

Earnings and the Value of Voting Rights*

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Abstract

We examine the impact of earnings announcements on the value of shareholder voting rights (voting premium) estimated using a new technique that exploits option prices. We find the voting premium is negatively related to earnings surprises. This relation is primarily driven by unfavorable earnings surprises. The negative effect of earnings on the voting premium is more pronounced with impending shareholder meetings, shareholder activist involvement, firm performance below industry norms, and is attenuated by lower analyst forecast dispersion, more insider ownership, fewer generalizable assets. Our study highlights the opposing influences of earnings on stock price through voting and cash flow rights.

JEL classification: G34, M41

Keywords: Voting Premium, Control Rights, Earnings Announcements, Corporate Governance

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Earnings and the Value of Voting Rights

Abstract

We examine the impact of earnings announcements on the value of shareholder voting rights (voting premium) estimated using a new technique that exploits option prices. We find the voting premium is negatively related to earnings surprises. This relation is primarily driven by unfavorable earnings surprises. The negative effect of earnings on the voting premium is more pronounced with impending shareholder meetings, shareholder activist involvement, firm performance below industry norms, and is attenuated by lower analyst forecast dispersion, more insider ownership, fewer generalizable assets. Our study highlights the opposing influences of earnings on stock price through voting and cash flow rights.

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Earnings announcements are one of the most significant information events for corporations, and the impact of earnings in capital markets attract considerable attention in the literature and among practitioners. An imperative, albeit understudied, economic role of earnings in capital markets is to provide a benchmark for assessment and/or settlement of contractual agreements (Watts and Zimmerman 1986; Weisbach 1988; Collins and DeAngelo 1990; Holthausen and Watts 2001). Adverse earnings news may reflect and/or trigger disagreements among investors regarding management of the firms' assets, and increase the chances of a contest for control (Palepu 1986; Edmans, Goldstein, and Jiang 2012; Ali, Kravet, and Li 2016; Karpoff, Schonlau, and Wehrly 2017).

In this study, we bring a new perspective and highlight the relation between the accounting information released in earnings announcements and the shareholder voting rights, which are one of the most fundamental contractual rights that shareholders have. In addition to informing investors regarding the risky stream of cash flows (ownership role), earnings influence control rights by providing a benchmark for shareholders to express their concerns with corporate performance and to pressure management for corporate reform (control role).¹ This dual role of earnings naturally maps into the separation of ownership and control that is prevalent in modern corporations (Berle and Means 1932; Manne 1964, 1965; Jensen and Meckling 1976; Fama and Jensen 1983).

It is difficult to discern the control role of earnings because voting rights are hard to isolate from cash flows. We overcome this problem by utilizing a new, market-based, and daily

¹ The lower information costs amid free-riding problems, and the assurance of standards under public scrutiny of the accounting information, may explain the common practice of using earnings as benchmarks for contracts (see, e.g., Li 2010, Christensen and Nikolaev 2012, and Christensen, Nikolaev, and Wittenberg-Moerman 2016).

measure of the value of shareholder voting rights. We test whether this value of voting rights varies with earnings information. Potential conflicts or disagreements among investors about how to run the firm in a world with incomplete contracts make control valuable (Aghion and Bolton 1986, 1992). In particular, the value of voting rights increases with an increased possibility of capital gains from improving the management of the company (Manne 1964; Easterbrook and Fischel 1983; Cox and Roden 2002; Karakaş and Mohseni 2019). Accordingly, given that negative earnings announcements are associated with and indicative of inefficiencies in the management of a company, we expect earnings announcements surprises to be negatively related with the value of voting rights.²

We estimate the value of voting rights by using option prices (hereafter, the *voting premium*), following the method introduced by Kalay, Karakaş, and Pant (2014). Specifically, we define the voting premium as the price difference between the stock and the non-voting share that is synthesized using the put-call parity relation, expressed as a percentage of the stock price.³ The key insight for the method is that option prices reflect the cash flows of the underlying stocks, but not the control rights. This new method, unlike other, common methods of estimating the value of control such as using trades of block shareholders or dual-class stocks, enables us to estimate the voting premium for a large sample of widely held firms and hence is

² It is also possible that, control creates an environment in which managers can extract private benefits. Such private benefits could take several different forms, from excess CEO compensation to non-pecuniary utility created by pride or social capital due to being in charge of a public company. Under this view, earnings announcements would be expected to have a positive correlation (if any) with the value of voting rights, particularly if the consumption of private benefits is significant. Our paper focuses more on the capital-gains-through-better-management channel of corporate control, rather than the private-benefits channel. See Section 1 for further discussions.

³ The voting premium reflects the value of the vote to the “marginal investor,” which can be incumbent management and/or (potential) outside investors. Throughout the text, we use the terms “the value of voting rights,” “the value of control,” and “the voting premium” interchangeably to refer to the market value of shareholder voting rights.

less subject to concerns of selection biases.⁴ The voting premium is on average positive, and increases around events in which control is likely to be contested (Kalay, Karakaş, and Pant 2014).

Analyzing 5,223 U.S. public firms over the period 1996 to 2015, and earnings surprises based on seasonal random walk expected earnings, we show that *change* in the value of voting rights is negatively related to earnings surprises—that is, a firm’s voting premium increases with unfavorable earnings surprises.⁵ This baseline result showing a negative relation between the voting premium and earnings surprises is robust to controlling for firm size, book-to-market, absolute abnormal returns (volatility) around the earnings announcements, and firm and year fixed effects, as well as for several liquidity proxies such as stock volume, the Amihud illiquidity measure, the bid-ask spread, short interest, and institutional ownership.⁶

Our baseline result is driven more by negative earnings surprises than by positive earnings surprises, and is robust to truncating the extreme earnings surprises. We obtain similar results to our baseline findings when we use analyst consensus, as expected earnings in the calculation of earnings surprises, instead of using seasonal random walk earnings.⁷ We find that

⁴ The method of estimating the value of control using (i) trades of block shareholder, takes price difference between the share price in a block trade and the general stock price right after the block sale, and (ii) dual-class stocks, takes price difference between superior and inferior voting classes of shares. The voting premium we estimate is conceptually closer to the latter method. This is because our method essentially synthesizes a benchmark stock (i.e., an inferior voting share) using options. See Kalay, Karakaş, and Pant (2014) for a more detailed discussion.

⁵ Throughout the paper, we use the change in the voting premium as our main variable of interest. However, our analyses are robust to using the level of the voting premium.

⁶ Repeating our analysis for the universe of dual-class stocks and using the voting premium based on dual-class shares, we continue to find that earnings surprise is negatively related to the voting premium; however, this relation is not statistically significant.

⁷ DeAngelo (1988) suggests that market participants largely rely upon simple earnings measures, since more complex earnings measures are likely to be difficult to interpret for most outside shareholders. Weisbach (1988) argues that changes in earnings are an unbiased estimate of unexpected earnings, since annual earnings follow approximately a random walk. Hence, we believe that using earnings surprises based on seasonal random walk earnings is more appropriate for our baseline analysis. Nevertheless, we repeat the analysis using analyst consensus

the negative relation of the voting premium with earnings announcements is stronger when there is: (i) a higher dispersion (disagreement) in analysts' earnings forecasts, (ii) less insider ownership (entrenchment) in the firm, (iii) worse managerial performance relative to industry norms (measured by earnings surprise relative to the firm's industry median earnings surprise), and (iv) more generalizable assets (liquidation options/values) in the firm. Our findings are in line with the view that unfavorable earnings reflect, and possibly trigger, potential disagreements among investors regarding the management of the firms' assets and increase the chances of a control contest for higher capital gains through better management, which in turn increases the voting premium.

In principle, any unexpected negative news that may increase conflicts and disagreements among investors about how to run the firm (e.g., negative news linked to managerial inefficiencies) can affect the voting premium. We focus on earnings in the paper since they provide a relatively clean setting for us to test our ideas. Earnings provide a reliable benchmark for dissident shareholders to express their concerns with management regarding corporate performance (DeAngelo 1998; Collins and DeAngelo 1990). In addition, earnings announcements provide well-defined and regularly timed measures, alleviating the concern that companies' choice of a particular announcement time and/or form may be based on certain unobservable factors that are correlated with the value of control. Furthermore, the earnings reporting process is geared toward uncovering information (particularly bad news) that has not yet been disclosed in other sources (Van Buskirk 2011; Roychowdhury and Sletten 2012). Overall, as Collins and DeAngelo (1990, p. 237) conclude in their analysis of the earnings and

as expected earnings to calculate earnings surprise, and find our results to be qualitatively the same, though our sample size decreases considerably with the analyst consensus.

proxy contests: "...the prominent role of reported earnings in the corporate governance process reflects their increased usefulness to investors attempting to evaluate managerial performance and/or to predict the contest outcome."

The voting premium is markedly higher for firms that have a higher percentage of ownership by active shareholders, and increases around dates of shareholder meetings, particularly when control is contested (Kalay, Karakaş, and Pant 2014). This insight, combined with the findings of DeAngelo (1988) and Collins and DeAngelo (1990), suggests that the voting premium should be particularly responsive to earnings information just before shareholder meetings. Indeed, exploiting 17,973 shareholder meetings between 1996 and 2013, we find that the closer the next shareholder meeting, at which control rights can be exercised, the stronger the effect of earnings on voting premium is. Relatedly, we find the voting premium to increase more strongly following negative earnings surprises at firms that are more subject to shareholder activism. This finding suggests that, consistent with the findings of Brav, Jiang, and Partnoy (2008), shareholder activism plays an important role in disciplining poorly performing firms. Accordingly, the market prices the value of the voting rights that are critical in exercising control in shareholder activism.

Potential litigations and dividend changes following earnings announcements may create positive and negative biases in our estimations, respectively. We rule out that these possibilities drive our results by confirming our baseline results to hold when we exclude from our sample stocks with earnings announcements accompanied by large price declines (proxying for high litigation likelihood) or stocks paying dividends. In addition, we show that our results are robust to controlling for mispricing/liquidity factors because short-sale constraints may lead to mispricing of securities and violations of put-call parity, which in turn may create a positive

bias in our estimations (Ofek, Richardson, and Whitelaw 2004). Hence, it is unlikely that our results are driven by non-control-related liquidity concerns.

A host of studies examine the relationship between option prices/characteristics and stock returns, particularly around major events such as earnings announcements, takeover announcements, and analyst recommendations (see, e.g., Amin and Lee 1997; Cao, Chen, and Griffin 2005; Doran, Fodor, and Krieger 2010; Jin, Livnat, and Zhang 2012). A common theme in these papers is that informed traders choose to use the options markets before they trade in the underlying stocks, without being explicit about the nature of such private information. Our study complements these studies by offering an economic meaning to the changes in option prices and associated private information around earnings announcements from the perspective of the market for corporate control.

Cremers and Weinbaum (2010) interpret put-call parity deviations as evidence of privately informed traders in options markets pushing synthetic stock prices away from traded stock prices and toward the correct value, which in turn implies the predictability of future stock returns. They document the degree of predictability to be high when option liquidity is high and when stock liquidity is low, and to be minimal in the opposite case. We find that changes in the voting premium around earnings announcements do not predict future stock returns after controlling for post-earnings-announcement drift. Further, we find our baseline effect to be strongest (weakest) when the stock and option liquidity are high (low). These suggest that the mispricing mechanism in Cremers and Weinbaum (2010) is unlikely to drive our results.⁸

Overall, our findings show that the value of voting rights change around accounting

⁸ Please see Section 5.3 for the further discussion of alternative interpretations of our findings.

earnings announcements, and that these changes are negatively related to the earnings news. This suggests that the market for corporate control is active and uses the accounting earnings as a benchmark for assessment of the firm performance.

Our paper relates and contributes to the literature on corporate governance/control and accounting (see, e.g., DeAngelo 1988; Collins and DeAngelo 1990; Francis, Schipper, and Vincent 2005) by highlighting a crucial economic role of the information released in the earnings announcements: to provide a benchmark for assessment and/or settlement of contractual agreements. This control role of earnings and its impact on stock prices are often neglected in the prior research.⁹

To our knowledge, this study is the first to document the opposing influences of earnings on stock price through voting and cash flow rights. It is also the first to systematically document and analyze voting premium around earnings announcements. This paper deepens our understanding about the determinants of the voting premium, and complements the findings of Kalay, Karakaş, and Pant (2014) by illustrating that earnings surprises play an important role in the documented increases in voting premium around shareholder meetings and following shareholder activism.¹⁰

⁹ Edmans, Goldstein, and Jiang (2012) show that negative market prices increase the takeover likelihood (particularly after addressing the anticipation effect), which in turn would affect the voting premium. Our paper complements the findings of Edmans, Goldstein, and Jiang (2012) by illustrating the impact of accounting earnings, in addition and in relation to the stock prices, on voting premium.

¹⁰ Kalay, Karakaş, and Pant (2014)'s findings that the voting premium changes around shareholder meetings and shareholder activism events are not conditional on, or implied by, the most recent earnings surprises.

1. Conceptual Relation Between the Value of Voting Rights and Earnings

Control rights matter to investors of a given security if investment contracts are incomplete and investors differ in terms of their private benefits, beliefs, expectations, risk aversions, and reputational concerns (Aghion and Bolton 1986, 1992). In particular, voting rights have value if outside shareholders feel the need to use their voting power to exert disciplinary pressure to improve firm performance (Manne 1964; Easterbrook and Fischel 1983; Cox and Roden 2002; Karakaş and Mohseni 2019).

Indeed, Manne (1962, p.412) states that the “...market value [of the vote] results because the vote has personal utility to individuals. But it only has this utility for one of two possible reasons: it is deemed valuable either as a means of securing a highly compensatory managerial position, or because it holds the key to higher capital gains through better management by others. Actually, most shareholders are only interested in the latter and will try to vote so as to maximize that possibility.” Our paper also focuses more on the latter channel (capital-gains-through-better-management channel of corporate control), rather than the former (private-benefits channel).

Lower-than-expected earnings would lower investors’ assessment of the incumbent management’s ability to sustain higher profits in the future. Negative earnings surprises also increase investors’ anxiety that incumbent management does not possess the ability to turn the company around. In such cases, earning reports would play an important role in determining the existence and nature of competition among different management teams to keep, acquire, or exercise the control over the firm in an attempt to fix/improve the firm’s performance (e.g., through a CEO turnover or a takeover). The value of voting rights should increase with the

possibility of capital gains from improving the management/performance of the company. Therefore, given that negative earnings announcements are associated with and indicative of inefficiencies in the management of the company, we expect the earnings announcements to be negatively related to the value of voting rights. We expect the effect of earnings announcements on the value of voting rights to be particularly driven after negative earnings announcements, since the effect of positive earnings on the voting premium would be bounded, as the voting premium would be expected to be non-negative.

We would indeed expect not only unfavorable earnings surprises, but any unexpected negative news regarding managerial inefficiency in the firm to increase the value of voting rights. In this paper, however, we focus on earnings news for several reasons. First, earnings announcements provide well-defined and regularly timed measures. This alleviates the concerns that the choice of companies regarding a particular announcement time and/or form may be due to certain unobservable factors that are correlated with the value of control. Relatedly, analyzing relative influence of efficiency and opportunism on accounting choices during corporate control contests, Christie and Zimmerman (1994) show that efficiency is the more important explanation of accounting choice and that accounting opportunism is a second-order effect. Second, the earnings reporting process is geared toward uncovering information (particularly bad news) that has not yet been disclosed in other sources (Van Buskirk 2011; Roychowdhury and Sletten 2012). This further confirms that, on average, earnings events are likely to contain information that would matter for the pricing of voting rights. Third, as argued in DeAngelo (1988), earnings figures are critical/crucial in corporate control contests such as proxy fights, which would directly affect the value of voting rights.

The value of voting rights is also interpreted as a lower bound for private benefits of

control (Barclay and Holderness 1989; Nenova 2003; Zingales 1995; Karakaş and Mohseni 2019). However, we assert that such an interpretation of the value of voting rights is not very relevant for our setting and analysis. First, consumption of private benefits is likely not immediately affected by earnings surprises. Second, private benefits are more likely to decrease than to increase following a negative earnings announcement, which would bias against us finding that earnings and the voting premium are negatively related. Third, levels of private benefits of control are, at least partially, controlled in our tests through control variables and fixed effects.

Regarding the private-benefits channel of corporate control, see, e.g., Karakaş and Mohseni (2019) in which the voting premium is used as a diagnostic tool to address the ongoing debate of whether staggered boards lead to managerial entrenchment problems/inefficiencies. They find that firms with staggered boards on average have a higher voting premium, which is consistent with the entrenchment view of the staggered boards. Our paper complements the work of Karakaş and Mohseni (2019) by illustrating that the market prices the value of the voting rights depending on the governance, performance, and ownership of the firm.

The value of control depends on the likelihood of a disagreement situation arising and its economic significance, as discussed in Zingales (1995), and hence is time varying. Consequently, throughout our analysis in Sections 4 and 5, we exploit various settings that shape voting rights to test whether the impact of earnings on voting premium varies over time and across firms.¹¹ Relatedly, we expect a negative relation between earnings and voting

¹¹ Within this framework, starting with Grossman and Hart (1988) and Harris and Raviv (1988), a vast literature analyzes security voting design and points to the importance of shareholder voting rights. See Yermack (2010) for a survey of research on shareholder voting and corporate governance.

premium as long as control is contestable within the firm, since otherwise the voting premium would be minimal.¹²

2. Estimation of the Voting Premium

To calculate the value of voting rights (i.e., the voting premium) on a daily basis, we follow the method described by Kalay, Karakaş, and Pant (2014). This method relies on the notion that option prices essentially derive their value from the cash flows of the underlying stocks, but not from the control rights. Thus, if we subtract the price of a non-voting stock synthesized using options, \hat{S} , from that of the underlying stock, S , we obtain the value of voting rights embedded in the stock within the expected life of the synthetic stock.¹³ Because stock prices are nominal values, normalizing the above-mentioned price differential by the price of the underlying stock gives us a measure for the value of the voting rights that can be used to compare over time and across companies. More formally, assume that \hat{S} is calculated using put-call parity for an option pair with the same maturity T and strike price X , and is adjusted for the early exercise premiums (EEPs) of American options and for dividends (*DIVs*) paid before the options mature—that is,

$$\hat{S} = C - P + PV(X) + \text{adjustments for EEPs and DIVs}, \quad (1)$$

$$\text{Voting Premium} = (S - \hat{S}) / S, \quad (2)$$

¹² Firms with options tend to have a large market capitalization and dispersed ownership. Hence the firms in our sample are contestable in the market for corporate control.

¹³ Expected life of the synthetic stock is determined by the maturity of options (or the time to exercise). At option expiration, the prices of the synthetic and common stocks converge. See Kalay, Karakaş, and Pant (2014) for a more detailed discussion.

where C and P are the American call and put option prices, respectively, and $PV(X)$ is the present value of investing in a risk-free bond with face value X that matures at time T .

Kalay, Karakaş, and Pant (2014) show that neither stock or option liquidity nor non-control-related frictions drive the changes in the voting premium. In addition, they show that the voting premium is positive on average and increases around events that matter more for control rights. These events include special shareholder meetings and/or meetings with close votes, episodes of hedge fund activism (particularly with hostile engagements), and merger and acquisition events.

An important advantage of the method we employ is that we can estimate the market value of voting rights for a large number of widely held public firms. The two other common ways to calculate the value of control in the literature are: (i) using price difference between the share price in a block trade and the general stock price right after the block sale, and (ii) using price difference between superior and inferior voting classes of shares. The former method requires a block sale event, which may not be easily observable for a large subset of stocks for an extended period of time.¹⁴ Moreover, measuring the value of control is not possible if the controlling block is not transferred. In addition, block sales are often triggered by events that may introduce potential selection biases. The latter method requires firms to have at least one other type of stock with different voting rights, and there are few firms with dual-class shares in which both classes of shares are publicly traded.¹⁵ Moreover, even if both classes of shares are publicly traded, one might be less liquid than the other. More importantly, these samples

¹⁴ See, e.g., Barclay and Holderness (1989) and Dyck and Zingales (2004).

¹⁵ See, e.g., Lease, McConnell, and Mikkelsen (1983), Levy (1983), Zingales (1994), Zingales (1995), Rydqvist (1996), Nenova (2003), Hauser and Lauterbach (2004), and Karakaş (2009).

are potentially subject to selection biases (DeAngelo and DeAngelo 1985; Smart and Zutter 2003). Indeed, Francis, Schipper, and Vincent (2005) find that earnings are generally less informative for dual-class firms, compared with single-class firms.

Our method provides a way to explore how the value of voting rights behaves when a block sale event is not present and/or when a dual-listed stock does not exist. Our method of estimating the voting premium is conceptually closer to the method using dual-class shares. This is because our method essentially synthesizes a benchmark stock (i.e., an inferior voting share) using options. There is an important technical difference between the two approaches: the maturity of the non-voting synthetic stock is finite in our method, whereas it is infinite for the inferior voting share in the dual-class method. This difference, *ceteris paribus*, would naturally lead to a higher voting premium measured with the dual-class method relative to ours. Comparing the two measures in a sample of firms with dual-class shares and options traded on superior classes of shares, Kalay, Karakaş, and Pant (2014) show that the voting premiums estimated from both methods are strongly positively correlated.

Absent any non-control-related frictions, by no-arbitrage, the value of voting rights would also be reflected in the equity lending markets. Indeed, one could obtain the votes by borrowing the stocks. Hence, another method to estimate the value of control is using the borrowing costs such as equity lending fees (Aggarwal, Saffi, and Sturgess 2015). However, the equity lending market is a negotiated, decentralized, and opaque market, and hence the value of voting rights inferred from equity lending fees can be significantly downward biased, as discussed in Kalay, Karakaş, and Pant (2014).

3. Sample Description

We use the OptionMetrics database for the calculation of daily voting premium. OptionMetrics is the standard data set used for studies on options and provides data on U.S. equity options starting from 1996. This database provides end-of-day bid and ask quotes, trading volume, open interest, and option-specific data (e.g., implied volatility, maturity, strike price) for all American call and put options on stocks traded on U.S. exchanges. It also provides the stock price and dividends of the underlying stocks and zero-coupon interest rates.

Voting premium calculation requires availability of option prices (both put and call). Following Kalay, Karakaş, and Pant (2014), we form option pairs to construct the synthetic stock. An option pair consists of matched call and put options written on the same underlying stock and with identical strike price and time to maturity. We discard option pairs for which the quotes for either the call or the put options are locked or crossed. The option prices are taken as the midpoints of the bid and ask quotes, which are the best closing prices across all exchanges on which the option trades. Since the options are all American style, we compute the early exercise premium for the put and the call using the binomial option-pricing model.

In our calculations, we use the most liquid option pair for each firm-day. The most liquid option pair for each firm at each day is defined as the one with the highest volume (minimum volume of call and put), closest at the money and shortest maturity. We use only the options with positive volume. Using the closest-at-the-money options also minimizes the potential downward biases in the voting premium due to the early exercise possibilities of the American options (see Kalay, Karakaş, and Pant 2014 for a more detailed discussion).

Because our method requires the availability of option contracts to calculate the voting

premium, we exclude stocks with no option contracts from our sample. For the stocks with option contracts, if we cannot calculate the voting premium for a given day, we assume it is zero for that particular date. As an alternative approach, we impute an average voting premium from an earlier period, which does not change our results or conclusions (see footnote 18).

We use several other databases to obtain further information on firms for which we have daily voting premium estimates. We use CRSP to obtain daily stock prices, which help us measure the market response to earnings announcements in terms of stock return and volatility, and also to calculate liquidity proxies such as stock volume, Amihud illiquidity, and bid-ask spread. Using the Compustat quarterly database, we identify the earnings announcement dates, earnings amount, and short interest, as well as stock characteristics such as firm asset size, book-to-market ratio, and research and development (R&D) intensity. We use the IBES Guidance database to identify firms that provide earnings guidance to the marketplace, and IBES to obtain analyst forecasts of earnings. We obtain shareholder activist ownership data from 13D filings available at SEC's EDGAR filing system, and institutional ownership data from the Thomson Reuters 13F database. We obtain annual meeting dates from the ISS (formerly RiskMetrics) database. We identify stocks that are difficult/costly to short (i.e., special stocks) by using the equity lending fees available in the Markit database. Finally, we obtain insider ownership data from Incentive Labs.

Throughout the paper, we use earnings surprises based on seasonal random walk earnings. With this setup, our baseline sample includes all the firms that have an earnings announcement available four quarters ago, and the four-quarter lagged earnings values provide the benchmark for earnings expectations. DeAngelo (1988) suggests that market participants largely rely upon simple earnings measures, since more complex earnings measures are likely

to be difficult to interpret for most outside shareholders. Citing earlier literature, Weisbach (1988) argues that changes in earnings are an unbiased estimate of unexpected earnings, since annual earnings follow approximately a random walk. Hence, we believe using earnings surprises based on seasonal random walk earnings is more appropriate for our baseline analyses. Nevertheless, we repeat and report our baseline analysis using analyst consensus as expected earnings to calculate earnings surprise, and we find our results to be qualitatively the same, though our sample size decreases considerably with the analyst consensus (see Section 4.3).

(~Insert Table 1 about here~)

Our main sample covers 5,223 U.S. public firms over 1996–2015. In Table 1, Panel A, we report summary statistics of the variables we utilize in our study. Firm equity *size* is the product of number of shares outstanding and the price at the end of calendar year prior to the fiscal year. The pooled average (median) market value of equity in our sample is \$2.47 billion (\$2.12 billion). *Book-to-Market* is the book-to-market ratio for which the book value of equity is calculated as sum of stockholders' equity, deferred tax, and investment tax credit minus preferred stock. The book-to-market ratio of the sample has a mean (median) of 0.388 (0.416). We measure the market response to quarterly earnings announcement as the absolute value of cumulative return $(-2,+2)$ trading days around the quarterly earnings announcement date. Mean (median) of absolute market response is 7.3% (5.1%).¹⁶ The *change in the voting premium* is the average voting premium around the quarterly earnings announcement $(t-2, t+2)$ minus the average voting premium before the earnings announcement $(t-45, t-15)$, where t is the earnings announcement date and the windows are defined in trading days. The change in voting premium

¹⁶ Throughout the tests, announcement day refers to the $(-2,+2)$ trading-days window around the earnings announcement day, unless it is stated otherwise for the purposes of robustness checks.

of the sample has a mean (median) of 0.031% (0.014%). Given that the median maturity of options in our sample is 57 days, a simple back-of-the-envelope calculation suggests that the annualized mean (median) change in the voting premium is about 0.20% (0.09%).¹⁷

Table 1, Panel B, shows the correlation matrix of key variables in the pooled sample. Pearson (Spearman) correlations are reported below (above) the main diagonal. The earnings surprise measure is significantly and negatively correlated with the change in the voting premium. This provides preliminary support for our main thesis that the voting premium increases if the firm announces lower-than-expected earnings.

4. Analysis

We present our baseline regression analysis in Table 2. The dependent variable for all three regressions is the change in the voting premium. Throughout the paper, we use the change in the voting premium as our main variables of interest.¹⁸

Our main dependent variable is the *earnings surprise*, which is calculated as the difference between reported earnings per share and the expected earnings (earnings per share reported four quarters ago), scaled by price at the beginning of the year. Because larger firms may differ from smaller firms with respect to the corporate control market (Nenova 2003), we control for the size of the firm. We also include proxies for growth of the firm (book-to-market),

¹⁷ The voting premium for options with maturity T can be annualized using the following formula: $1 - (1 - \text{voting premium})^{365/T}$ (see Kalay, Karakaş, and Pant 2014 for more details).

¹⁸ Our analyses are robust to (1) using a different benchmark window closer to the earnings announcement ($t-15$, $t-5$) (Appendix Table 1, Regressions 1 to 3), as opposed to ($t-45$, $t-15$) in our baseline tests; (2) using a different event window of earnings announcement (t , $t+2$) (Appendix Table 1, Regressions 4 to 6), as opposed to ($t-2$, $t+2$) in our baseline tests; (3) imputing the average voting premium in non-earnings event windows in year ($t-1$) if the voting premium is missing any day in year t (Appendix Table 1, Regression 7); and (4) using the level of the voting premium (Appendix Table 1, Regression 8). Please refer to Section 5.1 for further discussions.

since growing firms could be more subject to a control contest (Chemmanur, Paeglis, and Simonyan 2011). Finally, earnings announcements may pose volatility risks (Barth and So 2014), and hence we include absolute announcement returns to make sure that our results are not driven by (non-control-related) volatility of the stock. We include firm fixed effects to capture unobserved time-invariant firm-specific factors that could be related to changes in the voting premium, and year fixed effects to capture variation in voting premium changes specific to each year.

(*~Insert Table 2 about here~*)

We find a negative relation between the change in the voting premium and the earnings surprise. As shown in Table 2, the coefficient of the earnings surprise is statistically significant in all the regressions. A one-standard-deviation decrease in earnings surprise corresponds to about a 0.023 to 0.025 percentage point increase in the change in the voting premium (t -statistics vary from -2.85 to -3.04), depending upon the specification (Regressions 1 to 3, Table 2). Compared with the mean level of voting premium prior to the earnings announcement ($0.094\% - 0.031\% = 0.063\%$), and taking the large size of the firms in our sample into account, this amount is economically sizable.

In Regressions 4 and 5 of Table 2, we use medium-term options with expirations between 45 days and 180 days and long-term options with expirations of more than 180 days, respectively. Despite the decrease in the sample size, we find the coefficient of interest to be statistically stronger, compared with Regressions 1 to 3 of Table 2. Note also that the coefficient of interest for long-term options in Regression 5 of Table 2 is higher in absolute terms than the coefficient of interest for our baseline result in Regression 3 of Table 2 (-0.206 vs. -0.152).

This is intuitive since the method captures the voting premium within the maturity of the options used, and in line with the findings of Kalay, Karakaş, and Pant (2014) that the voting premium increases with the maturity of the options used to synthesize the non-voting share.

4.1. Robustness of Baseline Results

When we calculate the voting premium, we adjust for dividend payments within the maturity of the options utilized. However, firms that experience a negative earnings shock are more likely to cancel such dividends (DeAngelo and DeAngelo 1990), which in turn may introduce a negative bias in the voting premium. This potential bias is less of a concern since it would work against us finding the results we did. Regardless, in Regression 1 of Table 3, we restrict our sample to stocks that do not pay any dividends and repeat our tests, finding that our results are not affected if we remove dividend-paying stocks from the sample.

(~Insert Table 3 about here~)

Francis, Schipper, and Vincent (2005) find that earnings are generally less informative for dual-class firms, compared with single-class firms. Firms with dual-class shares constitute about 6% of the number of public firms in the United States. Dual-class firms are subject to sample selection biases, and superior voting shares tend to suffer from low liquidity (Gompers, Ishii, and Metrick 2010). To check whether some unobserved factors that determine the choice of being a dual-class stock matter for the relation we document, we exclude firms that have dual-class stocks (about 1.17% of our sample observations) from our sample (Table 3, Regression 2). We find that our results remain similar to our baseline findings.

Under the scenario of litigation risk, unexpected bad earnings may lead to firms being sued due to substantial drops in their stock prices (Skinner 1997). To examine the potential

impact of litigation risk on the voting premium through earnings announcements, in the spirit of Francis, Philbrick, and Schipper (1994), we identify earnings announcements followed by large negative stock price responses (less than –10% five-day earnings announcement returns) in Regression 3 of Table 3. By doing so, we essentially determine the earnings announcements that are more likely to be used as reasons to sue the firm in a class action.¹⁹ Unexpected bad earnings often lead to large drops in stock prices (Bernard, Thomas, and Abarbanell 1993). If a firm is more likely to be sued due to these sizable drops, then shareholders who own the stock at the time of the announcement retain the rights to claim potential future settlements. Under this scenario, future expected settlement payments can increase the value of control rights today, precisely when the unexpected bad earnings hit the market. To investigate whether this plausible alternative mechanism plays a role in our documented relationship between the voting premium and earnings announcements, we repeat our analysis after excluding earnings announcements that are accompanied by large price declines. We find that our baseline result remains robust (in fact, becomes stronger) for the rest of the stocks, and hence is unlikely to be driven by potential litigation risks.

(~Insert Table 4 about here~)

In Table 4, we find that our baseline results are robust to truncating the extreme observations of earnings surprises at the 2.5th and 97.5th percentiles (Table 4, Regression 1). When we analyze the earnings surprises in a piecewise regression with indicator variables for top (bottom) 2.5% of the earnings surprise distribution, we find that our results are driven more by the bottom earnings surprises (Table 4, Regression 2). Similarly, analyzing the earnings

¹⁹ Stock returns are a strong predictor of litigation (Palmrose and Scholz 2004, and Donelson et al. 2012). Our results in Regression 3 at Table 3 are not sensitive to the particular choice of the –10% cutoff.

surprises in a piecewise regression with indicator variables for top (bottom) 30% of the earnings surprise distribution, we find that our results are driven more by the bottom tercile of earnings surprises (Table 4, Regression 3). These findings suggest that the impact of earnings surprises on the voting premium is asymmetric, and stronger in the case of unfavorable earnings surprises.

4.2. Liquidity and Shorting Difficulties

One concern regarding our findings is whether the potential non-control-related frictions due to liquidity and/or shorting difficulties affect our baseline results. We think these are unlikely since our sample consists of firms with liquid options, which tend to be relatively large in size with actively traded stocks. Our baseline analyses also control for firm size, book-to-market, absolute abnormal returns (volatility) around the earnings announcements, and firm and year fixed effects. Nevertheless, to further investigate the effect of liquidity on our results, we include several liquidity proxies such as stock volume, Amihud illiquidity measure, bid-ask spread, short interest, and institutional ownership (and their squares) as control variables to our baseline specification (including these variables one by one or all together does not change our results) in Table 5. The results reported in the first column of Table 5 show that the coefficient of the earnings surprise is close to the baseline results and is statistically significant.

(~Insert Table 5 about here~)

To address the concerns regarding the shorting difficulties, in the last three specifications of Table 5, we exclude special stocks from our analysis, where a stock is defined to be a special stock if its three-day average indicative equity lending fee is above 100 basis points, and find that our baseline results continue to hold for the set of stocks for which shorting

activity is not severely constrained.

We provide additional evidence regarding potential non-control-related frictions in Section 5.3, where we discuss alternative interpretations of our findings.

4.3. Extensions of Baseline Results

We find results similar to our baseline results when we employ an alternative earnings surprise measure constructed using consensus analyst forecasts to determine expected earnings, though the sample size decreases considerably with analyst consensus (Table 6, Regression 1). We obtain the consensus forecast data from the IBES Summary forecast file. To reduce the influence of having forecasts from too few analysts, we only use forecast consensuses that had more than four analysts. Compared with our main sample, companies that have analysts following them are, on average, larger in size, and have a lower voting premium and lower earnings announcement day return volatility (untabulated).

(~Insert Table 6 about here~)

We also repeat our analysis for the universe of 195 dual-class firms using the voting premium obtained from dual-class shares. To make the voting premium from dual-class firms comparable to our voting premium from options prices, in the spirit of Zingales (1995), we use the following formula:

$$\text{Dual-Class Voting Premium} = [(P_S - P_I) / (P_I - rP_S)] * [(P_I / P_S)], \quad (3)$$

where P_S and P_I are the prices of superior and inferior voting shares, respectively, and r is the relative number of votes of an inferior voting share versus a superior voting one.

We find that, consistent with our results utilizing the voting premium, earnings surprise

is negatively related to the voting premium from dual-class firms; however, this relation is not statistically significant (Table 6, Regression 2). The statistical insignificance of our estimates with the voting premium from dual-class firms could be, in line with Gompers, Ishii, and Metrick (2010) and Francis, Schipper, and Vincent (2005), due to relatively low sample size (and hence the low power in our tests), and/or to dual-class firms' earnings being less informative and not very generalizable.

Another proxy for the value of the vote is implied by the equity lending fees. Equity lending market is negotiated, decentralized, and opaque, and hence reported lending rates may not correspond to the clearing rate in the market. More importantly, the value of the vote inferred from prices in the equity lending market can be significantly downward biased as discussed in detail in Kalay, Karakaş, and Pant (2014). Nevertheless, we repeat our analysis with the voting premium obtained from equity lending fees and find that, consistent with our baseline results, earnings surprise is negatively and statistically significantly related to the voting premium from equity lending fees (Regression 3, Table 6). The coefficient of earnings surprise is smaller than the one in our baseline regression in Regression 3 of Table 2 (-0.008 vs. -0.152). This is not surprising given that prices in the equity lending market can be significantly downward biased.

In the last specification of Table 6, in line with Weisbach (1988), we replace our seasonal random walk earnings surprise measure with a relative performance metric. We calculate the relative performance metric by subtracting the industry median earnings surprise from the firm's earnings surprise. We find that the coefficient of relative performance is larger than that of the earnings surprise in our baseline regression. This is consistent with the view that the market prices the value of the voting rights lower, when the earnings performance (and

related managerial inefficiencies) is accompanied by poor performance in the industry. In other words, our results suggest that the market, on average, can and does disentangle luck and skill in the management of the firm.

4.4. Shareholder Meetings

Markets respond to the information content of earnings more when there is greater uncertainty about a firm's future prospects (Lang 1991). The uncertainties regarding the firm's prospect and disagreements among investors about how to run the firm also make control valuable (Aghion and Bolton 1986, 1992). The timing of the meetings, content, and voting outcomes of the proposals play important roles in the mechanism of the real effects of earnings in exercising control. The voting premium increases around shareholder meetings, particularly when the control is contested (Kalay, Karakaş, and Pant 2014). Dissident shareholders attempting to unseat management through proxy contests typically cite poor accounting performance as evidence of managerial incompetence (DeAngelo 1988). Collins and DeAngelo (1990, p.214) find that "...despite evidence of earnings management during the election campaign, market and analyst reactions to earnings released during a proxy contest are more pronounced than they are in prior periods." Taking all these insights into account, and to the extent that an upcoming shareholder meeting heightens investor uncertainty and earnings reports are useful in resolving that uncertainty, we expect that voting premium reactions to earnings should be especially strong before shareholder meetings.

(~Insert Table 7 about here~)

To test this prediction, we augment the baseline specification to incorporate the timing of upcoming shareholder meeting. Using the shareholder meeting dates reported in the ISS

(formerly RiskMetrics) database for 17,973 annual meetings, we assign the indicator variable for *close distance* (I_{CD}) a value of one if the next shareholder meeting is within 30, 25, 20, 15, 10, and 5 days of the earnings announcement in Table 7, Regressions 1 to 6, respectively, and a value of zero otherwise. We include an interaction term for earnings surprise (ES) and the indicator variable for the shareholder meeting that takes place close to an earnings announcement, ($ES \times I_{CD}$), to capture the incremental variation caused by an earnings surprise combined with the shareholder meeting that takes place within the following month.

Consistent with our hypothesis, we find the effect of earnings on the voting premium to be stronger when the next shareholder meeting, at which control rights can be exercised, is closer (Table 7). There is almost a monotonic increase in the absolute value of the coefficient of interest from -0.119 for the specification with close distance defined as 30 days to the meeting (Table 7, Regression 1) to -0.217 for the specification with close distance defined as 5 days to the meeting (Table 7, Regression 6). In Table 7, Regression 7, we repeat the specification in Regression 6 with the long-term options, where we only use options with maturity greater than 180 days. This makes sure that the meetings did happen within the maturity of the options and confirms our results with a coefficient that is greater in absolute magnitude and in statistical significance.

4.5. Interaction Analyses

The uncertainties regarding the firm's prospect and disagreements among investors about how to run the firm are a major source of the value of voting rights (Aghion and Bolton 1986, 1992). Using analyst forecast dispersion (range of forecasts for stocks with more than four analysts), we confirm this insight: in the presence of a bigger disagreement (dispersion),

the voting premium is higher and its negative relation to the earnings announcements is stronger (Table 8, Regression 1).

(*~Insert Table 8 about here~*)

Earnings surprises could be due to managerial inefficiencies, or to the performance of the industry that the firm operates within (or both). We would expect our baseline finding of a negative relation between earnings surprises and the voting premium to be stronger for the former than for the latter. In Regression 2 of Table 8, we find evidence consistent with this expectation: the effect of earnings on the voting premium is stronger when the firm's earnings surprise is below the median earnings surprise for its industry. Buttressing our findings in Regression 4 in Table 6, this result suggests that the market (for corporate control) on average can disentangle the managerial inefficiencies due to managers' fault versus due to the industry, and accordingly price the value of the vote.

The voting premium increases in the presence of shareholder activism (Kalay, Karakaş, and Pant 2014). With this insight, we test whether our main finding, the negative relation between earnings announcements and the voting premium, is stronger when active shareholder involvement is higher. Consistent with the findings of Kalay, Karakaş, and Pant (2014) and also with our results around shareholder meetings in Section 4.4, we find that the effect of earnings announcements on the voting premium is stronger when the percentage of ownership by activist shareholders in the firm is higher (Table 8, Regression 3). This suggests that shareholder activism plays an important role in disciplining poorly performing firms.

The voting premium captures the marginal value of the vote given the performance, governance, and ownership structure of the firm. If the firm is management controlled, then we

would expect our baseline result to be muted.²⁰ Our findings in Regression 4 of Table 8 support this prediction: the negative effect of earnings surprise diminishes with insider ownership.

Next, we use the asset structure of firms to distinguish whether the voting premium varies across firms in the cross-section. Owners of firms occasionally resort to liquidation of firm assets if they cannot bear predictable losses. Such a liquidation option would, *ceteris paribus*, be more valuable for firms with generalizable assets, because these assets fetch a higher value when they are sold in a fire sale (Shleifer and Vishny 2011). Relatedly, Hayn (1995) shows that when future cash flows become disappointing, stock prices do not fall as much they should, suggesting that shareholders would prefer to liquidate a firm rather than bear predictable losses. For firms with a higher liquidation option, we expect the voting premium to respond more strongly to unfavorable earnings surprises. Berger, Ofek, and Swary (1996) show that the value of the firm's generalizable assets does not decline as much as the value of its specialized assets.

To capture whether a firm has generalizable assets, we use the R&D-to-sales ratio, which is often used as a measure of R&D intensity (Cohen, Diether, and Malloy 2013). We use the R&D-to-sales ratio as our asset generalizability measure with the assumption that R&D creates firm-specific know-how—*ceteris paribus*, assets of firms with higher R&D spending will have lower deployability in the secondary market for others. Consistent with our hypothesis, we find that the voting premium responds much more strongly to negative earnings news when the firm does not have higher R&D spending and when the firm has more tangible

²⁰ In the very extreme case of firms with uncontestable management (e.g., management having share ownership more than 50%), the voting premium and the effect of earnings surprises on the voting premium would be minimal. Firms with options tend to have a large market capitalization and dispersed ownership. Hence the firms in our sample are contestable in the market for corporate control.

assets (Table 8, Regression 5). Consistent with our results, Feldhütter, Hotchkiss, and Karakaş (2016) find that the creditor voting premium in bonds matters more for firms with more tangible assets.

It is important to note that the liquidation, or abandonment, option value and the voting premium are related but separate concepts, though both of them imply predictions of stock price changes in the same direction. The former refers to the cash flows of the underlying security, whereas the latter refers to the control/voting rights. Cash flow and control rights are typically not separated in earlier studies, in part due to the lack of a broadly applicable measure of the value of voting rights. Changes in the voting premium can potentially explain some of the reported liquidation option values in the stock prices. In fact, consistent with Hayn (1995), we find the response of the voting premium to earnings surprises to be driven more by negative earnings surprises (Table 4, Regressions 2 and 3). The (potential) changes in the abandonment option value cannot explain the voting premium, since any change in the cash flows of the underlying security is also identically reflected in the synthetic security created using options, due to the no-arbitrage principle.

To conclude, together with the results of Table 7 on shareholder meetings, our findings in Table 8 analyzing various interaction effects support the notion that the negative relation between earnings surprises and voting premium is driven, at least in part, by voting rights.

5. Further Issues

In this section, we discuss issues specific to our tests and provide additional evidence validating the robustness of our results. For brevity, we briefly discuss our findings in this

section and report our results in the Appendix Tables.

5.1. Alternative Windows and Methods

In our baseline analyses, we use the window of $(t-2, t+2)$ trading days centered around the earnings announcement as our event window to measure the level of the voting premium during earnings announcements, and we use the window of $(t-45, t+15)$ trading days as our benchmark window to measure the level of the voting premium during a non-earnings event window.

The five-day event window centered around the earnings announcement accommodates the possibility that part of the earnings announcement information is leaked and/or anticipated by the market and that the effect of the earnings announcement continues a few days after announcement.²¹ This event window also allows for a bigger sample and better statistical power in our analyses. Kalay, Karakaş, and Pant (2014) demonstrate that voting premium is time-varying and captures the effect of shareholder meetings or mergers announcements/completions around the events, for instance, due to leakage of information or anticipation, similar to the cumulative abnormal returns in the event studies. Relatedly, Dodd and Warner (1983) show an empirical regularity that stock prices typically increase before a proxy contest due to anticipation and voting premium. Edmans, Goldstein, and Jiang (2012) demonstrate that negative market prices increase the takeover likelihood due to anticipation. This would in turn increase the voting premium. It is also well documented in the literature that the stock price reaction to earnings surprises starts earlier than the announcement, due to information leakage and anticipation (Bernard and Thomas 1989).

²¹ If leakage/anticipation and/or persistence would not materialize, this would bias against us finding our results.

The 30-day period ending 15 days prior to the earnings announcement is a product of a tradeoff: we would like to pick a benchmark period (i) far from earnings announcement such that benchmark is not contaminated by the leakage and/or anticipation of earnings announcements, but (ii) close to earnings announcement such that the benchmark is relevant for comparison.

Our findings are not sensitive to the above-mentioned particular event and benchmark windows as illustrated in Appendix Table 1. Indeed, our results are robust to (1) using a different benchmark window closer to the earnings announcement ($t-15$, $t-5$) (Appendix Table 1, Regressions 1 to 3); (2) using a different event window of earnings announcement (t , $t+2$) (Appendix Table 1, Regressions 4 to 6); (3) imputing the average voting premium in non-earnings event windows in year ($y-1$) if the voting premium is missing any day in year y (Appendix Table 1, Regression 7); and (4) using the level of the voting premium (Appendix Table 1, Regression 8).

5.2. Persistence of Voting Premium

We demonstrate that the value of voting rights changes around earnings announcements. One question regarding this observation is whether that change would be persistent over a long period. The answer to this question is not obvious and depends on the circumstances. This is because, the value of voting rights depends on the likelihood of a disagreement situation arising and its economic significance, as discussed in Zingales (1995), and hence is time varying.

For instance, if there is an imminent corporate event around earnings announcements where the control could be contested (e.g., shareholder meetings), then one might expect the

effect to persist until the resolution of the contest.²² This is in line with our findings in our analysis of shareholder meetings in Table 7 (see Section 4.4), in which we find the effect of earnings announcements to be stronger as the shareholder meeting nears. However, if for some reason, the chances of a control contest following an earnings announcement dissipate (e.g., another information regarding the performance of the firm, and/or regarding the nature of the potential contest, with opposite and cancelling effect), the voting premium may mean-revert to its long-run average and hence the effect of the earnings announcement on the voting premium does not persist over a long period.

Indeed, Dodd and Warner (1983) show an empirical regularity that stock prices typically increase before a proxy contest due to anticipation and voting premium, but fall between contest announcement and election outcome announcement, illustrating that voting premium is temporary. They state (pp. 435-436, underline added): “There is evidence that a portion of the positive share price changes taking place in the early stages of the sample proxy contests was not permanent... The finding that some of the positive share price changes associated with a proxy contest are only temporary is predicted by Manne (1962) who argues that the market value of the vote attached to corporate shares rises temporarily during a proxy contest.”²³ Relatedly, Kalay, Karakaş, and Pant (2014) demonstrate that voting premium tends to build up/increase with the anticipation/announcement of a control contest – the fiercer the control contest, the higher the voting premium – and settles back to its original level after the conclusion

²² As discussed in Kalay, Karakaş, and Pant (2014) using episodes of hedge fund activism, one does not need a formal corporate control contest event for the voting premium to increase. The mere (private) threat of a voting event is sufficient to increase the value of voting rights. Many of the proxy contests are just the threats, and many of the (hedge fund) activism are done privately and with a credible threat of engaging the target in a proxy contest (see, e.g., Fos 2017, Klein and Zur 2009).

²³ See Section 6.2 of Dodd and Warner (1983) for an excellent and more detailed discussion of the value of voting rights during proxy contests, based on hypotheses drawn from Manne (1962).

of the contest. Analyzing the voting premium measured from dual-class stocks around the world, Karakaş (2009) shows that voting premium is a mean-reverting process.

Interestingly, Frazzini and Lamont (2007) and Barber et al. (2013) find that U.S. stocks earn higher returns during earnings announcement months than during non-announcement months (earnings announcement premium). Barber et al. (2013) find the phenomenon to be more pronounced for the small stocks, and argue that uncertainty over the earnings information to be disclosed is a primary driver of the earnings announcement premium. Our findings (i.e., asymmetrically stronger impact of negative earnings on voting premium – which tends to be more pronounced for smaller firms) and the mean-reverting nature of voting premium might contribute explaining the earnings announcement premium. We leave this interesting possibility for future research.

5.3. Alternative Interpretations

In this section, we discuss alternative interpretations of our findings, and our additional analyses to address these interpretations.

5.3.1. Short-Sale Costs

An alternative interpretation of our results is that short-sale constraints (i.e., limits to arbitrage) could cause the put-call parity deviations (Ofek, Richardson, and Whitelaw 2004), and that our results simply suggest put-parity deviations increase when earnings surprises are negative. While the equity lending fees themselves may come from mispricing, once they exist no arbitrage requires a put-call parity deviation for the exact reason it does for a dividend-paying stock. Otherwise, one could buy the real share, short the synthetic, and collect the lending fee without any risk.

To investigate whether such shorting difficulties drive our results, we perform a battery of tests. First, as discussed in Section 4.3, we find that including several liquidity proxies such as stock volume, Amihud illiquidity measure, bid-ask spread, short interest, and institutional ownership (and their squares) as control variables to our baseline specification does not change our baseline findings (Table 5, Regression 1). Second, excluding special stocks from our analysis, where a stock is defined to be a special stock if its three-day average indicative equity lending fee is above 100 basis points, illustrates that our baseline results continue to hold for the set of stocks for which shorting activity is not severely constrained (Table 5, Regressions 2 to 4). Third, in untabulated analyses, we also control for equity lending fees and find that our baseline result survives, though equity lending fees are also significantly and positively related to the voting premium. This is in line with our finding of a negative relation between earnings surprises and equity lending fees (a proxy for voting premium) in Table 6, Regression 3.

The above findings are important since they address a fundamental disagreement in the literature regarding the notion of mispricing interpretation of put-call parity deviations. Because the voting premium is a product of the no-arbitrage principle underlying the put-call parity, our findings suggest that put-call parity deviations around earnings announcements are related to earnings news even after controlling for non-control-related frictions.

5.3.2. Informed Trading

Cremers and Weinbaum (2010) argue that deviations from put-call parity contain information about future stock returns. Their main argument is that the put-call parity deviations are predictive of future stock returns (on both the short side and the long side) not because of the noise or short-sale constraints, but because of the trading activity of informed investors trading first in the options market. They find positive (negative) abnormal stock returns for

stocks with relatively expensive calls (puts), which cannot be explained by short-sale costs. Cremers and Weinbaum (2010) document the degree of predictability to be high when option liquidity is high and when stock liquidity is low, and to be minimal in the opposite case. They also find the degree of predictability to decrease over time and interpret their findings as evidence of privately informed traders in options markets pushing synthetic stock prices away from traded stock prices and toward the correct value.

To address this alternative interpretation, we perform a similar analysis using our sample that focuses on earnings announcement dates. In this analysis, we pay special attention to the previously documented relationship between earnings surprises and future stock returns (i.e., post-earnings-announcement drift) and focus on voting premium changes. We find that, unlike Cremers and Weinbaum (2010), our effect becomes strongest (weakest) when the stock and option liquidity are high (low) (Appendix Table 2). These suggest that our findings are unlikely to be driven by the mispricing mechanism analyzed in Cremers and Weinbaum (2010).

5.3.3. Discussion

Throughout our analyses, we do not find a strong support for the plausible alternative stories, but for the voting premium interpretation of our findings – voting rights become more valuable following unexpected negative earnings news. However, our findings do not rule out the possibility that other potential alternative hypotheses may play a role in some of our results. For instance, it is possible that lending fees may vary around earnings announcements for non-control-related issues, and/or informed traders may cause pressure in prices particularly in a market environment in which irrational investors trade with frictions where no-arbitrage principle is violated. Such mispricings due to behavioral biases and/or omitted frictions may have consequences on put-call parity violations around earnings announcements, which in turn

may potentially explain some of our findings.

In this study, in the spirit of the traditional finance literature, we do not investigate the behavioral aspects of the markets and assume no-arbitrage conditions to hold on average. Considering all of the collective evidence provided in the paper, we view our main results as being consistent with the control role of earnings providing an essential (but not necessarily exclusive) explanation for the patterns in voting premium around earnings announcements we document.

5.4. Maturity of the Options

In our main analysis, we use the voting premium calculated using the information in the mostly liquid options. As we further elaborate in Section 3, when multiple options are available, we use the shorter maturity options which are more liquid and less prone to mispricing concerns. Given that we obtain the value of voting rights embedded in the stock within the expected life of the synthetic stock, the voting premium should increase with the maturity of the options. We confirm this prediction in Appendix Table 3 by using a constant sample, i.e., using the same set of stocks that have both medium- and long-term options available for voting premium calculation. The results in this table indicate that magnitude of the coefficient of earnings surprise is about 2.5 times higher for long-term options, as compared to medium-term options.

5.5. Earnings vs. Past Returns

In our main analysis, we use the earnings surprises as a measure of the corporate performance. Alternatively, in line with the literature (e.g., Weisbach 1988), we also check whether and how the past stock return behaves as a measure of firm performance in Appendix Table 4.

Earnings surprises have the advantage of measuring short-term profits and being backward looking, compared to stock returns which reflect the future cash flows of the company and hence is forward looking. Relatedly, as discussed earlier in Section 5.1, stock returns also reflect the anticipation of the market for a potential control contest (Weisbach 1988; De Angelo 1998; Edmans, Goldstein, and Jiang 2012). This implies that using past stock returns may underestimate the market's disciplining effect on corporate control. There could also be a manipulation in the earnings streams of firms, which may also lead to underestimation of the relation we are reporting. Analyzing proxy contests for board seats, DeAngelo (1988) finds that dissident stockholders of these firms typically cite poor earnings as necessitating the proposed management change, while they infrequently cite a stock price decline for that purpose.

For purposes of comparison, we re-estimate and confirm our baseline analysis with the sample including the past return data (Appendix Table 4, Regression 1). Using the 3-month past stock returns and 12-month past stock returns as proxies for company performance, consistent with our baseline results, we find that voting premium around the earnings announcements is negatively related to the past stock returns (Appendix Table 4, Regressions 2 and 3). Including both the past stock returns and earnings changes, we find both the performance proxies to be negatively and significantly related to the voting premium (Appendix Table 4, Regressions 4 and 5).

The above findings suggest that, at the time of earnings announcements, markets consider both the reported accounting numbers and the past stock returns, when evaluating a firm's performance within our sample period. This is consistent with Fos (2017) finding that firms are targeted for proxy contests after a significant deterioration in all measures of performance, including stock returns, operating performance, and market valuation. Manne

(1964, 1965) suggests that a poor management of the firm will lower the stock price, which in turn will make it take-over of the firm more attractive. Further, our evidence compliments the findings of Edmans, Goldstein, and Jiang (2012) who conclude that prices impact the takeovers, and that financial markets have real effects by imposing discipline on managers by triggering takeover threats. While Edmans, Goldstein, and Jiang (2002)'s analysis emphasizes more the effect of the mispricing of firms, ours highlights more the effect of the mismanagement of firms.

We also observe that significance and coefficient of 3-month past stock returns are higher than the one of 12-month past stock returns. This implies that the market reacts relatively quickly to poor performance in its disciplining effect.

Weisbach (1988, p. 444) makes the point that returns may not be a good predictor of disciplinary CEO turnover because they anticipate the good news about the replacement of a bad CEO with a good one (and hence are not a backward-looking measure of the current CEO's performance). Consequently, stock returns may be inferior to accounting returns in measurement of management/firm performance.²⁴ Karpoff, Schonlau, and Wehrly (2017) find that, accounting for endogeneity and in addition to takeover indices such as G-index or E-index, market-adjusted past returns do not significantly predict takeover likelihood whereas ROAs do. Palepu (1987) find that accounting return on equity, as accounting proxy for management efficiency, is insignificant in predicting the takeover likelihood, whereas average excess return, a stock-price based performance measure, significantly predicts the takeover likelihood. Our findings suggest that voting premium is a sensitive measure capturing even the muted (due to anticipation) effects of stock returns, and hence can be utilized as a diagnostic tool to proxy for

²⁴ We thank John Core for bringing this point to our attention.

the overall governance of the firm based on market-based figures.

6. Conclusion

Corporate control is a first-order issue in capital markets; however, its tie to financial reporting is not well understood, in part due to the lack of a broadly applicable measure of the value of voting rights. An important contribution of this study is to bring a new perspective, and to highlight the control rights implications of certain accounting information by focusing on the value of voting rights and earnings announcements. Using a new methodology that utilizes option prices, we estimate the value of voting rights for a large set of widely held public firms, and we show that the value of voting rights increases when a firm announces unexpectedly negative earnings. To the best of our knowledge, this study is the first to point out that accounting disclosure has direct effects on the value of voting rights in a share.

Although we focus on the earnings announcements in this study, we believe our insight and technique of separating the cash flow and voting components of the stock can be applied to other important corporate governance/control and accounting disclosure issues. This might help explain some of the observed empirical regularities in the literature such as the asymmetric stock price reaction to earnings surprises that is usually linked to liquidation/abandonment option values in the stock prices, or the earnings announcement premium. Whether such explanations are empirically important remains to be tested and are beyond the scope of this paper. Our main effect would indeed apply not only to unfavorable earnings announcements, but to any unexpected negative news regarding the performance of the firm. Our paper is the first step in this relationship. We leave it to further research to investigate the dynamics of the voting premium and stock prices in the presence of negative news.

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Appendix A. Variable Definitions

Variable name	Definition
Voting Premium (%)	<p><i>Voting Premium (VP)</i> is calculated as the difference of actual stock price (S) and the implied stock price (S') of the synthetic long position constructed using American options as follows: long a call option, short a put option with the same strike X and time to maturity T, invest the proceeds in a bond with face value X for time T, and adjust for early exercise premiums of American options and for dividends before the options mature. We define <i>Voting Premium</i> as the ratio of this difference to actual stock price, i.e., $VP = (S - S')/S$, and present it in percentage figures (Kalay, Karakaş, and Pant 2014). We define two additional variables by restricting the option universe to two groups, based on the maturity of the options: <i>Voting Premium: Med. Term</i> refers to the voting premium calculated over a medium-term maturity using only the options that expire between 45 days and 180 days. <i>Voting Premium: Long Term</i> refers to the voting premium calculated over a long-term maturity using only the options with expiration days greater than 180 days. Data for the voting premium are obtained from OptionMetrics.</p>
Δ Voting Premium (%)	<p>Our main variable of interest, <i>ΔVoting Premium (ΔVP)</i>, is based on changes in <i>Voting Premium</i>. We define this measure as the average voting premium around the quarterly earnings announcement ($t-2, t+2$) minus the average voting premium before the earnings announcement ($t-45, t-15$), where t is the earnings announcement date and the windows are defined in trading days.</p>
Earnings Surprise	<p><i>Earnings Surprise (ES)</i> is measured by the difference between reported earnings per share and the expected earnings, scaled by stock price 30 trading days prior to the earnings announcement day. If stock price 30 trading days does not exist, we use 29, 31, 28 or 32 trading days ago prices. We drop observations if absolute earnings surprise is greater than 10.</p> <p>In our main sample, and throughout our analysis (unless otherwise stated), expected earnings are the earnings per share reported four quarters ago. In few instances, if earnings per share four quarters ago does not exist, we use three, two, or five quarters ago earnings as our benchmark. Data for earnings are obtained from Compustat.</p> <p>In the analyst subsample (Table 6, Regression 1), we use the consensus analyst forecast, obtained from IBES, as the expected earnings. The consensus forecast is the consensus earnings estimate provided by more than four analysts. We scale the earnings surprise measure in the analyst sample by 10 to make figures comparable to those of our main sample.</p>
Size (Ln)	<p><i>Size</i> is the number of shares outstanding (<i>CSHO</i>) multiplied by the market value of equity, calculated as the price end of the calendar year prior to the fiscal year (<i>PRCC_C</i>), and is utilized in natural logarithm. Relevant data are obtained from Compustat.</p>

Book-to-Market (Ln)	<i>Book-to-Market</i> is the book-to-market ratio where the book value of equity is calculated as the sum of stockholders' equity (<i>SEQ</i>), deferred tax (<i>TXDB</i>), and investment tax credit (<i>ITCB</i>) minus preferred stock (<i>PREF</i>), and is utilized in natural logarithm. Relevant data are obtained from Compustat.
Absolute Announcement Return	<i>Absolute Announcement Return (AAR)</i> is the cumulative return (-2, +2) trading days around the quarterly earnings announcement (i.e., around <i>the earnings announcement period</i>), and is utilized in absolute values. Relevant data are obtained from CRSP.
Amihud Illiquidity	<i>Amihud Illiquidity</i> is the average of the stock's (<i>Return/Volume</i>) over the earnings announcement period. Relevant data are obtained from CRSP.
Bid-Ask Spread	The <i>Bid-Ask Spread</i> is the average of the stock price's $(Bid - Ask) / [(Bid + Ask) / 2]$ over the earnings announcement period. Relevant data are obtained from CRSP.
Short Interest	<i>Short Interest</i> is the percentage of stocks shorted as of the end of the most recent quarter prior to the earnings announcement. Relevant data are obtained from Compustat.
Special Stock	A stock is a special stock if its three-day average indicative fee is above 100 basis points. Daily indicative fee information is obtained from Markit database.
Volume	<i>Volume</i> is the average of the stock's trading volume scaled by market value of equity over the earnings announcement period. Relevant data are obtained from CRSP.
<hr/>	
Close Shareholder Meeting Dummy (X)	The <i>Close Shareholder Meeting Dummy</i> takes a value of one if the next shareholder meeting is within <i>X</i> days of the earnings announcement, and zero otherwise. Shareholder meeting data containing 17,973 meetings over 1996-2013 are obtained from ISS. We match a quarterly earnings announcement to a shareholder meeting by limiting the calendar days between these two events to 91 days or less.
R&D Expense over Revenue	<i>R&D Expense over Revenue</i> is the research and development expense to annual revenue, which is the ratio of annual research and development expense to annual revenue. Relevant data are obtained from Compustat.
Institutional Ownership	<i>Institutional Ownership</i> data are obtained from the Thomson Reuters Institutional Holdings (13F) Database, which reports the total holdings of each institution.
Insider Ownership	<i>Insider Ownership</i> is the percentage of all shares (both direct and beneficial) controlled by all the insiders reported in the Incentive Labs over 2000-2013.
Shareholder Activism	We first count all the 13-D filings, obtained from SEC's EDGAR filing system, for a given calendar year for each two-digit SIC code and then divide this count by the number of firms to create an industry-level shareholder activism measure.
Forecast Dispersion	<i>Forecast Dispersion</i> is the range of IBES's quarterly earnings forecast scaled by price. We use forecasts only if the number of analysts issuing forecasts for the stock is more than four.

Table 1. Descriptive Statistics

This table presents the summary statistics for our sample. Panel A reports the summary statistics for the main sample, which consists of U.S. public firms in the period 1996–2015. The unit of observation is firm-quarter. All variables are as defined in Appendix A. Panel B reports the correlation matrix. Pearson (Spearman) correlations are reported below (above) the main diagonal.

Panel A. Main Sample (100,634 observations; 5,223 firms)

	Mean	St. Dev.	1st Quartile	Median	3rd Quartile
Voting Premium (%)	0.094	0.928	-0.065	0.046	0.196
ΔVoting Premium (%)	0.031	0.838	-0.108	0.014	0.152
ΔVoting Premium (%): Med. Term	0.068	0.744	-0.092	0.026	0.174
ΔVoting Premium (%): Long Term	0.179	1.389	-0.142	0.060	0.318
Earnings Surprise	-0.004	0.152	-0.009	0.002	0.011
Size (Ln)	7.813	1.614	6.647	7.661	8.869
Book-to-Market (Ln)	-0.948	0.831	-1.412	-0.877	-0.399
Absolute Announcement Return	0.073	0.075	0.023	0.051	0.098

Panel B. Correlation Matrix

	ΔVP	ΔVP: Med.	ΔVP: Long	ES	Size	B/M	AAR
ΔVoting Premium (%)		0.542	0.343	-0.005	0.003	0.017	-0.013
ΔVoting Premium (%): Med. Term	0.765		0.362	-0.003	-0.067	0.013	0.015
ΔVoting Premium (%): Long Term	0.634	0.544		-0.013	-0.098	0.009	0.024
Earnings Surprise	-0.030	-0.025	-0.035		-0.006	-0.055	-0.020
Size (Ln)	-0.016	-0.052	-0.075	0.012		-0.112	-0.328
Book-to-Market (Ln)	0.008	0.002	-0.003	-0.064	-0.133		-0.045
Absolute Announcement Return	0.003	0.027	0.028	-0.042	-0.264	-0.032	

Table 2. Baseline Results

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES), log firm size ($Size$), log book-to market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. The unit of observation is the firm–quarterly earnings announcement. We calculate earnings surprises based on seasonal random walk expected earnings. All variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. We treat Regression 3 as our baseline regression throughout the paper. In the fourth column, to calculate the voting premium over a medium-term maturity, we use only options that expire between 45 days and 180 days. In the fifth column, to calculate the voting premium over a long-term maturity, we use only options with expiration dates greater than 180 days to calculate the voting premium. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	ΔVP (%)				
Subsample:				Med. Term	Long Term
Earnings Surprise	−0.161*** (−3.038)	−0.155*** (−2.913)	−0.152*** (−2.854)	−0.121*** (−3.242)	−0.206** (−2.544)
Size (Ln)			−0.019** (−2.460)	−0.033*** (−4.520)	−0.071*** (−3.580)
Book-to-Market (Ln)			0.01 (1.291)	−0.002 (−0.266)	−0.002 (−0.095)
Absolute Ann. Return			0.037 (0.521)	0.139** (2.189)	0.150 (0.822)
Observations	100,634	100,634	100,634	78,665	46,924
R-squared	0.14	0.14	0.14	0.20	0.27
Year Fixed Effect	NO	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES	YES

Table 3. Robustness of Baseline Results

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. The first regression reports the baseline specification (Table 2, Regression 3) after excluding dividend-paying stocks from the sample. The second regression repeats the baseline specification after excluding dual-class stocks from the sample. The third regression reports the baseline specification for the subsample of earnings announcements with the announcement returns greater than -10% . All other variables are defined in Appendix A. The unit of observation is the firm–quarterly earnings announcement. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
Dependent Variable:	ΔVP (%)	ΔVP (%)	ΔVP (%)
Subsample:	Excluding dividend firms	Excluding dual-class firms	Excluding EA returns < -10%
Earnings Surprise	−0.172** (−2.193)	−0.151*** (−2.811)	−0.176*** (−2.877)
Size (Ln)	−0.021 (−1.486)	−0.020** (−2.560)	−0.020** (−2.405)
Book-to-Market (Ln)	0.007 (0.513)	0.009 (1.216)	0.008 (1.124)
Absolute Ann. Return	0.021 (0.213)	0.045 (0.629)	0.531*** (5.997)
Observations	46,613	99,449	89,388
R-squared	0.15	0.14	0.15
Year Fixed Effect	YES	YES	YES
Firm Fixed Effect	YES	YES	YES

Table 4. Truncated, and Piecewise Analyses

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. The first regression repeats the baseline specification (Table 2, Regression 3) by truncating earnings surprise at the 2.5th and 97.5th percentiles. The second and third regressions repeat the baseline specification with two dummy variables, Top and $Bottom$. In the second regression, Top ($Bottom$) takes a value of one if the earnings surprise is within the top (bottom) 2.5% of the earnings surprise distribution, and zero otherwise. In the third regression, Top ($Bottom$) takes a value of one if the earnings surprise is within the top (bottom) 30% of the earnings surprise distribution, and zero otherwise. All other variables are defined in Appendix A. The unit of observation is the firm–quarterly earnings announcement. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	(1) ΔVP (%)	(2) ΔVP (%)	(3) ΔVP (%)
Subsample/Method:	Truncated	Piecewise regression (Top, Bottom: 2.5%)	Piecewise regression (Top, Bottom: 30%)
Earnings Surprise	−0.248** (−2.052)	−0.280** (−2.297)	−1.097 (−1.158)
Top x Earnings Surprise		−0.978 (−0.919)	−2.261 (−0.924)
Bottom x Earnings Surprise		−0.643* (−1.758)	−2.501** (−2.040)
Top		0.125 (0.170)	0.011 0.602
Bottom		−0.034 (−0.539)	−0.003 (−0.275)
Size (Ln)	−0.011 (−1.473)	−0.017** (−2.308)	−0.018** (−2.304)
Book-to-Market (Ln)	0.015** (2.223)	0.009 (1.251)	0.012 1.583
Absolute Ann. Return	−0.002 (−0.037)	0.034 (0.469)	0.043 0.601
Observations	95,532	100,634	100,634
R-squared	0.14	0.14	0.14
Year Fixed Effect	YES	YES	YES
Firm Fixed Effect	YES	YES	YES

Table 5. Liquidity and Shorting Difficulties

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES) and on various liquidity proxies. In the regressions, we also control for log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + Liquidity\ Proxies + fixed\ effects$. The first column presents our result in the main sample. In the following (last) three columns of the table, we estimate the same specification after excluding the special stocks from the sample. We identify these special stocks using short interest data reported in the Markit database. A stock is a special stock if its three-day average indicative fee is above 100 basis points. In the first two columns, the voting premium is calculated using all options. In the third column, to calculate the voting premium over a medium-term maturity, we exclude options with expiration dates greater than 180 and less than 45 days to calculate the voting premium. In the last column, to calculate the voting premium over a long-term maturity, we use options that have expiration dates greater than or equal to 180 days. The unit of observation is the firm–quarterly earnings announcement. Liquidity proxies include announcement window averages of the stock’s *Amihud illiquidity*, *Bid-Ask Spread*, *Trading Volume*, *Short Interest*, and *Institutional Ownership*. We also include squares of the liquidity proxies. We drop observations that do not have short interest data. All other variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. *T*-statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5. Liquidity and Shorting Difficulties (cont'd)

Dependent Variable:	(1) ΔVP (%)	(2) ΔVP (%)	(3) ΔVP (%)	(4) ΔVP (%)
Subsample:		Excluding special stocks	Excluding special stocks	Excluding special stocks
			Med. Term	Long Term
Earnings Surprise	-0.171*** (-2.826)	-0.149** (-2.412)	-0.115*** (-2.604)	-0.150* (-1.685)
Size (Ln)	-0.028*** (-2.769)	-0.021** (-2.137)	-0.027*** (-3.289)	0.013 (0.518)
Book-to-Market (Ln)	0.009 (1.089)	0.004 (0.498)	-0.002 (-0.269)	0.013 (0.681)
Absolute Return (Abs)	0.035 (0.388)	0.073 (1.052)	0.034 (0.499)	-0.228 (-1.234)
Institutional Ownership	-0.021* (-1.751)	-0.017 (-1.472)	-0.017 (-1.320)	-0.082* (-1.753)
Bid-Ask Spread	-0.618 (-0.759)	-0.718 (-0.829)	-1.485*** (-2.663)	2.327 (1.313)
Amihud	0.001 (0.243)	0.001 (0.179)	0.003 (0.448)	0.036 (1.232)
Volume/ME	-0.562* (-1.676)	-0.468 (-1.420)	-0.428* (-1.774)	-1.310* (-1.932)
Short Interest	0.166 (1.482)	0.210** (1.992)	0.587*** (4.995)	2.818*** (8.451)
(Bid-Ask Spread)²	7.380 (1.297)	4.374 (0.701)	13.823*** (3.409)	5.136 (0.443)
(Amihud)²	0.000 (1.026)	0.000 (1.043)	0.000 (0.178)	0.001 (0.590)
(Volume/ME)²	0.225** (1.962)	0.180* (1.743)	0.244** (2.414)	0.453** (2.295)
(Short Interest)²	-0.064 (-0.376)	-0.183 (-1.226)	-0.302 (-1.566)	-1.596*** (-2.965)
Observations	88,991	86,375	68,678	41,725
R-squared	0.14	0.12	0.15	0.20
Year Fixed Effect	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES

Table 6. Extensions of Baseline Results

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) in Regressions 1, 2, and 4 (lending fee in Regression 3) on earnings surprise (ES), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. In the first regression, we repeat our baseline specification (Table 2, Regression 3) by using earnings surprises based on analyst consensus expected earnings, rather than the seasonal random walk expected earnings. The second regression repeats the analysis with the voting premium calculated from dual-class stocks using the method described in Section 4.3. In the third regression, the left-hand-side variable is the lending fee on the earnings announcement (EA) day. In the fourth regression, we replace our earnings surprise measure with a *Relative Performance* (RP) metric. To calculate RP , we first calculate each industry's median earnings surprise for each quarter and then deduct it from the firm's earnings surprise. All other variables are defined in Appendix A. The unit of observation is the firm–quarterly earnings announcement. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	(1) ΔVP (%)	(2) ΔVP (%)	(3) Lending Fee	(4) ΔVP (%)
Subsample/Method:	Analyst forecast	Dual-class voting premium	Lending fee approach	Relative performance
Earnings Surprise	-0.110** (-2.572)	-0.398 (-0.224)	-0.008*** (-2.837)	
Relative Performance				-0.172*** (-2.851)
Size (Ln)	-0.018** (-2.108)	-0.078 (-0.254)	-0.004** (-2.084)	-0.019** (-2.411)
Book-to-Market (Ln)	0.014* (1.729)	0.641 (1.467)	-0.000 (-0.190)	0.011 (1.389)
Absolute Ann. Return	0.063 (0.962)	-2.122 (-1.551)	0.028*** (3.367)	0.038 (0.539)
Observations	64,337	4,626	21,465	100,634
R-squared	0.12	0.35	0.12	0.14
Year Fixed Effect	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES

Table 7. Shareholder Meetings

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES), an indicator variable for close distance to shareholder meeting (I_CD), the interaction of earnings surprise and close shareholder meeting dummy ($ES \times I_CD$), and the control variables, including log firm size ($Size$), log book to market ratio (B/M), and absolute announcement return (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times I_CD_{it} + b_4 \times ES_{it} \times I_CD_{it} + b_5 \times Control\ Variables_{it} + fixed\ effects$. The unit of observation is the firm-quarterly earnings announcement. I (*Close Distance*) takes a value of one if the next shareholder meeting is within X days of the earnings announcement, and zero otherwise. The values of X are given in the heading of each column. All other variables are defined in Appendix A. The sample includes all observations for firms with an upcoming shareholder meeting in the next 91 days. In the last column, to calculate the voting premium over a long-term maturity, we use only options with expiration dates more than 180 days to calculate the voting premium. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable:	ΔVP (%)	ΔVP (%): Long Term					
Close Distance:	30 days to meeting	25 days to meeting	20 days to meeting	15 days to meeting	10 days to meeting	5 days to meeting	5 days to meeting
ES x I (Close Distance)	-0.119 (-1.078)	-0.124 (-1.129)	-0.191** (-2.282)	-0.195** (-2.430)	-0.189** (-2.376)	-0.217*** (-2.608)	-0.407*** (-2.986)
Earnings Surprise	0.075	0.075	0.084	0.083	0.081	0.083	0.238*
I (Close Distance)	-0.906	-0.917	-1.092	-1.109	-1.081	-1.136	-1.783
	0.014*	0.014*	0.018**	0.019**	0.019**	0.021*	0.009
	-1.706	-1.789	-2.14	-2.252	-2.070	-1.647	-0.376
Size (Ln)	-0.014 (-1.421)	-0.014 (-1.412)	-0.014 (-1.407)	-0.014 (-1.403)	-0.014 (-1.414)	-0.014 (-1.437)	-0.095*** (-3.642)
Book-to-Market (Ln)	0.020*	0.020*	0.020*	0.020*	0.020*	0.020*	0.014
	-1.923	-1.928	-1.94	-1.952	-1.953	-1.945	-0.592
Absolute Ann. Return	0.041	0.041	0.044	0.043	0.042	0.046	0.117
	-0.509	-0.509	-0.551	-0.533	-0.527	-0.567	-0.540
Observations	17,973	17,973	17,973	17,973	17,973	17,973	8,928
R-squared	0.17	0.17	0.17	0.17	0.17	0.17	0.29
Year Fixed Effect	YES						
Firm Fixed Effect	YES						

Table 8. Interaction Analyses

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES) and on the interaction of the earnings surprise with the following variables: (i) an indicator variable set equal to one if forecast dispersion is greater than the median dispersion in the fiscal quarter, and zero otherwise; (ii) an indicator variable that takes a value of one if the firm's earnings surprise is less than the median earnings surprise of its industry; (iii) an indicator variable set equal to one if the number of shareholder activism events in the industry (two-digit SIC) in a given year is greater than the 75th percentile of the sample, and zero otherwise; (iv) an indicator variable set equal to one if insider ownership is greater than 75% percentile of the sample, and zero otherwise; and (v) an indicator variable set equal to one if the research and development expense to annual revenue ($R\&D$) is greater than the 75th percentile of the sample, and zero otherwise. In the regressions, we also control for log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement return (AAR). We estimate the following regression: $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times ES_{it} \times Interacting\ Variable_{it} + b_4 \times Control\ Variables_{it} + fixed\ effects$. The unit of observation is the firm–quarterly earnings announcement. All other variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	ΔVP (%)	ΔVP (%)	ΔVP (%)	ΔVP (%)	ΔVP (%)
Interacting Variable:	Forecast dispersion	Relative performance	Shareholder Activism	Insider ownership	R&D expense
Earnings Surprise x Interacting Variable	−0.246* (−1.716)	−0.260** (−2.307)	−0.396* (−1.944)	0.182*** (1.849)	0.217** (2.147)
Earnings Surprise	−0.088* (−1.658)	−0.011 (−0.155)	−0.084** (−2.229)	−0.196*** (−3.005)	−0.173*** (−2.961)
Interacting Variable	0.002 (0.450)	0.000 (−0.065)	0.004 (0.467)	0.022 (1.474)	0.025 (1.077)
Observations	64,337	100,634	83,992	68,833	100,634
R-squared	0.12	0.14	0.14	0.15	0.14
Control Variables	YES	YES	YES	YES	YES
Year Fixed Effect	YES	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES	YES

Appendix Table 1. Alternative Windows and Methods

This table presents coefficient estimates of fixed-effects regressions of the change in the voting premium (ΔVP) on earnings surprise (ES), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. The unit of observation is the firm–quarterly earnings announcement. We use the samples used in Table 2 and Regressions 3, 4, and 5 to facilitate comparisons across analysis using the alternative benchmark windows in Regressions 1, 2, and 3 (and 4, 5, and 6) of this table, respectively. In all first three columns, we define the benchmark window as $(t-15, t-5)$, as opposed to $(t-45, t-15)$ in Table 2. In the fourth, fifth and sixth column, we define the benchmark window as $(t, t+2)$, as opposed to $(t-2, t+2)$ in Table 2. In the seventh column, we impute the average voting premium in non-earnings event windows in year $y-1$ as the voting premium for days with missing voting premiums in year y . In the eight column, we use the level of (rather than the change in) the voting premium. All other variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	(1) ΔVP (%)	(2) ΔVP (%)	(3) ΔVP (%)	(4) ΔVP (%)	(5) ΔVP (%)	(6) ΔVP (%)	(7) ΔVP (%)	(8) VP (%)
Subsample/Method:	Alt. Bench. Window	Alt. Bench. Window, Med. Term	Alt. Bench. Window, Long Term	Alt. Event Window	Alt. Event Window Med. Term	Alt. Event Window Long Term	Imputed VP	Level of VP
Earnings Surprise	-0.150*** (-2.877)	-0.125*** (-3.469)	-0.219*** (-2.707)	-0.124** (-2.401)	-0.108*** (-2.662)	-0.209** (-2.568)	-0.124** (-2.405)	-0.277*** (-4.102)
Size (Ln)	-0.022*** (-2.855)	-0.035*** (-4.917)	-0.075*** (-3.785)	-0.024*** (-2.991)	-0.032*** (-4.195)	-0.088*** (-4.352)	-0.005 (-0.619)	-0.032*** (-3.389)
Book-to-Market (Ln)	0.003 (0.440)	-0.002 (-0.279)	-0.025 (-1.258)	0.002 (0.215)	0.004 (0.455)	-0.002 (-0.100)	0.002 (0.250)	-0.003 (-0.231)
Absolute Ann. Return	0.052 (0.785)	0.126** (2.013)	0.070 (0.400)	-0.085 (-1.085)	0.046 (0.587)	-0.261 (-1.141)	0.031 (0.414)	0.207*** (2.904)
Observations	100,634	78,665	46,924	95,200	73,153	42,038	100,634	100,634
R-squared	0.14	0.21	0.27	0.13	0.18	0.27	0.14	0.20
Year Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES

Appendix Table 2. Stock and Option Liquidities

This table reports estimates obtained from fixed-effects regressions of *change in voting premium* (ΔVP) on earnings surprise (ES), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. The unit of observation is the firm–quarterly earnings announcement. We calculate earnings surprises based on seasonal random walk expected earnings. We split the sample into four subsamples based on the trading activity of the stock and the option. Specifically, for each stock-year, we first calculate annual stock turnover by dividing trading volume by the market value of equity. We then split stocks into high and low stock turnover groups based on the cross-sectional median turnover in each year. We repeat the same procedure for total option trading volume (sum of put and call options) and split the stocks into high and low option turnover groups based on the cross-sectional median turnover in each year. All other variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Variable:	ΔVP (%)	ΔVP (%)	ΔVP (%)	ΔVP (%)
Stock Liquidity:	High	High	Low	Low
Option Liquidity:	High	Low	High	Low
Earnings Surprise	−0.201** (−2.193)	−0.158* (−1.894)	−0.163** (−2.106)	−0.033 (−0.306)
Size (Ln)	−0.034*** (−3.109)	−0.010 (−0.589)	0.010 (0.498)	−0.020 (−0.980)
Book-to-Market (Ln)	0.021 (1.464)	0.022 (1.365)	0.009 (0.480)	−0.016 (−0.903)
Absolute Ann. Return	0.060 (0.643)	0.011 (0.065)	0.196 (1.189)	−0.101 (−0.597)
Observations	24,981	24,582	24,336	24,695
R-squared	0.26	0.20	0.28	0.25
Year Fixed Effect	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES

Appendix Table 3. Maturity of Options (Constant Sample)

This table reports estimates obtained from fixed-effects regressions of *change in voting premium* (ΔVP) on earnings surprise (ES), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times Size_{it} + b_4 \times B/M_{it} + b_5 \times AAR_{it} + \text{fixed effects}$. The unit of observation is the firm–quarterly earnings announcement. We calculate earnings surprises based on seasonal random walk expected earnings. In the first column, to calculate the voting premium over a medium-term maturity, we exclude options with expiration dates greater than 180 and less than 45 days to calculate the voting premium. In the second column, to calculate the voting premium over a long-term maturity, we use options that have expiration dates greater than or equal to 180 days. We constrain the sample to earnings announcements for which we can calculate voting premium using both medium- and long-term options. All other variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. T -statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
Dependent Variable:	ΔVP (%)	ΔVP (%)
Subsample:	Med. Term	Long Term
Earnings Surprise	−0.074** (−2.162)	−0.183*** (−2.604)
Size (Ln)	−0.030*** (−3.477)	−0.085*** (−4.494)
Book-to-Market (Ln)	0.007 (0.693)	0.004 (0.242)
Absolute Return (Abs)	0.183** (2.140)	0.181 (0.976)
Observations	42,873	42,873
R-squared	0.23	0.29
Year Fixed Effect	YES	YES
Firm Fixed Effect	YES	YES

Appendix Table 4. Earnings Surprises vs. Past Stock Returns

This table reports estimates obtained from fixed-effects regressions of *change in voting premium* (ΔVP) on earnings surprise (ES), past stock return (PR), log firm size ($Size$), log book-to-market ratio (B/M), and absolute announcement returns (AAR): $\Delta VP_{it} = b_1 + b_2 \times ES_{it} + b_3 \times PR_{it} + b_4 \times Size_{it} + b_5 \times B/M_{it} + b_6 \times AAR_{it} + \text{fixed effects}$. The unit of observation is the firm–quarterly earnings announcement. We calculate earnings surprises based on seasonal random walk expected earnings. *Past Return 3mth* refers to excess stock return in excess of CRSP value weighted market index during the fiscal quarter (year) prior to the earnings announcement. *Past Return 12mth* refers to excess stock return during the four fiscal quarters prior to the earnings announcement. All other variables are defined in Appendix A. We include firm and time (year) fixed effects where indicated. T-statistics, based on robust standard errors clustered by firm, are reported in parentheses below coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	(1)	(2)	(3)	(4)	(5)
	ΔVP (%)	ΔVP (%)	ΔVP (%)	ΔVP (%)	ΔVP (%)
Earnings Surprise	−0.152*** (−2.855)			−0.149*** (−2.815)	−0.149*** (−2.816)
Past Return 3mth		−0.045*** (−3.307)		−0.041*** (−3.072)	
Past Return 12mth			−0.010** (−2.472)		−0.008** (−2.049)
Size (Ln)	−0.019** (−2.449)	−0.020** (−2.527)	−0.019** (−2.415)	−0.022*** (−2.803)	−0.021*** (−2.661)
Book-to-Market (Ln)	0.010 (1.296)	0.014* (1.818)	0.012 (1.502)	0.009 (1.170)	0.007 (0.922)
Absolute Ann. Return	0.038 (0.527)	0.039 (0.551)	0.046 (0.644)	0.031 (0.429)	0.037 (0.516)
Observations	100,578	100,578	100,578	100,578	100,578
R-squared	0.14	0.14	0.14	0.14	0.14
Year Fixed Effect	YES	YES	YES	YES	YES
Firm Fixed Effect	YES	YES	YES	YES	YES