The Slow Reveal: Understanding Shareholder Meetings through Options*

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Abstract

This paper uses options to examine the importance of shareholder meetings and the timing of information released during the meeting cycle. Our findings imply that market participants continuously learn information about meeting agendas and voting outcomes throughout the meeting cycle. Specifically, option implied volatility peaks around the record date and gradually declines leading up to the meeting date. This decline is significant at 0.9%, varies by proposal topic and contentiousness level, and persists after controlling for voting premiums and borrowing fees. These findings suggest that previous studies may have underestimated the importance of shareholder meetings by only considering event returns.

JEL classification: G14, G30, G34
Keywords: shareholder meetings; shareholder proposals; management proposals; implied volatility; record date

*We thank Adem Atmaz, Pat Akey, Joon Woo Bae, Fred Bereskin, Aaron Burt, Sergey Chernenko, Theo Dehopere, Louis Ederington, Logan Emery, Isil Erel, Veljko Fotak, Thierry Foucault, Huseyin Gulen, Michael Hasler, Sunwoo Hwang, Sima Jannati, Wei Jiang, Oğuzhan Karakaş, Jon Karpoff, Simi Kedia, Scott Linn, Nadya Malenko, Charles Martineau, John Matsusaka, Anya Mkrtchyan, Ernst Maug, Mike O'Doherty, Amanda Olsen, Chayawat Ornthanalai, Nick Pan, Neil Pearson, Kuntara Pukthuanthong, Fangcheng Ruan, Miriam Schwartz-Ziv, Aurelio Vasquez, and conference/seminar participants at the AFA AFFECT, EFA and FMA Annual Meeting, University of Missouri, University of Sydney, Southern Illinois University, University of Oklahoma and the Joint Conference with the Allied Korea Finance Associations for helpful discussions and suggestions. The prior title of this paper was "Do Shareholder Meetings Matter? Evidence from the Options Market."

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1 Introduction

Shareholder meetings play a critical role in corporate governance, as they provide a forum for shareholders to vote on management and shareholder proposals. However, there are still open questions about the importance of shareholder meetings and proposals, because market reactions around meeting dates are often insignificant. According to Denes, Karpoff, and McWilliams (2017), only four out of twenty-three studies find significant cumulative abnormal returns around key event dates related to shareholder meetings.[1] On the other hand, several studies suggest that the price of a stock with voting rights is higher around the record date, indicating the importance of votes (Kalay, Karakaş, and Pant, 2014; Fos and Holderness, 2022; Levit, Malenko, and Maug, 2022). We argue that stock returns around specific event dates, such as meeting or record dates, cannot fully reflect the value of shareholder meetings and proposals because shareholder proposals can have mixed impacts on value, and shareholders build consensus gradually throughout the meeting cycle, which begins well before the actual event date as shareholders anticipate the meeting and engage in the process.

Therefore, we use a novel approach to estimate the importance of shareholder meetings and the timing of information released during the meeting cycle. Our approach is to use options, specifically changes in option implied volatility, over the entire event window that spans from before the record date up to the meeting date. Option implied volatility measures the likelihood of changes in a given stock price, as implied by the option prices on that stock, reflecting investors' uncertainty regarding the underlying price.[2] Option implied

[1] The results with significant market reactions are generally based on subsamples and some implement a dynamic regression discontinuity design (RDD) framework but these studies lack consensus, which is described more in our literature section.

[2] Option implied volatility has been used in an event-study setting, for events including earnings announcements, elections, macroeconomic announcements, hurricanes, acquisitions, and new CEO appointments (e.g., Dubinsky, Johannes, Kaeck, and Seeger, 2019; Kelly, Pástor, and Veronesi, 2016; Ederington and Lee, 1996; Kruttli, Tran, and Watugala, 2019; Barraclough, Robinson, Smith, and Whaley, 2013; Lowry, Rossi, and Zhu, 2019; Pan, Wang, and Weisbach, 2015).

volatility tends to increase when investors demand more protection from potential losses or downside risks, as they anticipate larger potential stock price changes. Option implied volatility typically declines as new information is disclosed to investors, and the extent of the decline indicates the perceived significance of this information. Therefore, this decline over the shareholder meeting cycle can be used to measure the importance of proposals being voted on. Importantly, options can also offer insights about the timing of information dissemination to investors.

Options are well-suited for investigating whether the value of shareholder meetings and proposals is reflected in financial markets for two key reasons. First, options are suitable for assessing the impact of multiple proposals that may have conflicting effects on a firm's value. When shareholders vote on multiple proposals during a meeting, some may increase the firm's value, while others may decrease it. Traditional methods relying on stock returns to assess the effects of such proposals may yield insignificant results, not because the proposals are insignificant, but because their cumulative effects may cancel out each other. However, implied volatility aggregates expected price changes resulting from individual proposals without negating each other's effects, which we further explain in Section 3. Second, it is essential to examine the entire course of the meeting cycle, because the information (e.g., meeting agenda, distribution of voting rights, expected voting outcomes) reaches shareholders in a gradual manner.[3] Specifically, on the record date, investors learn who will vote; on (or before) the proxy date, investors become aware of the meeting agenda. Record and proxy dates occur approximately 38 and 29 days before the meeting, respectively, and shareholders may form their consensus on voting weeks beforehand (Maug and Rydqvist, 2009).[4] Because

[3] Most prior studies examine a short window around shareholder meetings. This can have severe consequences if a longer window is needed. For example, Borochin and Golec (2016) show that stock-return-based event studies underestimate the effect of Obamacare by USD 39 billion because they fail to adjust for the market's anticipation of the event.

[4] This can occur through various means, such as private communications, public statements, or coordinated campaigns. Furthermore, voting outcomes are predictable to a large extent because voting starts weeks before the meeting, and proxy advisors' voting recommendations become available shortly after proxy dates.

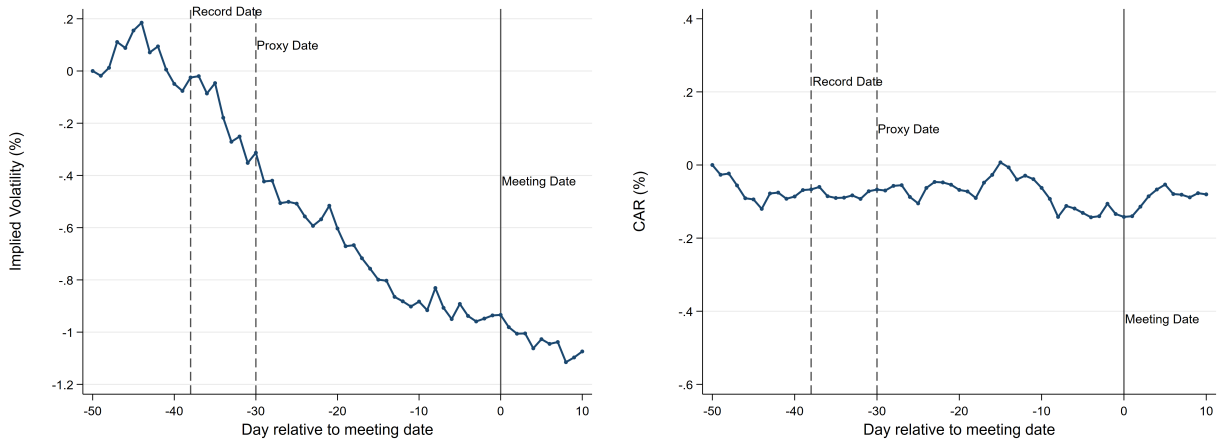
information about shareholder meetings is disseminated gradually over the meeting cycle, equity event studies which are best suited for unexpected, short-term revelations of new information may not capture the full impact of the meetings. In contrast, options are better suited to examine gradual information releases as they can reveal when and how information is disseminated throughout the meeting cycle.

We use a simple framework to demonstrate the link between options and the value effect of shareholder meetings. In the model, the market's response to a proposal is determined by two factors: the proposal's value and the voting surprise.[5] Based on this relationship, we demonstrate that substantial changes in option implied volatility indicate that a proposal has significant value implications, regardless of the magnitude of the voting surprise. Conversely, small changes in implied volatility suggest that the proposal either has little impact, or there is little surprise in the voting outcome, or both. We hypothesize that implied volatility will be higher before the meeting than after, if proposals can meaningfully affect firm value and their voting outcomes are not completely predictable. Otherwise, we expect implied volatility to be stable throughout the course of the meeting cycle.

We examine whether and when the value of proposals and meetings is reflected in the options market during the meeting cycle. We examine Russell 3000 firms' annual shareholder meetings during the period 2003–2020. Figure 1 shows that implied volatility gradually declines from the record date to the meeting date by approximately 0.9 percentage points.[6] Our finding offers several new insights into the literature. First, shareholder meetings and proposals matter sufficiently to affect the option prices. To the best of our knowledge, we are the first to empirically establish the importance of meetings and proposals using the entire sample of regular annual shareholder meetings. Few studies arrive at similar conclusions

[5] We model implied volatility, the ex-ante volatility of the price response, for proposal voting as the combination of squared proposal value and voting surprise. Note that we aggregate the response from all proposals in a meeting since we can observe the change in the expected volatility at the meeting level. In addition, we show that we can obtain the lower and upper limits of the average proposal value from the ex-ante volatility.

[6] base level: 39 percent



Panel A. Implied Volatility *Panel B. Cumulative Abnormal Returns*

Figure 1
Implied Volatility and Cumulative Abnormal Return Around Annual Meetings
The figure presents implied volatility and cumulative abnormal market model return for 60 trading days surrounding annual shareholder meetings from $t-50$ to $t+10$. Appendix Figure A.3 provides these graphs from $t-50$ to $t+10$. The estimation is from Equation (6) described in Section 3.2. The x-axis is the day relative to the annual shareholder meeting date. The sample includes 29,512 meetings from 2003 to 2020.

based on selected subsamples (e.g., Cuñat, Gine, and Guadalupe, 2012; Matsusaka, Ozbas, and Yi, 2021), including special meetings and proxy contests (e.g., Kalay et al., 2014; Brav, Jiang, Li, and Pinnington, 2022). Furthermore, we establish the decline of implied volatility is economically meaningful. Our framework allows us to estimate that a 0.9 percentage point decrease in implied volatility corresponds to a change in firm value ranging from 0.43 to 1 percent. We also establish lower and upper bounds around these estimates: 0.52 to 1.46 (0.23 to 0.64) when uncertainty about the voting results is low (high).[7] These results suggest that proposals can have a significant impact on firm value.

Second, our evidence indicates that information about shareholder meetings reaches the market *gradually* rather than on particular event dates such as meeting, proxy, or record dates. Such dynamics for shareholder meetings are unique compared to other corporate events, such as earnings or M&A announcements, where information is released on event

[7] The uncertainty about the voting result is low if a vote has a very low or high probability of passing (In this example, either 5% or 95% to pass). On the other hand, the uncertainty is high when a close-call vote is expected (50% to pass).

dates. Instead, the implied volatility dynamics reported around meetings are more aligned with corporate events where shareholders learn and form opinions over time, such as the introduction of a new CEO (Pan et al., 2015) or the overall performance of the firm (Pástor and Veronesi, 2003). Hence, our findings provide the first empirical evidence supporting theoretical predictions of investors' gradual information aggregation over the meeting cycle (Maug and Rydqvist, 2009). This gradual dissemination of information also explains why market reactions on event dates are often "lukewarm" despite investors' interest in shareholder meetings.[8] We find no significant decline in implied volatility over the two weeks leading up to the meeting, suggesting that most of the information that is valuable to investors is available to them approximately two weeks before the meeting date.

Third, our analysis gives a fresh perspective on the commonly held assumption, which has been supported by studies using regression discontinuity designs which assume a resolution of uncertainty on the meeting date (Cuñat et al., 2012), that the meeting date is the most critical point for uncertainty in the shareholder voting process. In contrast, we find that implied volatility is typically lowest around meeting dates within our event window. While previous research has focused on the value of voting rights (Levit et al., 2022; Fos and Holderness, 2022; Kalay et al., 2014; Kind and Poltera, 2013), our approach measures investors' perceived uncertainty. Nonetheless, consistent with the findings of the voting literature, we also highlight the importance of record dates in the shareholder voting process. Our findings support the idea that record dates warrant greater attention from scholars and regulators (Fos and Holderness, 2022.) Furthermore, the decline in implied volatility remains robust even after accounting for the voting premium.

Next, we examine whether the implied volatility dynamics differ for meetings with different characteristics. Understanding cross-sectional differences in volatility dynamics can provide insights into whether investors attach more importance to certain meetings, or if they

[8] Matsusaka et al. (2021) discuss that it is possible to observe insignificant market responses on meeting or proxy dates if the market does not suddenly learn the meeting agenda or outcomes on these dates.

have prior knowledge of relevant information based on meeting characteristics. Meetings that include shareholder proposals, which occur in around 13 percent of meetings, exhibit different implied volatility dynamics compared to those without shareholder proposals. Specifically, implied volatility decreases by approximately one percentage point from the record date to 11 trading days before the meeting date, after which it remains flat until the meeting date (Figure 2). This indicates that most of the uncertainty is resolved roughly two weeks before the meeting date.[9] In contrast, for meetings with only management proposals, implied volatility gradually decreases by approximately 0.85 percentage points from the record date to the meeting date. Our findings imply that meetings featuring shareholder proposals may hold more sway in the eyes of investors, highlighting the need for careful analysis of the potential impact of these proposals on market dynamics.

We also examine meetings with greater voting surprise. Specifically, we examine meetings with close votes on proposals and with disagreements between management and proxy advisory firms on voting recommendations. In line with our theoretical framework, we find that meetings with a larger voting surprise have larger declines in implied volatility. Specifically, we observe larger declines in implied volatility from the record date to the meeting date for proposals that pass or fail by margins less than 5, 10, and 20 percent, with closer votes leading to greater declines (1.32, 1.12, and 1.06 percentage points, respectively). We also find that implied volatility declines more for meetings where management and proxy advisors disagree on more proposals.[10]

We further examine issues that hold particular significance in the corporate governance

[9] In discussions with several practitioners, who use the Glass Lewis and Broadridge platforms for shareholder meetings voting, we learned that investors tent to pay more attention to meetings with shareholder proposals and finalize their votes for such meetings approximately two weeks prior to the meeting, at which point they can view the aggregate votes of all other platform clients on each proposal.

[10] Specifically, for meetings where management and proxy advisors' voting recommendations agree on all proposals, disagree on one proposal, and disagree on several proposals, we document that implied volatility declines from the record to the meeting date by 0.84, 0.91, and 1.59 percentage points, respectively. Also, we find that for meetings with close votes and recommendation disagreement, the pattern is similar regardless of the presence of shareholder proposals.

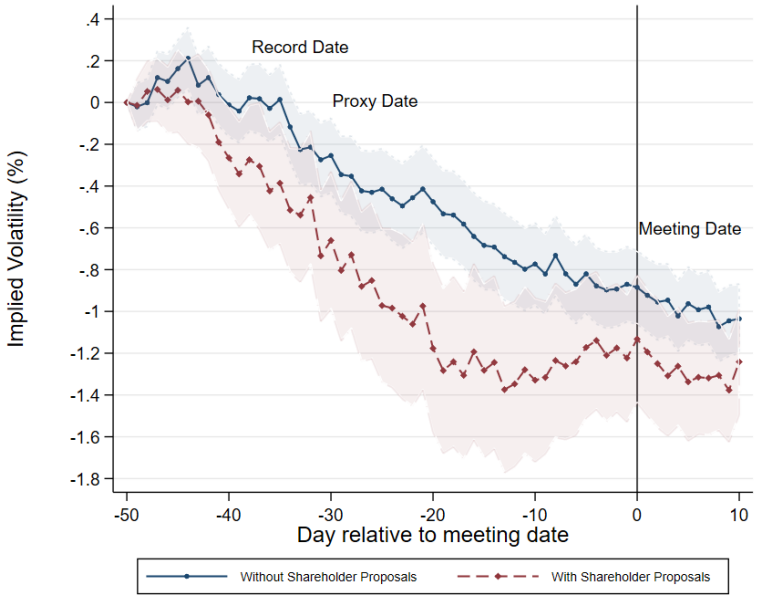


Figure 2
Implied Volatility: With and Without Shareholder Proposals

The figure presents implied volatility for 60 trading days surrounding annual shareholder meetings with and without shareholder proposals from $t-50$ to $t+10$, estimated from Equation (6) described in Section 3.2. The x-axis is the day relative to the earnings announcement date. The y-axis is the implied volatility relative to 50 trading days before the earnings announcement date. The sample includes 3,754 meetings with shareholder proposals and 25,507 meetings without shareholder proposals from 2003 to 2020.

literature, focusing on meetings that discuss proposals related to proxy access, majority vote requirements for director elections, board declassification, supermajority requirements for mergers, separation of CEO and chairman roles, written consent, and say-on-pay proposals. We also examine meetings with management-sponsored proposals on these topics to compare and contrast the impact of shareholder versus management proposals. While we note that the value impact of each proposal cannot be directly isolated, as several proposals are discussed at once in the same meeting, our findings suggest that shareholders are particularly concerned about meetings with proposals on proxy access, majority vote requirements for director election, supermajority vote requirements for mergers, and written consent, as evidenced by the pronounced decline for such meetings. Additionally, we observe a larger decline in implied volatility for meetings with management-sponsored say-on-pay proposals, suggesting that this issue holds notable importance to shareholders. Overall, our study highlights the

issues that are top of mind for investors and presents findings on the link between these topics and shifts in implied volatility.

Finally, we examine topics that have attracted attention in recent years: shareholder proposals on political disclosure and the environmental (E) and social (S) dimensions of ESG and follow He, Kahraman, and Lowry (2022) for defining topics into E and S categories. We analyze data from the entire sample period and observe a substantial decrease in implied volatility from the record to the meeting date for political disclosure proposals, while there is no significant change for E&S proposals. However, after 2016, when the attention towards E&S issues increased, we notice a change in this pattern. Specifically, we find that meetings with E&S proposals exhibit a significant decline in implied volatility between the record and the meeting dates. These findings imply that E&S proposals have become increasingly significant to shareholders in recent years.

As several studies highlight the importance of voting premium around record dates prior to shareholder meetings (Grossman and Hart, 1988; Kalay et al., 2014), it is crucial to verify that the decline in implied volatility is not driven by the heightened value of voting right before the record date.[11] We include proxies for voting premium, such as equity borrowing fees and a stock price changes/declines around the record date, following the approach of Levit et al. (2022), as well as Fos and Holderness (2022) and Muravyev, Pearson, and Pollet (2022) and verify that our results remain robust. Furthermore, to ensure the robustness of our overall findings, our regression models include firm or meeting fixed effects and control for potential confounding factors such as market volatility, distance from earnings announcements, and firm characteristics (e.g., size and leverage). When using firm fixed effects, we

[11] We examine regular annual meetings as opposed to special meetings or control contests, as such voting premium is likely to be less of a concern for our study, as prior studies document voting premium around special meetings (Kalay et al., 2014). Moreover, we examine the entire meeting cycle from prior to the record date to after the meeting date, while voting rights matter mainly around record dates. Furthermore, we aim to examine the progression of investor expectations about possible dispersion in stock prices around shareholder meetings by using option implied volatility and use a different approach from papers that address voting premium using options methodology (Kind and Poltera, 2013; Kalay et al., 2014).

also control for meeting-specific characteristics (e.g., the number of proposals voted on). Furthermore, we conduct separate analyses for call and put options and find that our main results are not driven solely by calls or puts; implied volatility declines for both types of options. We also examine the robustness of our results by using implied volatility based on historical option prices, which mitigates concerns related to interpolation in the standardized options database. To rule out the possibility that the implied volatility decline is driven by events unrelated to proposals, we conduct textual analysis on shareholder meeting transcripts and find that the decline is not due to such events. We conclude that our results are consistent across different model specifications and robustness checks.

Our paper contributes to the corporate governance literature that examines the value of shareholder proposals (e.g., Gillan and Stark, 2000; Cuñat et al., 2012). The empirical literature generally finds small and insignificant market reactions around annual meetings and proxy dates, making it challenging to establish that proposals have a meaningful impact on firm value. On the contrary, we provide empirical evidence from the options market that shareholder and management proposals and their voting outcomes matter to investors. While prior studies have used equity returns to examine shareholder meetings, to our knowledge, this is the first paper to examine option markets over the entire shareholder meeting cycle. Furthermore, we provide a clear explanation for why previous studies have found insignificant stock market reactions by showing that the market updates its expectations gradually, not on specific event dates. Therefore, we contribute to the literature on gradual resolution of investor uncertainty and learning (e.g. Pástor and Veronesi, 2003, 2009; Pan et al., 2015), by showing that investors form a consensus on proposal voting outcomes before shareholder meetings. Closely related to our paper is a study by Li, Maug, and Schwartz-Ziv (2021) that focuses on the impact of voting outcomes on trading behavior after the meeting date, motivated by opinion differences among shareholders. Unlike their paper, our paper examines the development of shareholder opinions and consensus leading up to the meeting date. We also enhance the literature on implied volatility analysis around important corporate events

by providing a unique example of information release over the long horizon, whereas other studies examine concentrated information releases (e.g. earnings). Another contribution is to document that investors' perceived uncertainty is heightened around the record and proxy dates. We believe that it is worthwhile for regulators and academics to devote more attention to the months leading up to a meeting.

2 Literature and Institutional Background

This paper contributes to the corporate governance literature that examines the effects of shareholder meetings and proposals on firm value. Prior studies have mostly relied on the cumulative abnormal return to evaluate the value of various types of proposals and shareholder activism (e.g., Karpoff, Malatesta, and Walkling, 1996; Gillan and Stark, 2000; Renneboog and Szilagyi, 2011). However, a review by Denes et al. (2017) suggests that most of these event studies generally document small and insignificant returns around meeting or proxy dates. This raises the question of whether these events have any meaningful implications for stock prices.

Although some have interpreted this as evidence that shareholder meetings and proposals are inconsequential on average, we argue that the setting simply does not allow us to use abnormal returns to assess the importance of meetings and proposals. One issue is that most meetings have multiple voted proposals, which can cancel out the positive and negative impact of individual proposals and lead to biased null effects. Setting aside the issue of multiple proposals, it is important to note that inferences based on cumulative abnormal returns posit that there is a surprise right around event dates (i.e., meeting and proxy dates), but this assumption is not always valid.[12] To address these challenges, Cuñat et al.

[12] The following papers assume that the market learns about the existence of shareholder proposals on proxy dates (Linn and McConnell, 1983; Karpoff et al., 1996; Gillan and Stark, 2000; Renneboog and Szilagyi, 2011). Furthermore, significant returns for shareholder meetings are documented for certain subsamples. Specifically, Brochet, Ferri, and Miller (2021b) find significantly higher returns for a subsample of contentious

(2012) employ a dynamic regression discontinuity design (RDD) framework on a subsample of meetings with close-call proposals and find that the passage of such proposals increases firm value. However, later studies by Bach and Metzger (2019) and Babenko, Choi, and Sen (2019) suggest that the RDD framework might not accurately estimate causal effects in this setting due to disproportional managerial victories in close votes, highlighting additional challenges in analyzing close-call proposals.

In practice, information regarding the meeting agenda is gradually released over time. The market can learn about proposals even before the proxy date, as companies are required to file proxies with the SEC 10 days before mailing, and proposals must be filed at least 120 days before the proxy is mailed.[13] Additionally, companies challenge around 40 percent of proposals by submitting a no-action letter to the SEC, making information, such as proposal contents, sponsors, and the company's reasons for seeking an exclusion, publicly available on the SEC website (Matsusaka et al., 2021). Proxy advisory firms, such as ISS and Glass Lewis, also issue voting recommendations several weeks before the meeting date and provide additional information for each proposal up for a vote. Shareholders submit their votes via these platforms roughly two weeks before the meeting date and can view the total votes of all other clients on the platform. As a variety of meeting-related information becomes available in the weeks leading up to annual shareholder meetings, the market updates its expectations about meeting outcomes over time. As a result, the effect of proposals on firm value may be dampened by the time the meeting occurs, and significant surprises are less likely to occur.[14]

Our novel approach is to study the anticipation of stock price changes around shareholder meetings, as measured by option implied volatility. Our main contribution is to provide clear

versus non-contentious meetings from proxy to meeting date. However, Brochet, Chychyla, and Ferri (2021a) do not find significantly different returns between in-person and virtual meetings over the proxy-to-meeting timeframe.

[13] On average, there are 29 trading days in between the proxy date and the meeting date. Appendix Figure A.1 shows the distribution. Also, for a time chart of key dates in the meeting cycle see Li et al. (2021).

[14] For this reason, Brochet et al. (2021b) and Brochet et al. (2021a) study investor beliefs around shareholder meetings using long-run cumulative abnormal returns between the proxy and meeting date.

evidence that shareholder meetings and proposals have significant implications for prices. While it may seem intuitive to some scholars, the literature has not been able to conclusively demonstrate the overall impact of shareholder meetings. Our unique perspective, although abstracting from the value of each proposal, sheds light on one of the most debated questions in the literature.

Our findings are consistent with models of learning in financial markets (e.g., Pástor and Veronesi, 2003, 2009), by providing empirical evidence for the gradual release of information throughout the meeting cycle. This literature has examined changes in valuations and asset prices associated with learning, but its application to corporate events has been limited to studies on market learning about new CEO quality after exogenous CEO turnover events, as shown in Pan et al. (2015). We add to this literature by examining learning around another corporate event: shareholder meetings. Our results suggest that investors' beliefs about the outcome of shareholder proposals are revised gradually as more information becomes available.

A related paper by Li et al. (2021) examines how investors' opinion differences affect trading behavior, documenting higher trading volumes and realized volatility after shareholder meetings, as measured by TAQ daily stock price volatility. Our paper is related to Li et al. (2021) in that both studies focus on investors' beliefs, using measures that are relatively new to the governance literature, and highlight that zero abnormal returns can undermine important developments surrounding the meetings. However, while Li et al. (2021) focus on activities after the meeting, especially when there is disagreement among shareholders regarding the voting outcomes, we focus on periods before the meeting by studying investors' ex-ante beliefs through implied volatilities.

There are relatively few studies that investigate options in the context of shareholder meetings, and Levit et al. (2022) provide a useful summary of the results of these studies. While prior research has focused on capturing the voting premium around record dates, our

study complements this literature by examining implied volatility changes from the record date to the meeting date to study the value of shareholder proposals and meetings. For instance, Kalay et al. (2014) analyze the value of voting rights around shareholder meetings using a different methodology than ours. They construct a measure of voting rights by comparing the price of a share with regular voting power to the price of a synthetically constructed underlying that does not include voting rights, and document a voting premium. In contrast, our study focuses on the implied volatility changes and sheds new light on the value of shareholder proposals and meetings.

This paper also contributes to the literature on shareholder meetings that highlight the importance of record dates. Fos and Holderness (2022) show that trading volume and stock prices are higher before the stock goes ex-vote and decline around the record date. The authors argue that despite their significance, record dates have received insufficient attention in the literature.[15] Our paper extends the insights of Fos and Holderness (2022) by demonstrating that investor uncertainty peaks around the record date. We further confirm the robustness of our findings by controlling for the stock price differences around the record date, shown in Fos and Holderness (2022).

Finally, our study contributes to the options literature by examining implied volatility around pre-scheduled events. Investors anticipating price fluctuations around events can purchase options to seek protection. Implied volatility tends to increase before the event and then decline after the uncertainty is resolved, particularly around events that are likely to generate uncertainty. Several studies document significant declines in option implied volatility after scheduled or expected announcements: Ederington and Lee (1996) around macroeconomic news releases, Kelly et al. (2016) around elections and global summits and Kruttli et al. (2019) around hurricanes. Studies including Patell and Wolfson (1979, 1981), Donders and Vorst (1996), Gao, Xing, and Zhang (2018) and Dubinsky et al. (2019) docu-

[15] Fos and Holderness (2022) highlights that the right to vote is one of only three distributions made to shareholders, along with dividends and rights offers and multiple papers study the latter two distributions.

ment implied volatility declines around earnings announcements. While earnings announcements often trigger a sudden large decline in implied volatility on the announcement date, we find that implied volatility changes more gradually around shareholder meeting dates. Also, Lowry et al. (2019) use options to re-examine an extended period prior to M&A announcements and find results in the options but not in the stock market. Our study reveals a new empirical pattern around an important pre-scheduled event, the annual shareholder meeting. We believe our findings are important because they shed light on how implied volatility behaves around different types of events. This information is valuable to investors and researchers interested in understanding the complexities of implied volatility around pre-scheduled events.

3 Empirical Design

3.1 Framework

In this section, we motivate our study with a simple framework regarding the price response to the voting outcome.[16] We first illustrate that if some voted proposals have positive value consequences and others have negative value consequences, an investigation of an ex-ante volatility measure rather than realized returns is less susceptible to type I error.

We begin by examining the price response to a single proposal. In our framework, the price response Z_p to the voting outcome reflects both the value of the proposal and the unexpected portion of the voting outcome. As soon as the information on the voting is

[16] Dubinsky et al. (2019) and Kruttli et al. (2019) use price response models in different settings: the former around earnings announcements and the latter around hurricanes.

known, the price responses to the voting surprise can be expressed as follows:

$$Z_{p,t+1} = \beta_p(V_{p,t+1} - \widehat{V_{p,t}}), \tag{1}$$

where Z_p is the price response to a proposal's voting outcome known at $t+1 \leq T$, and T is a shareholder meeting date where the voting result becomes publicly available. shareholder β_p is the value of a voted proposal, where $\beta_p > 0$ if a proposal is value enhancing and $\beta_p < 0$ if a proposal is value destroying.[17] V_p is the voting outcome that equals one when a proposal passes a vote with a probability of ϕ. We assume that V_p follows a Bernoulli distribution $V_p \sim B(1, \phi)$ where $Pr(V_p = 1) = \phi$, $Pr(V_p = 0) = 1 - \phi$, and $0 \leq \phi \leq 1$. $\widehat{V_p}$ is the market expectation of the voting outcome. Therefore, $V_p - \widehat{V_p}$ represents an investor's update on the voting result.

Because there are many proposals in a meeting, the return we observe is $\sum Z_p$, not Z_p. If there are n voted proposals, the price response to the meeting is:

$$\sum_{p=1}^{n} Z_{p,t+1} = \sum_{p=1}^{m} \beta_p^+(V_{p,t+1} - \widehat{V_{p,t}}) + \sum_{p=n-m+1}^{n} \beta_p^-(V_{p,t+1} - \widehat{V_{p,t}}), \tag{2}$$

where $\beta_p^+ > 0$ captures the value of m proposals with positive β_p and $\beta_p^- < 0$ captures the value of $n - m$ proposals with negative β_p. Equation (2) states that the observable price response reflects the sum of the value of all proposals; the values of proposals with opposite signs will cancel one another out. Therefore, any investigation of the importance of an individual proposal, $|\beta_p|$, is subject to type I error if it is estimated from $\sum Z_p$.[18] This

[17] Cuñat et al. (2012) propose a similar framework and introduce a difference-in-difference methodology to estimate β_p from the price response. Unlike our study, they posit that the price response to a proposal, β_p, is always positive.

[18] For example, consider a shareholder meeting with two proposals with identical voting surprise, $\phi = 0.5$. If $\beta_{p=1} = 3\%$ and $\beta_{p=2} = -3\%$, the price impacts from the two proposals are $Z_{t+1,p=1} = 1.5\%$ and $Z_{t+1,p=1} = -1.5\%$, respectively. The collective price impact becomes $\sum_{p=1}^{n} Z_{t+1,p} = 0\%$ and does not reflect the true aggregated value consequence of the proposals, $\sum |\beta_p| = 6\%$.

makes it challenging to study the value of proposals from the collective price impact.

Next, we illustrate why $Var_t(Z_{p,t+1})$, the *ex-ante* anticipated volatility of the price response, can better reflect the value of proposals, β_p. The ex-ante volatility of $\sum Z_p$ can capture the possible price response to voting results in both directions. Following Cuñat et al. (2012), we expect that the market can assign a precise probability with which the vote would pass as soon as the information about proposals becomes available. From $\widehat{V_p} = E(V_p) = \phi$, we obtain the ex-ante volatility of the price response to the voting outcome as follows:

$$Var_t(Z_{p,t+1}) = \beta_p^2 Var_t(V_{p,t+1} - \widehat{V_{p,t}}) = \beta_p^2 \phi_p (1 - \phi_p) \tag{3}$$

Note that β_p is squared in this specification. Therefore, the value of a proposal in either direction, regardless of whether a proposal is value increasing or decreasing, will lead to higher ex-ante volatility. Likewise, higher voting uncertainty is always associated with higher volatility with its possible range of $0 \leq \phi_p(1 - \phi_p) \leq 0.25$.

If price responses to an individual proposal and the voting results are independent and identically distributed, the volatility of the price response to the meeting becomes:

$$Var_t(\sum_{p=1}^{n} Z_{p,t+1}) = \sum_{p=1}^{n} \beta_p^2 \phi_p (1 - \phi_p). \tag{4}$$

Equation (4) states that the volatility of the price response to aggregate shareholder proposals (meeting uncertainty) is simply the sum of the volatilities of the price responses to the individual voting outcomes. While we assume here that all voting results are known at $t+1$, our model can also be applied if the voting results of proposals are known at different times.[19]

[19] For instance, if we assume that half of the price response occurs at $t+2$, equation (4) can be written as follows: $Var_t(\sum_{p=1}^{n/2} Z_{p,t+1}) + Var_{t+1}(\sum_{p=n/2+1}^{n} Z_{p,t+2}) = \sum_{p=1}^{n} \beta p^2 \phi_p (1 - \phi_p)$.

Importantly, our decomposition of ex-ante volatility in Equations (3) and (4) implies that the value implication of shareholder proposals, β_p^2, and the uncertainty about the voting outcome, $\phi_p(1-\phi_p)$, simultaneously affect the ex-ante volatility. For example, even if meeting uncertainty is maximized with $\phi = 0.5$ for all proposals, it will not play a role unless proposals have significant value consequences.

To illustrate the point above, consider two hypothetical proposals, one that is unlikely to affect firm value, such as to open or close a meeting, and one that is more important, such as a director election. As the average vote support for director elections is over 98%, the ex-ante volatility would mostly reflect the value consequences of the director election proposal. For the proposal to open or close a meeting, voting uncertainty can be either high or low. If the vote turns out to be close, the ex-ante volatility would mostly reflect the high voting uncertainty but will still remain low because the proposal has little value consequences.

Finally, we obtain the upper and lower bound of the average proposal value. We focus on the case when uncertainty about the voting outcome is homogeneous across all proposals.[20] We use the volatility of the price response from Equation (4) to study value implications. From the relationship between arithmetic and quadratic mean, we obtain the upper and lower bounds of the average proposal value as follows:

$$\sqrt{\frac{1}{n^2\phi(1-\phi)}Var_t(\sum_{p=1}^{n} Z_{t+1,p})} \leq \frac{\sum_{p=1}^{n}|\beta_p|}{n} \leq \sqrt{\frac{1}{n\phi(1-\phi)}Var_t(\sum_{p=1}^{n} Z_{t+1,p})} \tag{5}$$

The proof is available in appendix B. This specification helps us investigate the upper and lower bounds of proposal values with various ϕ. By assuming that proposals have a 50% chance to pass ($\phi = 0.50$), we maximize the meeting uncertainty reflected in ex-ante volatility, and hence the proposal value is minimized. Conversely, by assuming that all

[20] This assumption facilitates the reduction in degrees of freedom for the model but may not hold in reality. For the annual meetings without shareholder proposals, however, proposals tend to have similar voting outcomes with an average of 98% support.

proposals are almost always expected to pass ($\phi \geq 0.99$), we maximize the proposal value.

3.2 Empirical Specification

We study $Var(\sum Z_p)$, the ex-ante volatility of the price response to the shareholder meeting, using the difference of option implied volatility between two dates, $IV_t - IV_{t-i}$.[21] IV_{t-i} and IV_t are from the implied volatility of the standardized stock option that spans 30 days from date $t-i$ and t, respectively.[22] We use IV_t to measure the anticipated volatility of the underlying stock price changes from news releases about proposals and voting outcomes. Our main specification is the following regression:

$$Implied\,Volatility_{ijyt} = \beta_k D_k + \phi_l E_l + \gamma_t V_t + \theta' X_{ijy} + \zeta_i + \nu_y + \epsilon_{ijyt} \tag{6}$$

where *Implied Volatility* is the implied volatility of a standardized option for firm i and meeting j in year y on day t. D_k, where $k \in [-50, 10]$, is a dummy for the distance from the meeting, in trading days.[23] E_l, where $l \in [-50, 10]$, is a dummy for the distance from the adjacent earnings announcement in trading days. V_t is the daily market-level implied volatility for the Russell 2000 index on the day t. X_{ijy} is a set of the firm- and meeting-level control variables. Firm-level control variables include size, profitability, leverage, liquidity, and tangibility. Meeting-level control variables include the number of voted proposals and the number of voted shareholder proposals. ζ_i and ν_y are firm and year fixed effects. We also

[21] See Patell and Wolfson (1979), Dubinsky et al. (2019), Gao et al. (2018) for the use of this measure to capture the uncertainty around earnings announcements and Kruttli et al. (2019) for that around hurricanes. We validate our measure of ex-ante uncertainty following Dubinsky et al. (2019) by testing the correlation between $IV_{t-i} - IV_t$ and $|r_{t-i,t}|$ for various i. The correlation is statistically significant at 1% level and varies from 9% to 18% depending on the choice of window.

[22] We also test our main specification with the option implied volatility from nonstandardized options as a robustness check in a later section.

[23] For a small number of meetings the record dates occur even earlier than 50 days prior to the meeting. For those meetings, we start D_k from the record date.

include the day-of-the-week fixed effects. We later include meeting fixed effects instead of firm fixed effects and drop meeting-level control variables; the results are provided in Panel B of Table 4. Using the above specification, we concentrate on the time around shareholder meetings for (record, +10) and present results over that window in our figures and various windows between record and meeting dates in our tables.

We define IVD (implied volatility difference) as the difference in β coefficients between two dates. For example, IVD over the $(-10, 0)$ window measures the implied volatility change from 10 trading days before the meeting date to the meeting date and can be calculated by subtracting β_{-10} from β_0. This approach allows us to examine changes in implied volatility while controlling for firm and meeting characteristics, as well as the distance to the earnings announcement. To compute cumulative abnormal returns, we estimate market-model (i.e., CAPM) adjusted returns with a (−340, −140) pre-event trading day window. Then we use the estimated β to find abnormal returns for the (−50, 10) trading day window.

We pay particular attention to earnings announcements to ensure that our results are not contaminated by changes in the market due to earnings announcements. This is because implied volatility and abnormal returns are significantly affected by earnings announcements (Patell and Wolfson, 1979, 1981; Dubinsky et al., 2019; Gao et al., 2018). Specifically, implied volatility increases significantly prior to earnings announcements and declines on the earnings announcement date. We find that implied volatilities are affected even a couple of months prior to earnings releases.[24] Therefore, we exclude meetings for which earnings announcements occur from two days prior to five days after the meeting.[25] Additionally, we control for the trading day distance to earnings announcements through the inclusion of E_l in Equation (6) for meetings that take place in the window [−50, 10] surrounding the earnings announcement dates.

[24] Similarly, Gao et al. (2018) find that implied volatility starts to increase 30 trading days before earnings announcements.

[25] Our results are robust to examining different windows to limit meetings with nearby earnings announcements.

3.3 Data and Sample

We collect shareholder meeting dates for Russell 3000 firms from ISS (Institutional Shareholder Services). The ISS database contains 82,285 meetings for 13,838 firms from 2003 to 2020. Following Gao et al. (2018), we exclude observations with missing stock prices and stock prices below USD $5, which yields 57,003 meetings for 8,256 firms. As our focus is on annual meetings, we exclude other meeting types (e.g., proxy contests, special meetings) and cases where annual and non-annual meetings occur on the same day. We further exclude meetings if they take place within 30 days of one another. We are left with 52,428 meetings for 7,767 firms. We next exclude meetings that happen close to earnings announcements by excluding meetings for which earnings announcements occur from two days prior to five days after the meeting date (Section 3.2). This leaves us with 41,527 meetings for 7,318 firms.

Next, we merge the data on shareholder meetings with the standardized options data from OptionMetrics, which leaves us with 35,342 meetings for 5,627 firms. Following Gao et al. (2018), we exclude observations with an option premium below USD $0.125. To mitigate stale quote concerns (Battalio and Schultz, 2006; Dubinsky et al., 2019), we average call and put implied volatility for straddles and drop observations with extreme call and put implied volatility differences. Finally, we exclude observations that have multiple missing OptionMetrics observations in the (−5,0) window, where 0 is the shareholder meeting date. Our final sample covers 29,512 annual shareholder meetings for 4,869 firms occurring over the period 2003–2020. We add firm-level data from Compustat. We also add indices that measure the market's expectation of future volatility: for Russel 1000 firms from OptionMetrics and VIX for S&P 500 firms from the Chicago Board Options Exchange (CBOE) data. Finally, for our robustness check, we merge the historical options data into our final sample. Following Dubinsky et al. (2019), we alleviate microstructure concerns such as bid-ask spreads by using actively traded options. We exclude options with zero open interest and an aggregate volume below 1000 over the entire (−50,10) window. Our historical options sample covers

9,451 meetings for 1,949 firms. For another robustness test that involves textual analysis, we collect all shareholder meeting transcripts between 2011 and 2018 from Capital IQ and find 1,848 shareholder meeting transcripts for firms with options.

3.4 Descriptive Statistics

Table 1 presents the mean, median, standard deviation and mean differences for our final sample of annual shareholder meetings and for observations with a match to OptionMetrics data. As we drop observations with low option premiums, our sample firms tend to be larger than the average firm in the OptionMetrics database.

Table 2 provides an annual breakdown of annual shareholder meetings (Panel A) and proposals (Panel B). All 29,512 annual meetings in our sample feature management proposals. However, shareholder proposals occur in only 13.1% of all meetings. Over 98% of meetings have at least one management proposal that passes, but only 26.3% of meetings with shareholder proposals have at least one shareholder proposal that passes. Only 5.1% of meetings have at least one failed management proposal, while over 81.8% of meetings with shareholder proposals have at least one failed shareholder proposal. Close votes are more common for shareholder proposals. Close votes within a 10% voting margin occur in 5.9% of all meetings for management proposals and in 27.5% of meetings with shareholder proposals. Table 2 Panel B provides proposal-level information. The 29,512 annual meetings feature votes on 254,563 proposals, of which 97.2% are management proposals. On average, 96% of management proposals pass and 1.3% of management proposals fail, while only 16% of shareholder proposals pass and 81.6% of them fail. The remaining votes are either not applicable or pending or other (e.g. include a number of years for say-on-pay proposals). Close votes occur in 0.9% of management proposals and in 17.2% of shareholder proposals.

Table 3 provides information on several topics, including governance, political, envi-

ronmental and social proposals. For shareholder proposals, we examine proposals on compensation, board declassification, supermajority requirements, independent chairs, majority director elections, proxy access, and written consent. These shareholder proposals are more likely to pass (25.5% vs. 16.0%), gain more supporting "for" votes (29.4% vs. 20.2%), and have more close votes (25.3% vs. 17.2%) than shareholder proposals overall. However, they still pass no more than 25.5% of the time compared to the 96% pass rate for all management proposals. We also note variation in close votes across different shareholder proposals. For example, while close votes represent 17.2% of votes on all shareholder proposals, close votes are higher for proposals on compensation ratification (at 60.9%), on written consent (at 53.8%), on majority director elections (at 45.7%), and on proxy access (at 30.5%).

For management proposals, we examine several topics discussed above for shareholder proposals: board declassification, supermajority voting requirements, say-on-pay, and other compensation proposals. As the Dodd-Frank Act required shareholder approval of executive compensation, management proposals on say-on-pay have appeared on most firms' agendas since 2011. Management compensation proposals have a high proportion of opposition: 9.7% of proposals to ratify compensation and 17.6 % of other compensation proposals are objected to, compared to 7.6 percent for all management proposals. However, close votes are rare for management proposals on compensation (at most 5.5 %) as compared to management proposals on board declassification (13.8%) and supermajority voting requirements (15.2%).

Environmental and social proposals, as a group of agendas, appear most frequently in our sample. There are 1,785 such proposals over the period 2003–2020 with 658 environmental and 1,127 social proposals. There are 715 political proposals. The vast majority of political, environmental and social proposals do not pass. Specifically, only 1% of political and 1.9% of environmental and social proposals passed over the 2003–2020 period. Moreover, very few political, environmental and social proposal have close votes: 6.3% for political and 3.9% of social and environmental proposals.[26]

[26] We also examine annual changes in environmental (E), social (S) and political (P) proposals. Overall, we

4 Results

In this section, we first examine IVDs and CARs around shareholder meetings. Our main interest is in testing whether and when implied volatility fluctuates around periods surrounding annual shareholder meetings. We examine all shareholder meetings and then separately examine meetings with and without shareholder proposals. Next, we examine meetings with more uncertain voting outcomes: those with close-call proposals and with proposals where ISS and management agree and disagree in their voting recommendations. We also examine meetings with certain governance proposal topics that have been identified to be important for firm value in prior research, as well as political disclosure and ESG proposals. Finally, we provide several robustness check results.

4.1 All Meetings & Meetings With Shareholder Proposals

We begin by presenting the evolution of implied volatility and cumulative abnormal returns over the $(-50, 10)$ trading day window, where day 0 is the day of the annual shareholder meeting (Figure 1). Figure 1 graphs the β coefficients from equation (6) and shows that implied volatility declines by about 0.9 percentage points from the record date to the meeting date. During this window, shareholders learn which shareholders will be eligible to vote on proposals (around the record date), which proposals will be on the ballot (around/before the proxy date), and form expectations about voting outcomes. The record date occurs on average 38 trading days before the annual shareholder meeting date (Appendix Figure A.1). The average distance between the proxy date and the meeting date is 29 trading days.

see a decline in the number of such proposals after 2017, but the proportion of supporting votes increases and abstain votes declines for these proposals over the period 2003–2019. For E and S proposals supporting votes increase from approximately 10% in 2006 to approximately 22% in 2019. For P proposals supporting votes jump in 2006 from 9% to 20% and increase to 32% through 2019. However, this trend reverses in 2020 with support for proposals on E and S declining to 13% in 2020 and on P declining to 18% in 2020, while opposing votes increase for E, S, and P proposals.

Panel A of Figure 1 shows that a large part of this decline occurs over the $(-50, -10)$ window. An interesting pattern is that the decline is gradual and does not seem to be pronounced on any particular event date, even the shareholder meeting date. Another notable pattern is that implied volatility stabilizes approximately 11 trading days prior to the shareholder meeting. We interpret this as indicating that important information regarding shareholder meetings mostly comes out between the record date and up to two weeks prior to the meeting. In other words, approximately two weeks prior to the meeting, shareholders have a good idea about voting outcomes.

Panel B of Figure 1 shows that cumulative abnormal returns do not show significant changes on average between the record and meeting dates. Although this might give the impression that meetings do not feature issues that can significantly affect firm value, our findings based on implied volatilities indicate otherwise. This highlights the importance of considering information from the options market, in addition to that from the equity market, in research examining shareholder meetings.

Another interesting finding is that investors' perceived uncertainty peaks around the record date, not on the shareholder meeting date that has received more attention from the literature. In fact, our results indicate that implied volatilities are among the lowest around meeting dates. This suggests that investors pay attention to record dates, consistent with the message of Fos and Holderness (2022) that the record date deserves more attention from academics.

Figure 2 is similar to Figure 1 but breaks down the pattern into meetings with and without shareholder proposals. For both, implied volatility starts to decline around the record date and implied volatility stabilizes after the meeting date. The overall amount of decline from the record date to the meeting date is similar for meetings with and without shareholder proposals.

For meetings with shareholder proposals, implied volatility declines more rapidly in the

beginning and the pattern flattens approximately 11 trading days before the meeting. This suggests that the resolution of uncertainty starts around the record date and shareholder proposals' voting outcomes become more predictable approximately 11 trading days before the meeting. In addition, for meetings with shareholder proposals, we document a somewhat steeper decline in implied volatility right after the shareholder meetings when all final voting outcomes are announced. Our interpretation is that remaining uncertainty about voting outcomes on shareholder proposals gets settled after final voting occurs.

After confirming the long-term patterns from the record date to the meeting date, we next examine both long and short windows around shareholder meetings, as well as cumulative abnormal returns. Table 4 presents IVDs and CARs for all meetings and breaks down the patterns depending on whether a meeting had any shareholder proposals. We examine the following windows: (Record, 0), (Proxy, 0), $(-10, 0)$, $(-1, 0)$, $(0, +3)$, where 0 is the date of the shareholder meeting. Panel A of Table 4 provides results from regressions that include firm and year fixed effects. We use the same specification for later tables. Firm-level control variables (e.g., size, profitability, leverage) are included in these regressions.

Table 4 Panel A reports that implied volatility declines by approximately 0.87% over the (Record, 0) window. The magnitude is similar for meetings with and without shareholder proposals, suggesting that both shareholder and management proposals are important to shareholders. The results indicate that investors care about proposals voted on during shareholder meetings and that the news regarding voting eligibility, the meeting agenda, and voting outcomes are important in allowing investors to form expectations about stock prices. Although the outcomes of management proposals are believed to be largely predictable, investors seem to care about the distribution of voting rights and the agenda, as well as their potential to affect stock prices.

Consistent with patterns documented in the literature, we do not find significant cumulative abnormal returns. For most windows we examine, cumulative abnormal returns

are usually of very small magnitude. The insignificant equity market reaction around the shareholder meeting date is interpreted by many scholars as shareholder proposals having minimal impact on firm value (Denes et al., 2017). We also find insignificant CARs around meeting dates; however, we document an economically significant decline in implied volatility between the record date and the meeting date, which is evidence that investors care about meetings and proposals. Our explanation for this discrepancy (i.e., an insignificant equity market reaction and a significant decline in implied volatility) is that some proposals increase firm value while others decrease firm value, producing an average null effect.

Table 4 Panel B presents results that include meeting fixed effects instead of firm fixed effects and confirms the results in Panel A. There is a significant decline in implied volatility between record and meeting dates and no significant changes in CARs. In the tables that follow, we present results that include firm fixed effects.

We note that the economic magnitude of implied volatility changes around shareholder meetings is smaller than the implied volatility changes around earnings announcements (approximately 5%) or macroeconomic events (1.43% for national elections and global summits, Kelly et al., 2016), in somewhat different specifications. These studies usually document significant implied volatility changes as well as large and significant cumulative abnormal returns around their events. This paper examines shareholder meetings, for which the corporate governance literature generally finds insignificant market reactions. Above studies also show a rapid decline in implied volatility around earnings and other announcement dates, at which point most of the information is released. In contrast, our study documents a gradual decline in implied volatility, indicating that information regarding the meeting agenda is gradually released between record and meeting dates.

We also investigate when the options market reacts to information about meetings and proposals. Appendix Table A.2 presents our results. First, we find that most of the decline in implied occurs between 40 to 10 trading days before the meeting date: 70.5% of the total

decline during the (-50, +5) window happens around the meeting date. This means that most of the decline occurs between the record date and when ISS issues a voting recommendation. Second, we find that the trajectory of decline is different between meetings with and without shareholder proposals, confirming the patterns in Figure 2. For meetings without shareholder proposals, implied volatility typically begins to decrease around 40 days before the meeting date (i.e., around the record date), and continues to gradually decrease as the meeting approaches, with the steepest drop occurring between 20 to 10 days prior to the meeting. However, for meetings with shareholder proposals, the largest decline in implied volatility occurs around the record and proxy dates (i.e., between 40 to 30 trading days prior to the meeting). The pattern remains unchanged when we use the record date as a reference point. For meetings without shareholder proposals, the decline in implied volatility is significant from the record date to approximately 40 days after (i.e., around the meeting date). In contrast, for meetings with shareholder proposals, the decline is significant only for the window between 5 days before to 20 days after the record date.

To shed further light on the economic importance of proposals, we discuss our empirical results in the context of the framework in Section 3.1. In our framework, there is a U-shaped relationship between the probability of a proposal to pass a vote, ϕ, and the value of a proposal. Therefore, the estimated value of a proposal is high (low) when ϕ is low (high). Figure 3 shows the upper and lower limit of the implied value of a proposal when the number of proposals is eight, which is the average in our sample.

We start with the case of $IVD = 0.9$, which is approximately the magnitude we observe in an average shareholder meeting. When there is little voting uncertainty, for example, when $\phi = 0.05$ or 0.95, the implied value of a proposal is estimated to be approximately 0.99%. Our upper and lower bound estimates show that the implied value can be as low as 0.52% and as high as 1.46%. On the other hand, when there is high voting uncertainty ($\phi = 0.5$), the implied value of a proposal is estimated to be about 0.43%, with lower and upper limits

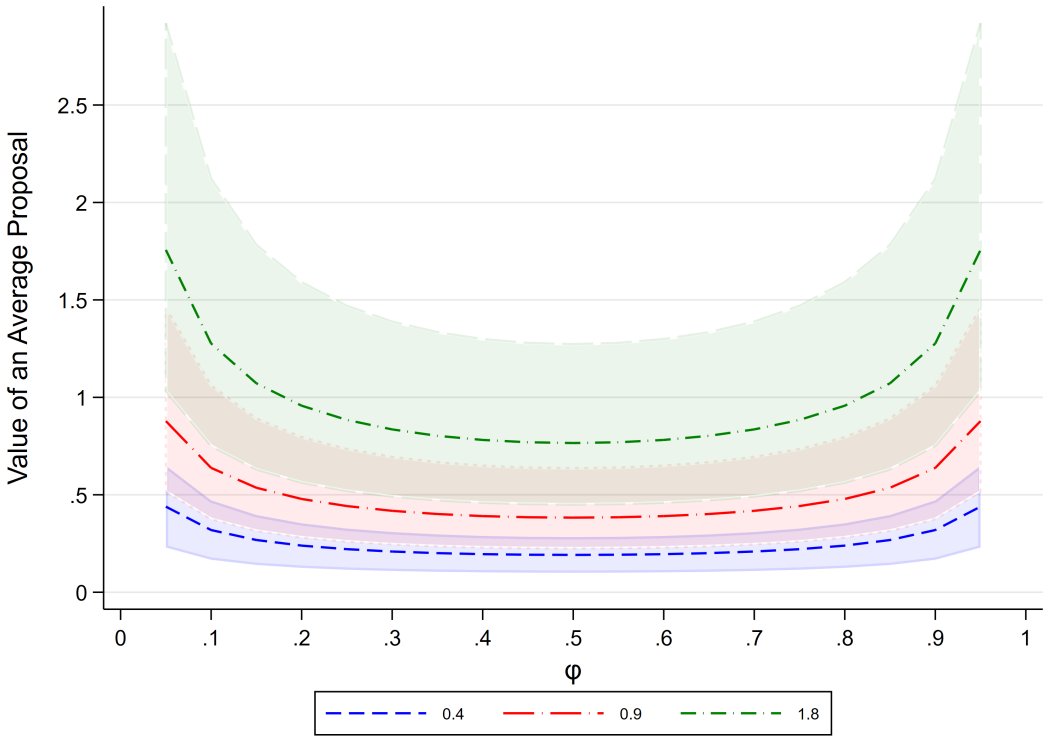


Figure 3
Upper and Lower Bounds of Implied Proposal Value

The figure presents upper and lower bounds of implied value of a proposal from Equation 5. ϕ is the likelihood of a proposal to pass, and value is the price impact of a proposal in annualized returns in percentage points. The number of proposals used in Equation (B.2) in this figure is eight in total. Each color represents the value of a proposal when IVD is 0.4, 0.9, and 1.6, respectively.

of 0.23% and 0.64%, respectively.[27] If IVD is 0.4, the implied value of a proposal is between 0.1% and 0.65%. If IVD is 1.6, the implied value of a proposal is between 0.4% and 2.6%.

The results suggest that proposals can have a significant impact on firm value. Considering that this figure describes the value of a single proposal and multiple proposals are voted on at a shareholder meeting, the combined value of proposals in a meeting can be larger than what Figure 3 suggests.

[27] Given that most of the proposals in our sample are not close-call proposals, the estimated value of an average proposal is likely to be higher than 0.43%.

4.2 Meetings with Uncertain Voting Outcomes

Next, we examine meetings with uncertain voting outcomes: meetings with proposals that had close votes and proposals for which management and the ISS advisory firm disagree on voting recommendations. We define close-call proposals in three ways: as those pass or fail within 5%, 10%, or 20% margins.[28] For example, for a proposal that requires majority support to pass, a vote would fall within the 5% margin if the proposal receives a vote share of between 45% and 55%. We call these close votes at 5%. Close votes at 5%(10%) are more likely among shareholder proposals, whereas 8%(17%) of proposals in 14%(28%) of meetings with shareholder proposals are classified as close. For meetings with management-only proposals 0.4%(0.9%) of proposals in 3%(6%) of meetings are classified as close votes. In other words, 86%(72%) of meetings with shareholder proposals do not have close votes in our sample.

Table 5 presents results for close votes in a layout similar to that of Table 4. Panel A shows that for meetings with close-call proposals at the 5% margin, implied volatility declines by 1.32% over the (Record, 0) window, and this decline is similar for meetings with and without shareholder proposals. We do not document significant cumulative abnormal returns around shareholder meetings, similar to what we find in Table 4. We show that implied volatility also declines over the (Proxy, 0) window: a 1.15% decline for all meetings, a 0.71% decline for meetings with shareholder proposals and a 1.32% decline for meetings without shareholder proposals. Panels B and C present similar results for close votes at the 10% and 20% margins.

Overall, the implied volatility decline is larger for meetings with close votes than for meetings without close votes (Table 4). The magnitude of decline becomes larger as the vote margin narrowers, suggesting that investors care more about meetings with close-call

[28] We consider a 20% margin since Bach and Metzger (2019) suggest that management proposals that pass by a wide margin should still be considered close votes.

proposals. However, the difference across margins is statistically insignificant.

For shorter windows, we do not find a significant decline in implied volatility on average, similar to what we find in Table 4. In other words, there is no further reduction in investor uncertainty from information that is revealed approximately two weeks prior to meetings. We continue to find insignificant CARs over shorter windows. Given that the regression discontinuity design is often used to examine close shareholder votes, insignificant IVDs and CARs might come as a surprise to some readers. Once we break down the patterns, implied volatility declines significantly over the $(-10, 0)$ window for meetings with close votes (5% margin) on management only proposals. Panels B and C show that this decline in implied volatility over the $(-10, 0)$ window is specific to meetings with close votes at 5% margin. For meetings with very close management proposals, it seems that important information is released during the two-week window before the meeting.

To further understand proposals with uncertain outcomes, we next examine proposals with recommendation disagreement between ISS and management.[29] Table 6 presents results for meetings where ISS and management agree on all proposal recommendations, disagree on one recommendation, and disagree on two or more recommendations. Overall, implied volatility declines between the record and the meeting date, regardless of whether ISS and management agree or disagree. However, the decline in implied volatility is larger when ISS and management disagree and when they disagree on more proposals: when ISS and management agree on all their recommendations, implied volatility declines by 0.84% over the (Record,0) window. When voting recommendations between ISS and management differ on one proposal, implied volatility declines by 0.91%, and when their recommendations differ on two or more proposals implied volatility declines by 1.57% over the same window. Similar to close vote results in Table 5, the magnitude of decline is larger when voting outcome uncertainty is greater, suggesting that investors care more about how these proposals will affect

[29] Such proposals are called contentious by Heath, Macciocchi, Michaely, and Ringgenberg (2022).

firm value. We also document implied volatility declines over the (Proxy,0) window. We generally do not find significant implied volatility declines in shorter windows and windows closer to the meeting, similar to what we found before.

To summarize, we document a larger decline in implied volatility between the record and meeting dates for meetings with more uncertain voting outcomes: when meetings feature close-call proposals and when ISS and management disagree on their voting recommendations on more proposals. This indicates that value implications are larger when voting outcomes become less predictable. This also suggests that information provided to investors between record and meeting dates is especially useful in such situations.

4.3 Proposal Topics

4.3.1 Governance Proposals

We next examine implied volatility patterns around meetings with issues that are often believed to matter more in the literature. For example, we examine meetings with executive compensation proposals from both shareholders and management.[30] We also examine meetings with proposals by both shareholders and management that concern board declassification and the supermajority voting requirements, as well as shareholder proposals that require an independent board chairman, majority vote requirements for director elections, proxy access, and written consent. Finally, we examine meetings with proposals whose topics have received considerable publicity since 2016 – political disclosure as well as social and environmental proposals.

[30] Executive compensations proposals have been linked to firm value and performance (Cuñat, Gine, and Guadalupe, 2016) and are widely discussed in the media and press: *"Swiss bank said research by its quantitative evidence and data science team, which looked at 1,700 incidents, found that companies that lost a vote on executive remuneration at their annual meetings were much more likely to suffer share price underperformance."* – Financial Times, 7/18/2020, Mooney, Attracta, "A new sell signal? Stocks underperform after pay revolt, says UBS."

Table 7 presents implied volatility patterns around shareholder meetings that feature various proposal topics. Panel A presents results for various shareholder proposal topics. We exclude meetings with close votes on management proposals. The first column of Panel A provides results for meetings that include at least one shareholder proposal to facilitate comparison. Panel B presents results for meetings with certain management proposal topics and excludes meetings with close votes on shareholder proposals. As such, the first column of each panel can be used as a benchmark to determine the importance of certain proposal topics to investors.

We find that there is a significant decline in implied volatility across most specifications over the (Record,0) window. We do not find significant declines in implied volatility over the shorter windows surrounding the meeting, similar to our prior results. This indicates that our main results presented in Table 4 are not driven by a particular subsample or proposal topic. We find that the decline is more pronounced (vs. 0.78% for meetings with at least one shareholder proposal and without close-call management proposals) for meetings with shareholder proposals on the following topics: supermajority voting requirements, majority voting requirements for director elections, proxy access, and written consent. Our interpretation is that these are among the most value-relevant topics.

In contrast, the implied volatility decline is smaller in magnitude than that for a "typical" meeting with a shareholder proposal, when a meeting features proposals to declassify the board of directors and to separate the CEO and the chairman of the board. While drawing inferences about specific topics is difficult given the presence of multiple proposals in meetings, shareholders seem to be less concerned about meetings that feature these proposal topics, presumably because they care less about such agenda items or have little question about voting outcomes.

Panel B presents the results for management proposal topics. Among the topics we

examine, investors care mostly about proposals to ratify executive compensation.[31] This contrasts with the insignificant decline for meetings that feature shareholder proposals to ratify executive compensation (Panel A). For the rest of the topics we examine – other compensation proposals, proposals to declassify the board and proposals for supermajority voting requirements – we do not find that investors care more about them than the average management proposal.

To summarize, we find that investors care about meetings that feature various proposal topics, including management proposals to ratify executive compensation, shareholder proposals for director elections, proxy access, written consent and supermajority voting requirements. This provides support to the prior literature that has highlighted such proposals as important for firm value (e.g., Cohn, Gillan, and Hartzell, 2016). Moreover, we do not find that proposals on board declassification and the separation of the CEO and the chairman are viewed as particularly important, although these topics have received attention from media and the academic literature.[32]

4.3.2 Political, Environmental and Social Proposals

Next, we examine meetings with shareholder proposals on environmental, social, and political issues. We follow He et al. (2022) and Dikolli, Frank, Guo, and Lynch (2022) when assigning shareholder proposals to environment (E) and social (S) categories (E and S criteria are often used in combination with governance (G) in ESG topics). As described in Section 3.4, political, E and S proposals receive low vote support (1% for political and 1.9% for E and S proposals), and therefore there is low uncertainty in voting outcomes. Given this, we

[31] Due to regulation changes, most firms introduced proposals to ratify executive compensation on their ballots in 2012. When we compare meetings within the same firm before and after the firm's introduction of proposals to ratify executive compensation on their ballots, we continue to find significantly larger declines in implied volatility in the post-2012 period.

[32] Larcker, Ormazabal, and Taylor (2011), Cremers, Litov, and Sepe (2017), and Field and Lowry (2022) discuss the importance of board declassification, among others. Brickley, Coles, and Jarrell (1997) and Yang and Zhao (2014) discuss the merits of an independent board chairman.

do not expect shareholders to be concerned about the passage of these proposals. However, if shareholders consider such proposals to have important value implications for firms we would still expect to see a decline in implied volatility for meetings with political, E, and S proposals. Furthermore, if shareholders consider such proposals to have larger consequences for firm value than other shareholder proposals, we would expect to see larger declines in implied volatility for meetings with E, S, and political proposals than for meetings with other shareholder proposals.

Table 8 presents the results for shareholder proposals related to political, E and S topics. Implied volatility declines by 1.07 percentage points between the record and meeting date for meetings with political proposals. This decline is larger than that for a typical shareholder proposal (Table 7, 0.77 percentage points). Our results are consistent with political proposals being important to shareholders. We do not document significant implied volatility results from (−10,0) and other shorter windows around the meeting, similar to what we report in earlier sections. This suggests that shareholders have a good idea about what will happen with political proposals two weeks prior to the meeting.

The results for E and S proposals are insignificant, suggesting that shareholders do not believe these proposals to be consequential. Next, we examine whether E or S proposals individually are associated with firm value but do not find support for this. Next, we separate E and S proposals into those that call for disclosure versus those that require action. Again, we follow He et al. (2022) and Dikolli et al. (2022) shareholder proposal categories. We do not find significant changes in implied volatility for either action or disclosure shareholder E and S proposals.

We then ask whether E and S proposals are considered more important for firm value after 2016, when such proposals gained wide press coverage.[33] We find that to be the case and

[33] Consistent with E and S proposals being more important to investors after 2016, we find a decline in abstain votes for such proposals from approximately 10% prior and up to 2016 to approximately 2%-3% in 2019.

present the results in Panel B of Table 8. There is a large and significant decline in implied volatility for meetings after 2016 with E and S proposals, as implied volatility declines by 1.43 percentage points between the record and meeting dates. This decline in implied volatility is significantly different, by 1.37 percentage points, from that which occurred prior to 2016. These results are consistent with E and S proposals being more important to shareholders after 2016 and shareholders viewing E and S proposals as being consequential to firm value.

Overall, we show that meetings with certain proposal topics are associated with a larger decline, suggesting that investors care more about these issues. We find that environmental, social, and political proposals have become more important to shareholders since 2016.

4.4 Robustness

In this section, we provide several robustness tests. First, we show that our main specification is valid by replicating implied volatility patterns around earnings announcements with our specification (Figure A.2). Next, we verify that our results are robust to controlling for voting premium and equity lending fees (Table 9, Panel A). We also verify that our results are not simply driven by call or put options (Table 9, Panel B). Next, we show that implied volatility patterns are similar when we use the historical options data instead of standardized options data (Table 9, Panel C). This confirms the validity of using the standardized options data. Next, we ensure that our results hold when we exclude meetings with information related to new product or patent releases discussed during the shareholder meeting.[34]

4.4.1 Validity of Our Main Specification

We introduce Equation (6) to examine implied volatility patterns over months surrounding shareholder meetings w hile controlling for the effect of confounding factors (e.g., adjacent

[34] Another idea is to examine implied volatility around canceled meetings. After excluding meetings that are inappropriate for analysis, we find only 47 such events, and there are very few firms with options data.

earnings announcements, economy-wide factors, firm- and meeting-specific characteristics). To confirm the validity of this specification, we apply it to earnings announcements, an event that is associated with significant implied volatility fluctuations (e.g., Patell and Wolfson, 1979; Gao et al., 2018; Dubinsky et al., 2019). Our goal is to produce the well-known pattern around earnings announcements with our specification: implied volatility increases significantly before earnings announcements and declines significantly on the day of earnings announcements (e.g., Figure 1 Graph B of Gao et al., 2018). Appendix Figure A.2 confirms that our specification fully captures the implied volatility patterns while separating out potential confounding factors.

4.4.2 Voting Premium and Equity Lending Fee

Voting rights become especially important prior to record dates of shareholder meeting, because owners on record get to vote in the shareholder meeting. Levit et al. (2022) summarize over forty papers on voting premium. Several approaches have been used in the literature to determine voting premium: dual-class shares, block purchases, options, equity lending and record-day price effects. Papers that examine voting rights using options (e.., Kalay et al., 2014; Kind and Poltera, 2013), aim to calculate the difference between a share with voting rights and a synthetically created share. In contrast, this paper uses options in a modified event study setting. The methodology used by papers that use options to examine voting rights differs from the methodology used in this paper. Levit et al. (2022) suggest that "the voting premium can be considered as the difference between the pre-record date and the post-record date share price." Consistent with this and with votes being valuable, Fos and Holderness (2022) document a decline in stock prices and negative returns in (-2,0) window, where day 0 is the record date. We include this proxy for voting premium in our regressions to test the robustness of our findings. Moreover, Levit et al. (2022) mention that more recent papers have used the equity lending fee around record dates to examine voting

rights (e.g. Aggarwal, Saffi, and Sturgess, 2015). We follow Muravyev et al. (2022) and in our regressions consider voting rights proxied by equity lending fees. Results in Table 9, Panel A confirm that our results are robust to controlling for voting premium and equity lending fees.

4.4.3 Call vs. Put Options

In our main specification, we average the implied volatility of a 30-day at-the-money call and put. The interpretation of the results could be different if the decline is meaningful only for either call or put options. To examine this possibility, we separately examine call and put options and report the results in Table 9, Panel B. It shows that our main results are not driven by only calls or puts: implied volatility declines meaningfully for both call and put options. The magnitude of the decline is similar for calls and puts, suggesting that investors are not particularly expecting an increase or decrease in the stock price.

4.4.4 Standardized Options vs. Historical Options

Our main analysis is based on standardized options to mitigate the impact of time to maturity on implied volatility. To verify that our results are not sensitive to standardization, we run our main regressions using the historical options data. The results are reported in Table 9, Panel C. We confirm that implied volatility declines significantly from the record date to the meeting date. However, the magnitudes are larger than those based on standardized options (Table 4). Some of the differences can be explained by the difference in sample characteristics between the standardized and historical options data. For example, historical options data include options with more active trading records. In addition, the average implied volatility of historical options data is higher than that of standardized options (49% vs 39%). Aside from the difference in magnitude, the significant implied volatility declines for both samples lends support to the use of standardized options data.

4.4.5 Textual Analysis

We interpret the implied volatility decline between record and meeting dates as being associated with the gradual information revelation about proposals and voting. Yet, one could wonder whether our results are instead associated with important announcements during the meeting unrelated to proposals, such as changes in managerial personnel or product lines.[35] To examine this, we conduct a textual analysis of 1,848 shareholder meeting transcripts from the Capital IQ database. The goal of this analysis is to confirm that our results are not driven by announcements unrelated to proposals. In unreported analysis, we confirm that the results are robust after excluding meetings with wordgrams such as "new patent" or "new launch". We also hypothesize that meetings that focus on proposals and related agenda items would have fewer uncertain words because proposal-related information is more likely to be released prior to meetings via the proxy, voting recommendations, and voting tallies before the meeting date. Consistent with this view, we find that the implied volatility decline is significantly larger for meetings with fewer uncertain words. These results are available upon request.

5 Conclusion

Shareholder meetings are an essential governance mechanism for firms, where shareholders vote on crucial corporate matters. However, studies on the impact of these meetings on corporate value have been inconclusive, given the lack of significant short-term market reactions around the annual shareholder meetings. We argue that this lack of significance

[35] While firms cannot disclose new material information during shareholder meetings they sometimes provide interesting information to shareholders. For example, Tesla's shareholder meeting in 2020 was dubbed "battery day" as investors expected to hear an announcement regarding battery development and innovation but were unsure about its content or even existence. Tesla indeed mentioned long-term plans for battery development but did not disclose additional information regarding innovation (https://www.tesla.com/2020shareholdermeeting).

does not imply a lack of importance. Rather, it is due to the fact that multiple proposals with potentially confounding value impacts are voted on together during the meeting, and information is gradually released over the entire meeting cycle, not just around the meeting dates. To address this issue, we examine changes in option implied volatility over the meeting cycle, from the record date to the meeting date.

Our main finding is that option implied volatility decreases by approximately 0.9 percentage points from the record date to the meeting date for annual shareholder meetings held between 2003 to 2020. This implies that investors expect stock price volatility to decrease as the meeting date approaches and more information about proposals and voting results is released. Based on the magnitude of implied volatility changes, we estimate that the average proposal has an impact of approximately 0.5% to 1% on company value in annualized returns. Additionally, we observe that implied volatility does not peak around the shareholder meeting dates, as is typical for corporate events such as earnings announcements. Instead, it peaks around the record date and gradually declines to the meeting date, consistent with the gradual release of information across the meeting cycle. Our results demonstrate when information is disseminated to investors and suggest that most information about proposals and voting is available to investors before the meeting date.

Next, we investigate whether investors assign greater importance to specific proposals. We observe different patterns in information dissemination for meetings with and without shareholder proposals. Furthermore, in line with our model, we show significant declines in implied volatility for meetings with substantial voting surprises, such as those with close votes and disagreement between management and proxy advisors on recommendations. We also find that the decrease in implied volatility is pronounced for meetings that include proposals on proxy access, majority vote requirements for director election, supermajority vote requirements for mergers, written consent, say-on-pay proposals, and political proposals. Finally, we provide evidence that meetings with environmental and social proposals are

associated with a significant decline in implied volatility only after 2016, consistent with the change in the perceived importance of these proposals over time.

Our results suggest that previous studies may have underestimated the impact of shareholder meetings on firm value. Therefore, caution is necessary when interpreting event returns around shareholder meetings. While many studies have used equity returns to examine shareholder meetings, to our knowledge, this is the first paper to examine option markets over the entire shareholder meeting cycle. Our findings highlight the importance of incorporating information from both equity and options markets throughout the entire meeting cycle, not just around meeting dates. Overall, our study shows that the value of shareholder proposals is reflected in the options market, and investor reactions are different across meetings with distinct features.

References

Aggarwal, Reena, Pedro AC Saffi, and Jason Sturgess, 2015, The role of institutional investors in voting: Evidence from the securities lending market, *The Journal of Finance* 70, 2309–2346.

Babenko, Ilona, Goeun Choi, and Rik Sen, 2019, Management (of) Proposals, *working paper, Arizona State University and University of New South Wales* .

Bach, Laurent, and Daniel Metzger, 2019, How close are close Shareholder Votes?, *Review of Financial Studies* 32, 3183–3214.

Barraclough, Kathryn, David Robinson, Tom Smith, and Robert Whaley, 2013, Using Option Prices to Infer Overpayments and Synergies in MA Transactions, *The Review of Financial Studies* 26, 695–722.

Battalio, Robert, and Paul Schultz, 2006, Options and the bubble, *The Journal of Finance* 61, 2071–2102.

Borochin, Paul, and Joseph Golec, 2016, Using options to meaure the full value-effect of an event: Application to Obamacare, *Journal of Financial Economics* 120, 169–193.

Brav, Alon, Wei Jiang, Tao Li, and James Pinnington, 2022, Shareholder Monitoring Through Voting: New Evidence from Proxy Contests, *Working Paper* .

Brickley, James A, Jeffrey L Coles, and Gregg Jarrell, 1997, Leadership structure: Separating the ceo and chairman of the board, *Journal of corporate Finance* 3, 189–220.

Brochet, Francois, Roman Chychyla, and Fabrizio Ferri, 2021a, Virtual Shareholder Meetings, *Working Paper, ECGI working paper 777/2021* .

Brochet, Francois, Fabrizio Ferri, and Greg Miller, 2021b, Investors' Perceptions of Activism via Voting: Evidence from Contentious Shareholder Meetings, *Contemprorary Accounting Research* 38, 2758–2794.

Cohn, Jonathan B, Stuart L Gillan, and Jay C Hartzell, 2016, On enhancing shareholder control: A (dodd-) frank assessment of proxy access, *The Journal of Finance* 71, 1623–1668.

Cremers, KJ Martijn, Lubomir P Litov, and Simone M Sepe, 2017, Staggered boards and long-term firm value, revisited, *Journal of Financial Economics* 126, 422–444.

Cuñat, Vicente, Mireia Gine, and Maria Guadalupe, 2012, The vote is cast: The effect of corporate governance on shareholder value, *Journal of Finance* 67, 1943–1977.

Cuñat, Vicente, Mireia Gine, and Maria Guadalupe, 2016, Say pays! Shareholder voice and firm performance, *Review of Finance* 20, 1799–1834.

Denes, Matthew R, Jonathan M Karpoff, and Victoria B McWilliams, 2017, Thirty years of shareholder activism: A survey of empirical research, *Journal of Corporate Finance* 44, 405–424.

Dikolli, Shan, Mary Frank, Zhe Guo, and Luann Lynch, 2022, Walk the talk: ESG mutual fund voting on shareholder proposals, *Review of Accounting Studies* 27, 864—896.

Donders, Monique W.M., and Ton C.F. Vorst, 1996, The impact of firm specific news on implied volatilities, *Journal of Banking & Finance* 20, 1447–1461.

Dubinsky, Andrew, Michael Johannes, Andreas Kaeck, and Norman J Seeger, 2019, Option pricing of earnings announcement risks, *Review of Financial Studies* 32, 646–687.

Ederington, Louis, and Jae Lee, 1996, The Creation and Resolution of Market Uncertainty: The Impact of Information Releases on Implied Volatility, *Journal of Financial and Quantitative Analysis* 31, 513–539.

Field, Laura Casares, and Michelle Lowry, 2022, Bucking the trend: Why do IPOs choose controversial governance structures and why do investors let them.

Fos, Vyacheslav, and Clifford G. Holderness, 2022, The distribution of voting rights to shareholders, *working paper, Boston College* .

Gao, Chao, Yuhang Xing, and Xiaoyan Zhang, 2018, Anticipating Uncertainty: Straddles around Earnings Announcements, *Journal of Financial and Quantitative Analysis* 53, 2587–2617.

Gillan, Stuart L, and Laura T Stark, 2000, Corporate governance proposals and shareholder activism: The role of institutional investors, *Journal of Financial Economics* 57, 275–305.

Grossman, Sanford J., and Oliver D. Hart, 1988, One share-one vote and the market for corporate control, *Journal of Financial Economics* 20, 175–202.

He, Yazhou, Bige Kahraman, and Michelle Lowry, 2022, ES Risks and Shareholder Value, *Working paper* .

Heath, Davidson, Daniele Macciocchi, Roni Michaely, and Matthew C Ringgenberg, 2022, Do index funds monitor?, *The Review of Financial Studies* 35, 91–131.

Kalay, Avner, Oguzhan Karakaş, and Shagun Pant, 2014, The market value of corporate votes: Theory and evidence from option prices, *Journal of Finance* 69, 1235–1271.

Karpoff, Jonathan M, Paul H Malatesta, and Ralph A Walkling, 1996, Corporate governance and shareholder initiatives: Empirical evidence, *Journal of Financial Economics* 42, 365–395.

Kelly, Brian, Ľubor Pástor, and Pietro Veronesi, 2016, The price of political uncertainty: Theory and evidence from the option market, *Journal of Finance* 71, 2417–2480.

Kind, Alex, and Marco Poltera, 2013, The value of corporate voting rights embedded in option prices, *Journal of Corporate Finance* 16–34.

Kruttli, Mathias K, Brigitte Roth Tran, and Sumudu W Watugala, 2019, Pricing Poseidon: Extreme Weather Uncertainty and Firm Return Dynamics, *working paper, The Board of Governors of the Federal Reserve System and Cornell University* .

Larcker, David F, Gaizka Ormazabal, and Daniel J Taylor, 2011, The market reaction to corporate governance regulation, *Journal of financial economics* 101, 431–448.

Levit, Doron, Nadya Malenko, and Ernst Maug, 2022, The Voting Premium, *Working Paper* .

Li, Sophia, Ernst Maug, and Miriam Schwartz-Ziv, 2021, When Shareholders Disagree: Trading after Shareholder Meetings, *The Review of Financial Studies* .

Linn, Scott C., and John J McConnell, 1983, An empirical investigation of the impact of 'antitakeover' amendments on common stock prices, *Journal of Financial Economics* 11, 361–399.

Lowry, Michelle, Marco Rossi, and Zhongyan Zhu, 2019, Informed Trading by Advisor Banks: Evidence from Options Holdings, *The Review of Financial Studies* 32, 605–645.

Matsusaka, John G, Oguzhan Ozbas, and Irene Yi, 2021, Can shareholder proposals hurt shareholders? Evidence from securities and exchange commission no-action-letter decisions, *The Journal of Law and Economics* 64, 107–152.

Maug, Ernst, and Kristian Rydqvist, 2009, Do Shareholders Vote Strategically? Voting Behavior, Proposal Screening, and Majority Rules, *Review of Finance* 13, 47–79.

Muravyev, Dmitriy, Neal Pearson, and Joshua Pollet, 2022, Why Does Options Market Information Predict Stock Returns, *Working Paper* .

Pan, Yihui, Tracy Wang, and Michael Weisbach, 2015, Learning About CEO Ability and Stock Return Volatility, *The Review of Financial Studies* 28, 1623–1666.

Patell, James M, and Mark A Wolfson, 1979, Anticipated information releases reflected in call option prices, *Journal of Accounting and Economics* 1, 117–140.

Patell, James M, and Mark A Wolfson, 1981, The Ex Ante and Ex Post Price Effects of Quarterly Earnings Announcements Reflected in Option and Stock Prices, *Journal of Accounting Research* 19, 434–458.

Pástor, Ľubor, and Pietro Veronesi, 2003, Stock Valuation and Learning about Profitability, *The Journal of Finance* 58, 1749–1789.

Pástor, Ľubor, and Pietro Veronesi, 2009, Learning in Financial Markets, *Annual Review of Financial Economics* 1, 361–381.

Renneboog, Luc, and Peter G Szilagyi, 2011, The role of shareholder proposals in corporate governance, *Journal of Corporate Finance* 17, 167–188.

Yang, Tina, and Shan Zhao, 2014, Ceo duality and firm performance: Evidence from an exogenous shock to the competitive environment, *Journal of Banking & Finance* 49, 534–552.

Table 1
Summary Statistics

This table reports summary statistics for firm-level characteristics, implied volatility and abnormal returns for observations with shareholder meetings. The first three columns are from the sample with options and the next three columns are from the our final filtered sample. Section 3.3 describes the filters applied. Appendix Table A.1 presents variable definitions.

	With Options (35,342 meetings)			With Options Filtered (29,512 meetings)			Mean Difference
	Mean	Median	STD	Mean	Median	STD	
Firm-level variables							
Total Assets (mln. USD)	9,481	1,639	25,970	10,267	1,859	27,148	786***
Log (Total Assets)	7.5	7.4	1.8	7.6	7.5	1.8	0.1***
Log (Mkt. Value)	7.4	7.3	1.6	7.6	7.5	1.5	0.2***
Liquidity	0.21	0.11	0.23	0.20	0.11	0.22	−0.01***
Tangibility	0.22	0.12	0.24	0.22	0.12	0.23	0.00
ROA	0.07	0.10	0.22	0.09	0.11	0.18	0.02***
Mkt. Leverage	0.22	0.17	0.22	0.22	0.16	0.21	−0.01***
Book Leverage	0.24	0.20	0.25	0.24	0.20	0.23	0.00*
Sales Growth	0.17	0.08	0.61	0.17	0.08	0.56	−0.01
Employment Growth	0.09	0.04	0.28	0.09	0.04	0.27	0.00
Investment Growth	0.05	0.02	0.14	0.05	0.02	0.13	0.00
Option and Stock variables							
Implied Volatility (IV)	41	36	22	39	35	19	−2***
Abnormal Return	0.01	−0.04	2.74	0.00	−0.04	2.45	−0.01***

Table 2
Meeting- and Proposal-Level Information, 2003–2020

This table reports the summary of annual shareholder meetings and proposals from those meetings for the sample described in Section 3.3. Panel A presents the meeting summary, and Panel B presents the proposal summary. Panel A provides the number of meetings and then separately for proposals sponsored by management and shareholders; it presents the percentage of meetings with proposals sponsored by each, the percentage of meetings with close votes at the 10% margin on proposals sponsored by each, the percentage of meetings with at least 1 passing proposal and with at least 1 failing proposal sponsored by each. Panel B provides the number of proposals and then separately does so for proposals sponsored by management and shareholders; it presents the percentage of proposals sponsored by each, the percentage of close votes at the 10% margin, and passing and failing votes on proposals sponsored by each.

Panel A. Meeting Level

Year	# of Meetings	% with Mgmt. Proposals	% with Close Vote on Mgmt. Proposals	% with ≥ 1 Mgmt. Proposals that Pass	% with ≥ 1 Mgmt. Proposals that Fail	% with Shh. Proposals	% with Close Vote on Shh. Proposals	% with ≥ 1 Shh. Proposals that Pass	% with ≥ 1 Shh. Proposals that Fail
2003	1,175	100.0	5.5	97.3	6.3	16.2	32.1	37.9	80.5
2004	1,276	100.0	5.9	92.6	14.3	17.0	21.2	29.5	87.6
2005	1,256	100.0	6.8	99.4	4.9	14.5	30.2	30.8	78.6
2006	1,333	100.0	4.7	98.9	6.4	14.6	36.9	35.4	77.9
2007	1,429	100.0	4.0	95.0	4.1	14.2	31.0	22.7	86.2
2008	1,483	100.0	5.4	95.1	3.0	13.1	32.0	26.8	78.9
2009	1,323	100.0	5.8	98.3	3.3	15.1	38.5	39.5	80.0
2010	1,556	100.0	4.3	99.2	1.8	14.3	35.1	34.2	78.8
2011	1,675	100.0	8.2	99.5	5.6	11.0	28.1	31.9	75.1
2012	1,679	100.0	7.0	99.3	4.6	12.6	25.1	31.3	75.8
2013	1,824	100.0	4.7	98.8	4.9	11.9	20.3	18.9	82.9
2014	1,974	100.0	4.6	98.9	4.3	12.0	24.5	18.6	85.2
2015	2,032	100.0	4.4	98.8	5.2	13.2	29.5	29.1	80.6
2016	2,048	100.0	3.9	98.6	5.7	12.4	19.0	24.9	77.9
2017	1,954	100.0	4.4	99.0	4.5	11.6	22.9	19.8	84.6
2018	1,955	100.0	4.4	99.0	5.1	11.2	31.5	13.2	89.0
2019	1,818	100.0	5.1	99.1	5.0	12.0	26.5	19.2	81.7
2020	1,722	100.0	18.5	99.2	4.7	12.9	15.8	16.2	89.2
Total	29,512	100.0	5.9	98.3	5.1	13.1	27.5	26.3	81.8

Panel B. Proposal Level

Year	# of Proposals	% Mgmt. Proposals	% Close Vote on Mgmt. Proposals	% Mgmt. Proposals that Pass	% Mgmt. Proposals that Fail	% Shh. Proposals	% Close Vote on Shh. Proposals	% Shh. Proposals that Pass	% Shh. Proposals that Fail
2003	8,129	95.6	0.9	95.9	2.5	4.4	18.8	23.3	76.1
2004	9,399	95.4	1.0	88.9	4.0	4.6	11.7	18.6	81.0
2005	9,217	95.9	1.1	98.2	.7	4.1	17.5	17.7	79.6
2006	10,010	95.8	0.7	97.8	1.7	4.2	22.9	18.6	78.3
2007	10,931	95.9	0.6	93.4	2.1	4.1	18.5	12.0	83.7
2008	11,576	96.5	0.8	94.0	1.4	3.5	17.1	14.4	79.9
2009	10,724	96.2	0.9	97.5	.9	3.8	24.3	22.1	76.2
2010	12,666	96.5	0.6	98.4	.4	3.5	22.5	19.2	78.6
2011	16,558	98.0	1.0	88.2	.7	2.0	17.1	19.2	79.3
2012	15,025	97.5	0.9	97.8	1.1	2.5	15.5	20.0	77.6
2013	16,404	97.7	0.6	97.8	1.2	2.3	14.1	12.8	84.9
2014	17,669	97.7	0.6	98.1	1.0	2.3	15.6	12.8	84.2
2015	18,358	97.4	0.6	97.8	1.5	2.6	17.4	17.6	79.8
2016	18,575	97.6	0.5	97.7	1.6	2.4	11.8	16.1	82.1
2017	19,239	98.0	0.5	91.5	1.2	2.0	15.0	12.2	85.8
2018	17,799	97.9	0.5	97.6	1.3	2.1	21.6	9.3	87.7
2019	16,399	97.9	0.6	97.6	1.3	2.1	17.5	12.1	86.2
2020	15,885	97.7	4.2	97.9	1.1	2.3	10.7	10.2	88.5
Total	254,563	97.2	0.9	96.0	1.3	2.8	17.2	16.0	81.6

Table 3
Governance (including Say-on-Pay), Political, Environmental and Social Proposals

This table reports the summary for various proposals that are voted on during annual shareholder meetings. It provides the number of proposals of each type, the percentage of proposals that pass, the percentage of proposals with close votes at the 10% margin and the average percentage of for, against and abstain votes.

	# of Proposals	% Pass	% Close Votes	Avg. % For	Avg.% Against	Avg. % Abstain
Proposals All	254,563	93.7	1.4	59.1	37.2	3.2
Proposals by Management (Mgmt.)	247,389	96.0	0.9	88.1	7.6	1.0
Proposals by Shareholders (Shh.)	7,174	16.0	17.2	20.2	76.9	6.2
Proposals - Governance and Say-on-Pay						
Ratify compensation (Shh.)	197	15.2	60.9	41.8	55.5	5.8
Compensation other (Shh.)	1,080	5.2	13.1	24.0	74.5	2.3
Declassify board (Shh.)	350	82.3	16.0	70.3	26.7	1.7
Supermajority voting (Shh.)	139	77.0	16.5	66.3	32.2	1.1
Independent chair (Shh.)	601	2.8	16.8	28.7	70.6	1.2
Majority director elections (Shh.)	346	46.5	45.7	53.8	45.1	1.7
Proxy access (Shh.)	220	49.5	30.5	48.7	50.8	0.8
Written consent (Shh.)	264	17.8	53.8	39.3	60.0	0.9
Total Governance and Say-on-Pay (Shh.)	3,197	25.5	25.3	29.4	69.2	2.2
Ratify compensation (Mgmt.)	15,939	97.6	4.0	89.8	9.7	1.1
Compensation other (Mgmt.)	8,167	96.7	5.5	81.4	17.6	1.0
Declassify board (Mgmt.)	593	85.0	13.8	91.8	1.8	0.5
Supermajority voting (Mgmt.)	447	79.9	15.2	91.9	2.2	0.9
Total Governance and Say-on-Pay (Mgmt.)	25,146	96.7	4.9	86.3	11.1	0.9
Proposals - Political, Envirnomental and Social						
Political contributions/activities	715	1.0	6.3	15.0	80.1	9.3
Environmental (E)						
Report on genetically engineered products	41	0.0	0.0	6.0	89.0	11.2
Cigarette/tocacco/alcochol/weapons (sin activities)	162	1.9	1.2	5.2	90.4	19.8
Report on greenhouse gas emissions	121	2.5	5.8	24.6	69.8	11.6
Environment-related issues	334	1.8	5.4	14.5	82.4	9.1
Social Issues (S)						
Report on pay disparity	121	4.1	5.8	17.7	79.3	6.0
Code of corporate conduct/workplace human rights	199	1.0	1.5	15.9	78.9	10.4
Animal Welfare standars/animal testing policy	54	1.9	0.0	4.2	86.3	18.6
Non-disriminatory policy	54	0.0	0.0	6.5	88.3	8.8
Prepare a sustainability report	117	4.3	11.1	26.1	64.4	13.0
Safety	24	0.0	0.0	11.6	84.5	11.2
Diversity issues	113	2.7	4.4	18.2	79.6	4.4
Other social-related issues	324	1.9	4.3	13.6	81.5	9.3
Charitable contributions (excl. political contributions)	35	0.0	0.0	5.8	90.2	8.8
CSR-based compensation	86	0.0	0.0	12.2	86.0	5.9
Total E+S	1,785	1.9	3.9	11.7	83.7	12.0

Table 4
Implied Volatility Changes and Cumulative Abnormal Returns around Shareholder Meetings

This table presents the average implied volatility changes (IVDs) and cumulative abnormal returns(CARs) around shareholder meetings over various windows indicated in the first column, where 0 is the meeting date. IVDs are calculated from Equation (6) and CARs are calculated using the market model. All regressions include year and weekday fixed effects and controls for overall market volatility and distance from adjacent earnings announcements. Regressions in Panel A(B) include firm(meeting) fixed effects. Controls in Panel A are firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Panel A. Firm Fixed Effects

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	IVD	CAR	IVD	CAR	IVD	CAR
(Record, 0)	−0.871***	−0.153	−0.844***	0.073	−0.849***	−0.181
	(0.092)	(0.112)	(0.184)	(0.222)	(0.102)	(0.125)
(Proxy, 0)	−0.901***	0.027	−0.428**	0.046	−0.973***	0.052
	(0.091)	(0.114)	(0.169)	(0.209)	(0.101)	(0.127)
(−10, 0)	−0.106	−0.043	0.146	−0.040	−0.157*	−0.028
	(0.072)	(0.087)	(0.137)	(0.162)	(0.080)	(0.097)
(−1, 0)	0.002	−0.007	0.095	−0.028	−0.017	−0.003
	(0.044)	(0.020)	(0.064)	(0.030)	(0.051)	(0.023)
(0, +3)	−0.074	0.056	−0.089	−0.012	−0.081	0.065
	(0.052)	(0.038)	(0.067)	(0.072)	(0.059)	(0.043)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	1,339,744	1,365,797	195,161	190,924	1,144,583	1,174,873
N Firms	4,013	3,762	834	796	3,925	3,665

Panel B. Meeting Fixed Effects

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	IVD	CAR	IVD	CAR	IVD	CAR
(Record, 0)	−0.923***	−0.096	−0.973***	−0.085	−0.891***	−0.101
	(0.058)	(0.067)	(0.108)	(0.144)	(0.065)	(0.075)
(Proxy, 0)	−0.925***	0.020	−0.608***	−0.044	−0.971***	0.025
	(0.062)	(0.071)	(0.112)	(0.148)	(0.070)	(0.079)
(−10, 0)	−0.111*	−0.061	0.049	−0.133	−0.150**	−0.051
	(0.059)	(0.068)	(0.110)	(0.147)	(0.066)	(0.076)
(−1, 0)	0.007	0.003	0.019	−0.005	0.004	0.004
	(0.057)	(0.066)	(0.105)	(0.141)	(0.063)	(0.073)
(0, +3)	−0.131**	0.081	−0.173	0.048	−0.126**	0.085
	(0.057)	(0.066)	(0.106)	(0.141)	(0.064)	(0.073)
Meeting FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	1,594,842	1,598,078	223,064	216,580	1,371,778	1,381,498
N Meetings	29,261	26,207	3,754	3,538	25,507	22,669

Table 5
Implied Volatility Changes and Cumulative Abnormal Returns for Meetings with Close Votes

This table presents the average implied volatility changes (IVDs) and cumulative abnormal returns(CARs) around shareholder meetings for meetings with close votes. Windows are indicated in the first column, where 0 is the meeting date. IVDs are calculated from Equation (6) and CARs are calculated using the market model. All regressions include firm, year, and weekday fixed effects and controls for overall market volatility, distance from adjacent earnings announcements, firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Panel A. Vote Margin ≤ 5%

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	IVD	CAR	IVD	CAR	IVD	CAR
(Record, 0)	−1.319***	−0.257	−1.399***	0.024	−1.372**	−0.845
	(0.334)	(0.498)	(0.414)	(0.729)	(0.573)	(0.794)
(Proxy, 0)	−1.154***	0.150	−0.708**	0.022	−1.317***	0.026
	(0.302)	(0.455)	(0.334)	(0.679)	(0.505)	(0.762)
(−10, 0)	−0.283	−0.294	0.148	−0.169	−0.794**	−0.235
	(0.226)	(0.329)	(0.275)	(0.466)	(0.377)	(0.526)
(−1, 0)	−0.100	−0.027	−0.064	0.022	−0.095	−0.037
	(0.122)	(0.063)	(0.088)	(0.094)	(0.248)	(0.100)
(0, +3)	−0.083	0.121	0.057	−0.064	−0.036	0.394*
	(0.166)	(0.138)	(0.178)	(0.194)	(0.316)	(0.223)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	63,131	62,894	24,469	23,609	29,201	30,150
N firms	715	665	242	228	457	418

Panel B. Vote Margin ≤ 10%

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	IVD	CAR	IVD	CAR	IVD	CAR
(Record, 0)	−1.115***	−0.502	−0.851***	−0.028	−0.966***	−1.067**
	(0.228)	(0.333)	(0.288)	(0.472)	(0.376)	(0.528)
(Proxy, 0)	−0.935***	0.028	−0.562**	0.039	−0.929***	−0.171
	(0.218)	(0.299)	(0.265)	(0.412)	(0.358)	(0.495)
(−10, 0)	−0.133	−0.287	0.157	−0.584**	−0.352	−0.094
	(0.173)	(0.217)	(0.191)	(0.291)	(0.266)	(0.332)
(−1, 0)	−0.019	−0.165	−0.028	−0.010	0.027	−0.082
	(0.156)	(0.211)	(0.065)	(0.061)	(0.176)	(0.065)
(0, +3)	−0.039	−0.011	−0.023	−0.063	−0.049	0.015
	(0.113)	(0.096)	(0.126)	(0.123)	(0.200)	(0.150)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	127,608	127,612	50,680	49,030	60,827	62,987
N firms	1,140	1,075	377	362	822	761

Table 5 (*—Continued*)

Panel C. Vote Margin ≤ 20%

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	IVD	CAR	IVD	CAR	IVD	CAR
(Record, 0)	-1.055^{***}	-0.556^{**}	-0.719^{***}	-0.393	-0.952^{***}	-0.899^{**}
	(0.174)	(0.240)	(0.264)	(0.344)	(0.253)	(0.355)
(Proxy, 0)	-0.750^{***}	-0.309	-0.381	-0.552^{*}	-0.847^{***}	-0.350
	(0.167)	(0.225)	(0.251)	(0.333)	(0.246)	(0.347)
(−10, 0)	-0.144	-0.145	0.053	-0.204	-0.253	-0.036
	(0.137)	(0.172)	(0.154)	(0.235)	(0.207)	(0.248)
(−1, 0)	0.053	-0.024	-0.075	0.007	0.078	-0.032
	(0.073)	(0.041)	(0.057)	(0.051)	(0.123)	(0.064)
(0, +3)	-0.070	-0.011	-0.140^{*}	-0.011	-0.082	0.039
	(0.093)	(0.082)	(0.082)	(0.097)	(0.157)	(0.123)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	256,348	258,505	72,061	69,909	139,529	144,580
N firms	1,825	1,716	449	434	1,518	1,404

Table 6
Implied Volatility Changes: By Whether ISS/Management Agree on Voting Recommendations

This table presents the average implied volatility changes (IVDs) around shareholder meetings depending on whether ISS and management agree or disagree on voting recommendations. Windows are indicated in the first column, where 0 is the meeting date. "Agree" means that ISS and management provide the same recommendations for all proposals at a given meeting. "Disagree1" means that ISS and management provide different recommendations for at least one proposals. "Disagree2" means that ISS and management provide different recommendations for more than one proposals. IVDs are calculated from equation (6). All regressions include firm, year, and weekday fixed effects and controls for overall market volatility, distance from adjacent earnings announcements, firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

	All Meetings			Meetings with Shareholder Proposals			Meetings without Shareholder Proposals		
	Agree	Disagree1	Disagree2	Agree	Disagree1	Disagree2	Agree	Disagree1	Disagree2
(Record, 0)	−0.840***	−0.913***	−1.586***	−0.531	−0.907***	−1.338**	−0.846***	−0.831***	−1.510***
	(0.113)	(0.144)	(0.276)	(0.368)	(0.211)	(0.642)	(0.117)	(0.184)	(0.348)
(Proxy, 0)	−0.944***	−0.838***	−1.084***	−0.361	−0.451**	0.078	−0.962***	−0.986***	−1.350***
	(0.113)	(0.139)	(0.280)	(0.332)	(0.190)	(0.481)	(0.117)	(0.181)	(0.368)
(−10, 0)	−0.153*	0.038	0.009	−0.134	0.197	0.234	−0.177*	−0.016	−0.014
	(0.090)	(0.107)	(0.205)	(0.310)	(0.145)	(0.391)	(0.092)	(0.139)	(0.262)
(−1, 0)	−0.009	0.036	−0.143	0.030	0.110	−0.148	−0.018	0.009	−0.158
	(0.060)	(0.066)	(0.134)	(0.103)	(0.073)	(0.093)	(0.062)	(0.088)	(0.185)
(0, +3)	−0.094	−0.090	−0.041	−0.208	−0.081	−0.079	−0.100	−0.102	−0.062
	(0.067)	(0.080)	(0.155)	(0.142)	(0.074)	(0.245)	(0.069)	(0.109)	(0.208)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N Obs.	794,027	545,717	151,873	37,711	157,450	20,828	763,477	381,106	107,048
N firms	3,112	3,133	1,327	330	741	116	3,074	2,880	1,113

Table 7
Implied Volatility Changes: Governance Topics

This table presents the average implied volatility changes (IVDs) around shareholder meetings by proposal topics, for selected governance proposals. Panel A(B) reports results for topics sponsored by shareholders(management) and excludes meetings that had close votes on management(shareholder) proposals. Windows are indicated in the first column, where 0 is the meeting date. IVDs are calculated from Equation (6). All regressions include firm, year, and weekday fixed effects and controls for overall market volatility, distance from adjacent earnings announcements, firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Panel A. Shareholder Proposals

	Shh. Proposal	Ratify Comp.	Comp.	Declassify	Super-majority	Indep. Chairman	Maj. Vote for Elections	Proxy Access	Written Consent
(Record, 0)	−0.777***	0.043	−0.691*	−0.821	−2.399*	−0.738*	−1.452**	−2.199***	−1.386***
	(0.198)	(1.459)	(0.373)	(0.722)	(1.351)	(0.444)	(0.627)	(0.579)	(0.461)
(Proxy, 0)	−0.323*	−0.227	−0.458	0.254	−1.196	−0.269	−0.298	−0.865	−1.150**
	(0.177)	(1.161)	(0.317)	(0.609)	(1.118)	(0.395)	(0.564)	(0.543)	(0.447)
(−10, 0)	0.179	−0.353	0.159	0.500	0.101	−0.062	0.671	−0.107	−0.245
	(0.130)	(0.543)	(0.214)	(0.536)	(0.574)	(0.310)	(0.432)	(0.421)	(0.325)
(−1, 0)	0.104	0.238	0.071	0.091	−0.271	0.077	−0.200	0.009	0.018
	(0.064)	(0.401)	(0.092)	(0.125)	(0.254)	(0.159)	(0.232)	(0.171)	(0.128)
(0, +3)	−0.065	−0.176	0.091	0.254	−0.300	−0.050	−0.311	−0.094	0.214
	(0.070)	(0.356)	(0.128)	(0.186)	(0.573)	(0.189)	(0.307)	(0.250)	(0.202)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
N Obs.	179,060	8,848	45,048	15,943	6,289	28,391	15,078	9,739	11,832
N firms	806	83	271	210	83	189	185	131	96

Panel B. Management Proposals

	Mgmt. Proposal	Ratify Comp.	Comp.	Declassify	Super-majority
(Record, 0)	−0.849***	−0.958***	−0.800***	−0.414	−0.183
	(0.102)	(0.131)	(0.172)	(0.407)	(0.699)
(Proxy, 0)	−0.973***	−0.781***	−0.773***	−0.605	0.029
	(0.101)	(0.122)	(0.170)	(0.415)	(0.693)
(−10, 0)	−0.157*	−0.150	−0.157	0.264	−0.289
	(0.080)	(0.101)	(0.129)	(0.309)	(0.511)
(−1, 0)	−0.017	−0.033	0.103	−0.055	0.120
	(0.051)	(0.068)	(0.079)	(0.176)	(0.176)
(0, +3)	−0.081	−0.115	0.025	0.158	−0.170
	(0.059)	(0.080)	(0.090)	(0.246)	(0.306)
Controls	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y
N Obs.	1,144,583	680,127	350,845	26,304	14,514
N firms	3,925	2,818	2,582	428	210

Table 8
Implied Volatility Changes: Political, Environmental and Social Topics

This table presents the average implied volatility changes (IVDs) around shareholder meetings by proposal topics, for political, environmental, and social proposals. Panel A reports results for all years and Panel B breaks down the sample period before and after 2016. Windows are indicated in the first column, where 0 is the meeting date. IVDs are calculated from Equation (6). All regressions include firm, year, and weekday fixed effects and controls for overall market volatility, distance from adjacent earnings announcements, firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Panel A. All Years

	Political	ESG	Disclosure	Action
(Record, 0)	-1.071^{***}	-0.377	-0.228	-0.316
	(0.365)	(0.351)	(0.439)	(0.481)
(Proxy, 0)	-0.539^{*}	0.174	0.135	0.297
	(0.295)	(0.288)	(0.375)	(0.413)
$(-10, 0)$	-0.097	0.180	0.121	0.262
	(0.226)	(0.202)	(0.237)	(0.260)
$(-1, 0)$	0.053	0.072	0.098	0.010
	(0.076)	(0.079)	(0.088)	(0.107)
$(-1, +3)$	0.090	0.035	-0.126	0.055
	(0.144)	(0.128)	(0.154)	(0.179)
Controls	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y
N Obs.	31,451	59,253	28,846	37,286
N firms	164	335	221	228

Table 8 (*—Continued*)

Panel B. Pre vs. Post 2016

	Political	ESG	Disclosure	Action
(Record, 0) Pre 2016	−1.100***	−0.060	−0.102	−0.017
	(0.423)	(0.384)	(0.447)	(0.538)
(Proxy, 0) Pre 2016	−0.465	0.466	0.186	0.582
	(0.346)	(0.319)	(0.381)	(0.452)
(−10, 0) Pre 2016	−0.003	0.348	0.200	0.395
	(0.252)	(0.227)	(0.255)	(0.301)
(−1, 0) Pre 2016	0.053	0.045	0.032	0.004
	(0.093)	(0.095)	(0.101)	(0.130)
(−1, +3) Pre 2016	0.002	0.006	−0.165	0.063
	(0.174)	(0.142)	(0.148)	(0.194)
(Record, 0) Post 2016	−0.909*	−1.430**	−0.528	−1.380
	(0.542)	(0.655)	(0.814)	(0.927)
(Proxy, 0) Post 2016	−0.749*	−0.768	0.050	−0.703
	(0.431)	(0.535)	(0.667)	(0.814)
(−10, 0) Post 2016	−0.393	−0.457	−0.127	−0.325
	(0.400)	(0.344)	(0.463)	(0.418)
(−1, 0) Post 2016	0.054	0.157	0.286*	0.013
	(0.109)	(0.117)	(0.151)	(0.153)
(−1, +3) Post 2016	0.349	0.105	−0.026	−0.018
	(0.238)	(0.235)	(0.350)	(0.366)
Coefficient Difference				
(Record, 0) Pre − Post 2016	−0.190	1.370*	0.426	1.363
	(0.617)	(0.711)	(0.811)	(1.026)
(Proxy, 0) Pre − Post 2016	0.284	1.234**	0.136	1.285
	(0.500)	(0.585)	(0.647)	(0.876)
(−10, 0) Pre − Post 2016	0.390	0.805**	0.326	0.721
	(0.443)	(0.391)	(0.495)	(0.505)
(−1, 0) Pre − Post 2016	−0.001	−0.112	−0.253	−0.008
	(0.140)	(0.151)	(0.173)	(0.209)
(−1, +3) Pre − Post 2016	−0.347	−0.099	−0.140	0.080
	(0.292)	(0.264)	(0.359)	(0.400)
Controls	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y
N Obs.	31,451	59,253	28,846	37,286
N firms	164	335	221	228

Table 9
Robustness

This table presents the average implied volatility changes (IVDs) around shareholder meetings. Panel A presents IVDs and CARs estimated from the equation (8) after controlling proxies for voting premium. Panel B presents IVDs separately for call and put options. Panel C presents IVDs computed from historical option prices with expiration dates of between 5 and 90 days. Windows are indicated in the first column, where 0 is the meeting date. IVDs are calculated from Equation (6). All regressions include firm, year, and weekday fixed effects and controls for overall market volatility, distance from adjacent earnings announcements, firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

Panel A. Voting Premium and Borrowing Fee

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	IVD	CAR	IVD	CAR	IVD	CAR
(Record, 0)	−0.912***	−0.163	−0.967***	0.0799	−0.876***	−0.195
	(0.092)	(0.110)	(0.176)	(0.220)	(0.103)	(0.123)
(Proxy, 0)	−0.940***	0.002	−0.509***	0.007	−1.009***	0.028
	(0.092)	(0.112)	(0.165)	(0.210)	(0.103)	(0.125)
(-10, 0)	−0.096	−0.056	0.177	−0.072	−0.158*	−0.041
	(0.075)	(0.086)	(0.139)	(0.163)	(0.084)	(0.096)
(-1, 0)	−0.007	0.002	0.067	−0.034	−0.025	0.007
	(0.046)	(0.020)	(0.064)	(0.030)	(0.052)	(0.023)
(0, +3)	−0.070	0.060	−0.109∗	−0.027	−0.074	0.070*
	(0.054)	(0.038)	(0.064)	(0.072)	(0.062)	(0.042)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	1,231,158	1,363,142	185,687	190,689	1,045,471	1,172,453
N firms	3,752	3,756	794	795	3,656	3,660

Panel B. Call and Put

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
	Call	Put	Call	Put	Call	Put
(Record, 0)	−0.851***	−0.890***	−0.830***	−0.858***	−0.828***	−0.870***
	(0.093)	(0.093)	(0.184)	(0.187)	(0.103)	(0.103)
(Proxy, 0)	−0.908***	−0.895***	−0.432**	−0.424**	−0.978***	−0.967***
	(0.092)	(0.092)	(0.169)	(0.172)	(0.102)	(0.103)
(−10, 0)	−0.094	−0.118	0.138	0.153	−0.141*	−0.173**
	(0.074)	(0.073)	(0.139)	(0.139)	(0.082)	(0.081)
(−1, 0)	0.024	−0.021	0.144**	0.046	0.001	−0.035
	(0.046)	(0.047)	(0.067)	(0.068)	(0.053)	(0.053)
(−1, +3)	−0.050	−0.099*	−0.059	−0.119*	−0.058	−0.104*
	(0.054)	(0.053)	(0.070)	(0.071)	(0.061)	(0.061)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	1,339,744	1,339,744	195,161	195,161	1,144,583	1,144,583
N firms	4,013	4,013	834	834	3,925	3,925

Table 9 (*—Continued*)

Panel C. Historical Options

	All Meetings		Meetings with Shareholder Proposals		Meetings without Shareholder Proposals	
(Record, 0)	-2.736^{**}	-1.929^{***}	-3.467^{**}	-0.683^{***}	-3.656^{***}	-2.891^{***}
	(1.096)	(0.133)	(1.754)	(0.166)	(1.364)	(0.187)
(Proxy, 0)	-1.778^{**}	-1.281^{***}	-1.586	-0.127	-2.800^{***}	-2.081^{***}
	(0.810)	(0.105)	(1.333)	(0.132)	(1.002)	(0.148)
$(-10, 0)$	-0.810^{**}	-0.608^{***}	-0.402	-0.104	-1.434^{***}	-1.041^{***}
	(0.357)	(0.066)	(0.565)	(0.085)	(0.440)	(0.092)
$(-1, 0)$	-0.016	-0.057	-0.081	-0.158^{**}	-0.045	-0.080
	(0.877)	(0.058)	(0.185)	(0.074)	(0.114)	(0.080)
$(0, +3)$	-0.023	-0.034	-0.263	-0.201^{**}	0.016	0.122
	(0.903)	(0.063)	(0.301)	(0.081)	(0.235)	(0.088)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	N	Y	N	Y	N
Meeting FE	N	Y	N	Y	N	Y
Year, Weekday FE	Y	Y	Y	Y	Y	Y
N Obs.	725,356	792,844	266,525	290,496	458,831	502,348
N firms	1,949	9,451	538	2,451	1,838	6,653

Appendix A. Additional Figures and Tables

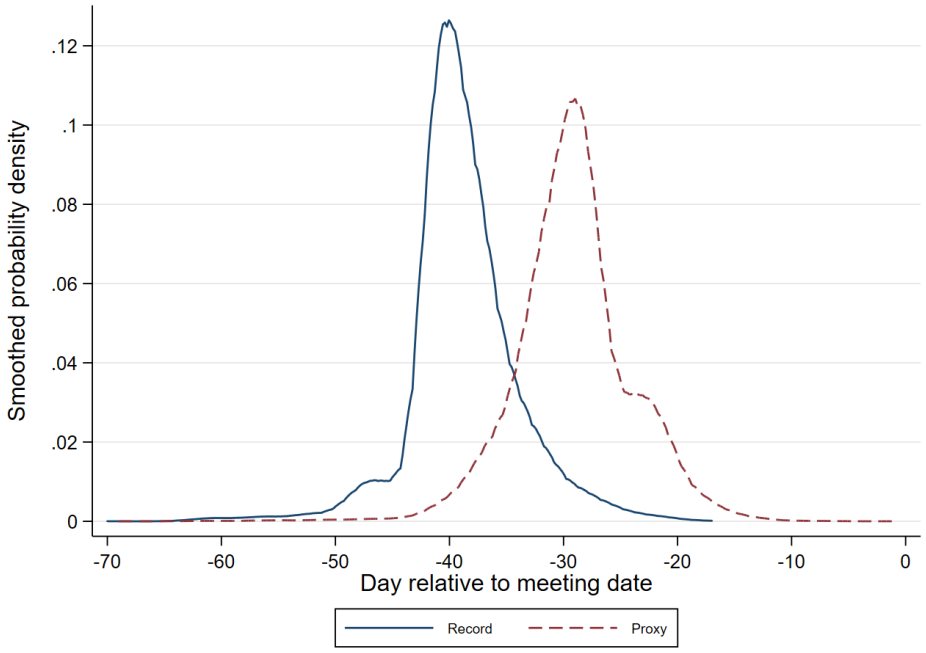


Figure A.1
Timeline

The figure presents the kernel density plots of days to meeting dates from record dates and proxy dates for 29,512 annual meetings. The sample period is from 2003 to 2020.

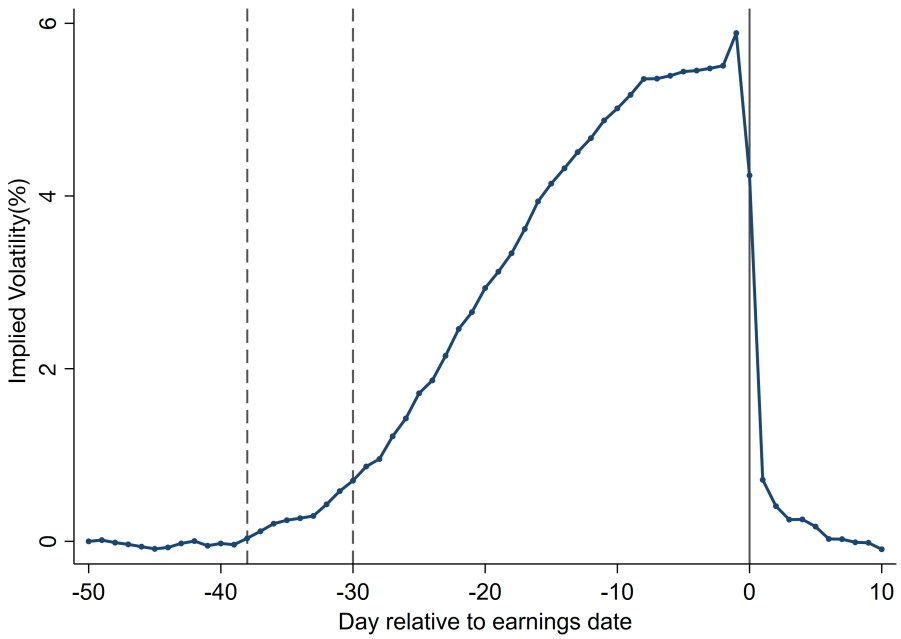
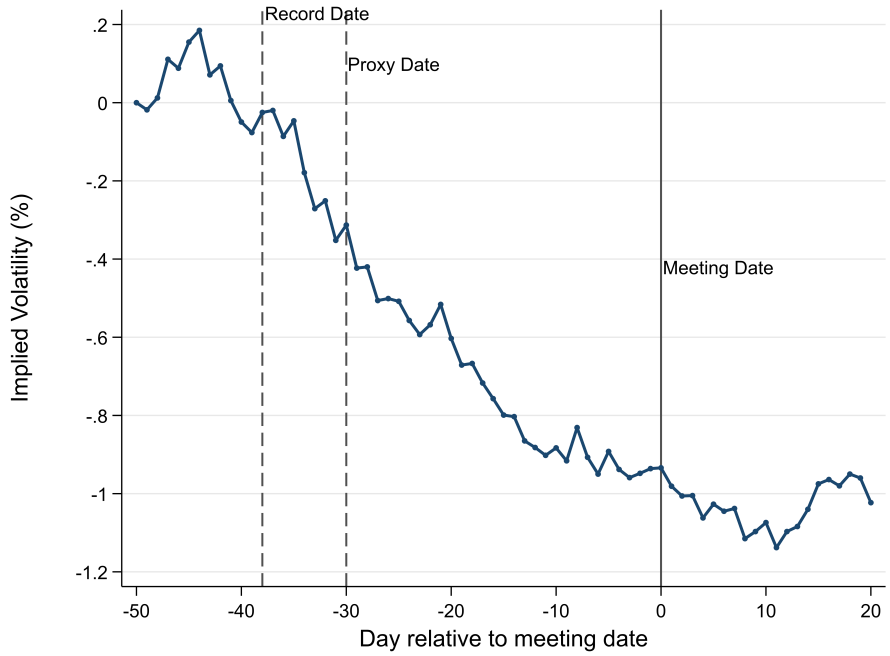


Figure A.2
Implied Volatilities around Earnings Announcements

The figure presents implied volatility for 60 trading days surrounding earnings announcement dates from $t-50$ to $t+10$, estimated from Equation (6) described in Section 3.2. The x-axis is the day relative to the earnings announcement date. The y-axis is the implied volatility relative to 50 trading days before the earnings announcement date. The sample includes 30,848 earnings announcements that occur around annual shareholder meetings (from several months prior to several days before the meeting) from 2003 to 2020.

Panel A. Implied Volatility



Panel B. Cumulative Abnormal Returns

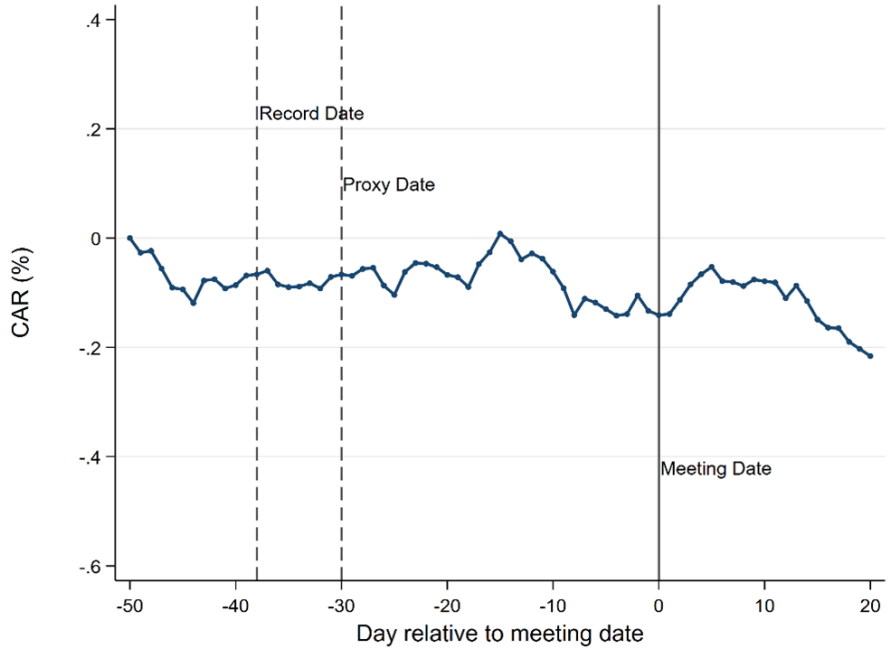


Figure A.3
Implied Volatility and Cumulative Abnormal Return Around Annual Meetings
The figure presents implied volatility and cumulative abnormal market model return for 60 trading days surrounding annual shareholder meetings from $t-50$ to $t+10$, estimated from Equation (6) described in Section 3.2. The x-axis is the day relative to the annual shareholder meeting date. The sample includes 29,512 meetings from 2003 to 2020.

Table A.1
Variable Definitions

Variable	Definition
Total Assets	Total asset is from the Compustat item *at*.
Log (Total Assets)	Log (Total asset) is the log of Compustat item *at*.
Log (Mkt. Value)	Log (Mkt. Value) is the log of the market value of equity, computed as the share price multiplied by the number of shares outstanding ($prcc\_f^*csho$).
Liquidity	Liquidity is the ratio of cash and marketable securities to total asset (che/at).
Tangibility	Tangibility is the ratio of net property, plant and equipment to total asset ($ppent/at$).
ROA	ROA is the ratio of operating income before depreciation to total asset ($oibdp/at$).
Mkt. Leverage	Market leverage is the ratio of total debt to the market value of total asset (($dlc + dltt)/(dlc + dltt + mktval)$).
Book Leverage	Book leverage is the ratio of total debt to the book value of total asset (($dlc + dltt)/at$).
Sales Growth	Sales growth is the growth of sales for a fiscal year ($\Delta sale_{t-1,t}/sale_{t-1}$).
Employment Growth	Employment growth is the growth of the number of employees for a fiscal year ($\Delta emps_{t-1,t}/emps_{t-1}$).
Investment Growth	Investment growth is the growth of net property, plant and equipment for a fiscal year ($\Delta ppent_{t-1,t}/ppent_{t-1}$).
IV	IV is the average implied volatility of call and put positions for standardized at-the-money options with 30 days maturity.
IVD	IVD is the change of IV between day a and day b, $\beta_a - \beta_b$, estimated from the equation (8).
CAR	CAR is the cumulative abnormal return from the market-model between day a and b from β estimated from the window of $(-340, -140)$ around shareholder meetings.

Table A.2
The Timing of Implied Volatility Changes

This table presents the average implied volatility changes around shareholder meetings and record dates over various windows indicated in the first column. In the results in the first three columns, 0 is the meeting date. In the results in the last three columns, 0 is the record date. The columns under All present results from all annual shareholder meetings. The columns under Shh present results from shareholder meetings with shareholder proposals. The columns under No Shh present results from shareholder meetings without shareholder proposals. IVDs are calculated from Equation (6) All regressions include firm, year and weekday fixed effects and controls for overall market volatility and distance from adjacent earnings announcements. Controls are firm size, ROA, market leverage, liquidity, tangibility, number of voted proposals, and number of voted shareholder proposals. Appendix Table A.1 presents variable definitions. Standard errors are reported in parentheses beneath coefficient estimates. ***, **, and * indicate significance at the 1, 5, and 10% levels.

	Around Meeting Dates				Around Record Dates		
	All	Shh	No Shh		All	Shh	No Shh
$(-50,-40)$	-0.105	-0.291^{**}	-0.074	$(-5,0)$	-0.096	-0.298^{***}	-0.061
	(0.077)	(0.147)	(0.085)		(0.063)	(0.102)	(0.070)
$(-40,-30)$	-0.246^{***}	-0.467^{***}	-0.210^{**}	$(\text{Record},+10)$	-0.254^{***}	-0.398^{***}	-0.217^{***}
	(0.081)	(0.150)	(0.090)		(0.073)	(0.134)	(0.081)
$(-30,-20)$	-0.209^{**}	-0.317^{**}	-0.155^{*}	$(+10,+20)$	-0.335^{***}	-0.428^{***}	-0.280^{***}
	(0.083)	(0.141)	(0.092)		(0.076)	(0.149)	(0.083)
$(-20,-10)$	-0.252^{***}	-0.174	-0.275^{***}	$(+20,+30)$	-0.194^{***}	-0.098	-0.210^{**}
	(0.080)	(0.133)	(0.089)		(0.075)	(0.149)	(0.083)
$(-10,\text{Meeting})$	-0.105	0.146	-0.157^{*}	$(+30,+40)$	-0.300^{***}	-0.077	-0.405^{***}
	(0.072)	(0.137)	(0.080)		(0.116)	(0.169)	(0.134)
$(0,+5)$	-0.086	-0.108	-0.089	$(\text{Record},\text{Meeting})$	-0.879^{***}	-0.865^{***}	-0.853^{***}
	(0.061)	(0.093)	(0.068)		(0.090)	(0.185)	(0.100)
Controls	Y	Y	Y		Y	Y	Y
Firm FE	Y	Y	Y		Y	Y	Y
Year, Weekday FE	Y	Y	Y		Y	Y	Y
N Obs.	1,339,744	195,161	1,144,583		1,339,744	195,161	1,144,583
N firms	4,013	834	3,925		4,013	834	3,925

Appendix B. Proofs

This section provides the proof of (B.3). We first define the average proposal value in a meeting (regardless of the direction) as $\sum_{p=1}^{n} |\beta_p|/n$, or the sum of proposal values divided by the number of proposals in a meeting. From the relationship between arithmetic and quadratic mean for nonnegative real numbers, we obtain upper and lower bounds of the average proposal value.[36]

$$\sqrt{\frac{\sum_{p=1}^{n} \beta_p^2}{n^2}} \leq \frac{\sum_{p=1}^{n} |\beta_p|}{n} \leq \sqrt{\frac{\sum_{p=1}^{n} \beta_p^2}{n}} \tag{B.1}$$

We now describe how ex-ante volatility can be used to study upper and lower bounds in Equation (B.1). To obtain the upper and lower bounds of the average proposal value, we replace the probability of implementing a specific proposal, ϕ_p, with the average probability at the meeting level, ϕ, in Equation (4). Assuming that $\phi_p = \phi$ for all proposals, the sum of squared proposal values becomes the following:

$$\sum_{p=1}^{n} \beta_p^2 = \frac{1}{\phi(1-\phi)} Var_t(\sum_{p=1}^{n} Z_{t+1,p}) \tag{B.2}$$

Finally, by combining Equation (B.1) and (B.2), the upper and lower bounds of the average proposal value in a meeting can be written as follows:

$$\sqrt{\frac{1}{n^2\phi(1-\phi)} Var_t(\sum_{p=1}^{n} Z_{t+1,p})} \leq \frac{\sum_{p=1}^{n} |\beta_p|}{n} \leq \sqrt{\frac{1}{n\phi(1-\phi)} Var_t(\sum_{p=1}^{n} Z_{t+1,p})} \tag{B.3}$$

[36] For the upper bound, the relationship between arithmetic and quadratic mean is as follows: $\frac{x_1+x_2+\cdots+x_n}{n} \leq \sqrt{\frac{x_1^2+x_2^2+\cdots+x_n^2}{n}}$. For the lower bound, the relationship between arithmetic and quadratic mean is as follows: $\frac{x_1+x_2+\cdots+x_n}{n} \geq \frac{1}{\sqrt{n}}\sqrt{\frac{x_1^2+x_2^2+\cdots+x_n^2}{n}}$