}{2})] = p$*;*

If the large shareholder is informed, $S_A - \delta \geq \frac{1}{2}$*.*

Where p is an exogenous probability.

The voting record date is usually 50 days before the firm meeting, when eligible voters and their voting equity holding are registered. Regarding the order of the voting record date and managerial actions, I make the assumption that the voting record date occurs after proposal drafting $t = 1$, and after the voting record date, management could withdraw the proposal at $t = 2$. This withdrawal action explains the observable withdrawn proposals.

At t=2, management makes the decision to withdraw the proposal or not. Failed management proposals bring reputation cost to managers $k_d > 0$, which is anticipated. Thus a manager has an incentive to withdraw when the proposal is heading to a defeat, especially when the manager is a long-term one.

At t=3, after the firm meeting, the voting outcome is realized. Passing a management proposal brings about security benefits to shareholders and private benefits to the manager. Failing a management proposal results in a reputation cost for the manager, and no realization of security benefits and private benefits.

The goal of this setup is to solve for the optimal managerial action e^*, and the equilibrium distribution of the proposals over realized voting support $F(S_R)$, with parameter space $(k_d, \alpha, \Pi, b, \lambda, p)$, so that associated welfare and efficiency analysis can be carried out.

5.1 Effort in Equilibrium

At $t = 2$, if $E[Pr(S_R \geq \frac{1}{2})]b \leq E[Pr(S_R \leq \frac{1}{2})]k_d$, the manager withdraws the proposal at the last minute. b represents the level of the manager's private benefit that she could obtain if the drafted proposal gets passed. By the assumption about S_A and the large shareholder's information acquisition, if the large shareholder is uninformed, while the manager is informed, the manager withdraws the proposal if $p * b \leq (1-p) * k_d$; if the large shareholder is informed, the manager won't withdraw the proposal, because projects with positive security benefits will be selected. If both are uninformed, I assume internal withdrawal of the proposal, as if no proposal will be put up for a vote during this process, as the manager perfectly knows that project 0 wouldn't gain her private benefit, and thus wouldn't take the risk.

At $t = 1$, with probability e^*, the manager will be informed, while with probability E^*, if the manager is informed, the large shareholder will be informed. From this, S_A can be inferred conditional on e^*. If the large shareholder is informed, which happens with probability E^*, $S_A - \delta \geq \frac{1}{2}$. If the manager is informed while the large shareholder is uninformed, which happens with probability $e^*(1-E^*)$, $E[Pr(S_R \geq \frac{1}{2})] = p$.

At $t = 0$, the manager chooses e. The optimization problem is Burkart et al. (1997) with reputation cost. I analyze based on the comparison of b and k_d.

In the case when reputation cost is lower relative to private benefit, the manager would choose to take the risk in the case when the large shareholder is not informed. Given shareholder's equilibrium effort E^*, the manager's maximization problem is the following:

$$max \;\; eE^*\lambda b + e(1-E^*)(p*b-(1-p)*k_d) - \frac{1}{2}e^2$$

$e(1-E^*)(p*b-(1-p)*k_d)$ is the scenario when the proposal is put up for voting when the large shareholder is uninformed, thus with a probability p the proposal will pass, and the manager could grab private benefit b (and otherwise a lose with reputation cost k_d). The solution to this maximization problem is:

$$e^* = min\{[\lambda b - [pb-(1-p)k_d]]E^* + pb - (1-p)k_d; 1\}$$

This FOC condition relates to Burkart et al. (1997)'s initiative effect. Consider the case with the inner solution. When $\lambda \in [0, p-(1-p)\frac{k_d}{b}]$ and thus less congruence of interest, the managerial effort decreases with large shareholder monitoring. This corresponds to the holdup problem, as increasing monitoring decreases the manager's chance to diverge to the project with the highest private benefits. When $\lambda \in [p-(1-p)\frac{k_d}{b}, 1]$, the manager's effort increases with the probability that the large shareholder is informed. This is different from the hold-up problem because the voting constrains the overall managerial gain, with the uncertainty of voting, and reputation cost associated with failures. Thus manager would rather ensure to maximize the chance that his proposal gets passed through soliciting support, instead of taking a risk to diverge to the proposal with full private benefit.

Proposition 1 *Within the context of voting, there is a managerial trade-off between taking the initiative and voting success.*

Given the manager's equilibrium effort e^*, the large shareholder's maximization problem is the following:

$$max \;\; \alpha e^*[E\pi + p(1-E)\lambda\pi] - \frac{1}{2}E^2$$

Similar to the management problem, the part of $p\alpha e^*(1-E)\lambda\pi$ is the situation that large shareholders are uninformed about the project payoff, and thus management takes the chance. The corresponding FOC condition is:

$$E^* = min\{\alpha\pi[1-p\lambda]e^*; 1\}$$

Thus, the larger the stake, the more monitoring effort. The following assumption makes sure that the interior solution is obtained:

Assumption 2 $b \in (0,1)$; $\alpha\pi b < \frac{1}{\lambda(1-\frac{1}{2}\lambda)}$

Then the following unconditional equilibrium effort level is obtained:

$$e^*(b) = \frac{\frac{1}{2}(b - k_d)}{1 + \alpha\pi[\frac{1}{2}(b - k_d) - \lambda b](1 - \frac{1}{2}\lambda)} \quad \text{and} \quad E^*(b) = \frac{\alpha\pi(1 - \frac{1}{2}\lambda) \cdot \frac{1}{2}(b - k_d)}{1 + \alpha\pi[\frac{1}{2}(b - k_d) - \lambda b](1 - \frac{1}{2}\lambda)}$$

In the case when reputation cost is higher relative to private benefit, the manager would choose to withdraw when the large shareholder is uninformed. Thus the manager and large shareholder's maximization problem is similar to before, except without the uncertain term.

$$e^* = min\{\lambda b E^*; 1\} \quad \text{and} \quad E^* = min\{\alpha\pi e^*; 1\}$$

Thus unconditionally, following **Assumption 2**,

When $\alpha\pi\lambda b < 1$, $e^* = 0$ and $E^* = 0$.

When $\alpha\pi\lambda b > 1$, $e^* = 0$ and $E^* = 0$, or $E^* = 1$ and $e^* = \lambda b$.

When $\alpha\pi\lambda b = 1$, $e^* = \lambda b E^*$ (Very rare case).

Although in this stage, the manager could withdraw at the last minute, with anticipation of the higher reputation cost, the manager would either never work, or when profit is relatively higher, under endless monitoring, choose higher work. There is no room for managerial initiative.

5.2 Selection & Failure

In this section, I discuss the managerial proposal selection problem. From the previous subsection, we can see that the managerial proposal voting outcome discontinuity around the 0 voting threshold could be explained by two channels: 1. before voting, the large shareholder monitors the proposal, which reduces the chance of proposals with higher private benefit put up for a vote; 2. there is a reputation cost associated with proposal failures, and the manager would not put up random proposals at a voting event.

The probability of proposal selection would be $Pr(Selection) = e^*E^*$. When the large shareholder is informed, the proposal with the highest security benefit will be put up for a vote, resulting in a higher chance of winning. I first discuss the scenario $b > k_d$.

$$Pr(Selection) = e^*E^* = \frac{\frac{1}{4}\alpha\pi(b-k_d)^2(1-\frac{1}{2}\lambda)}{\{1+\alpha\pi[\frac{1}{2}(b-k_d)-\lambda b](1-\frac{1}{2}\lambda)\}^2}$$

Corollary 1 *When $b > k_d$, $Pr(Selection)$ is monotonically increasing with respect to b.*

With higher managerial private benefits, selection tends to be higher as the manager would induce more effort to search for projects. Conditional on the manager's effort, the large shareholder also increases optimal monitoring effort.

In the case of $b < k_d$, we would either see no selection, and hence, no managerial proposal $\alpha\pi\lambda b < 1$, or linear selection effect with respect to b, when $\alpha\pi\lambda b > 1$. In the same line of reasoning, if π is relatively higher, then the large shareholder has the incentive to exert a maximum level of effort to ensure, while the manager has the correspondence linear in b. Note that in this scenario, although the k_d does not lead to a substantial change in the shape of the selection function, but still provides a lower bound for managers soliciting votes. With relatively higher reputation costs, managers tend to submit fewer proposals in general.

The probability of proposal failure would be $Pr(Failure) = \frac{1}{2}e^*(1-E^*)$ when $b > k_d$. When the large shareholder is uninformed, while the manager is informed, the manager would put up a proposal with a chance to win.

$$Pr(Failure) = \frac{1}{2}e^*(1-E^*) = \frac{\frac{1}{4}(b-k_d)[1-\alpha\pi b\lambda(1-\frac{1}{2}\lambda)]}{\{1+\alpha\pi[\frac{1}{2}(b-k_d)-\lambda b](1-\frac{1}{2}\lambda)\}^2}$$

Proposition 2 *When $b > k_d$, there exists a threshold value b_t, where $Pr(Failure)$ is increasing with respect to b when $b < b_t$, and decreasing with respect to b when $b > b_t$.*

$$b_t = \frac{1+\frac{1}{2}\alpha\pi k_d(1-\frac{1}{2}\lambda)}{\alpha\pi(1-\frac{1}{2}\lambda)(\lambda+\frac{1}{2})}$$

Private benefit has positive and negative effects on managerial proposal failure through two channels. Although the manager and large shareholder effort both increase with respect to b, the probability of management proposal failure increases with managerial effort e, while decreases with the large shareholder effort E. Starting from a lower level of b, increasing private benefit leads to more failure as manager tends to submit more risky proposals with increasing private benefit. Passing the threshold, increasing private benefit leads to less failure as the selection effect dominates.

In the case of $b < k_d$, there would never be proposal failures as the manager won't take the risk to submit proposals without the large shareholders' informness.

5.3 Empirical Implications

This theoretical framework emphasizes the role of managerial private benefit. As the analysis before, due to her potential information advantage, it's possible for the manager to rent-seek for managerial private benefit; however, higher private benefit also leads to higher managerial effort, increasing value creation. The aim of the empirical analysis is to disentangle these two effects so that we can answer the question of this paper. This requires an estimation of the model. This section provides some numerical examples to understand how each parameter moves the model prediction. Figure 4 describes the subplots. 1-4 adjusts different parameters from the baseline graph 5: the probability of proposal failure with $(\alpha, \pi, \lambda, k_d) = (0.1, 40, 0.2, 0.1)$ across different values of b. We can see that lower π and α, higher proposal failure, due to lower shareholder monitoring; k_d mainly influences Pr(Fail) through the starting point of the curves, and hence, the lower k_d, in general, higher probability of management proposal failures; and the higher λ, the higher degree of concavity of the graph: as the hold-up problem becomes less severe with higher λ, managerial effort increases more relative to the large shareholder effort. In figure 6, I plot the probability of proposal selection with respect to b. With the lowest level of b, Pr(Selection) is relatively less sensitive, while in the higher region, Pr(Selection) is always increasing in b. I provide empirical evidence supporting the predictions of the theory section in the next section.

6 Managing Proposals: Empirics

As analyzed in section 5, theoretically, an association exists between private benefit and management proposal selection, and hence, proposal failure. This section provides a first look at the data of such associations. Then I examine the effect of a reputation shock: CEO retirement age to verify the validity of the reputation cost, as assumed in the outcome of the voting stage.

Private benefit can relate to Kalay et al. (2014)'s strategy: the difference between the actual stock price, and a synthetic portfolio constructed through put-call parity. As revealed in the paper, such discrepancy always exists, but tends to be higher with more contentious meeting proposals. For this reason, I focus on this measurement exactly on a firm meeting voting record date, when the activity of firm votes trading tends to be higher, and the stock price better reflects the influence of the ownership structure.

I provide an illustration as to why Kalay et al. (2014)'s strategy relates to managerial private benefit b. As illustrated before, there are chances when the large shareholder can't be informed about the project's profitability. Shareholders know that the manager would take the chance to choose whichever project that gives the manager b, and hence deviating from profit maximization. In this case, shareholders bear the opportunity cost of missing π. Glick & Kalay (2003) provides an example of how the options portfolio could help construct the opportunity of a lost asset when there is uncertainty in the asset value. In a similar line, we could consider the opportunity cost of missing π by converting the put-call parity $C(T) - P(T) + PV(S(\pi))$, where $S(\pi)$ is the anticipated stock price as a function of the security benefit. If there is uncertainty in the anticipated security benefit, the option realization replicates the ups and downs of the realized cash flow. Thus, the discrepancy between the $C(T) - P(T) + PV(S(\pi))$ and the actual stock price reflects the proportion of diverted private benefits. Burkart et al. (1998) explains why the stock price internalizes the managerial private benefit b. In their framework, the controlling shareholder could extract corporate resources ϕ, so that the resulting security benefit takes a fraction of $(1-\phi)$. With a convex diversion cost $l(\phi)$, the optimal extraction for the controlling shareholder becomes a fraction $\phi^* - l(\phi^*)$, a fixed amount. This amount should bear equivalence to b if the manager represents the controlling shareholder.[4]

[4]Kalay et al. (2014) explains this measurement as the value of voting rights. Through the perspective of the controlling shareholder, the private benefit extraction should relate negatively to Kalay et al. (2014)'s measurement. However, there are activist investors who tend to buy votes before firm meetings. This explains that, in general,

Figure 5 depicts the variation and confidence interval of this measurement across different management proposals. It shows that for adjourn meeting, amend omnibus stock plan, approve merger agreement, approve omnibus stock plan, and increase authorized common stock, this measurement tends to be higher. To relate, Figure 2 shows that the degree of discontinuity varies across different types of management proposals. For amend/approve omnibus stock plan, the degree of discontinuity is on average higher.

Note that although the S_R is sensitive to the private benefit measurement, there is more noise to the final voting result for/ against. Figure 6 plots the actual failure frequency of voting results across the private benefit rank. It shows that for both say-on-pay votes (blue), the pattern predicted by theory is more obvious, with a concave shape that peaked at 4; for non-say-on-pay votes(red), the variation isn't as significant as S_R. There are two potential reasons explaining this violation. First, the non-advisory proposals are themselves of a great variety, and hence cause different margins in terms of sensitivity to private benefit measurement. I categorize the management proposals listed in appendix C, according to the general descriptions of the proposal contents, and perform the same ranking test as in figure 7. Indeed, though the higher frequency of proposal failures tends to appear in the central region, the actual ranking distributions do not follow a clear pattern as opposed to the advisory votes. Second, as mentioned before, the theory prediction relies on the assumption of the voting result probability. If some external forces, such as shareholder activism events happened, then the predicted distribution would be disrupted. I further explore this effect in section 6.

CEO Retirement. In this section, I consider CEO's discretion over proposals put forward. As mentioned before, management proposal failure has implicit cost on management's reputation. As reputation is a long-term implicit contract (Summers & Shleifer (1988)), we would be expecting such a cost to be less so for short-term managers. For ease of exposition, consider two types: the long-term one M_l and the short-term one M_s. M_l has a long-term perspective in the firm, and thus reputation serves as an important element of career concern to him; M_s has shorter expected horizon as a manager inside the firm. Thus short term economic incentive outweighs career concerns; he compares the potential **rent** from risk-taking in voting with the reputation

Kalay et al. (2014)'s measurement is non-negative and tends to be higher around special meetings. This is induced by the private benefit of the activist side, which correlates with positive security benefits brought about by successful activism. As this paper is focusing on the management proposal voting, in general associated with less activism, the negative end of Kalay et al. (2014)'s measurement matters for evaluation of managerial private benefit.

cost associated with votes not passed.

As the CEO term is usually endogenous to firm and CEO characteristics, it's not wise to directly use CEO turnover when constructing a proxy of the CEO term. What's more, any such measurements would be look-back, which does not fit well with the expected horizon story.

CEO Retirement age provides a natural variation to the management decision-making. As documented in Jenter & Lewellen (2015) and Lumsdaine et al. (1990), for US professionals, there exists a retirement age window (64-66), when the probability for the professional leaving the firm is higher, and highest around age 65. In this paper, I look to this retirement age window and argue that, with a higher chance of retirement at this age, we should expect that CEOs that are 1 year younger than this age are more likely to fit into M_s type decision making. I examine CEOs solely as they are the No.1 decision maker in the firm.

In figure A.1, the left figure shows the distribution of the CEO age across the lifespan. The average age of CEOs centers in the later half of the 50s, and range from 30 to 90. The right figure shows the distribution of the interval between the voting record date and the date when the CEO leaves the position, conditional on turnover occurring within 1 year: the near future turnover follows a relatively non-centered distribution across a year. This graph shows that when examining the age of the CEO at firm meetings and using it as a predictor of a near future turnover, the retirement age bracket provides a fuzzy discontinuity window.

Figure A.2 shows the probability of turnover within 1 year of a given CEO age group, below 51 (on the left), and above 51 (on the right). In this sample of CEOs, for younger CEOs, turnover seems to be higher for those aged below 40; for elder CEOs, turnover is higher in the region of (63-65). This is exactly one year before the documented retirement age, consistent with the literature.

Since the frequency of CEOs below age 40 is very rare and is associated with cases of high turnovers, I condition the sample on ages above 40. Table A.1 shows such an association. In the regression, I include the retirement age dummy (age 63-65) and a dummy for CEOs aged above 66 to capture the discontinuity at ages 63 and 66. CEO turnover is significantly associated with CEO age, as shown in all specifications. With the CEO age falling into the retirement age bracket (63-65), the probability of CEO turnover within one year goes up by 21.5% in the full specification. Firm and CEO level characteristics matter for the turnover: with higher insider ownership, there

is a lower probability of CEO turnover. This result is consistent with Jenter & Lewellen (2015)'s.

Jenter & Lewellen (2015)'s paper argues that retirement-age executives are associated with less cost of forced turnover after a takeover as they are retiring very soon. Thus they are more willing to accept a takeover bid. Extrapolated from Jenter & Lewellen (2015)'s paper about CEO preferences, I show that the CEO retirement age also has an effect on the management proposal's voting outcome. If we consider shareholder voting activities to be similar to takeover activities, then we should expect to see similar results as Jenter & Lewellen (2015), that the retirement-age executives are associated with more shareholder disagreement and face more failures in the management proposal outcome.

Table 3 runs a first-stage regression of the proposal outcome (fail=1, others=0) on the retirement age (63-65) dummy, and age 66 dummy, together with the same covariates and fixed effects as the specification in table A.1: the association between retirement age and CEO turnover.

We can see that retirement-age CEOs are associated with a higher probability of proposal failures. Falling into the retirement age window leads to an increase in management proposal failure probability, and this effect is stronger within the CEO. Column (4) reports the regression estimates with full specification and CEO fixed effects. Entering the retirement age raises the probability of proposal failure by 2.5%, along with the rising probability of CEO turnover within 1 year. This effect is significant at 1% level controlling for firm and CEO characteristics, and especially the CEO's insider ownership, showing that the short-term CEO rent-seeking behavior is mediated by the degree that the manager could benefit from such proposals.

The result of this first-stage regression means two things. First, it provides a piece of novel evidence about managerial reputation incentives, consistent with the previous assumption that reputation is an important type of entry cost for management decision-making and proposals that were put forward. Second, it shows that the CEO retirement age provides another route of exogenous variation to management proposal voting, which is CEO power, with an F-value of 3.87 in the first stage in the full specification. The full specification will be exploited in the 2SLS regression later.

7 The Effect of Shareholder Activism on Management Rent-Seeking: Methodology

As analyzed in section 4, it's impossible to directly evaluate the treatment effect of failing the management proposals, because the manager will choose to self-select away from the treatment (fail), instead of into the treatment. Thus the conditional independence assumption is unlikely to hold, as managers with a higher probability of selection are also associated with a higher probability of profitable project generation. As estimated and presented in figure A.5, with a reasonable guess of the parameter set, the estimated probability of selection has a mode of around 1.4%. Details of this estimation will be discussed in the next section.

This section provides a novel route of plausibly exogenous variation to the management proposal failures: the pre-record date options trading volume spike. I argue that this helps with unbiased identification of the effect of failing management proposals, as by the instrumental variable philosophy, when the variation is unlikely correlated with the outcome variable otherwise, except failing management proposals, the selection effect bias would be eased. The relevance of this route is supported by existing theory as signals that lead to shareholder activism. I show that an option trading volume spike leads to higher failures, and this effect still holds with executive stock option plan proposals.

Existing literature discussed the role of derivatives trading as an activist strategy to obtain voting rights before the voting record date. Speit et al. (2023) emphasizes the role of put options. They considered the case of an activist blocking a value-increasing reform. As it's difficult to buy voting shares as the dispersed shareholders tend to free-ride on the expected post-reform security benefits increase, this type of activists could choose to trade put options, giving them a right to sell security at the strike price of the anticipated post-reform security benefit, if the realized stock price is below the anticipation. With such a trade, the activist effectively reduces the dispersed shareholder's anticipation of the success probability of the reform, and thus willing to sell shares at a price between the current stock price and the anticipated post-reform security benefit. Burkart & Lee (2013) discusses the role of call options. Suppose the existence of an activist who brings value improvement with her trade, however, the exact potential is unobserved. With the free-riding problem, dispersed shareholders would only sell at the average valuation of the value improvement,

leading to lower types overpaying. The call options provide an effective signal of the bidder's value improvement. For low type of activists, to buy votes without being misidentified as high type (and thus paying for the premium), the activist could sell a call option with a strike price of exactly their type of valuation. Thus, an actual high type would suffer from the execution of the call option and could not enjoy the type-specific incremental cash flow. Seeing this signal, the sellers would agree to sell at the bidding price.

Within this paper's context, I argue that call option trading volume with a strike price of pre-meeting share price best captures activists' signals. Consider this paper's theoretical set-up: with large shareholder monitoring, there are probabilities that management proposals bring profits. Around the voting record date, such expectation has already correctly been reflected in the share price. Suppose there's an activist plotting to object to the incumbent, even though the plot disrupts the profit generation. The activist needs to acquire voting shares to sway voting results. Due to the free-riding problem, dispersed shareholders wouldn't sell shares. Thus the activist could sell the call option at the current share price to signal the fact that the plot is disrupting the profit generation. Seeing this signal, dispersed shareholders would be willing to sell the voting shares, because otherwise they would suffer from a loss. [5]

As in figure A.3, around the firm meeting record date, there exist trading volume spikes for both put and call options with a strike price near the voting record date stock price. This is especially obvious for call option trading volume, which tends to rise and fall more frequently before the firm meeting record date. This is a piece of strong evidence supporting the above plot, as the voting record date alone does not entail any other reasons for security trading on this scale. I capture the options trading volume spikes through the discrepancy between the maximum and minimum options trading volume in the 20-day window before the firm meeting record date, standardized by the total number of shares outstanding. For the meetings that are not associated with frequent option trading (1-2 observations of option trading volume), I take the level of the volume as the spike. This length of time is reasonable, as the proposal drafting process is not swift. As mentioned before, strictly speaking, it takes no less than a month before a firm meeting for a shareholder proposal to be submitted to ISS for review.

[5]For this plot, the put option would also work. However, empirically, call option trading is generally better for identification purpose, as put option tradings are also associated with speculation: an arbitrager expecting the vote to be failed would also choose to buy a put option.

Table 4 presents the result of the first-stage regression. We can see that the voting record date call option trading volume increases the probability of proposal failures for management proposals. I control for proposal level fixed effect to capture the proposal level variation of options trading volume. A 10 basis point increase in call option trading volume (standardized by the number of shares outstanding) leads to about 30% increase in management proposal failure probability, and is significant at one percentage level. A similar effect holds for the put option. It shows that the signaling channel mentioned above holds in both directions. In columns (4) to (6), I interact the signaling channel with the proposals about omnibus stock compensation, which are the proposals that change the executive compensation. For call options, omnibus stock plan proposals are influenced more heavily by option trading volume significantly, showing that the instrumental effect still holds for these types of proposals. For the analysis later, I focus on the specification in column (1), with calls, to best exploit the signaling effect of options trading volume spike.

It's also worth mentioning that the first-stage result is indeed plausibly driven by the signaling channel, as the increasing probability of proposal failure is largely driven by the higher end of the call option trading volume spikes. In figure A.4, I plot the association between the magnitude of call option trading volume spikes and the probability of management proposal failure rate. I found that for smaller volume regions ($< 2 \times 10^{-6}$, which takes more than 50% of the sample), the probability of proposal failure tends to decrease. This is reasonable as the speculators of firm meetings wouldn't trade in a very large magnitude. However, in the region with large trading volume spikes ($> 2 \times 10^{-6}$), the probability of proposal failure tends to increase and is on average higher than that of the small volume region by 1.5%. This is a meaningful region as this magnitude of the volume takes up more than 10% of a large shareholder's holding. [6] With such magnitude of the trade, it's more likely that the spike is driven by a vote-trading motive.

8 The Effect of Shareholder Activism on Management Rent-Seeking: Empirical Results

This section examines the effect of shareholder activism through the exogenous variation introduced in the previous section. Remember that without any external forces, the probability of management

[6] A standard option contract has 100 shares of the underlying stock.

proposal failure tends to be non-monotonic, which can be best found in figure 6, for advisory votes (the blue bars). However, it's often not the case that the pattern is obvious, most likely due to shareholder actions before the meeting. As analyzed before, the call option trading volume spikes lead to more management proposal failures. Due to these potential external forces, the original model assumption about $\frac{1}{2}$ probability for the failure of the private benefit proposals is unlikely to hold, and hence, the failure of management proposals does not represent the management rent-seeking. Thus I resort to indirect measurements. First, I examine the stock market reaction to management proposal failure. If passing and failing are unexpected, then the stock market reaction should reflect the proposal's value. For proposals with higher managerial private benefits, and hence, less security benefit, the failure of the proposal should result in a less negative stock market reaction. Second, I examine the reaction of non-CEO executive turnover to the management proposal failure. As managers who can extract higher rents are more likely to stay in the firm, higher executive turnover following managerial proposal rejection should reflect a change in the condition of the managerial effective control.

I show the impact of failing management proposals on executive turnover and shareholder returns. In a two-stage least squares framework, I instrument the failure of management proposals with call option trading volume spikes, to introduce uncertainty to the managerial proposal selection problem. As a comparison, I also examine the impact of the retirement-age CEOs. Remember that retirement-age CEOs help identify the observations with less reputation cost, and hence, have higher initiative and are also more likely to put forward risky proposals. [7] Comparing the effect of management proposal failures in simple regression & retirement-age CEOs, with those instrumented by activism channels should give us more insights about the effect of shareholder activism.

8.1 Estimation and sampling

As analyzed in the theory section, managerial private benefits influence management proposal selection and failure. We want to get rid of the influence of the selection effect on the outcome variable and evaluate the effect of exogenous failure on the outcome variable. This leads to the

[7] Notably, shareholder activism and retirement-age CEOs are not equivalent. Though the specifications are similar to 2SLS estimation, the exogenous variation brought about by the activism routes helps with unbiased estimation, while the retirement age effect, on the one hand, encourages more proposals' submission, however, on the other hand, leads to a higher probability of proposal selection.

following second-stage regression specification:

$$Y_{itp} = \psi \widehat{Fail}_{itp} + \kappa_1 Pr(\widehat{Selection})_{it} + \kappa_2 \widehat{Fail}_{itp} \times Pr(\widehat{Selection})_{it} + \alpha_t + \epsilon_{itp}$$

Where the treatment, the failure of management proposal, is instrumented by shareholder activism and CEO retirement. α_t stands for time-fixed effects. $Pr(\widehat{Selection})$ is the estimated probability of proposal success, which is a function of the known variable b. With such specification, ψ is the parameter of interest and evaluates the effect of management proposal failure, while κ_1 estimates the effect of increasing the probability of managerial self-selection when $Fail = 0$, which captures the **self-selection** effect, while κ_2 estimates the effect of managerial proposal failure when self-selection is higher. Including the second and third terms helps with understanding a more accurate effect of managerial rent-seeking.

I first provide a reasonable guess for $Pr(\widehat{Selection})$. The method is to approximate the shape of the proposal failure across the ranking of managerial private benefit for advisory votes, as shown in figure 6. As analyzed before in figure 4, I simulate the model-predicted managerial proposal failure probability across different sets of parameter values. Subplot 5 approximates the advisory votes failure frequency: with a peaking point in the middle and highest frequency of around 3%, which corresponds to slightly less than 1% over all proposals for the peaking point of the advisory votes, and a suitable concavity with less probability of proposal failure at the lower and higher end of the private benefit measurement, I use the parameter set $(\alpha, \pi, \lambda, k_d) = (0.1, 40, 0.2, 0.1)$ as a reference for the estimation of $Pr(\widehat{Selection})$ in the later regressions.

Figure A.5 presents the histogram of the original voting premium measurement in percentage terms as in Kalay et al. (2014). As it covers a different value region than the model assumption $b \in (0, 1)$, for convenience, I rescale the voting premium to private benefit by reverting the sign of the measurement, and then linearly mapping it to $(0, 1)$: (-premium+maximum)/(maximum-minimum). Figure A.5 also presents the histogram of the rescaled private benefit measurement. Mapping this measurement to the model prediction with $(\alpha, \pi, \lambda, k_d) = (0.1, 40, 0.2, 0.1)$, I calculate the model-predicted probability of proposal selection, as shown in the bottom of Figure A.5. In general, the level of selection probability has a mean of around 12% and a maximum of around 20%.

Realistically, there is one empirical challenge to introduce the selection effect: the available data on different types of exogenous variation and selection effects do not perfectly overlap. This is especially problematic if the variation loses its validity in the overlapping sample. Among the three exogenous variations, this problem is most severe for the retirement age CEOs, as in the overlapping sample, the retirement age effect disappears in all specifications. To deal with this problem, I impute 0s for the observations that do not have available selection effect data. For the options trading volume effect, the overlap is the whole sample and thus does not threaten the identification.

8.2 Executive turnover

Executive turnover/ dismissal is a reflection of both the governance condition and managerial performance. Sarin et al. (1997) shows that insider ownership structure is negatively related to top executive turnover, while outside large shareholder's presence is positively related to it, controlling for performance. Volpin (2007) examines turnover-performance sensitivity and finds it negatively correlates with higher ownership concentration and top executive ownership. Wang (2021) investigates UK family firms and finds that higher foreign competition leads to more managerial turnover, consistent with a disciplinary channel on family firms' private benefits. Examining the effect of 'no' votes in managerial voting provides extra evidence of a similar channel: an exercise of the voting rights of all shareholders (not only informed shareholders, but also minority shareholders). This helps with understanding the effect on managerial rent-seeking, as executive turnover represents a shortened horizon for the management to extract private benefit.

Table 5 presents the results with CEOs' retirement age as exogenous variation. As already shown in table 3, retirement-age CEOs are associated with a higher probability of management proposal failure, due to a lower reputation cost for the CEO, and consequently higher managerial effort. Examining the effect of failure over the next four years, I found diverging effects. In the short run, non-CEO executive turnover probability is negatively affected by failure, especially for turnover from year 1 to year 2. Comparing columns (5) and (7) of the top panel, we can see that the OLS estimate is amplified by the CEO retirement age effect. The proposals that failed because the CEO faced less reputation cost led to 10.4% fewer non-CEO executive turnovers in the next two years. This is a novel fact since higher executive turnovers are usually documented

to be associated with threats to the management. One potential explanation is that the passing of similar proposals leads to relatively higher non-CEO executive turnovers, potentially due to disagreement or distaste for the passing of the proposals. This can be supported by the fact that with a higher probability of managerial selection, the effect attenuates: managers tend to obtain a higher level of private benefit with the passing of the proposal. This occurs in the short term after a firm meeting, within 2 years, as a direct result of the voting. Considering selection, by comparing columns (5) and (6), we can see that the effect of failure is amplified when controlling for selection, with significant negative executive turnovers for management with a lower probability of self-selection, consistent with the result in the 2SLS specification.

In the longer run, the retirement age CEO effect reverses. Comparing columns (5) and (7) of the bottom panel, the proposals which were failed because the CEO faced less reputation cost led to a 27% increasing probability of executive turnover three years later. Over the long term, reputation cost plays a role. Executives might resort to outside options as a result of this cost.

Let's then analyze the effect of shareholder activism. Table 6 instruments management proposal failure with option trading volume. Higher option trading volume serves as a signal to acquire votes to change the voting outcome, and in the context of management proposal voting, increases the probability of proposal failure. Failures induced by shareholder activism lead to an increasing probability of executive turnover in the future, and the effect is particularly large for turnover within 2-3 years, with a 38.9% increase in the turnover probability in the 2SLS framework. This is likely due to managerial self-selection over the loss in the private benefit. In this sample, for turnover within 2-3 years, the OLS with selection effect (as in column (2)) leads to consistent estimates with the 2SLS specification (3). In the OLS specification, for management with higher selection, failure leads to significantly higher executive turnovers. Management with higher selection tends to lose more with rejection, as a failure already poses a surprise. Thus it is similar to option-induced activism, where shareholders pose a surprise to the voting outcome.

In terms of the effect of proposal failure on executive turnover, these two routes of exogenous variations point in similar directions: more proposal failures, which lead to more executive turnovers in the longer run. However, in terms of cross-sectional effect heterogeneity, the two routes point in opposite directions. For management with higher self-selection probability, relative to lower self-selection probability, retirement-age CEOs lead to relatively higher turnover, while

call option-induced activism leads to relatively lower turnover. This is likely due to additional reputation costs posted by activism, which affects management with lower private benefits.

8.3 Shareholder welfare

The abnormal return after the firm meeting directly indicates the shareholder's valuation of the proposal. Cuñat et al. (2012) explains that the event day market return of a plausibly random passing of shareholder governance proposal reflects the value of the proposal. Their result shows that the market tends to react to a random proposal only on the event day, and no after-effects in the aggregate. Li et al. (2021) looks into the institutional trading patterns after firm meetings, and finds that funds tend to sell more immediately after firm meetings, due to disagreement. With this fact that the shareholder base changes after a firm meeting, Babenko (2019) gets around this period and examines 5 days of cumulative market reaction to close-call management proposals and shows an on-average positive market reaction to close-call management proposals excluding regular say-on-pay votes. Indeed, as shown in figure 8, the average market reaction after a firm meeting tends to be reversed after several days. While the daily abnormal return goes upwards from event day to day 2, the trend diminishes after 7 days.

Considering these facts, I first examine the immediate and cumulative effects of failed management proposals caused by CEO retirement in table 7. In general, the effect of failing management proposals leads to a negative stock market reaction on the event day, with a 0.3% decrease in returns. With the significance alleviated after, I argue that this effect directly reflects the average value of management proposals. This evidence is consistent with the theoretical interpretation of the managerial initiative effect: on average, the managerial proposals are value-increasing, even if they have higher chances of rent-seeking. With reduced reputation cost, management has higher initiative, and hence the cost of rejection for shareholders is higher. This is also reflected by controlling for the selection effect. In column (2), in the simple OLS regression, we can see that for the passed proposals, the management with a higher probability of self-selection tends to have positive immediate stock market returns, and thus failing such proposals causes higher negative returns compared to the management with lower probability of self-selection. This effect also shows up in the 7-day cumulative abnormal returns. Controlling for self-selection, for the management with lower self-selection, failure leads to higher 7 days cumulative abnormal returns, with a significantly

positive 1.3%, possibly due to higher selling due to disagreement when such proposals get passed. This fact is consistent with Babenko (2019)'s, and is supporting evidence that failing the management could be value-enhancing, and relates to the previous evidence that following the passing of management proposals with a lower probability of self-selection, there is a positive effect on executive turnovers. This fact is more significant as compared with the event date abnormal returns. As the passing of the proposal is a surprise, shareholders react to the voting result through trading (Li et al. (2021)). In the meantime, the average effect of failing for the management with higher selection tends to be value destroying.

Let's then examine the effect of shareholder activism. In table 8, using option volume to introduce exogenous variation, I found contrasting effects as opposed to retirement-age CEOs. In this subsample, on the event day, in general, there are no significant stock market reactions, in contrast to the retirement age subsample. This is likely due to the retirement age sample consisting only of CEOs above 40 years old, and hence brings about more value-enhancing proposals. What's different is that the 7 days' cumulative abnormal returns are significantly lower upon management proposal failures. A failure leads to a 18.7% decrease in returns in the 2SLS specification. Following a similar argument, this result bears a different interpretation from the event date stock market reaction, and measures the aggregate shareholder return after trading. Thus the 7-day CAR reflects the fact that more shares are sold due to disagreement.

Controlling for selection and interaction, the effect of failure leads to a surprising total of 55.9% decrease in the 7 days cumulative abnormal returns in the full specification for management with a lower probability of self-selection in column (8), while for management with a higher probability of self-selection, failure leads to relatively higher stock market returns. This effect speaks to the previous evidence that failure is associated with higher executive turnover in the long run, especially for management with a lower probability of selection, due to the increased reputation cost associated with activism.

In terms of management proposals voting, the direction of shareholder welfare is ambiguous. With a positive probability, the proposal could generate profit. Although the average value of proposals is positive, shareholder welfare is an aggregation of the profit motives and shareholder's opinions. Thus we can see that even when the firm has more mature CEOs, failing the proposal could result in higher welfare; while following the activism that induces voting shares trading,

failing the proposal results in lower welfare. Although activism effectively reduces managerial rent-seeking, it also leads to short-term welfare loss.

9 Conclusion

Does shareholder voting curb management rent-seeking? If the voting shareholders know perfectly about the value of the management proposal, then the correct answer should be given by the voting results, and the associated market reaction. However, the fact that the realized lack of no votes, and discontinuity of the management proposal frequency around the pass/no pass voting threshold shows that managerial action before a firm meeting does have a non-negligible effect, and thus, the effect of this should be taken into account.

Based on the empirical evidence established by the literature, I provide a simple model to dissect the effect of managerial action. In the model, managerial proposal drafting is monitored by a large shareholder. Because of the costly effort for him to acquire information about the profitability of projects, it is not always the case that the most profitable projects can be enforced by a large shareholder. This condition is exacerbated when the manager has diverging interests from large shareholders, as though facing the reputation cost at the voting stage, the manager seeks to maximize her chance to obtain private benefit. Thus the management proposals can be classified, theoretically, into two types: the value-enhancing ones, which are verified by the large shareholder about their profitability; the rent-seeking ones, which are not verified by the large shareholder, and thus more likely to carry ambiguous effect. I then show that empirically identifying the effect of failure while reducing the influence of managerial self-selection is possible, as the managerial private benefit could be proxied by a portfolio of stock and options, a measurement designed by Kalay et al. (2014). Empirical evidence confirms the theoretical mappings between the private benefit measurement and proposal failure frequency: a concave graph with a lower probability of proposal failure when the private benefit measurement is at the lower and higher end. The effect of reputation in the voting event is also important, as supported by the higher rate of management proposal failure when the firm's CEO is approaching the common retirement age window.

With the empirical mapping confirming the managerial selection effect, I developed a novel empirical strategy to analyze the effect of rejecting management proposals. I consider the signaling

channel that causes shareholder activism, as similarly documented by theory. The particular signal is the call option trading volume, which tends to spike before the firm meeting record date. Activists tend to employ such a strategy to signal for dispersed shareholder cooperation. Indeed, I found that with a higher level of pre-record date call option trading volume spike, consequently, there is a higher probability of management proposal failure rate.

With these routes, I test the impact of rejecting management proposals. With option trading volume, I found significant 2-3 year subsequent executive turnovers, and drastically negative seven days cumulative stock market return to the management proposal failure induced by option trading spikes. In terms of treatment effect heterogeneity, shareholder activism mainly influences the management with lower self-selection, reducing the managerial rent-seeking horizon by posing long-term reputation costs brought about by proposal failures.

This paper highlights the significance of managerial private benefit, and argues that ignoring the associated managerial self-selection effect leads to the violation of the conditional independence assumption, and thus leads to biased estimates of the effect of failing management proposals. The results of controlling for such effects do, in fact, change the significance of the specification, and result in consistent estimates with the 2SLS specification, which are considered to provide a more unbiased estimation of the problem. For executive turnover, OLS with selection controls brings about large significant executive turnover upon failure, similar to the 2SLS instrumented by call option trading volume spike. In addition, we can see that failing is not always value destroying: controlling for selection, conditional on higher performance, failure leads to around 2% higher 7 days cumulative abnormal returns for management with lower selection, showing that shareholders also take into consideration non-profit reasons in terms of management proposal voting.

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Figures and Tables

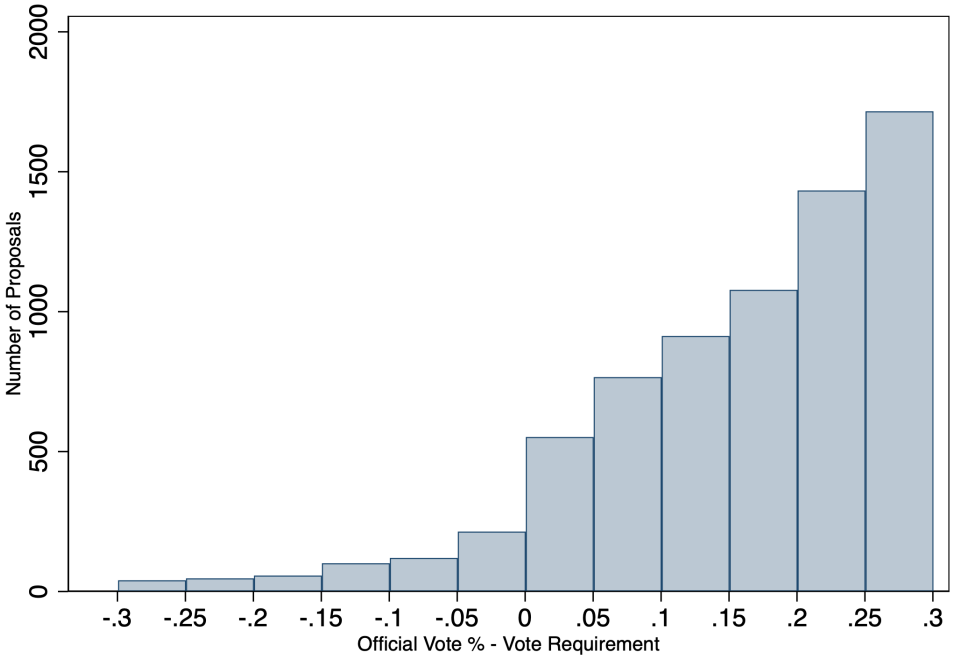


Figure 1: Histogram of closely contested proposals by distance

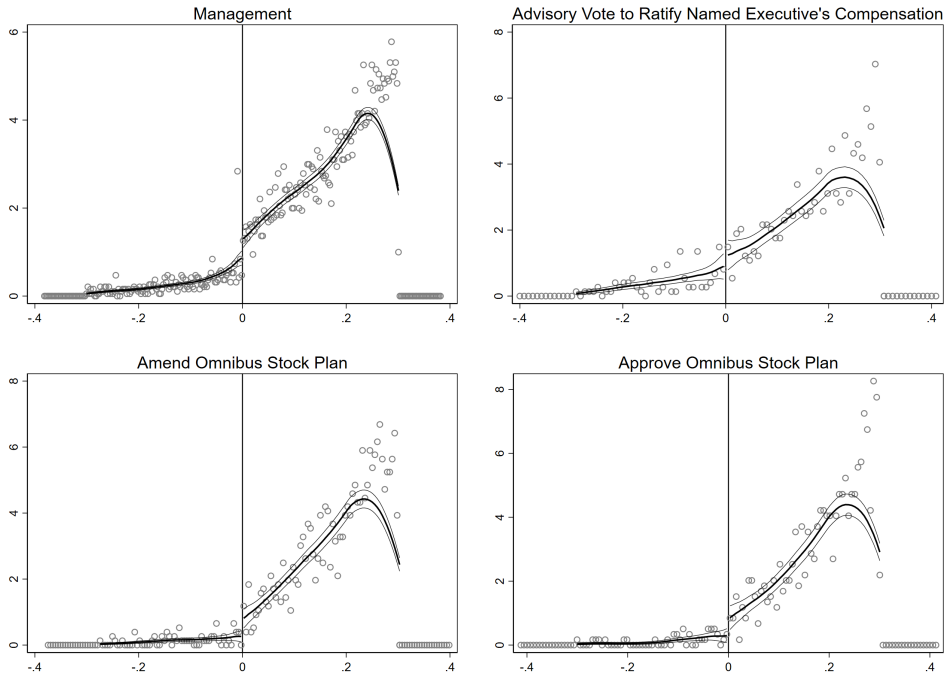


Figure 2: Continuity of Votes, McCrary 2008

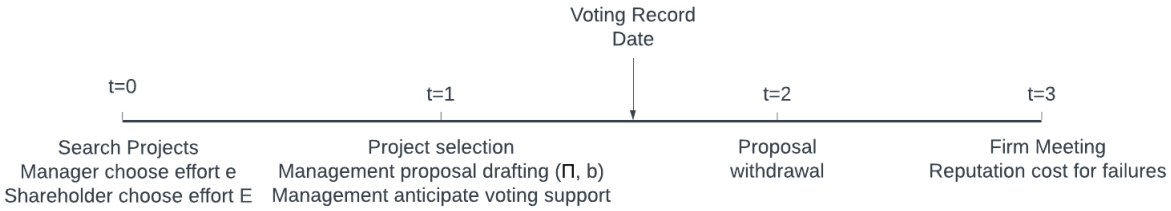
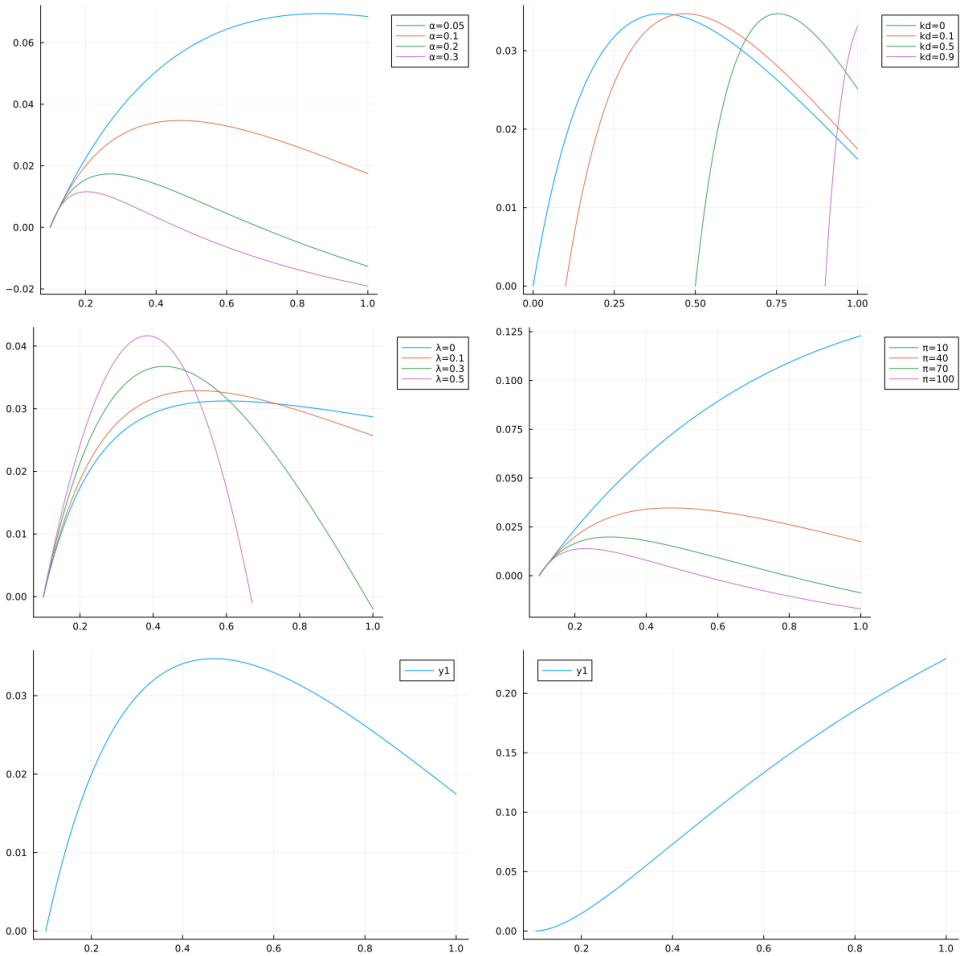


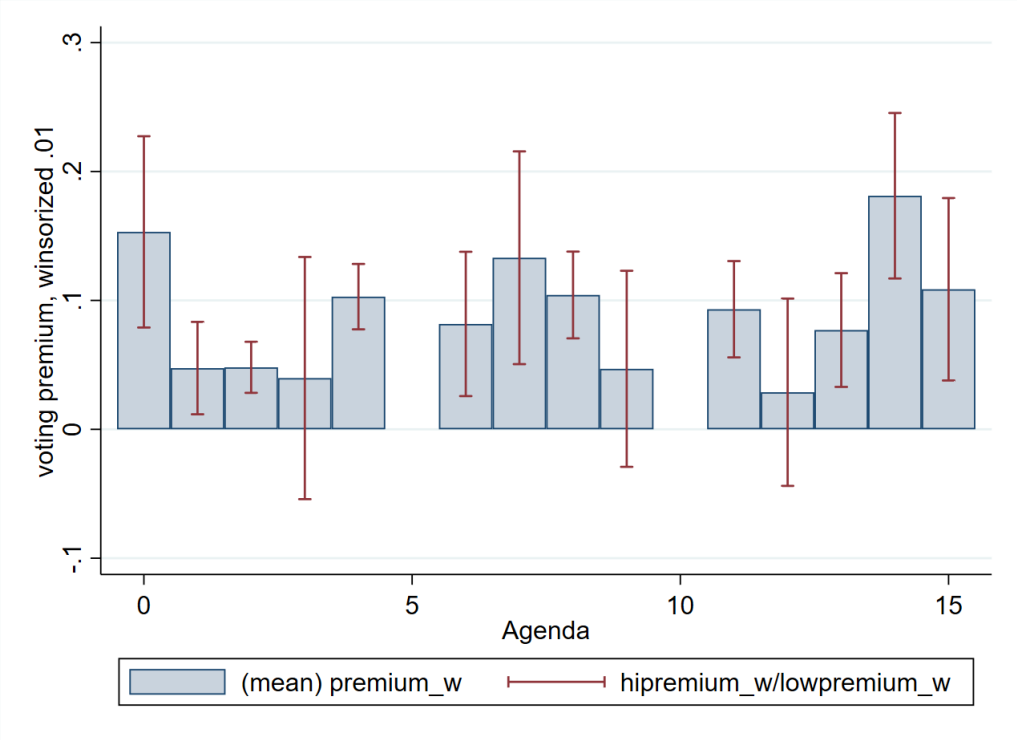
Figure 3: Timeline



Subplot descriptions:

1. Pr(Fail) with varying α
2. Pr(Fail) with varying k_d
3. Pr(Fail) with varying λ
4. Pr(Fail) with varying π
5. Pr(Fail) with (α, π, λ, k_d)=(0.1, 40, 0.2, 0.1)
6. Pr(Selection) with (α, π, λ, k_d)=(0.1, 40, 0.2, 0.1)

Figure 4: Model Simulations



Agenda descriptions:
0. Adjourn Meeting
1. Advisory Vote on Say on Pay Frequency
2. Advisory Vote to Ratify Named Executive Officers' Compensation
3. Amend Articles/Bylaws/Charter-Non-Routine
4. Amend Omnibus Stock Plan
6. Amend Qualified Employee Stock Purchase Plan
7. Approve Merger Agreement
8. Approve Omnibus Stock Plan
9. Approve Qualified Employee Stock Purchase Plan
11. Approve/Amend Executive Incentive Bonus Plan
12. Declassify the Board of Directors
13. Elect Subsidiary Director
14. Increase Authorized Common Stock
15. Other Business

Figure 5: Voting premium mean and 95% confidence interval as in Kalay et al. (2014)

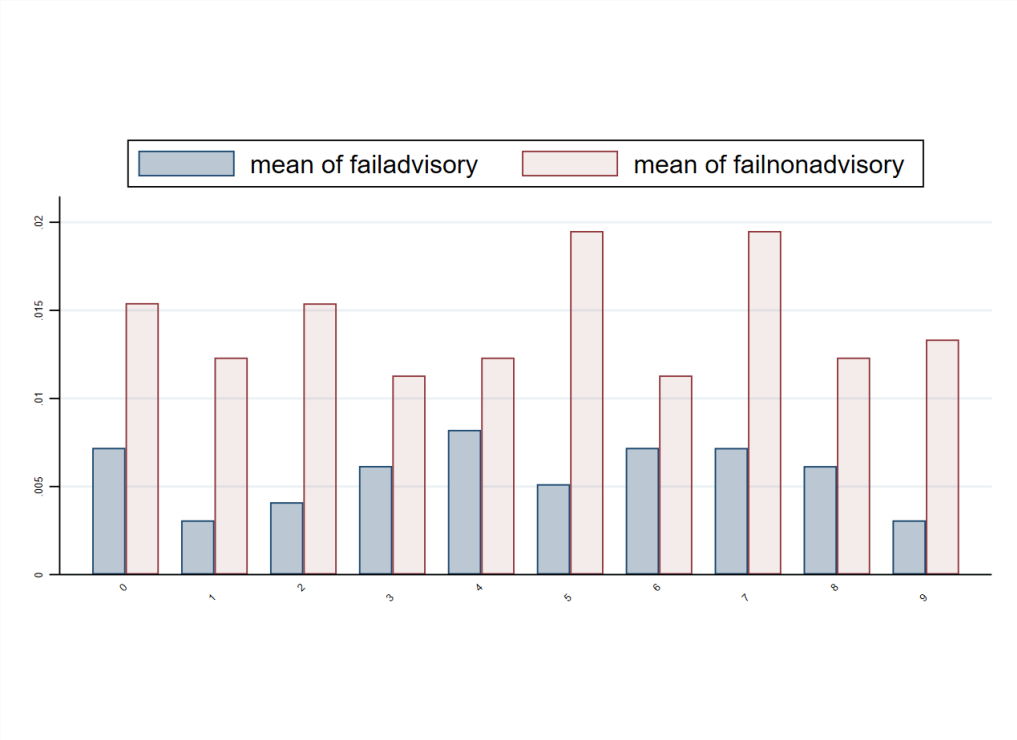


Figure 6: Voting premium and management proposal failure probability

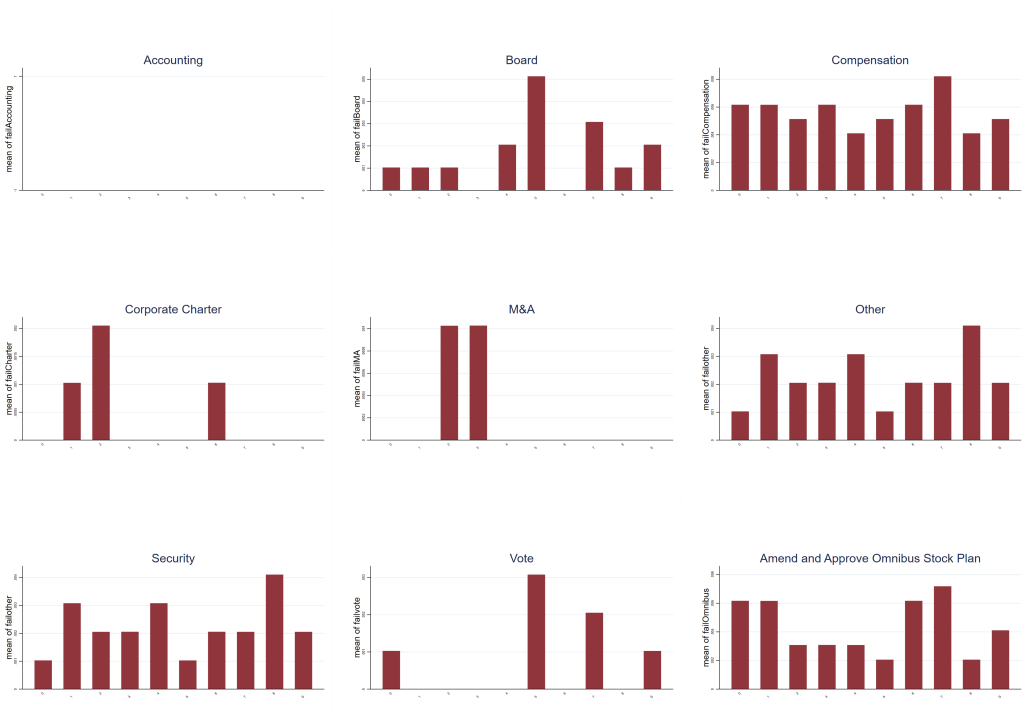


Figure 7: Heterogeneity Across Categories as Appendix C

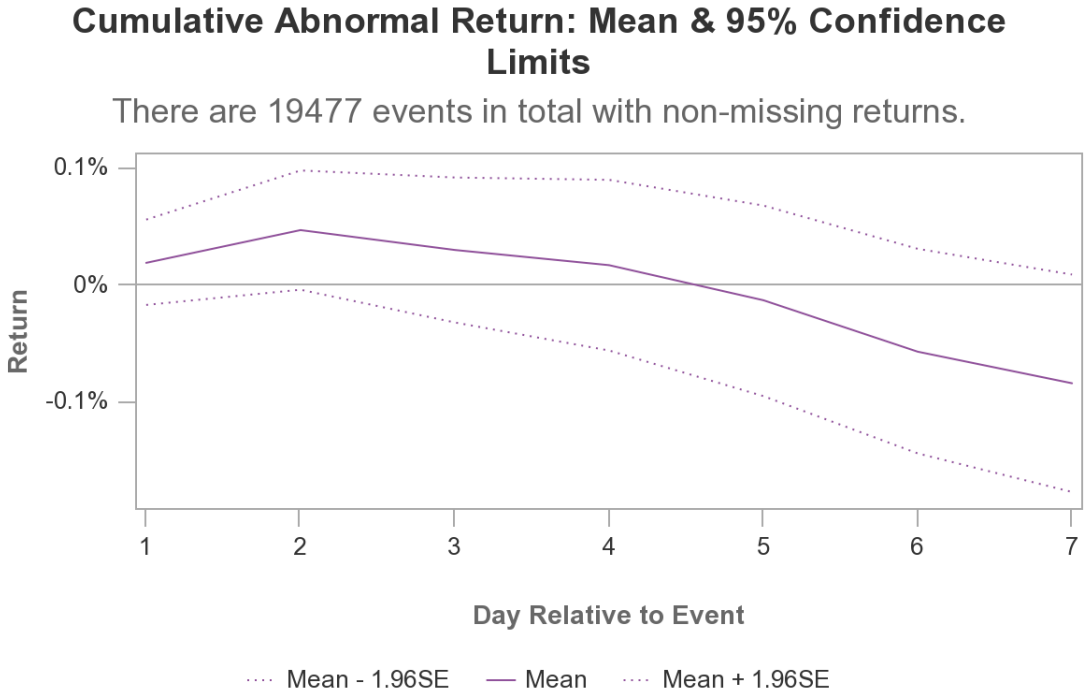


Figure 8: Average Cahart 4 factor cumulative abnormal return after firm meeting (generated from WRDS Event Studies)

Table 1: **Frequency of management-sponsored proposals across voting outcomes**

This table provides information on the management-sponsored proposals. The top section shows the frequency of proposals that passed or failed with a distance to the voting result between [-1,1]. The bottom section shows the frequency of withdrawn proposals. I list the top 3 proposals in each bin/ withdrawn that occur with the highest frequency, with the number of observations to the right of the proposal.

Distance	Proposal	Observations
[-1,-0.5)	Approve Merger Agreement	32
	Declassify the Board of Directors	4
	Amend Articles / Bylaws / Charter-Non-Routine	4
[-0.5,0.4)	Approve Merger Agreement	187
	Increase Authorized Common Stock	21
	Adjourn Meeting	14
[-0.4,-0.3)	Advisory Vote to Ratify Named Executive Officers' Compensation	5
	Elect Directors (Opposite Slate) (INACTIVE)	4
	Approve Omnibus Stock Plan	3
[-0.3,-0.2)	Advisory Vote to Ratify Named Executive Officers' Compensation	15
	Amend Omnibus Stock Plan	8
	Approve Omnibus Stock Plan	6
[-0.2,-0.1)	Advisory Vote to Ratify Named Executive Officers' Compensation	31
	Amend Omnibus Stock Plan	23
	Declassify the Board of Directors	12
[-0.1,0)	Advisory Vote to Ratify Named Executive Officers' Compensation	58
	Amend Omnibus Stock Plan	30
	Declassify the Board of Directors	29
[0,0.1)	Amend Omnibus Stock Plan	226
	Advisory Vote to Ratify Named Executive Officers' Compensation	139
	Approve Omnibus Stock Plan	127
[0.1,0.2)	Amend Omnibus Stock Plan	485
	Approve Omnibus Stock Plan	287
	Advisory Vote to Ratify Named Executive Officers' Compensation	233
[0.2,0.3)	Amend Omnibus Stock Plan	827
	Approve Omnibus Stock Plan	507
	Advisory Vote to Ratify Named Executive Officers' Compensation	402
[0.3,0.4)	Amend Omnibus Stock Plan	1,164
	Approve Omnibus Stock Plan	812
	Advisory Vote to Ratify Named Executive Officers' Compensation	779
[0.4,0.5)	Advisory Vote to Ratify Named Executive Officers' Compensation	4,754
	Approve/Amend Executive Incentive Bonus Plan	1,525
	Amend Omnibus Stock Plan	1,435
[0.5,1]	Elect Director (Management)	331
	Elect Subsidiary Director	202
	Private Company	97
Withdrawn	Adjourn Meeting	411
	Other Business	379
	Elect Director (Management)	25

Table 2: **Descriptive statistics of the voting-executive joined sample**

This table provides an overview of the joined sample between executive turnover and management proposals. Panel A describes a sample that's one meeting proposal per observation. Firm-level characteristics are included. Dividend payer is a dummy variable for firms that pay dividends during the fiscal year. Market to book is winsorized at 1% level while extreme values are dropped for other variables. Institutional concentration is the institutional HHI index provided by Thomson Reuters. All variables in panel A are lagged by 1 year relative to the meeting record date. Panel B describes sample that's one proposal-executive per observation. Age and tenure are calculated at the time of the meeting record date. Age is in years and tenure is in days. Turnovers in 1 year is relative to the meeting record date. Turnovers in 2 years exclude turnovers in 1 years, etc. Firm level characteristics in Panel A are also included in the sample of panel B. Panel C describes the sample keeping only executives.

Panel A: Proposal level sample						
	No. Obs.	Mean	Median	P10	P90	SD
Proposals	18,022					
Withdrawals	447					
Failures	373					
Log(assets)	17,146	7.77	7.68	5.71	10.00	1.67
Market-to-book	16,215	3.27	2.00	0.90	5.38	15.29
ROA	16,449	0.13	0.13	0.02	0.26	0.12
Sales growth	14,893	0.12	0.08	-0.11	0.35	0.35
Dividend payer	17,146	0.54				
Insider ownership	5,441	0.99%	0.17%	0.02%	1.72%	3.55%
Institutional concentration	17,503	0.06	0.04	0.03	0.09	0.07
Institutional ownership	15,851	0.726	0.773	0.441	0.942	0.203
Panel B: Proposal-executive level sample						
	No. Obs.	Mean	Median	P10	P90	SD
Proposal-Executives	182,239					
Executives per proposal	18,022	10.11	10	6	15	3.54
Age	144,914	51.13	51	41	61	8.03
Tenure	44,985	10.22	8	1	23	9.03
Turnovers	19,745					
Turnovers in 1 Year	3,538					
Turnovers in 2 Years	2,952					
Turnovers in 3 Years	2,630					
Turnovers in 4 Years	2,234					
Panel C: Proposal-CEO level sample						
	No. Obs.	Mean	Median	P10	P90	SD
Proposal-CEOs	24,236					
Proposals	15,474					
Fails	446					
Females	725					
Age	24,236	56.08	56	47	65	7.53
Tenure	23,934	10.40	7	1	26	10.32
Shares owned	14,258	2.76%	0.91%	0.09%	6.33%	6.01%
Log(asset)	22,678	7.75	7.67	5.63	10.04	1.72
Dividend payers	12,440					

Table 3: **Retirement age CEOs: First stage**

This table estimates the first stage of the probability of proposal failure on CEO retirement age. Linear probability regression coefficients are reported:

$$Prob(Fail = 1)_{itpm} = \tau_{ret}\mathbb{1}[RET\_AGE(63-65)] + X_m + X_i + \upsilon_m + \epsilon_{itpm}$$

The sample excludes meetings labeled as 'Proxy Fights'. The dependent variable is the realized management proposal failure probability; it is regressed on a dummy variable indicating whether the CEO is in the retirement age bracket (63-65)) at the firm i's meeting time t. The covariates are X_m: CEO level characteristics including tenure, whether a new executive (tenure less than two years), and CEO's total ownership of shares; X_i: firm characteristics including log of total assets, and whether the firm is a dividend payer or not. υ_m represents the CEO fixed effect. t (for OLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels.

$Prob(Fail)$	(1)	(2)	(3)	(4)
$RET\_AGE(63-65)$	0.003	0.009**	0.017***	0.025***
	(0.87)	(2.43)	(3.56)	(3.43)
$AGE66$	-0.003	-0.002	0.023***	0.040***
	(-0.91)	(-0.49)	(3.31)	(3.25)
Tenure		0.000		-0.004***
		(1.55)		(-3.05)
New Executive		0.009***		-0.008
		(3.07)		(-1.33)
Shares Owned		0.000		0.001
		(0.94)		(1.49)
Log(asset)		0.000		0.022***
		(0.72)		(3.23)
Dividend		0.002		0.003
		(1.04)		(0.34)
CEO FE	No	No	Yes	Yes
Adj. R^2	0.000	0.001	0.318	0.249
F-value	0.88	2.86	8.22	3.87
Obs.	24,053	14,030	24,032	14,030

Table 4: **Call Option Trading Volume: First Stage**

This table estimates the first stage of the probability of proposal failure on options trading volume. Linear probability regression coefficients are reported:

$$Pr(Fail)_{itp} = \tau_{volume} Spike_{itp} + \phi_p + \epsilon_{itp}$$

$Spike_{itp}$ stands for the call or put option trading volume spike, specified as the discrepancy between the maximum and minimum option trading volume within the window 20 days before and includes the voting record date. For meetings that are not associated with frequent option trading (1-2 observations of option trading volume), the level of the volume is imputed as the spike. All sample excludes meetings labeled as proxy fights. Volumes are standardized by the firm's corresponding number of shares outstanding. It is winsorized at 1% level. ϕ_p stands for proposal fixed effects (for proposals that have more than 50 observations in the sample). "Omnibus" stands for amend or approve omnibus stock compensation. The sample excludes "approve merger agreements". t (for OLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels.

Pr(Fail)	Call	Put	Call Put	Call	Put	Call Put
	(1)	(2)	(3)	(4)	(5)	(6)
Spike call	342.6***		258.3**	323.4***		272.4**
	(3.54)		(2.31)	(2.86)		(2.10)
Spike put		406.1***	230.0		333.2**	147.0
		(3.08)	(1.51)		(2.10)	(0.81)
Omnibus				-0.029***	-0.031***	-0.030***
				(-4.19)	(-4.39)	(-4.29)
Spike call × Omnibus				71.61		-54.00
				(0.33)		(-0.21)
Spike put × Omnibus					234.6	272.9
					(0.82)	(0.82)
Proposal FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.0103	0.0100	0.0126	0.0102	0.0099	0.0103
F-value	5.90	5.74	5.72	5.61	5.49	5.24
Obs.	8,964	8,964	8,964	8,964	8,964	8,964

Table 5: **Retirement Age CEOs: rejection and executive turnover**

This table tests whether management proposal rejection leads to future executive turnover. The linear regression specification is the following:

$$Y_{itp} = \psi \widehat{Fail}_{itp} + \kappa_1 Pr(\widehat{Selection})_{it} + \kappa_2 \widehat{Fail}_{itp} \times Pr(\widehat{Selection})_{it} + \alpha_t + \epsilon_{itp}$$

The sample is restricted to CEOs above 40 years old. The sample includes only non-CEO executive turnover and excludes meetings that are labeled as proxy fights. The dependent variable is the probability of executive turnover within the next four years. The regression is a 2SLS specification. The management proposal failure is instrumented by the specification in table 3. In this subsample, the retirement age CEO's instrumental effects are preserved. Different columns correspond to different specifications. The Pr(Selection) variable is imputed with 0s for missing values to keep the full CEO retirement-turnover sample. t (for OLS) and Z (for 2SLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels. Standard errors are clustered at the firm level.

	Turnover within 1 year				Turnover within 1-2 years			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fail	-0.007	-0.031	-0.065	-0.089	-0.026	-0.051**	−0.104**	−0.115**
	(-0.27)	(-0.99)	(-1.17)	(-1.40)	(-1.13)	(-2.02)	(-2.36)	(-2.56)
Pr(Selection)		-0.096		-0.100		0.11		0.117
		(-0.84)		(-0.86)		(1.17)		(1.18)
Fail × Pr(Selection)		0.708		0.800		0.76		0.429
		(1.37)		(0.86)		(1.44)		(0.46)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	14,030	14,030	14,030	14,030	14,030	14,030	14,030	14,030
R^2	0.027	0.026	0.026	0.026	0.026	0.026	0.025	0.026
	Turnover within 2-3 year				Turnover within 3-4 year			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fail	0.031	0.030	0.042	0.044	0.049	0.021	0.270**	0.163
	(0.86)	(0.64)	(0.46)	(0.37)	(0.88)	(0.42)	(2.01)	(1.28)
Pr(Selection)		0.042		0.042		0.099		0.060
		(0.49)		(0.48)		(1.03)		(0.60)
Fail × Pr(Selection)		0.052		-0.042		0.872		3.710
		(0.09)		(-0.03)		(0.63)		(1.60)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	14,030	14,030	14,030	14,030	14,030	14,030	14,030	14,030
R^2	0.003	0.003	0.003	0.003	0.006	0.007	0.011	0.014

Table 6: **Option Volume: rejection and executive turnover**

This table tests whether management proposal rejection leads to future executive turnover. The linear regression specification is the following:

$$Y_{itp} = \psi \widehat{Fail}_{itp} + \kappa_1 Pr(\widehat{Selection})_{it} + \kappa_2 \widehat{Fail}_{itp} \times Pr(\widehat{Selection})_{it} + \alpha_t + \epsilon_{itp}$$

The sample includes only non-CEO executive turnover, and excludes meetings that are labeled as proxy fights. In this subsample, the option trading volume's instrumental effects are preserved. The dependent variable is the probability of executive turnover within the next four years. The regression is a 2SLS specification. The management proposal failure is instrumented by the specification (1) about call option volume spike in table 4. t (for OLS) and Z (for 2SLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels. Standard errors are clustered at the firm level.

	Turnover within 1 year				Turnover within 1-2 years			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fail	0.046	-0.096	0.279	0.037	0.032	0.120	0.067	0.553
	(1.27)	(-0.97)	(0.96)	(0.05)	(1.12)	(1.16)	(0.31)	(1.10)
Pr(Selection)		-0.116		-0.137		-0.029		0.039
		(-0.90)		(-0.89)		(-0.34)		(0.36)
Fail × Pr(Selection)		1.348		2.167		-0.832		-4.64
		(1.35)		(0.30)		(-0.92)		(-1.07)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	5,314	5,314	5,314	5,314	5,314	5,314	5,314	5,314
R^2	0.160	0.160	0.145	0.160	0.150	0.150	0.150	0.150
	Turnover within 2-3 year				Turnover within 3-4 year			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fail	0.023	-0.055	0.389**	0.706*	0.019	0.101	0.121	0.027
	(1.07)	(-1.37)	(2.28)	(1.74)	(1.31)	(1.10)	(1.20)	(0.20)
Pr(Selection)		-0.078		-0.015		0.073		0.051
		(-1.31)		(-0.33)		(1.60)		(1.08)
Fail × Pr(Selection)		0.742*		-3.05		-0.781		0.804
		(1.83)		(-0.88)		(-0.97)		(0.60)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	5,314	5,314	5,314	5,314	5,314	5,314	5,314	5,314
R^2	0.166	0.167	0.085	0.167	0.120	0.121	0.104	0.120

Table 7: **Retirement Age: rejection and abnormal returns**

This table tests whether management proposal rejection leads to post-meeting abnormal returns. The linear regression specification is the following:

$$Y_{itp} = \psi \widehat{Fail}_{itp} + \kappa_1 Pr(\widehat{Selection})_{it} + \kappa_2 \widehat{Fail}_{itp} \times Pr(\widehat{Selection})_{it} + \alpha_t + \epsilon_{itp}$$

The sample restricts to CEOs above 40 years old and excludes meetings that are labeled as proxy fights. The dependent variable is the meeting day and 7 days cumulative abnormal returns calculated with the Cahart 4 factor model. The regression is a 2SLS specification. The management proposal failure is instrumented by the specification in table 3. In this subsample, the retirement age CEO's instrumental effects are preserved. Different columns correspond to different specifications. t (for OLS) and Z (for 2SLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels. Standard errors are clustered at the firm level.

	Day of vote			
	OLS	OLS	2SLS	2SLS
	(1)	(2)	(4)	(5)
Fail	-0.003^{**}	-0.002	-0.008^{***}	-0.007^{**}
	(-2.35)	(-1.33)	(-2.64)	(-2.24)
Pr(Selection)		0.009		0.009
		(1.25)		(1.22)
Fail × Pr(Selection)		-0.028		-0.025
		(-1.03)		(-0.38)
Year FE	Yes	Yes	Yes	Yes
Obs.	13,497	13,497	13,497	13,497
R^2	0.001	0.002	0.002	0.002
	7 days CAR			
	OLS	OLS	2SLS	2SLS
	(6)	(7)	(9)	(10)
Fail	0.007	0.013^{**}	0.007	0.010
	(1.37)	(2.04)	(0.67)	(0.88)
Pr(Selection)		-0.006		-0.006
		(-0.29)		(-0.31)
Fail × Pr(Selection)		-0.182		-0.120
		(-1.68)		(-0.54)
Year FE	Yes	Yes	Yes	Yes
Obs.	13,497	13,497	13,497	13,497
R^2	0.003	0.003	0.003	0.003

Table 8: **Option Volume: rejection and abnormal returns**

This table tests whether management proposal rejection leads to post-meeting abnormal returns. The linear regression specification is the following:

$$Y_{itp} = \psi \widehat{Fail}_{itp} + \kappa_1 Pr(\widehat{Selection})_{it} + \kappa_2 \widehat{Fail}_{itp} \times Pr(\widehat{Selection})_{it} + \alpha_t + \epsilon_{itp}$$

The sample excludes meetings that are labeled as proxy fights. In this subsample, the option trading volume's instrumental effects are preserved. The dependent variable is the meeting day and 7 days of cumulative abnormal returns calculated with the Cahart 4 factor model. The regression is a 2SLS specification. The management proposal failure is instrumented by the specification (1) about call option volume spike in table 4. t (for OLS) and Z (for 2SLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels. Standard errors are clustered at the firm level.

	Day of vote			
	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)
Fail	-0.001	-0.006	-0.001	0.008
	(-0.24)	(-0.78)	(-0.05)	(0.10)
Pr(Selection)		0.019		0.022
		(0.94)		(0.94)
Fail × Pr(Selection)		0.046		-0.085
		(0.73)		(-0.12)
Year FE	Yes	Yes	Yes	Yes
Obs.	9,125	9,125	9,125	9,125
R^2	0.003	0.003	0.003	0.003
	7 days CAR			
	OLS	OLS	2SLS	2SLS
	(5)	(6)	(7)	(8)
Fail	-0.003	-0.028	-0.187^{***}	-0.559^{*}
	(-0.50)	(-0.70)	(-2.52)	(-1.79)
Pr(Selection)		0.031		-0.037
		(0.54)		(-0.47)
Fail × Pr(Selection)		0.222		3.361
		(0.65)		(1.28)
Year FE	Yes	Yes	Yes	Yes
Obs.	9,125	9,125	9,125	9,125
R^2	0.002	0.002	0.000	0.005

Appendix

A Preliminary empirical results

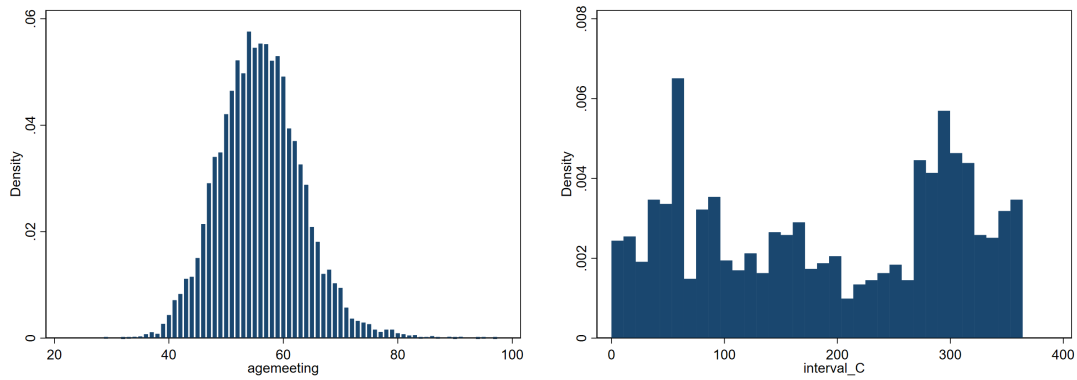


Figure A.1: Distribution of CEO age (left) and interval (right). Interval is the number of days between the voting record date and the date when the CEO leaves the position, conditional on turnover occurring within 1 year.

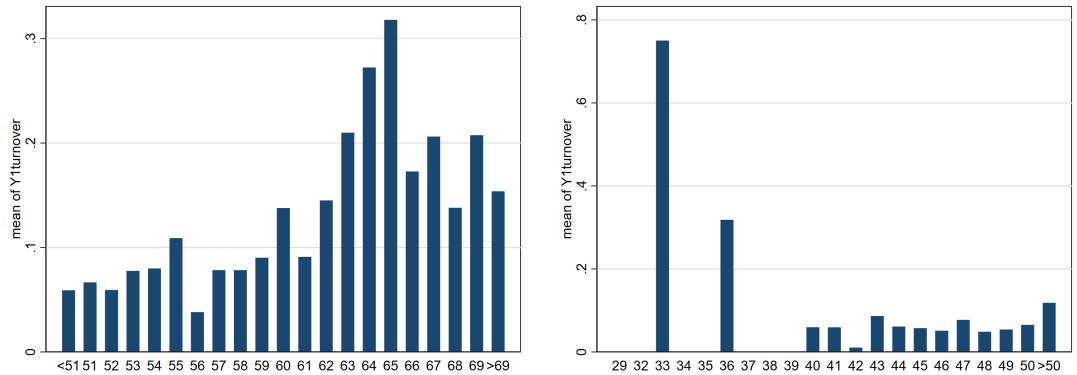


Figure A.2: The probability of CEO turnover conditional on CEO's age $>$ 50 (left) and $<=$ 50 (right).

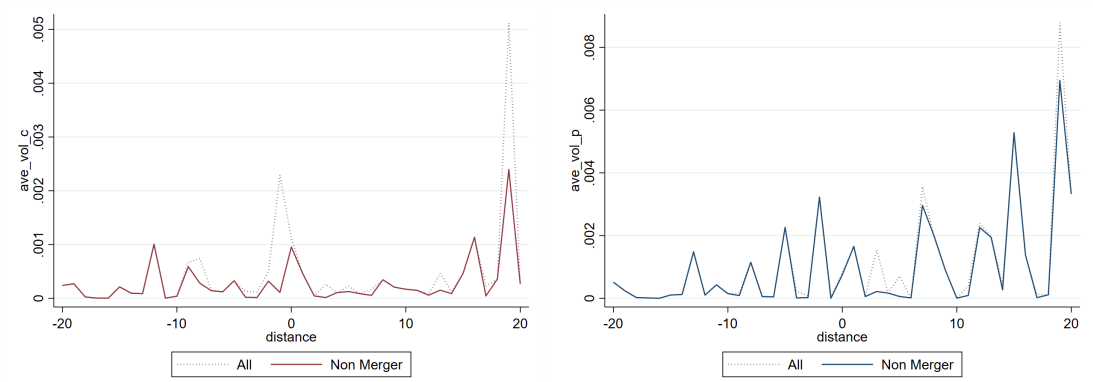


Figure A.3: Call (left) and put (right) option trading volume spikes around firm meeting voting record date (per number of shares outstanding).

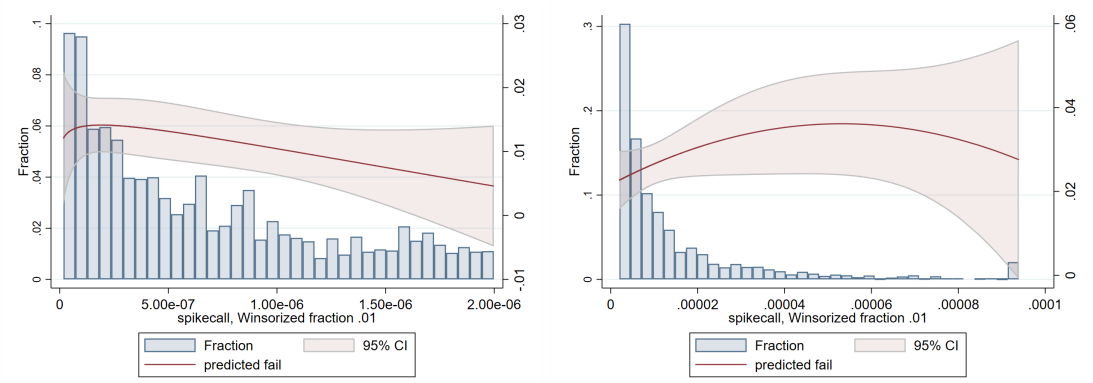


Figure A.4: Call options trading volume and proposal failure probability when the volume is less than 2×10^{-6} and more than 2×10^{-6} (per number of shares outstanding). The blue bars with the left axis compose the histogram, while the red line is the fractional polynomial fitted probability of management proposal failure.

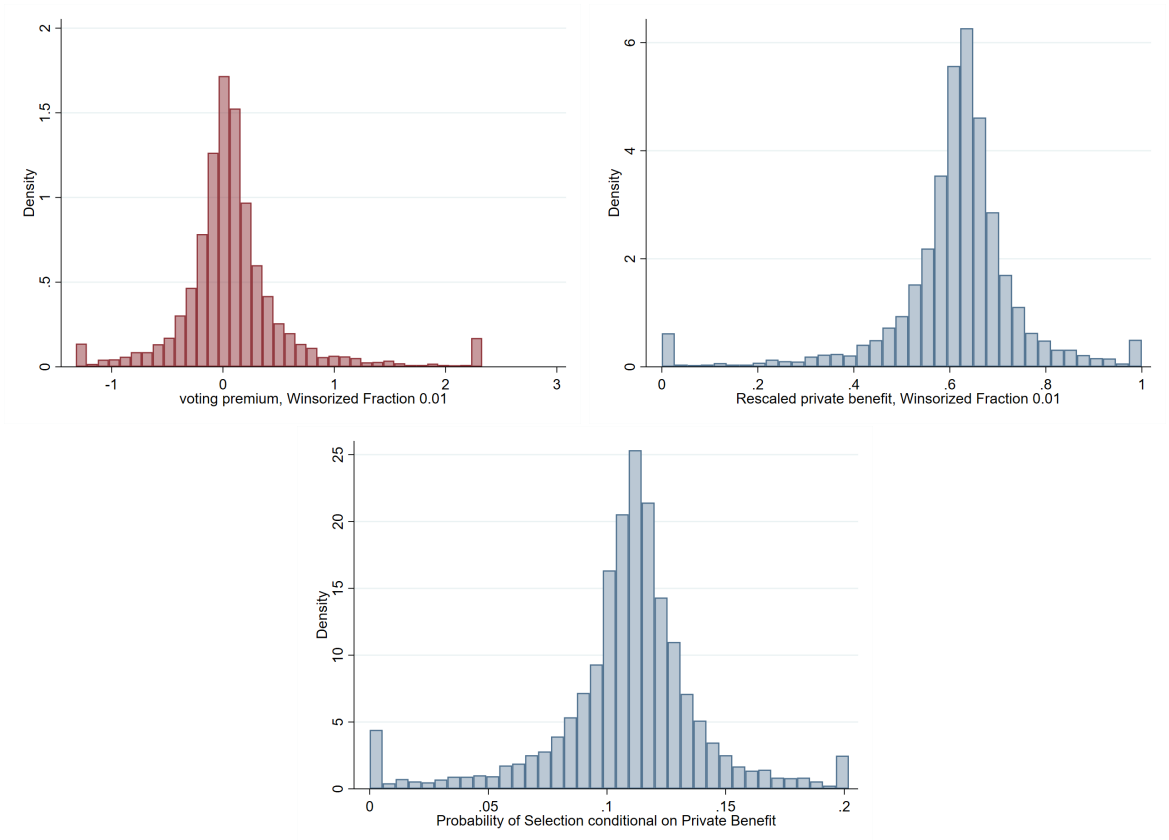


Figure A.5: Top left: distribution of voting premium as in Kalay et al. (2014); top right: distribution of rescaled private benefit measurement towards (0,1); bottom: Pr(Selection)

Table A.1: **Association between CEO retirement age and turnover**

This table shows the association between CEO retirement age and CEO turnover. The linear regression specification is the following:

$$Prob(Tover_{in} = 1)_{itpm} = \beta_{ret} \mathbb{1}[RET\_AGE(63-65)] + X_m + X_i + \upsilon_m + \epsilon_{itpm}$$

The dependent variable is the probability of CEO turnover within 1 year. X_m represents characteristics associated with CEO, including tenure and whether a new executive or not (tenure less than 2 years), and CEO's percentage of total shares owned; X_i represents firm level characteristics, including log of total asset, and whether the firm is a dividend payer or not. α_m represents the CEO's fixed effect, υ_m represents the manager's fixed effect. t (for OLS) values are reported in the parentheses, and $*$, $**$, $***$ correspond to significance at 10, 5, and 1 percent levels.

$Prob(Turnover_{in} = 1)$	(1)	(2)	(3)	(4)
$RET\_AGE(63-65)$	0.193***	0.207***	0.220***	0.157***
	(26.98)	(22.37)	(26.42)	(12.88)
$AGE66$	0.100***	0.123***	0.323***	0.215***
	(14.95)	(12.92)	(26.82)	(10.57)
Tenure		-0.003***		0.048***
		(-8.33)		(24.61)
New Executive		-0.047***		-0.048***
		(-6.45)		(-4.70)
Shares Owned		-0.003***		-0.000***
		(-5.77)		(-0.31)
Log(asset)		0.006***		-0.084***
		(3.29)		(-7.54)
Dividend		-0.027***		-0.015***
		(-4.72)		(-1.18)
Manager FE	No	No	Yes	Yes
Obs.	24,236	14,104	24,215	14,054
R^2	0.035	0.046	0.663	0.721

B Proof

Proof of Corollary 1 Consider how the probability of selection changes with b.

$$\frac{dPr(Selection)}{db} = \frac{d(E^* \cdot e^*)}{db} = \frac{\partial E^*}{\partial b} \cdot e^* + \frac{\partial e^*}{\partial b} \cdot E^*$$

where

$$\frac{\partial e^*}{\partial b} = \frac{\frac{1}{2}[1 - \alpha\pi k_d \lambda(1 - \frac{1}{2}\lambda)]}{\{1 + \alpha\pi[\frac{1}{2}(b - k_d) - \lambda b](1 - \frac{1}{2}\lambda)\}^2}$$

and

$$\frac{\partial E^*}{\partial b} = \alpha\pi(1 - \frac{1}{2}\lambda)\frac{\partial e^*}{\partial b}$$

Since $e \in (0, 1)$, and $E \in (0, 1)$, and $\partial E^*/\partial b$ is an affine transformation of $\partial e^*/\partial b$, the sign of $dPr(Selection)/db$ depends on the sign of $1 - \alpha\pi k_d \lambda(1 - \frac{1}{2}\lambda)$. With **Assumption 2** $\alpha\pi b < \frac{1}{\lambda(1-\frac{1}{2}\lambda)}$, and since this is analyzing the scenario of $b > k_d$, $1 - \alpha\pi k_d \lambda(1 - \frac{1}{2}\lambda) > 0$ always holds. QED.

Proof of Proposition 2 Consider how the probability of failure changes with b.

$$\begin{aligned}
\frac{dPr(Failure)}{db} &= \frac{d\frac{1}{2}((1 - E^*) \cdot e^*)}{db} \\
&= -\frac{1}{2}\frac{\partial E^*}{\partial b} \cdot e^* + \frac{1}{2}\frac{\partial e^*}{\partial b} \cdot (1 - E^*) \\
&= [-\frac{1}{2}\alpha\pi(1 - \frac{1}{2}\lambda)e^* + \frac{1}{2}(1 - E^*)] \cdot \frac{\partial e^*}{\partial b}
\end{aligned}$$

Given the closed-form solution of e^* and E^*, we get the term in the bracket to be

$$\frac{1 - \alpha\pi b\lambda(1 - \frac{1}{2}\lambda) - \frac{1}{2}(b - k_d)\alpha\pi(1 - \frac{1}{2}\lambda)}{1 + \alpha\pi[\frac{1}{2}(b - k_d) - \lambda b](1 - \frac{1}{2}\lambda)}$$

For this term to be positive, we need

$$b < \frac{1 + \frac{1}{2}\alpha\pi k_d(1 - \frac{1}{2}\lambda)}{\alpha\pi(1 - \frac{1}{2}\lambda)(\frac{1}{2} + \lambda)}$$

QED.

C Additional information

Type	Description Proposal	Obs.
Accounting	Accept Consolidated Financial Statements and Statutory Reports	5
	Accept Financial Statements and Statutory Reports	23
	Approve Auditors and Authorize Board to Fix Their Remuneration Auditors	81
	Approve Cancellation of Capital Authorization	1
	Receive Financial Statements and Statutory Reports (Non-Voting)	2
M&A	Acquire Certain Assets of Another Company	1
	Approve Acquisition OR Issue Shares in Connection with Acquisition	76
	Approve Merger Agreement	189
Other	Adjourn Meeting	262
	Adopt New Articles of Association/Charter	2
	Adopt the Jurisdiction of Incorporation as the Exclusive Forum for Certain Disputes	1
	Amend Investment Advisory Agreement	2
	Approve Formation of Holding Company	2
	Approve Reduction/Cancellation of Share Premium Account	7
	Approve Sale of Company Assets	7
	Approve Scheme of Arrangement	2
	Approve/Amend Stock Ownership Limitations	5
	Approve/Amend Stock Ownership Limitations (INACTIVE)	3
	Change Company Name	25
	Change Date/Location of Annual Meeting	1
	Close Meeting	1
	Eliminate/Restrict Right to Act by Written Consent	4
	Indicate Personal Interest in Proposed Agenda Item	2
	Miscellaneous Proposal: Company-Specific	4
	Open Meeting	1
	Other Business	284
	Preferred Proposal	14
	Rescind Fair Price Provision	1
	Shares Represented by this Proxy are Owned and Controlled by a @ Citizen	6
Vote	Adopt Majority Voting for Uncontested Election of Directors	24
	Adopt or Increase Supermajority Vote Requirement for Amendments	2
	Amend Quorum Requirements	1
	Amend Votes Per Share of Existing Stock	1
	Eliminate Cumulative Voting	5
	Provide Directors May Only Be Removed for Cause	1
	Provide Right to Act by Written Consent	2
	Provide Right to Call Special Meeting	9
	Reduce Supermajority Vote Requirement	43
	Require Advance Notice for Shareholder Proposals/Nominations	5
	Transact Other Business (Non-Voting)	13

Type	Description Proposal	Obs.
Board	Adopt, Renew or Amend NOL Rights Plan (NOL Pill)	14
	Adopt, Renew or Amend Shareholder Rights Plan (Poison Pill)	21
	Adopt/Amend Nomination Procedures for the Board	2
	Approve Corporate Governance Report	1
	Approve Decrease in Size of Board	10
	Approve Discharge of Management Board	10
	Approve Discharge of Supervisory Board	7
	Approve Executive Appointment	1
	Approve Financial Statements, Allocation of Income, and Discharge Directors	3
	Approve Increase in Size of Board	15
	Approve/Amend Director and Officer Indemnification/Liability Provisions (INACTIVE)	11
	Authorize Board to Fill Vacancies	2
	Authorize Board to Issue Shares in the Event of a Public Tender Offer or Share Exchange Offer	1
	Authorize Board to Set Terms of Preferred	1
	Change Range for Size of the Board	3
	Classify the Board of Directors	3
	Company Specific–Board-Related	29
	Declassify the Board of Directors	112
	Elect Company Clerk/Secretary	1
	Elect Directors (Bundled)	2
	Elect Directors (Opposition Slate) (INACTIVE)	2
	Elect Subsidiary Director	259
	Elect Supervisory Board Member	19
	Elect Supervisory Board Members (Bundled)	1
	Establish Range For Board Size	13
	Establish/Alter Mandatory Retirement Policy for Directors	1
	Fix Number of Directors	22
	Fix Number of and Elect Directors (Bundled)	2
	Issue Updated Indemnification Agreements to Directors	2
	Permit Board to Amend Bylaws Without Shareholder Consent	7
Compensation	Advisory Vote on Golden Parachutes	42
	Advisory Vote on Say on Pay Frequency	969
	Advisory Vote to Ratify Named Executive Officers' Compensation	2355
	Amend Non-Employee Director Omnibus Stock Plan	67
	Amend Non-Employee Director Restricted Stock Plan	16
	Amend Non-Employee Director Stock Option Plan	44
	Amend Nonqualified Employee Stock Purchase Plan	15
	Amend Omnibus Stock Plan	1596
	Amend Qualified Employee Stock Purchase Plan	299
	Amend Incentive Stock Option Plan (INACTIVE)	1
	Amend Restricted Stock Plan	33
	Amend Stock Option Plan	81
	Approve Dividends	7
	Approve Incentive Stock Option Plan (INACTIVE)	2
	Approve Non-Employee Director Omnibus Stock Plan	33
	Approve Non-Employee Director Restricted Stock Plan	10
	Approve Non-Employee Director Stock Option Plan	21
	Approve Nonqualified Employee Stock Purchase Plan	8
	Approve Omnibus Stock Plan	721
	Approve Outside Director Stock Awards/Options in Lieu of Cash	4
	Approve Qualified Employee Stock Purchase Plan	169
	Approve Remuneration of Directors and/or Committee Members	7
	Approve/Amend Bundled Compensation Plans	8
	Approve Stock-for-Salary/Bonus Plan	2
	Approve Stock/Cash Award to Executive	1
	Approve/Amend Deferred Compensation Plan	16
	Approve/Amend Employment Agreement(s)	1
	Approve/Amend Executive Incentive Bonus Plan	576
	Approve/Amend Profit Sharing Plan	1
	Bundled Say on Pay/Golden Parachute Advisory Vote	1
	Company-Specific-Compensation-Related	17

Type	Description Proposal	Obs.
Corporate Charter	Amend Articles Board-Related	3
	Amend Articles/Bylaws/Charter to Include Antitakeover Provision(s)	1
	Amend Articles/Bylaws/Charter–Routine	20
	Amend Articles/Bylaws/Charter-Non-Routine	116
	Amend Articles/Bylaws/Charter-Organization-Related	14
	Amend Articles/Charter Equity-Related	1
	Amend Articles/Charter Governance-Related	2
	Change State of Incorporation [ ]	24
	Company Specific Organization Related	4
	Company-Specific–Organization-Related	15
Security	Approve Issuance of Equity or Equity-Linked Securities without Preemptive Rights	8
	Approve Issuance of Shares Below Net Asset Value (NAV)	11
	Approve Issuance of Shares for a Private Placement	20
	Approve Issuance of Warrants/Convertible Debentures	11
	Approve Repricing of Options	51
	Approve Restricted Stock Plan	15
	Approve Restructuring Plan (INACTIVE)	1
	Approve Reverse Stock Split	4
	Approve Stock Option Plan	24
	Approve Stock Option Plan Grants	27
	Approve Stock Split	6
	Approve/Amend Conversion of Securities	35
	Approve/Amend Securities Transfer Restrictions	6
	Authorize New Class of Preferred Stock	15
	Authorize Reissuance of Repurchased Shares	1
	Authorize Share Repurchase Program	12
	Authorize Share Repurchase Program and Cancellation of Repurchased Shares	3
	Authorize a New Class of Common Stock	3
	Bondholder Proposal XXX	1
	Company Specific-Equity-Related	42
	Company-Specific–Mutual Fund	1
	Eliminate Class of Common Stock	7
	Eliminate Class of Preferred Stock	3
	Eliminate Preemptive Rights	4
	Eliminate/Adjust Par Value of Common Stock	2
	Increase Authorized Common Stock	376
	Increase Authorized Preferred Stock	8
	Increase Authorized Preferred and Common Stock	13
	Opt Out of State's Control Share Acquisition Law	2
	Ratify Past Issuance of Shares	1
	Reduce Authorized Common and/or Preferred Stock	4