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Abstract

We document high persistence in shareholder turnout, creating predictable differences in effective voting power across firms. Accordingly, firms with lower turnout exhibit higher voting premia. For identification, we exploit the 2010 NYSE Rule 452 amendment eliminating broker authority over uninstructed shares as a shock to turnout in director elections. Further, we show that low turnout predicts contentious governance events where shareholder influence is more valuable, and that the negative voting premium-turnout relation is stronger when such events are more likely. Results indicate that investors price *de facto* voting power and that persistent shareholder participation shape the value of corporate control.

Keywords: Shareholder voting participation; Value of voting rights; Broker non-vote rule; Contentious governance events; Voting power

JEL codes: G11, G23, G41

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1. Introduction

Shareholder voting is a fundamental governance mechanism that can meaningfully affect firm outcomes, such as board responsiveness, executive compensation, and corporate policies (e.g., Cai, Garner, and Walkling, 2009; Yermack, 2010; Ferri, 2012; Iliev et al., 2015; Aggarwal, Dahiya, and Prabhala, 2019). Yet, exercising voting rights is costly because shareholders have to evaluate proposals and cast their votes. Classical rational-choice models of voting argue that voters compare the expected benefits of influencing decisions with the costs of voting (e.g., Downs, 1957; Riker and Ordeshook, 1968). These models imply that the value of voting shapes participation. A complementary strand of theory, however, emphasizes that participation itself can shape the value of voting: as more voters participate, each vote represents a smaller fraction of the effective electorate and therefore exerts less influence (Chamberlain and Rothschild, 1981; Börgers, 2004).

In practice, shareholder participation can be expected to influence the value of voting for two reasons. First, most ballot items are decided based on votes cast rather than shares outstanding, making the size of the effective electorate important.[1] Second, participation is far from universal since voting is optional for many shareholders. Especially retail investors and certain types of institutional managers, such as private wealth managers, show lower turnout (e.g., Hutzler, 2025; Iliev and Lowry, 2026).[2] In fact, as **Figure 1** shows, average voter turnout in U.S. firms is less than 80%, and participation varies substantially across firms, ranging from below 50% to above 90%. Thus, shareholders' *de facto* voting power, i.e., their realizable influence on corporate decisions given the effective electorate, often diverges from their *de jure* ownership of voting rights.

For example, an investor owning 10% of a firm's outstanding shares controls 20% of the votes cast when turnout is 50%, but only 11.1% when turnout is 90%. Lower turnout may also affect the efforts for shareholders, especially activists, of engaging with other voters to accumulate votes on

[1] According to data from ISS Voting Analytics for our sample period 2003-2022, shares outstanding serve as the vote base for only 1.5% of all ballot items, while 97% of all items is based on votes cast, predominantly "For" and "Against" votes (see Appendix Table 1).

[2] A recent article on the Harvard Law School Forum on Corporate Governance highlights that voting participation by both retail and institutional investors has consistently decreased over time and that participation in the 2025 proxy season was the lowest in about a decade, with about 77% (28%) of institutional (retail) investors exercising their votes (Tae, Callan, and Donowitz, 2025). Firms also explicitly recognize and respond to low voter turnout: for example, in 2025 the SEC approved Exxon Mobil's retail voting program after the company reported that despite retail investors holding nearly 40% of its shares, only about 10% of outstanding shares were voted, motivating firm-level interventions to increase effective voting participation (Ho, Grannis, and Pinder, 2025).

certain ballot items (e.g., via "vote no" campaigns) to effectively influence firms.

This background raises a fundamental question in corporate governance: does shareholder participation shape the value of voting rights? This question is worthwhile answering given that extant literature has focused on how the expected value of voting (i.e., the costs and benefits) shapes shareholder participation (e.g., Brav, Cain, and Zytnick, 2022), while little is known about how participation itself may shape the value of voting. We primarily address this latter question by examining whether investors price voting rights based on their *de facto* voting power. In other words, do investors assign greater value to voting rights when fewer shareholders vote?

For shareholder participation to affect the market value of voting rights, investors must be able to anticipate a substantial component of future participation so that firms differ predictably in the size of their effective electorates. Still, shareholders may well participate more when the expected benefits of voting are higher, as emphasized by rational-choice models. As a first central result of this study, we document that voter turnout is highly persistent across firms (autocorrelation of 0.84, $R^2 = 0.67$), enabling markets to price de facto voting power. **Figure 2** illustrates this persistence by sorting firm-years into deciles based on voter turnout. Firms tend to remain in the same decile from one year to the next, especially firms in the lowest and highest deciles, where the probability of staying approaches 60%. This high persistence suggests that meeting-specific incentives alone do not fully explain the aggregate shareholder participation pattern we observe.

If shareholder participation is sufficiently predictable, the classical theory of corporate control (Grossman and Hart, 1980; Shleifer and Vishny, 1986; Harris and Raviv, 1988), according to which control rights derive value from the ability to influence corporate decisions, suggests that the value of voting rights should reflect differences in de facto voting power. Additionally, Zingales (1995) notes that the price of a vote reflects the premium shareholders expect in a control contest, determined by the likelihood a vote is pivotal and the magnitude of private benefits available to the winner. This aligns with the model by Speit, Voss, and Danis (2024) where voting rights are valuable precisely because they confer the potential to exert influence—the value of a vote increases as the voting base shrinks. Levit, Malenko, and Maug (2026) approach the issue differently, focusing on blockholders' ability to influence the shareholder base and control corporate decisions. Yet, their model also implies that voting premiums would be shaped by low turnout, which increases the relative influence of each vote and the strategic importance of controlling the voting base. Together, these insights imply that the market value of voting rights

should vary inversely with expected shareholder turnout.

We test this prediction using the option price–based measure of the value of voting rights proposed by Kalay, Karakaş, and Pant (2014).[3] We find that lower turnout predicts a higher voting premium. **Figure 3** illustrates the pricing of de facto voting power using a nonparametric test: the voting premium is negatively related to shareholder turnout, with the effect steepening at low turnout rates and flattening once turnout exceeds around 75%. This pattern is consistent with investors valuing de facto voting power, which converges to de jure voting power as participation becomes widespread and the incremental impact of any single vote becomes very small.

More formal lead-lag regressions support this negative relation. A one-standard-deviation decrease in past voter turnout (13 percentage points) predicts an increase in the daily voting premium by 2.4 basis points (or approximately $2.2 million for the average firm), an economically significant effect given an average daily premium of 3 basis points. This estimate corresponds to an increase in the annualized voting premium of approximately 0.25%, compared to a mean annualized premium of 0.31%.[4] The negative relation between voting premia and turnout is robust to controlling for institutional ownership, corporate governance and ISS voting recommendations, as well as stock and option liquidity. It also remains robust within a subsample of S&P 500 firms after controlling for granular ownership structure—including retail, insider, ETF, and active mutual fund ownership—which indicates that turnout captures variation in de facto voting power beyond ownership composition and blockholder effects.

We note that classical rational-choice models would predict a positive correlation between the voting premium and shareholder participation, which biases against us finding the de facto voting-power effect we document. In particular, one may contend that "strategic voters"—active investors who step in precisely when stakes are high—could make the voting premium and turnout rise together. We show, however, that the inverse voting premium-turnout relation remains strong in subsamples with both high and low levels of stock liquidity and institutional ownership, two

[3] The value of voting rights is determined as the difference in value between voting and synthesized non-voting shares, normalized by the voting share price. This measure of voting premium is also used in Gurun and Karakaş (2026) and Karakaş and Mohseni (2021).

[4] The voting premium is measured over the time to maturity of the option pairs used to estimate the value of voting rights, with the average option maturity being 35 days (untabulated). The voting premium increases with the time to maturity of the options pairs used to calculate it. Voting premiums for options with time to maturity of T can be annualized using the following formula (see Kalay, Karakaş, and Pant, 2014): $1 - (1 - \text{voting premium})^{365/T}$.

common drivers of shareholder engagement (e.g., McCahery, Sautner, and Starks, 2016).

To alleviate endogeneity concerns, we exploit a quasi-exogenous regulatory shock to voting participation: the amendment to NYSE Rule 452 (effective January 2010) eliminated brokers' ability to vote uninstructed shares in uncontested director elections by reclassifying them as non-routine. This change requires beneficial owners to provide instructions or vote directly rather than through broker delegation, causing a sharp and largely mechanical decline in turnout by changing *how* votes are cast rather than *who* is entitled to vote. Since director elections are the most frequent ballot items, the reform was arguably pervasive, affecting shareholders independent of changes in ownership or firm-specific governance actions.

We show that director election turnout falls by 19.4 percentage points among firms that previously relied heavily on broker votes, compared with a 10.2-percentage-point decline among less affected firms, yielding a difference-in-differences estimate of 9.2 percentage points. In contrast, turnout on non-director items shows no comparable decline. Importantly, consistent with investors pricing de facto voting power, these firms also exhibit an increase of approximately 7 basis points in their voting premia. This evidence is robust to controls for institutional ownership as well as to entropy balancing and propensity score matching based on firm characteristics. We find similar results (i) using shorter treatment windows that isolate the effect of the 2010 shock from subsequent governance and proxy-voting reforms, or (ii) when we conduct a "dose response" test using a continuous measure of treatment intensity based on pre-reform broker non-votes. Collectively, our findings suggest that reduced participation, which increases de facto voting power, has a plausibly causal effect contributing to an increase in the value of voting rights.[5]

We also examine how voting standards shape the pricing of de facto voting power. We find that the negative relation between voting premia and turnout is strongest under majority voting, weaker under plurality voting, and weakest under cumulative voting. Under majority voting, electoral outcomes depend on surpassing a fixed approval threshold (typically 50% of votes cast), which increases the sensitivity of outcomes to participation levels. Under plurality voting, directors are elected as long as they receive more votes than competing candidates, making outcomes less sensitive to overall turnout. Lastly, cumulative voting, which allows shareholders to concentrate votes and thereby strengthens minority representation, further reduces the dependence of effective

[5] The broker-vote reform also addresses potential concerns that some items might endogenously reach the ballot (Dressler, 2020), as it exogenously shifts turnout while director elections are always on the ballot.

voting power on aggregate participation. These results reinforce our central argument that investors price de facto voting power, as the voting premium-turnout relation varies systematically with institutional rules governing how participation translates into effective control.

To complement our findings, we further study the governance consequences of shareholder disengagement. We find that lower turnout predicts a greater likelihood of future contentious governance events, including contentious meetings, dissent voting, close votes, and activist campaigns. A one-standard-deviation decline in turnout increases the likelihood of contentious shareholder meetings by 13%, dissent voting by 13%, close votes by 12%, and activism events by 18%. Thus, our evidence suggests that de facto voting power shapes investor behavior as activist campaigns are more likely at low-turnout firms. Consistent with these findings, we also document that lower turnout decreases support for directors, particularly under majority voting, where approval thresholds make outcomes more sensitive to participation. The negative relation between the voting premium and turnout is strongest both among firms most likely to face governance disputes and among firms with lower expected director support, where outcomes are more likely to be contested. Overall, these results suggest that investors attach greater value to voting rights when control contests are more probable, in line with Zingales (1995), and that de facto voting power is most valuable in settings where participation affects whether votes are influential.

Collectively, our findings demonstrate that investors price *de facto voting power*—the effective influence derived from expected participation—rather than merely formal ownership rights. Persistence in shareholder turnout thus affects not only governance dynamics but also the economic value of corporate control itself. The extent to which turnout affects the value of control is shaped by voting standards and may thus be influenced by firms and regulators.

Our paper makes three main contributions. First, we contribute to the literature on the value of corporate votes and control rights (Zingales, 1995; Nenova, 2003; Dyck and Zingales, 2004; Kalay, Karakaş, and Pant, 2014; Fos and Jiang, 2016) by showing that shareholder participation, rather than ownership alone, is a central and predictable determinant of voting-right value. Prior studies attribute variation in voting premia to ownership structures, takeover protection, or private benefits of control. We show that even when such determinants remain virtually unchanged, the effective voting power, shaped by how many shareholders vote, significantly affects valuation of control rights, consistent with the predictions of pivotal-voting models (e.g., Börgers, 2004).

Second, we contribute to the literature on shareholder engagement and governance outcomes.

Prior work emphasizes that institutional participation improves monitoring and firm performance (Becker, Bergstresser, and Subramanian, 2013; Appel, Gormley, and Keim, 2016). To the best of our knowledge, we are the first to systematically document that voter turnout is highly persistent at the firm level, allowing investors to predict their effective voting power. Relatedly, Brav and Li (2026) find that institutional investors' reported ownership systematically overstates their realized voting control, since a meaningful share of reported holdings is not converted into cast votes. While their focus is on this institution-level gap between ownership and realized voting, our paper documents the analogous gap at the market level and shows that investors price it. Our results suggest that this persistent pattern of engagement shapes not only the value of control but also the likelihood of future governance conflicts, where control becomes particularly valuable. Low participation signals weaker oversight and greater scope for managerial discretion or activist intervention, conditions under which voting rights command a higher premium. We note that, given participation is persistent, policies aiming to "activate" shareholders—for example, by simplifying proxy voting or via digital engagement—may not quickly change voting patterns.[6]

Finally, our study contributes to research about regulatory effects on shareholder democracy (Iliev and Lowry, 2015; Ertimur, Ferri, and Stubben, 2010). Exploiting the 2010 broker-vote reform as a quasi-natural experiment allows us to isolate the impact of voter turnout on the value of voting rights, shedding light on one of the unintended consequences of the regulation. Specifically, the reform may have shifted the effective electorate further toward institutional investors and other blockholders, thereby reducing the influence of retail shareholders. Our results are likely to be also relevant for investors and regulators outside the U.S. Shareholder turnout in many other countries is significantly lower than in the U.S., averaging only between 40% and 60% (Lesmeister, Limbach, and Goergen, 2022; Zachariadis, Cvijanovic, and Groen-Xu, 2025), while the votes-cast basis is the default rule across most large economies (e.g., Canada, China, France, Germany, Italy, Japan, the U.K.). Moreover, other countries have adopted regulations comparable to NYSE Rule 452, such as the 2009 regulation of proxy voting by custodian banks in Germany, or have adapted other regulations that potentially affect de facto voting power, such as the introduction of double-voting rights in France (Bourveau, Brochet, and Garel, 2022).

[6] Consistently, in untabulated analyses, we find no evidence that virtual shareholder meetings were associated with higher voter turnout before the COVID pandemic. Even with a recent trend in virtual voting during and after COVID (Li and Yermack, 2025), we observe no considerable increase in voter turnout as suggested by Figure 1.

2. Voting and pivotality: Institutional setting and theoretical framework

2.1 Institutional setting, NYSE Rule 452, and de-facto voting power

Most shareholder votes are cast at the annual general meeting (AGM), typically covering both routine items, such as auditor ratification or the approval of annual reports, as well as various non-routine items, including director elections, executive compensation ("say on pay"), matters substantially affecting shareholder rights (e.g., approval of merger agreements, adoption or removal of classified boards), and shareholder-sponsored proposals. In general, routine items consider matters of the firm's ordinary business that do not materially affect shareholder rights or control. In contrast, non-routine items consider matters that affect shareholders' substantive rights, governance, or control over the firm. Voting is usually conducted electronically or by proxy, and most shares are held in "street name," meaning that beneficial owners instruct brokers (or other intermediaries) how to vote. While brokers can generally vote uninstructed shares in case of routine items, they require explicit voting instructions for non-routine items.

Importantly, while U.S. mutual funds have a fiduciary duty to vote, voting is optional for most institutional managers, e.g., hedge funds, mixed asset managers or private wealth managers (Iliev and Lowry, 2026). Consistent with this, Zachariadis, Cvijanovic, and Groen-Xu (2025) document that the average participation rate among shareholders in the U.S. who are not mutual funds or insiders is only 26%. Furthermore, Brav and Li (2026) show that even among institutions that do vote, the average institution casts votes for only 77% of its reported holdings, with participation shaped by the ex-ante allocation of voting authority between advisers and clients rather than by the characteristics of individual votes.

2.1.1 Voting bases

Vote outcomes can be calculated using different voting bases, which determine the denominator against which "For" votes are measured. The two predominant standards are the votes-cast basis and the shares-outstanding basis. Under a votes-cast basis, approval is calculated as either F/(F+A) or F/(F+A+AB) (where F, A and AB stand for "For," "Against" and "Abstain" votes). Non-votes and/or abstentions are excluded from the denominator. This method is by far the most common method in U.S. corporations (but also in many other large economies) and tends to favor passage because it effectively ignores uninstructed shares. In fact, Appendix Table 1 shows that in our

sample, which spans the years 2003 to 2022, 97% of all items are decided on a votes-cast basis.[7] Under the alternative shares-outstanding basis, approval is calculated as the ratio of "For" votes to all shares entitled to vote, meaning that unvoted shares and abstentions count effectively as "Against." This standard is typically reserved for fundamental corporate actions (e.g., charter amendments or merger approvals) and represents a much stricter hurdle, which is more common for special shareholder meetings.

The classification of routine versus non-routine items and, importantly, the choice of voting base directly affects the de-facto voting power of active shareholders. Because brokers and other intermediaries can vote uninstructed shares, thereby increasing voter turnout, de-facto voting power will likely matter less for routine items. Under a votes-cast basis, low turnout amplifies the relative influence of those who vote, increasing their effective control. In contrast, under a shares-outstanding basis, non-participation dilutes voting power, making control harder to exercise unless broad shareholder support is secured.[8]

2.1.2 NYSE Rule 452

Broker discretionary voting was introduced in 1937 under New York Stock Exchange (NYSE) Rule 452 to boost turnout at shareholder meetings and help meet quorum requirements. Under this rule, for certain routine matters to be voted upon at the AGM, if shareholders do not vote by proxy or at the meeting in person and do not provide voting instructions, brokers may vote on their behalf at their discretion. In July 2009, the SEC approved the NYSE's proposed amendment to Rule 452, which became effective for shareholder meetings held on or after January 1, 2010. The amendment caused a significant regulatory change, restricting the ability of brokers to vote uninstructed shares on behalf of their clients (the beneficial owners) in uncontested director elections. Specifically, the reform reclassified uncontested director elections as non-routine matters and thereby eliminated broker discretionary voting for these elections. Consequently, beneficial owners have to provide explicit voting instructions or have to vote directly rather than through broker delegation. Since

[7] Since we require options data to calculate our voting premium measure, the voting statistics we report may be biased towards larger companies. However, examining the raw ISS Voting Analytics data for the 2003-2022 period, the share of ballot items applying the votes-cast basis remains similar—96% (untabulated).

[8] Since material, high-stakes corporate decisions, especially merger approvals, are typically voted under a shares-outstanding rule, where turnout does not mechanically increase certain shareholders' influence, de facto voting power is unlikely to exclusively reflect expectations of such decisive votes. In this regard, examining the raw ISS Voting Analytics data for the 2003-2022 period, we find the share of ballot items applying the shares-outstanding basis to be 78% for items ISS flags as "Approve Merger Agreement." It is 14% for special meetings, which is still several times higher than the unconditional likelihood of ballot items applying the shares-outstanding base.

director elections are the most frequent items on corporate ballots, the reform constitutes a widespread shock to effective participation costs for shareholders who previously relied on broker delegation.[9]

By changing how votes are cast rather than who is entitled to vote, the reform led to a sharp, largely mechanical, and persistent decline in shareholder voter turnout (see Figure 1). Importantly, the reform did not actively change formal voting rights or approval thresholds, firm-level voting rules, ownership structures, the voting base applied to ballot items or ballot content. Therefore, the resulting decline in turnout causes a largely mechanical increase in the shareholders' de facto voting power, independent of changes in voting rules, ownership or firm-specific governance actions. Lastly, targeting director elections in isolation, the reform focused on the arguably most valuable recurring voting item, given that boards are the ultimate governing body within the firm.[10]

2.2 Theoretical framework and empirical predictions

Our hypothesis that value of corporate voting rights reflects de facto voting power generally rests on economic models of pivotal voting, or electoral influence, such as Chamberlain and Rothschild (1981) and Börgers (2004). According to these models, voter participation shapes the value of voting because, as more voters participate, each vote represents a smaller fraction of the effective electorate and therefore exerts less influence. To motivate our empirical analysis, we sketch a simple framework in the spirit of Zingales (1995), who specifically studies the value of corporate voting rights. Our framework links the market value of voting rights to shareholder participation.

The core premise is that a voting share commands a premium over an otherwise identical non-voting claim because ownership of a vote carries the potential to influence corporate outcomes. We define the voting premium VP, normalized by the share price P, as:

$$VP(\tau) \approx \phi(\tau) \cdot \pi(\tau) \cdot \frac{B}{P} \qquad (1)$$

[9] https://www.sec.gov/files/rules/sro/nyse/2009/34-60215.pdf. See page 12 that mentions "As such, the Commission believes that NYSE's proposal should better enfranchise shareholders by helping assure that votes on matters as critical as the election of directors are determined by those with an economic interest in the company, rather than the broker who has no such economic interest, and also should enhance corporate governance and accountability to shareholders."

[10] A subsequent expansion of broker discretionary voting restrictions, effective in 2012, reclassified governance proposals as non-routine. Its impact on voter turnout appears limited in our sample (Figure 1), consistent with the reform affecting a narrower set of proposals and operating on the intensive margin of voting rather than eliminating a large block of broker-cast votes. We therefore focus on the 2010 amendment to NYSE Rule 452.

where $\tau \in (0,1]$ is the fraction of shares that actually vote; $\phi(\tau)$ is the probability that a control-relevant event (such as an activist intervention or a director election) occurs; $\pi(\tau)$ is the probability that an individual vote is pivotal, conditional on such an event; and B denotes the value associated with obtaining the preferred control outcome (conventionally modeled as private benefits of control) accruing to the winning side, which in practice reflect the capitalized value of influencing board composition, executive pay, or strategic decisions.[11] Critically, both ϕ and π are written as functions of voter turnout τ, a point we develop in detail below.[12]

2.2.1 Turnout and de facto voting power

Let N denote the number of shares outstanding. In most of our setting, decisions are taken by a majority of votes cast, not of shares outstanding (see Section 2.1 and Appendix Table 1). Hence, the effective electorate is:

$$N^V = \tau N \qquad (2)$$

A shareholder owning fraction θ of outstanding shares holds θN votes *de jure*. Her *de facto* voting power, measured as her share of votes among those cast, is:

$$\theta^V = \frac{\theta N}{N^V} = \frac{\theta}{\tau} \qquad (3)$$

When turnout is incomplete $(\tau < 1)$, de facto voting power exceeds de jure ownership. The resulting wedge between θ^V and θ, $\theta(1/\tau - 1)$, increases as turnout falls. Thus, for a given ownership structure, lower participation mechanically concentrates influence in the hands of those who vote.

An important implication follows immediately: anticipated turnout is priceable. Because voter turnout is highly persistent at the firm level (as we document later in Section 4.1), shareholders can forecast the expected size of the effective electorate and hence their expected de facto voting power at the next AGM using observed past participation. Markets therefore price *expected* de

[11] Theoretically, control matters when investment contracts are incomplete and investors differ in their objectives, whether because of private benefits, beliefs, risk preferences, reputational concerns, or other considerations (Aghion and Bolton, 1986, 1992). While prior work typically models the value of control through private benefits, Aghion and Bolton show that differences in beliefs provide an equivalent theoretical representation. We therefore treat B as a reduced-form parameter capturing the value of obtaining the preferred control outcome when investors disagree about how the firm should be run.

[12] B and P vary across firms—for example with ownership concentration, industry, and takeover exposure—but are treated as relatively slow-moving in our empirical setting. Our baseline identification exploits variation in τ while holding B/P approximately constant through firm fixed effects and a quasi-natural experiment.

facto power in the cross-section, and our baseline regressions exploit this predictability. The quasi-natural experiment later in Section 4.4 complements this by providing a plausibly causal test that does not rely on the persistence of turnout to generate cross-sectional predictability.

2.2.2 The effect of turnout on pivotality: The $\pi(\tau)$ channel

We now formalize how turnout τ affects the pivotality component π. Consider a binary vote in which a control-relevant event has been triggered (i.e., conditional on $\phi > 0$). Abstracting from one given investor, suppose each of the remaining $N^V - 1$ votes is independently cast for either side, with the outcome being uncertain ex ante. Under a standard normal approximation to the binomial, the probability that a single additional vote is decisive (i.e., breaks an exact tie) is inversely proportional to the square root of the number of votes cast:

$$\pi(\tau) \propto \frac{1}{\sqrt{N^V}} = \frac{1}{\sqrt{\tau N}} \tag{4}$$

Substituting this into the expression for the voting premium yields:

$$VP(\tau) \approx \phi(\tau) \cdot \frac{1}{\sqrt{\tau N}} \cdot \frac{B}{P} \tag{5}$$

We make two important qualifications. First, the symmetric-contest assumption underlying this formula (i.e., each vote is equally likely to fall on either side) is most natural in genuinely contested settings. In routine, uncontested director elections that dominate our sample, the formal per-period pivotality of a marginal vote is low regardless of turnout. The formula should therefore be interpreted as capturing the option value of voting rights over a forward-looking horizon that encompasses future potential control events, rather than the pivotality in any single scheduled vote. Second, the independent-voting assumption is a simplifying approximation. In practice, coordinated voting blocs and proxy advisors introduce correlation. This does not change the qualitative prediction—larger electorates still dilute the marginal impact of any one vote—but it does suggest that the formula understates pivotality in settings with greater coordination.

With these caveats, the expression for $VP(\tau)$ delivers two clean qualitative predictions that guide our empirical work:

- **Prediction 1 (Turnout effect):** Holding ϕ, B, and P constant, $\partial VP/\partial\tau < 0$. As more shareholders vote, each vote becomes less likely to be pivotal, reducing the value of the voting right. Our baseline regressions later in Section 4.2, which absorb variation in ϕ and B/P

through firm fixed effects and numerous control variables, test this prediction.

We note that the marginal effect of turnout on the voting premium is stronger at low turnout: $\partial^2 VP/\partial\tau^2 > 0$. Formally, since $VP \propto \tau^{-1/2}$, the sensitivity $|\partial VP/\partial\tau| = (1/2) \cdot \tau^{-3/2} \cdot const$ is steeply decreasing in τ. As participation rises, additional voters have a diminishing impact on pivotality, flattening the premium-turnout relation. Our empirical tests in Section 4.2 examine whether this convexity is present in the data. The model does not pin down the precise turnout level at which the relation flattens empirically; we treat this as an empirical question, which we address using a piecewise nonlinear specification rather than imposing a specific functional form.

2.2.3 The role of voting standards

The strength of the voting premium-turnout relation depends not only on τ but also on the institutional rules that translate vote counts into outcomes, because these rules determine how sensitive $\pi(\tau)$ is to participation.

Under *majority voting*, a proposal passes only if it receives more than 50% of votes cast.[13] The approval probability is therefore a direct function of the level of support among active voters, making it highly sensitive to who participates and in what proportion. A given reduction in τ has a larger effect on $\pi(\tau)$ because the threshold constraint is more binding. Under *plurality voting*, directors are elected by receiving more votes than any competing alternative, even if they receive less than a majority of votes cast.[14] In uncontested elections (the modal case in our sample), this means any positive net vote tally suffices, making the outcome structurally insensitive to the absolute level of participation. A reduction in τ raises the de facto power of active voters, but the probability that their marginal vote is pivotal in the formal sense changes little when there is no credible competing candidate. The premium-turnout relation should therefore be present but weaker under plurality voting.

Furthermore, *cumulative voting* allows shareholders to concentrate their total votes on a single director, with total votes equal to shares owned multiplied by the number of seats contested. This mechanism empowers minority coalitions independently of aggregate turnout: even when overall

[13] The vast majority of larger U.S. firms have adopted majority voting. For example, Choi et al. (2016) report that as of January 2014 almost 90% of S&P 500 companies had adopted some form of majority voting.

[14] For example, suppose a company has 100 shares outstanding and shareholders are voting one director to the board. There are three director candidates who receive the following votes: director A (25 votes), director B (20 votes), and director C (15 votes). Voter turnout is 60% and director A is elected.

participation is low, a small, coordinated bloc can secure board representation by pooling votes. Consistently, Gompers, Ishii, and Metrick (2003) code cumulative voting as a provision whose presence is associated with an increase in minority shareholder rights. Cumulative voting therefore reduces the sensitivity of de facto voting power to τ, further weakening the premium-turnout relation. Based on the above, we derive our second testable prediction:

- **Prediction 2 (Voting standards):** The negative relation between the voting premium and voter turnout is strongest under majority voting, weaker under plurality voting, and weakest (or potentially absent) under cumulative voting. We test these predictions later in Section 4.5.

2.2.4 The effect of turnout on contest probability: The $\phi(\tau)$ channel

The framework in Section 2.2.2 treats ϕ as exogenous to τ to derive clean predictions about pivotality. However, there are reasons to expect ϕ itself to be decreasing in τ, generating a second, complementary channel through which lower participation raises the voting premium.

When turnout is persistently low, a relatively small coalition of active shareholders can determine outcomes. This reduces the cost of accumulating a pivotal voting stake and increases the expected payoff from launching an activist campaign. At the same time, low turnout weakens the disciplining effect of shareholder monitoring, increasing the scope for value-reducing managerial decisions and therefore the demand for activist intervention. Both mechanisms imply $\partial\phi/\partial\tau < 0$: firms with chronically low participation are more likely to experience future governance disputes.

Incorporating both channels yields the full expression for the voting premium:

$$VP(\tau) \approx \phi(\tau) \cdot \pi(\tau) \cdot \frac{B}{P} \qquad (6)$$

where both $\phi(\tau)$ and $\pi(\tau)$ are decreasing in τ, so the voting premium is decreasing in τ through two reinforcing mechanisms. The two channels also interact: the premium-turnout relation should be strongest precisely among firms where ϕ is high (i.e., where governance disputes are most likely) because in those firms a marginal vote is both more likely to be cast in a consequential contentious governance event and more likely to be decisive given the restricted electorate. This interaction delivers our third testable prediction:

- **Prediction 3 (Contestability interaction):** The negative relation between the voting premium and voter turnout is stronger among firms with a higher predicted probability of future contentious

governance events. We test this prediction later in Section 5, where we first estimate ϕ from a predictive model of governance disputes and then examine whether the voting premium-turnout gradient is larger in the high-ϕ subsample.

Importantly, the separation of the two channels also clarifies the identification logic of our empirical design. The quasi-natural experiment in Section 4.4 exploits the 2010 NYSE Rule 452 amendment, which generated a largely mechanical decline in τ by removing brokers' discretionary voting authority in director elections. Because the shock changed how votes are cast rather than who is entitled to vote or the underlying governance environment, it is plausibly orthogonal to contemporaneous changes in ϕ. The DiD estimates in Section 4.4 therefore primarily isolate the $\pi(\tau)$ (pivotality) channel. Section 5, by contrast, examines the $\phi(\tau)$ (contestability) channel directly by relating persistent turnout levels to the subsequent incidence of governance events.

One might also consider the reverse channel, consistent with the predictions of rational-choice voting models: high contest probability ϕ or large private benefits B could themselves attract greater participation, as strategic investors step in precisely when the stakes are highest. This would induce a positive correlation between τ and VP because high ϕ raises both the voting premium and turnout simultaneously, working directly against our hypothesized negative premium-turnout relation. Any bias introduced by this channel therefore causes our estimates to understate the true negative effect of lower participation on the voting premium, making our tests conservative.[15]

2.2.5 Connections to recent theoretical work

Two recent models provide complementary microfoundations for the framework above and suggest additional nuances. Speit, Voss, and Danis (2024) develop a model of activist voting in which the equilibrium vote price in the equity lending market is determined by the probability that an individual shareholder's decision is pivotal for the vote outcome. They show formally (Lemma 4 and Proposition 3) that this pivotality probability is bounded above by a term proportional to $1/\sqrt{n}$, where n is the number of shareholders, and converges to zero as ownership becomes more dispersed. Mapping their n to our effective electorate $N^V = \tau N$, vote prices decrease as

[15] This logic also helps interpret our baseline OLS results: finding a negative and significant premium-turnout relation despite this countervailing force strengthens rather than weakens the inference. The quasi-natural experiment in Section 4.4, where the decline in τ is driven by a regulatory change plausibly orthogonal to ϕ and B, provides further assurance that the documented relation is not an artefact of reverse causality.

participation rises and the pivotality component scales approximately as $\tau^{-1/2}$, consistent with our Prediction 1 and with the binomial approximation above. Their primary focus is on the price wedge between equity lending and option markets rather than the turnout-premium relation directly, so this mapping requires treating their n as our effective electorate.

Levit, Malenko, and Maug (2026) develop a unified theory of blockholder governance and the voting premium in a setting without takeovers or controlling shareholders. In their framework, a minority blockholder purchases shares from dissenting shareholders to shift the median voter in its preferred direction. While voter turnout is not an explicit parameter in their model, lower participation implies a smaller effective electorate in which each share purchased has a larger proportional impact on the composition of the voting base, raising the blockholder's marginal willingness to pay for the voting component of each share and thus the voting premium. This median-voter-shifting channel reinforces Prediction 1 through a mechanism distinct from pivotality.[16] What both their model and ours share is the conclusion that the economic value attached to votes depends on the effective composition of the voting base rather than on formal ownership or statutory rights alone.

3. Data and variable construction

The voting data for U.S. companies' annual general meetings (AGMs) are obtained from the Institutional Shareholder Services (ISS) Voting Analytics for the period from 2003 to 2022. For each voting item, the data provides the number of votes for, votes against, and votes abstained, which enables us to compute the voter turnout rate. Specifically, voter turnout is calculated as the sum of votes cast (for, against, or abstained) as a percentage of eligible votes. Firms use different bases in determining the support rate. Depending on the voting base reported in the database, we either aggregate the total number of votes for and against if only "For" and "Against" votes are used in the calculation of the support rate (F+A), or the total of votes for, against, and abstained if abstentions are also included in the calculation (F+A+AB). For each AGM, we then calculate the average voter participation rate across all voting items.

[16] Levit, Malenko, and Maug (2026) further show that free-riding by dispersed shareholders can theoretically compress or even make standard empirical measures of the voting premium negative, including the option-implied measure we employ. While negative voting premiums are indeed observed for some firms, the preponderance of empirical evidence (including our own) finds that option-implied premiums are positive on average, suggesting that free-riding does not systematically eliminate the wedge between actual and synthetic share prices and that our measure captures meaningful variation in the value of voting rights across firms and over time.

Following Kalay, Karakaş, and Pant (2014), we use the OptionMetrics database to calculate the voting premium daily for the period from 2003 to 2022. Specifically, we construct a synthetic nonvoting share of common stock using the put-call parity relationship and define the voting premium as the difference between the price of the stock and its synthetic nonvoting counterpart, normalized by the stock price. The key idea behind this approach is that option prices capture the cash flows associated with the underlying stocks but exclude their control rights. A notable advantage of this method is its ability to estimate the voting premium for a large sample of firms, unlike the traditional method of analyzing the relative prices of dual-class stocks. We merge the daily voting premium data with the most recent annual meeting date, applying a one-week lag to account for the SEC requirement that firms are required to report voting results in a Form 8-K within four business days.[17] We then compute the average daily voting premiums over the period from the current meeting to the next.

Other firm-level financial variables are obtained from the Compustat database. Our set of control variables includes *Total Assets (log)*, *Firm Age (log)* (i.e., the number of years since the firm's inclusion in Compustat), *Book Leverage* (i.e., total debt to total assets), *ROA* (i.e., operating income to total assets), *Tangibility* (i.e., tangible to total assets), *Loss* (an indicator equal to one for firms with negative net income). We also control for a firm's institutional ownership using the two variables *IO (non Big3)* and *IO (Big3)*, which capture the total ownership of non-Big Three and Big Three institutional investors, respectively. Ownership data is from Thomson-Reuters' Institutional (13f) Holdings database. Following Ben-David et al. (2021), we identify the Big Three asset managers using the following identifiers: Vanguard (MGRNO 90457), State Street (MGRNO 81540), and BlackRock (aggregate holdings from six MGRNO identifiers: 9385, 11386, 39539, 56790, 91430, and 12588). For robustness, we additionally include controls for firms' corporate governance, namely the E-index (Bebchuk, Cohen, and Ferrell, 2009), based on governance information from the ISS Governance database, the MSCI G-score, and imputed ISS recommendations (from Zytnick, 2025). Appendix Table 2 provides detailed variable definitions.

Table 1 presents descriptive statistics for the main sample, which includes 42,277 firm-year observations for 5,575 unique firms. The average daily voting premium is 0.03% (3 bps) with a considerable cross-sectional variation. Mean voter turnout is approximately 80%, which compares

[17] https://www.sec.gov/files/form8-k.pdf.

well with extant literature: for example, Maug and Rydqvist (2009) and Lesmeister, Limbach and Goergen (2022) find a mean voter turnout for U.S. firms of 81.8% and 79.0%, respectively.

Figure 1 further illustrates time-series and cross-sectional trends in voter turnout from 2003 to 2022. The solid black line with circle markers represents the average turnout across firms in each year. The dashed-dot line with square markers shows the median turnout, while the dashed lines with diamond and triangle markers represent the 10^{th} percentile and 90^{th} percentile, respectively. The figure shows that average voter turnout remains relatively stable prior to 2010 but declined noticeably around that year, coinciding with regulatory changes that restricted broker discretionary voting. Moreover, the wide gap between the 10^{th} and 90^{th} percentiles highlights substantial cross-sectional variation in voter turnout. This gap becomes more pronounced after 2010, amounting to at least 30 percentage points.

4. Voter turnout and the voting premium

4.1 Persistence of voter turnout

To hypothesize a significant relation between past voter turnout and the future voting premium, we implicitly assume that investors are able to anticipate and thus price a substantial component of future turnout. That means, past voter turnout at the firm level must serve as a sufficient proxy for future turnout. Therefore, we begin our analysis by examining the persistence of voter turnout.

We first conduct a one-year transition probability analysis by plotting a heatmap of the one-year transition probabilities of voter turnout across deciles, as shown in Figure 2. Specifically, each year, firms are sorted into voter turnout deciles, and the figure displays the probability of transitioning from one decile to another in the subsequent year. For all deciles, the diagonal cells are the darkest relative to the off-diagonal ones, indicating a high degree of persistence in voter turnout. Notably, the colors are darkest towards the two extreme tails, suggesting greater persistence among firms with either very low or very high voter turnout. Particularly, firms in the lowest and highest deciles exhibit a probability of staying of almost 60%. Even if firms do transition, they almost always move only to the adjacent decile.

In a second step, we regress next year's voter turnout, measured by the variable *Voter Turnout (lead)*, on either the previous year's voter turnout (i.e., *Voter Turnout*) or the average voter turnout over the past three years (i.e., *Voter Turnout (3-yr avg.)*). **Table 2** reports the results. In columns

(1) and (2) we omit controls and fixed effects. We find that the coefficient on the previous year's voter turnout is 0.839, while that on the past three-year average is 0.881 (with *t*-statistics equal to 153.735 and 138.842, respectively). The corresponding adjusted R-squared values are 67.1% and 64.1%, respectively. Together, the large coefficients and explanatory power suggest that past voter turnout is a very strong predictor of future turnout.

In columns (3) and (4), we additionally control for firm characteristics, as well as industry and year fixed effects. The estimated coefficients on *Voter Turnout* and *Voter Turnout (3-yr avg.)* decline modestly to 0.723 and 0.755 and adjusted R-squared values increase to 71.2% and 69.4%, respectively. These results indicate that past voter turnout remains a significant and economically meaningful predictor of future turnout in the cross-section of firms, even after accounting for firm fundamentals and industry classification. Lastly, columns (5) and (6) include firm (instead of industry) fixed effects to control for time-invariant unobserved heterogeneity across firms. The coefficients on *Voter Turnout* and *Voter Turnout (3-yr avg.)* decrease to 0.360 and 0.368, while the adjusted R-squared values rise to 77.3% and 76.2%, respectively. The modest increase in R-squared from columns (1)–(2) to (3)–(4) suggests that firm fundamentals and industry classification explain relatively little of the cross-sectional variation in turnout persistence beyond what past turnout already captures. The relatively larger increase in R-squared in columns (5)–(6), together with the decline in the turnout coefficient, indicates that a meaningful share of persistence reflects stable, unobserved firm characteristics—though the coefficients of 0.360 and 0.368 confirm that substantial within-firm persistence remains even after netting out this heterogeneity.[18]

Collectively, the results suggest that voter turnout is highly persistent at the firm level, making past turnout a reliable proxy for future shareholder participation. Investors can therefore infer and price their de facto voting power (based on votes expected to be cast) at upcoming AGMs. This structural interpretation is consistent with Brav and Li (2026), who show that institutions' voting participation is driven by ex-ante, largely time-invariant adviser-client voting-authority arrangements rather than by the characteristics of individual votes.

[18] Among firm characteristics, we find that firm size and ROA are positively correlated with voter turnout, while the loss indicator is negatively correlated, suggesting that larger and better-performing firms tend to have higher shareholder participation, consistent with extant evidence (e.g., Lesmeister, Limbach, and Goergen, 2022). Additionally, both institutional ownership variables—whether *Big Three* or *non–Big Three*—are positively associated with voter turnout, indicating a strong positive influence of institutional presence on the percentage of votes cast.

4.2 Participation and the voting premium: Baseline results

To investigate the relation between firms' voting premium and past voter turnout, we start with sorting firms into 100 groups based on turnout each year. Within each group, we then compute the average turnout every year and the voting premium in the subsequent year. Figure 3 plots these averages, with the x-axis representing the average turnout and the y-axis representing the average voting premium. Each grey dot corresponds to one of the 100 groups, and the black line depicts the fitted LOWESS (Locally Weighted Scatterplot Smoothing) curve. This nonparametric approach does not make any distributional assumptions, thereby helping to uncover the functional form that describes the relation between two variables. We observe a downward-sloping fitted line, indicating a negative relation between the voting premium and turnout in the univariate setting. In other words, the voting premium tends to increase as turnout decreases. Notably, the fitted line becomes steeper when turnout falls below approximately 75%, suggesting that the effect of voter turnout on the voting premium is more pronounced for lower voter turnout.

Next, we examine the relation between voting premium and past voter turnout through the following panel regression, formally testing Prediction 1:

$$Voting\ premium_{i,t+1} = \alpha + \beta Voter\ Turnout_{i,t} + \gamma Controls_{i,t} + \delta_t + \epsilon_{i,t} \quad (7)$$

where $Voting\ premium_{i,t+1}$ is the value of voting rights for firm i in year $t+1$, measured as the mean of all daily observations from the annual general meeting in year t to the subsequent one in year $t+1$. $Voter\ Turnout_{i,t}$ is the average shareholder participation rate in previous annual meeting(s), measured by the variable *Voter Turnout* or, alternatively, *Voter Turnout (3-yr avg.)*. $Controls_{i,t}$ is a vector for the set of control variables for firm fundamentals and institutional ownership described in Section 3. We control for year fixed effects and (SIC-3) industry or firm fixed effects. Firm fixed effects appear necessary to account for unobserved heterogeneity across firms, such as family firm status, the presence of persistent anchor investors or firms' general governance quality and reputation. Yet, we also rely on industry fixed effects for robustness because of the high persistence of voter turnout at the firm level.

Table 3, Panel A reports the results. Columns (1) and (2) include firm-level control variables as well as industry and year fixed effects, while in columns (3) and (4), we replace industry with firm fixed effects. Across all columns, we find a negative and statistically significant association between voting premium and past voter turnout, whether measured as the previous year's turnout

or the average over the prior three years. These findings are consistent with our hypothesis that lower voter turnout is associated with a higher premium on voting rights, supporting Prediction 1. Using the specification with firm and year fixed effects (column 3) to assess the economic significance, our estimate indicates that a one-standard-deviation decrease in voter turnout is associated with an approximately 80% (or 2.4 basis points) increase in the voting premium at the mean (0.130×0.185/0.03). This increase in the voting premium corresponds to approximately $2.2 million for the average firm, given its mean market capitalization ($9,174 million).

In untabulated results, we decompose voter turnout into its predicted and residual components using the regression specifications shown in Table 2. We find that both components are negatively and statistically significantly correlated with the future voting premium. This finding indicates that our results are not solely driven by slow-moving firm characteristics or anticipation effects, but also by unexpected changes in shareholder participation, consistent with markets pricing realized changes in de facto voting power rather than merely expected governance conditions.

Furthermore, Figure 3 illustrates a non-linear relation between the voting premium and voter turnout with the premium rising sharply when turnout falls below approximately 75% and flattening above this threshold. This non-linearity is consistent with the predictions in our theoretical framework in Section 2.2: lower turnout increases the sensitivity of voting outcomes to marginal participation by shrinking the effective electorate, whereas at high turnout, additional participation has little effect on the distribution of voting power. Therefore, we additionally estimate a piecewise non-linear specification with a kink at 75%. Specifically, we replace the variable, *Voter Turnout*, in equation (7) with the two variables, *Min (Voter Turnout, 0.75)* and *Max (0, Voter Turnout – 0.75)*, and construct analogous variables using the three-year average turnout. Following Sirri and Tufano (1998), we also transform *Voter Turnout* into fractional ranks (*Rank*) ranging from 0 to 1, and define corresponding *Min (Rank, 0.75)* and *Max (0, Rank – 0.75)* variables, again using the voter turnout from last year or the average over last three years.[19]

The results, reported in Panel B of Table 3, are consistent with Figure 3. Coefficients on *Voter Turnout* (or its fractional rank) are negative and significant below the 75% threshold but insignificant above it. Moreover, the economic magnitudes exceed those in Table 3, which imposes linearity, suggesting that the linear specification understates the economic impact of turnout on the

[19] In untabulated regressions, we find the results to be qualitatively similar with an 80% kink point.

voting premium. Overall, these results are consistent with the idea that when turnout is low, each vote carries greater influence over control outcomes, increasing the value of voting rights. As turnout rises, control outcomes become less sensitive to individual votes, reducing the marginal value of voting rights and flattening the relation between voting premium and turnout.

4.3 Robustness

In the following section, we provide the results from several auxiliary tests concerning the robustness of our baseline estimates. We first address issues of outliers and stock option illiquidity related to our voting premium measure. Appendix Table 3 provides the results from re-estimations of the regressions with industry or firm fixed effects shown in columns (1) and (3) of Table 3, Panel A, respectively. In columns (1) and (2), we use *Median Voting Premium* as the dependent variable. It captures the value of voting rights for firm i in year $t+1$, measured as the median (instead of the mean) of all daily observations from the annual general meeting in year t to the subsequent one in year $t+1$. We thereby account for outliers beyond winsorizing the voting premium. In both columns, the coefficient on *Voter Turnout* remains both statistically significant (at the 5% level or better) and economically sizable.

In columns (3) and (4) of Appendix Table 3, we exclude firm-years for which less than the 25th percentile of daily voting premium data is available to test whether our results are robust to excluding voting premium observations based on less liquid stock options. We repeat this test in columns (5) and (6), excluding all firm-years for which less than the 50th percentile of daily voting premium data is available. The dependent variable is *Voting Premium*. Throughout all these four columns, we find the coefficient on *Voter Turnout* to remain significant at the 1% level. Importantly, although our sample reduces from 5,575 to 4,636 firms by focusing only on the voting premium calculated from the most liquid stock options, our estimates remain economically sizable.

Second, we consider whether corporate governance affects the relation between the voting premium and voter turnout. Firms with a weaker governance structure may simultaneously exhibit lower turnout and higher voting premiums. To the extent that a firm's governance structure is relatively persistent over time, our use of firm fixed effects already partially controls for its influence on the voting premium and turnout. Nonetheless, in columns (1) and (2) of **Table 4**, Panel A, we explicitly include controls for governance structure quality using the E-index (Bebchuk, Cohen, and Ferrell, 2009) and, alternatively, the MSCI G-index as in Aggarwal, Dahiya,

and Yilmaz (2024). The inclusion of these controls, while lowering the number of observations in the regressions due to data availability, does not materially alter our main findings.[20]

Furthermore, one might argue that stock liquidity could affect both the voting premium and turnout, for example because less liquid stocks may induce shareholders to use voice (i.e., voting) rather than exit (i.e., "voting with their feet"), consistent with McCahery, Sautner, and Starks (2016). Lower liquidity can also reduce market monitoring (Holmström and Tirole, 1993). To account for this possibility, we control for stock liquidity using the Amihud (2002) illiquidity measure in column (3) of Table 4, Panel A. In columns (4) and (5), we additionally control for proxy advisor voting recommendations, using the imputed ISS recommendations data from Zytnick (2025), to ensure that our results are not driven by external voting guidance that may simultaneously affect both voter participation and voting outcomes. This helps us isolate the independent effect of de facto voting power. Specifically, we control for *Mean ISS rec prob* (column 4), which is the likelihood of a "For" recommendation for a specific ballot item averaged across all of a firm's ballot items in a year, and for *ISS rec Against* (column 5), which is an indicator variable that equals one if there is at least one "Against" recommendation for a firm's ballot item in a year. Our baseline results again remain qualitatively unchanged. Overall, we conclude that the observed negative relation between the voting premium and turnout is not solely driven by differences in corporate governance structures, proxy advisor voting recommendations or stock liquidity of the firms.

We additionally assess whether our estimates for voter turnout are driven primarily by director elections—the most common voting item—or also by other ballot items. In this regard, Aggarwal, Dahiya, and Prabhala (2019) note that director elections are central to corporate governance, as the board of directors serves as the primary mechanism through which shareholders exercise control over the firm. We construct average voter turnout measures for director votes and for all other items, respectively, to separately analyze the effect of director votes and votes on other items. As shown in columns (6) and (7), both measures exhibit a negative and statistically significant relation with the voting premium.

Third, another concern is that the relation between the voting premium and turnout reflects omitted ownership-related characteristics. Importantly, retail ownership is generally associated

[20] In untabulated regressions, we find similar results when we instead control for classified boards using the data provided by Guernsey et al. (2025), which cover almost all our sample firms.

with lower participation and may also affect voting premia through weaker incentives to engage in governance. Likewise, insider ownership may reduce effective shareholder participation by concentrating voting power among a small set of investors while simultaneously increasing voting premia by raising the strategic importance and marginal value of votes. Relatedly, Levit, Malenko, and Maug (2026) argue that observed voting premia may primarily reflect the marginal valuation of influential blockholders. To address these concerns, we re-estimate our baseline regressions from Table 3 within the subsample of S&P 500 firms for which detailed ownership data from Amel-Zadeh, Kasperk, and Schmalz (2022) are available. Specifically, we control for different combinations of granular ownership measures, including mutual fund and ETF ownership, insider ownership, and retail ownership (defined as one minus institutional and insider ownership). Panel B of Table 4 reports the results. The significantly negative relation between the voting premium and turnout remains remarkably stable across all specifications, suggesting that turnout captures variation in de facto voting power beyond ownership composition and blockholder effects. This result holds despite a substantially smaller sample size, with firm-year observations reduced roughly sixfold relative to the full sample, underscoring that the relation is not an artifact of the broader sample's composition. Moreover, focusing on S&P 500 firms also further mitigates concerns related to governance quality, investor attention, as well as stock and option liquidity.

Fourth, one may argue that active investors could step in precisely when voting is more important, which would cause the voting premium and voter turnout to rise together. We note that the resulting positive correlation between turnout and the voting premium will generally run against us finding significant results for de facto voting power. However, we provide additional evidence to better understand the potential role of such "strategic voters." We argue that a firm's stock liquidity and institutional ownership are important drivers of shareholder engagement, consistent with survey evidence (McCahery, Sautner, and Starks, 2016), theory (Maug, 1998), and extant findings that institutional ownership tends to be associated with stronger monitoring and more informed voting (e.g., Iliev and Lowry, 2015).

We re-estimate our baseline regressions for subsamples based on stock liquidity and total institutional ownership. In Appendix Table 4, columns (1) and (2) show results for subsamples based on low and high Amihud illiquidity, while columns (3) and (4) show the results for subsamples based on low and high institutional ownership (using annual median values). In all four columns, we find a statistically significant and negative coefficient for *Voter Turnout*. While

the coefficient estimates are smaller for more liquid stocks and higher institutional ownership (in columns 1 and 4, respectively), differences in coefficient estimates across subsamples are statistically insignificant. In untabulated analyses, we find similar results when we partition samples on active mutual fund or ETF ownership instead of total institutional ownership. In sum, we conclude that the inverse relation between the voting premium and turnout does not significantly hinge on either firms' stock liquidity or institutional ownership, suggesting that our main result is unlikely to be significantly driven by above mentioned strategic voting behavior.[21] Relatedly, Brav and Li (2026) provide direct institution-level evidence on this question, finding little support for the idea that institutions vote a larger share of their holdings when a position is larger or a vote is more closely contested. To the extent firm-level turnout aggregates such investor-level participation decisions, this pattern further weakens the concern that active investors' selective participation in more consequential votes drives our turnout–premium relation.

Taken together, the results in this section suggest a strong and robust negative association between the voting premium and voter turnout, consistent with our hypothesis that lower shareholder participation predicts a higher value of voting rights.

4.4 Estimates using the 2010 regulatory changes to broker voting rights

As shown in Figure 1, the 2010 amendment to NYSE Rule 452 led to a notable decline in overall voter turnout. As such, this regulation provides a quasi-natural experiment for examining the impact of reduced voter turnout, which (mechanically) leads to increased de facto voting power, on the voting premium. Although the rule change applied broadly, firms with higher levels of broker voting prior to 2010 are more exposed to the shock and are therefore expected to experience larger declines in turnout. This cross-sectional variation enables a comparison of changes in the voting premium across firms with differing degrees of exposure, thereby strengthening the causal interpretation of the link between voter participation and the value associated with voting rights.

Because all firms are affected to some extent, we classify firms into treatment and control groups based on their expected exposure to the shock. To implement the DiD estimation, we measure exposure using broker voting activity in 2009, the year immediately preceding the regulatory change. Specifically, we use the number of broker non-votes disclosed in firms' 2009

[21] There is also a possibility that some shareholders may pre-disclose their voting preferences. This behavior should reduce the uncertainty about turnout and governance outcomes and therefore should weaken the premium-turnout relation. Put differently, it should bias us against finding a significant relation.

proxy statements. Broker non-votes arise when shares are held in street name by brokers, but beneficial owners do not provide voting instructions and, because the proposal is classified as a non-routine matter under exchange rules, brokers are prohibited from casting discretionary votes on uninstructed shares. This pre-shock measure captures the extent to which each firm relied on broker voting prior to the reform and, therefore, the magnitude of the voting power reduction a firm would likely experience in director elections once broker discretionary voting is eliminated. Firms with higher broker non-votes in 2009 are thus more exposed to the shock, as a larger fraction of their previously votable shares became ineligible for voting absent explicit owner instructions.

In 2009, AGM voting information is available for 1,935 firms in our sample, of which 633 report positive broker non-votes, while the remaining firms report zero broker non-votes. Using these disclosures, we calculate the percentage of broker non-votes relative to total shares outstanding. Firms in the top decile of broker non-votes percentages are classified as the treatment group (193 firms), while the remaining firms comprise the control group.[22] To further improve covariate comparability between the two groups, we implement entropy balancing and propensity score matching (PSM) based on firm characteristics from 2008 fiscal year-end and institutional ownership structure from 2008 calendar year-end.

To verify that our identification strategy effectively distinguishes treatment and control groups, Panel A of **Figure 4** illustrates the impact of the regulatory shock on voter turnout in director elections. We define the years 2006, 2007, and 2009 as the pre-treatment period (Year −3, Year −2, and Year −1, respectively), and 2010, 2011, 2012, and 2013 as the post-treatment period (Year 0, Year +1, Year +2, and Year +3, respectively). We exclude 2008 which coincided with the peak of the financial crisis and exhibited substantial spikes in voting premia. As expected, voter turnout declines sharply for both treatment and control groups after the 2010 amendment to NYSE Rule 452 restricting broker voting. More importantly, the decline is considerably larger for the treatment group: average turnout falls from 87.3% to 67.9%, a 19.4-percentage-point decline, whereas the control group experiences a decline from 89.0% to 78.8%, a drop of 10.2 percentage points.[23] These patterns provide empirical support for our identification strategy, confirming that 2009

[22] In this analysis, we exclude financial and utility firms due to their heightened distress during the financial crisis, which led to a pronounced spike in voting premia.

[23] While these numbers refer to the comparison of the pre- and post-treatment periods, we find that the decline in voter turnout occurs immediately upon 2010 shock. Specifically, average turnout falls from 87% in 2009 to 67% in 2010 for the treatment group, whereas the control group experiences a decline from 88% to 76%.

broker voting levels reliably predict exposure to the regulatory shock.

To examine the impact of the regulatory shock on the voting premium, we first plot the average voting premia for the treatment and control groups over the years surrounding the 2010 shock after entropy balancing. Panel B of Figure 4 shows that prior to 2010, both groups exhibit similar levels of voting premia. After 2010, the control group does not experience an observable change in the voting premium, whereas the treatment group's voting premium rises over the following three years. This pattern supports the notion that reduced voter participation, which increases shareholders' de facto voting power, increases the voting premium.

To formally quantify this effect and control for other factors that may influence the voting premium, we estimate the following regression:

$$Voting\ premium_{i,t} = \alpha + \beta Treat_i \times Post_t + \gamma Controls + \delta_t + \epsilon_{i,t} \quad (8)$$

where $Voting\ premium_{i,t}$ is the average of all daily voting premium observations from one AGM to the subsequent one for a firm. $Treat_i$ is an indicator variable equal to one if the firm's reported broker non-vote percentage in 2009 is in the top decile, and zero otherwise. $Post_t$ is equal to one for years 2010, 2011, 2012, and 2013, and zero for pre-treatment years 2006, 2007, and 2009. Control variables are the same as in equation (7). The regression includes firm fixed effects to capture within-firm variations, along with year fixed effects. As a result, the standalone $Treat_i$ and $Post_t$ indicators are omitted from the specification due to collinearity with the fixed effects.

Results are reported in **Table 5**. In Panel A, we first examine whether voter turnout indeed declines more in the treatment group relative to the control group by estimating equation (8) with various voter turnout measures as the dependent variable. Column (1) reports results using overall voter turnout, column (2) for director election turnout, and column (3) for turnout on all other items. We find a negative and statistically significant coefficient on *Treat* × *Post* in columns (1) and (2), confirming that the treatment group experiences a larger decrease in overall and director election voter turnout following the 2010 shock. The estimated effects are –0.056 for overall turnout and –0.092 for director elections, corresponding to declines of 5.6 and 9.2 percentage points, respectively. For voter turnout on non-director items, we observe a small increase of 1.2

percentage points in voter turnout, which is marginally significant.[24]

Panel B of Table 5 reports the DiD estimates for how the voting premium changes around the shock. Columns (2) to (7) show coefficient estimates on *Treat* × *Post* from regressions with control variables (as in Table 3) and firm and year fixed effects, while column (1) omits controls. The ("unmatched") estimates in columns (1) and (2) are based on all treated and control firms. Independent of whether we include control variables, the voting premium for the treatment group increases by about 7 basis points more than that of the control group following the regulatory shock.

To further account for differences between the treatment and control groups, we conduct matched-sample analyses using both entropy balancing and one-to-one (1:1) propensity score matching (PSM) based on firm characteristics measured at the end of 2008 fiscal year and institutional ownership at the end of 2008 calendar year. Appendix Table 5 provides checks on the covariate balance. The first two columns report the means for the treated group in the unmatched sample and the PSM sample, respectively. The next three columns report the means for the control group in the unmatched sample, the entropy-balanced sample, and the PSM sample. The last three columns report the differences in means between the treated and control groups for the unmatched sample, the entropy-balanced sample, and the PSM sample, respectively. Before matching, the control group has a significantly higher ROA, is less likely to report negative income, and has greater non-Big Three ownership. After matching, all these differences are eliminated, and the two groups no longer exhibit statistically significant differences in these firm characteristics.

We then re-estimate the DiD regression in columns (3) and (4) of Table 5, Panel B, using the entropy balancing weights and the one-to-one PSM sample, respectively. The results, reported in column (3), show that the coefficient on *Treat* × *Post* remains positive and statistically significant, with an estimated value of 0.071, similar to the 0.072 reported absent entropy balancing. The estimate in column (4) based on the PSM sample, is larger at 0.118, and remains statistically significant. Because broker non-votes in 2009 could reflect ballot composition as well as broker-held uninstructed shares, we additionally control for the categories of proposals appearing on the

[24] One potential concern is that the Rule 452 amendment also altered firms' ownership structures, in which case the observed increase in voting premia could partly reflect changes in the composition or concentration of shareholders rather than just a change in de facto voting power arising from lower turnout. Therefore, we re-estimate our DiD specifications using several measures of institutional ownership (IO)—such as total IO, IO (Top 10), and ownership concentration (IO HHI)—as dependent variables. Appendix Table 6 and Figure 5 show the results. We find no evidence of meaningful changes in any of the IO measures prior to or following the amendment. These findings suggest that the increase in voting premia is unlikely to reflect broad changes in institutional ownership or ownership concentration.

AGM agenda in untabulated analyses and find qualitatively similar results.[25]

In columns (5) to (7) of Table 5, Panel B, we further present the dynamic DID estimates using the unmatched sample, the entropy balanced sample, and the PSM sample, respectively. The year 2009 is used as the baseline year and therefore omitted from the estimation. The estimated coefficients on the interaction terms *Treat* × *Year* 2006 and *Treat* × *Year* 2007 are statistically insignificant across all specifications, indicating no significant pre-trend in voting premia between the treatment and control groups prior to the shock.

In contrast, beginning in 2010, the year of the regulatory shock, the coefficients become positive and statistically significant. In 2010, the estimated effect ranges from 9.8 basis points in the unmatched and entropy-balanced samples to 14.3 basis points in the PSM sample, with statistical significance at the 10% level or better. This immediate increase indicates that treated firms experienced a discrete rise in voting premia following the shock. The effect persists in subsequent years. In 2011, the estimated coefficients remain positive across all specifications and are statistically significant in the PSM sample. By 2012, the effect becomes larger and statistically significant at the 5% level in all specifications, with estimated magnitudes ranging from 0.123 to 0.192. In 2013, the coefficients remain economically large and statistically significant in the unmatched and entropy balanced samples, although statistical significance weakens slightly in the PSM sample.

To address concerns that our estimates capture contemporaneous changes in the proxy-voting or broader governance environment, we re-estimate the DiD regressions using two shorter post-treatment windows. Beginning with annual meetings held on or after January 21, 2011, the Dodd–Frank Act required most public companies to hold advisory say-on-pay votes at least every three years (Rule 452 was further amended to prohibit discretionary broker voting on executive-compensation matters). These requirements were extended to smaller reporting companies for meetings held on or after January 21, 2013. We therefore first restrict the post-treatment period to 2010–2012, excluding the 2013 extension of these voting requirements to smaller reporting companies. Second, we use 2010 as the sole post-treatment year. Although this specification substantially reduces statistical power by relying on a single post-treatment year, it isolates the

[25] Specifically, we re-estimate the regressions in columns (2) to (4) of Table 5, Panel B, additionally controlling for twelve indicators for the proposal categories represented on the annual-meeting agenda, following Brav, Cain, and Zytnick (2022).

immediate effect of the director-election amendment before mandatory Dodd–Frank say-on-pay voting began in 2011 and additional governance-related voting items (e.g., declassifying boards, shareholder rights to call special meetings) became non-routine in subsequent years. The estimated effects on voting premia, shown in Panel C of Table 5, remain economically similar to our baseline estimates and statistically significant (except for the unmatched case in column 4).

Lastly, we provide additional evidence using a continuous "dose response" specification of the 2010 NYSE Rule 452 shock to capture continuous treatment effects. Instead of defining discrete treatment and control groups, we exploit cross-sectional variation in exposure intensity using the variable *Broker non-votes %*, which measures the fraction of a firm's uninstructed shares in 2009. Interacting this measure with the *Post* indicator defined above yields a continuous treatment variable *Post* × *Broker non-votes %* that captures the extent to which firms are differentially affected by the reform. This approach allows us to examine whether firms more exposed to the decline in broker voting experience correspondingly larger changes in director voter turnout and voting premia. Consistent with this interpretation, Panel D of Table 5 shows that higher exposure is associated with a stronger decline in director-election turnout (in columns 1 and 2) and a larger increase in the voting premium (in columns 3 and 4). These patterns are in line with a monotonic relation between exposure to the reform and both participation and pricing effects, which helps alleviate concerns about arbitrary treatment classification and omitted variable bias.

Together, the results suggest that the decline in voter turnout caused by the 2010 broker voting restrictions led to a measurable increase in the voting premium for affected firms, which helps provide a plausibly causal link between shareholder participation and the value of voting rights.

4.5 Voting standards

In this section, we test Prediction 2 by examining under which voting standards the effective electorate, and hence de facto voting power, matters more or less. If our general hypothesis that markets price de facto—not de jure—voting power is correct, we should find a more pronounced relation between the voting premium and voter turnout when voting standards favor shareholders' de facto voting power. To this end, we consider two dimensions of voting standards: (i) majority versus plurality voting, and (ii) the presence of cumulative voting, which allows vote concentration.

De facto voting power may matter under both voting standards: in plurality voting because few votes can win an election, and in majority voting because turnout affects the denominator and

thus who can form a majority. Nevertheless, de facto voting power may matter more under majority voting, because a proposal's approval hinges on surpassing an absolute threshold of 50% of the votes cast, which amplifies the marginal impact of each additional vote on the likelihood of success. Accordingly, we expect the link between the voting premium and turnout to be more pronounced under the majority voting standard. Cumulative voting increases the influence of minority shareholders, even if overall turnout is high. Empirically, we expect the relation between the voting premium and turnout to be weaker or even disappear when firms apply cumulative voting.

To test the above empirical predictions, we re-estimate our baseline regressions from columns (1) and (3) of Table 3, Panel A for different subsamples. **Table 6** presents the results. In Panel A, we separate firm-years based on whether firms are incorporated in U.S. states that have passed majority voting legislation as part of their state corporate laws, initiating firm-level changes from the original plurality voting default standard to the majority voting standard. We identify such states using the data provided by Cunat, Lü, and Wu (2025), and only classify a firm as being incorporated in a state with majority voting legislation for years after which the respective state adopted the legislation.[26] Importantly, such legislation does not directly establish majority voting but makes shareholder approval of a majority voting standard via a bylaw binding. As a result, some firms we flag as having a majority voting standard based on their state of incorporation may instead still apply plurality voting (while other firms might voluntarily adopt majority voting), which runs against us finding significant differences.

The results across columns (1) to (4) of Panel A of Table 6 suggest that while de facto voting power tends to be priced under both majority and plurality voting standards, the relation between the voting premium and turnout is significantly more pronounced under the former (as indicated by the tests on coefficient differences). This result supports our empirical prediction. Furthermore, the coefficients on *Voter Turnout* in columns (2) and (4) indicate that, under majority voting, the voting premium is significantly larger than our baseline estimates in Table 3 (e.g., –0.599 in column 2 versus –0.381 in column 1 of Table 3, Panel A). Thus, the value of de facto voting power appears to be shaped by prevailing voting standards and can be significantly larger in certain

[26] Cunat, Lü, and Wu (2025) list all U.S. states with legislation that effectively changed the voting standard in director elections from plurality to majority voting between 2006 and 2013 (e.g., California, Delaware, Indiana, Washington). Therefore, our sample period spans the years 2003-2016, so that our sample starts (ends) three years before (after) the first (last) state adopted majority voting legislation. However, we find similar results using the full sample period in untabulated analyses.

instances.

In Panel B of Table 6, we separate firm-years based on whether firms (in each year) allow shareholders to concentrate their votes under a cumulative voting standard. We retrieve information on cumulative voting from the original Gompers, Ishii, and Metrick (2003) data for the early years of our sample and from the MSCI GMI and ISS governance databases for later sample years (i.e., from 2006 onwards).[27] Consistent with our empirical prediction, we find no relation between the voting premium and turnout for firms that make use of the cumulative voting standard. Specifically, the coefficients on *Voter Turnout* in columns (2) and (4) are both statistically and economically insignificant. In contrast, the results in columns (1) and (3) show a statistically and economically significant relation between the voting premium and turnout, indicating that the market prices de facto voting power in firms without cumulative voting, which account for more than 90% of all firms. Collectively, these results provide empirical support for our Prediction 2.

5. Shareholder participation and future governance events

5.1 Contentious governance events

We next explore whether shareholder participation has implications for future governance outcomes. Specifically, we examine whether lower voter turnout is associated with a higher likelihood of contentious events in the future, such as contested director elections, shareholder proposals, close votes, or activist interventions. The motivation for this analysis lies in the notion that low shareholder participation may signal weak monitoring or disengagement, potentially emboldening management or attracting activist attention. Additionally, low turnout may increase the probability of control-related events, as fewer votes are needed to influence outcomes when overall participation is limited.

We identify contentious governance events through voting behavior and activist activity. First, broadly following the approach of Brochet, Ferri, and Miller (2021), we use voting outcomes and recommendations to capture investor perceptions of governance concerns. Specifically, we construct a simple ex-post measure for contentiousness by defining an annual regular meeting as contentious if at least one ballot item receives less than 75% support, or if the meeting includes

[27] GMI and ISS do not always agree on the presence of cumulative voting. We set the dummy for cumulative voting to 0 if both databases flag no presence of cumulative voting or if only one database does so while the other omits the information. We set the cumulative voting dummy to 1 if either GMI or ISS flags the presence of cumulative voting.

shareholder proposals, or if there is at least one proposal for which management recommends voting against or abstain from voting. While both low voter support and shareholder-initiated proposals indicate shareholder efforts to monitor or challenge management (Ertimur, Ferri, and Stubben, 2010), "Against" and "Abstain" voting recommendations by the management are often considered indicative of contentious voting items. This measure, *Contentious meeting*, equals one if at least one of the above conditions is met, and zero otherwise.

Second, we create an indicator variable *Dissent voting*, which equals one if there is at least one voting item receiving less than 50% of "For" votes or if ISS Voting Analytics flags it as "Fail," and zero otherwise. Evidence suggests that dissent voting has real consequences for affected companies (Fischer et al., 2009; Iliev et al., 2015; Aggarwal, Dahiya, and Prabhala, 2019).

Third, we identify firms that hold special shareholder meetings during the year. Special meetings are typically convened to address significant governance or control-related matters outside the regular annual meeting cycle, such as changes to corporate charters, major transactions, or board restructuring. These meetings are frequently triggered by shareholder demand or managerial responses to governance pressure (e.g., Thomas and Cotter, 2007) and thus provide a useful proxy for heightened shareholder engagement or dispute. However, while most firms allow shareholder-called special meetings, they typically specify a minimum ownership threshold (usually stated as a percentage of outstanding shares) that a shareholder must reach in order to be able to call such meetings. We define the variable *Special meeting* to equal one if the firm holds a special shareholder meeting during the year, and zero otherwise.

Fourth, we examine whether voter turnout affects the likelihood of close voting outcomes, which capture situations in which individual votes are more likely to be pivotal and de facto voting power can be particularly valuable. To this end, we create an indicator variable, *Close votes*, which equals one if there is at least one voting item at the shareholder meeting that receives a "For" vote share within a ±5% band around 50%, and zero otherwise. This cutoff follows Cunat, Gine, and Guadalupe (2012), who show that the economic effects of shareholder voting are concentrated in a narrow window of approximately ±5% around the 50% threshold, while outcomes decided by wider margins are largely anticipated by the market and do not generate significant effects. Intuitively, lower turnout reduces the effective electorate, which tends to increase the influence of individual votes, making outcomes more likely to cluster around decision thresholds.

Lastly, we capture ownership-based activism campaigns using Schedule 13D filings from

Audit Analytics. These filings are mandated by the SEC when an investor acquires more than 5% of a firm's shares with the intent of influencing corporate policy or governance. Prior literature has used 13D filings to track the onset of activist campaigns (e.g., Brav et al., 2008), which typically involve demands for governance, strategic, or financial changes, and serve as an indicator of shareholder activism. Because not all filings reveal an explicit plan to intervene in a target firm, we follow established methodology by focusing only on filings in which the stated purpose includes terms such as "control," "disputes," "concerns," or "discussion," and excluding those labeled "agreement," "support," or "other," based on Audit Analytics classifications (e.g., Khurana, Li, and Wang, 2018; DesJardine, Shi, and Werner, 2025).[28] Using this approach, we construct an indicator variable, *SC13D activism*, which equals one if a firm experiences a financially motivated activism event in a given year, and zero otherwise.

To formally test the relation between voter turnout and future governance outcomes, we estimate the following regression:

$$Contentious\ Event_{i,t+1} = \alpha + \beta Voter\ Turnout_{i,t} + \gamma Controls + \delta_t + \epsilon_{i,t} \quad (9)$$

where $Contentious\ Event_{i,t+1}$ is one of the above indicator variables capturing the definitions of contentious governance events. All regressions include firm and year fixed effects. Because of the use of high-dimensional fixed effects and binary outcome variables, we estimate the regressions using linear probability models.

Results are reported in **Table 7**. Panel A presents the average likelihood of each type of contentious governance event at the firm-year level in our sample. The first measure, *Contentious meetings*, has a mean of 35.4%. The frequency of *Dissent voting*, *Special meetings*, and *Close votes* is lower, with an average of 15.5%, 6.0%, and 5.4%, respectively. A firm faces an unconditional likelihood of 3.6% of experiencing an activist campaign (*SC13D activism*) each year.

[28] "Control" refers to intentions such as acquiring control of the company, changing or nominating individuals to the board of directors, or replacing existing management. "Disputes" include allegations of misleading behavior by management, disagreements over managerial decisions, conflicts with management, and ongoing or potential litigation. "Concerns" encompass issues such as dissatisfaction with stock price performance, opposition to a planned acquisition, requests for information from management, and strategic suggestions aimed at improving firm performance. "Discussion" involves engaging or intending to engage in dialogue with management, requesting meetings, or signaling the potential for discussions related to mergers or acquisitions. "Agreement" and "Support" refers to cases where the investor's intentions are supportive or cooperative. "Other" includes more general investment purposes. For robustness, we also include filings categorized under "investment purpose" in the identification of activism events, results remain qualitatively unchanged.

Panel B presents the estimation results from equation (9). We observe a negative and statistically significant relation between voter turnout and subsequent contentious meetings, dissent voting, close votes, and activism events, while the relation with special meetings is negative but not statistically significant.[29] Including governance controls, such as the E-index or MSCI G-score, does not alter the qualitative conclusions of our results. The negative associations indicate that firms with lower shareholder participation are more likely to experience contentious events in the future, whether manifested through shareholder voting behavior or activist interventions. To gauge the economic magnitude, a one-standard-deviation decrease in turnout is associated with a 13% increase based on our simple contentious meeting measure (0.130×0.348/35.4%), 13% increase for dissent voting, 12% increase for close votes, and an 18% increase based on the Schedule 13D measure capturing activism intent. These results highlight the economically meaningful link between low turnout and the likelihood of future contentious governance events.

After documenting that lower voter turnout is associated with a higher likelihood of future contentious events, we hypothesize that the observed relation between lower turnout and a higher future voting premium is partly driven by the fact that voting rights become more valuable in contexts where contentious events are more likely. Therefore, we expect the relation between the voting premium and turnout to be stronger among firms with a higher likelihood of future contentious events, as per our Prediction 3. To test this idea, we first estimate the likelihood of future contentious events using regression equation (9). We then split the sample into high- and low-likelihood groups and examine whether our baseline results are more pronounced in the subsample with a higher estimated likelihood of future contentious events.

The results, reported in Panel C of Table 7, use the median likelihood of future contentious events to partition the sample.[30] For all five measures of contentious events, we find that the association between low voter turnout and a high voting premium is generally more pronounced in the subsample with a higher likelihood of future contentious events—the estimated coefficients in the high-group are consistently larger in magnitude, and significantly so for the variables *Contentious meetings*, *Close votes*, and *SC13D activism*. This pattern is consistent with the idea

[29] In untabulated results, we find a negative and statistically significant relation between voter turnout and future likelihood of special meetings when using industry and year fixed effects. We acknowledge that the prevalence of minimum ownership thresholds stated as a percentage of outstanding shares may run against us finding significant results for special meetings.

[30] Results are similar when we split the sample into high- and low-likelihood groups using the top tercile.

that low turnout increases the value of voting rights particularly in settings where votes are more likely to be pivotal, such as in close or contested decisions, thereby providing empirical support for Prediction 3.

Taken together, these findings suggest that de facto voting power is not only priced by markets but also shapes investor behavior. For example, activist campaigns are more likely at low-turnout firms, consistent with activists targeting situations where a given stake provides them with opportunities for greater influence (or where influence is less costly). This pattern indicates that expected participation plays a direct role in investors' engagement and investment decisions.

5.2 Director elections

We extend the analysis of future governance outcomes by examining voting results in director elections, which provide a direct measure of realized shareholder support and dissent. Director elections are the most frequent ballot item and firms have little discretion over whether to include them, making them a standardized setting to study how voter turnout shapes voting outcomes. While prior tests focus on the incidence of contentious events, director votes allow us to assess how turnout affects actual voting outcomes in a setting that is typically characterized by high baseline support (e.g., Cai, Garner, and Walkling, 2009).

Panel A of **Table 8** shows that lower turnout is associated with significantly lower support for directors. In column (1), we regress the variable *Director "For" votes*, i.e., the mean "For" vote percentage across all director election items at a given shareholder meeting, on *Voter Turnout* along with the same control variables used in previous analyses. In column (2), we additionally include an indicator for majority voting and the interaction term *Voter Turnout* × *Majority Voting*. In both columns, the coefficient on *Voter Turnout* is significantly positive, consistent with the notion that lower participation amplifies the influence of relatively small, motivated dissenting shareholders, thereby decreasing aggregate support for management. The significantly positive coefficient on *Voter Turnout* × *Majority Voting* in column (2) suggests that the effect of voter turnout is more pronounced under majority voting, where approval thresholds make outcomes more sensitive to participation. Consistent with stricter approval requirements, the negative coefficient on the *Majority Voting* indicator is associated with lower baseline support for directors.

The analysis in Panel B of Table 8 is analogous to that in Panel C of Table 7. Specifically, we regress the voting premium on voter turnout for sub-samples of firm-years with low versus high

predicted director "For" votes, where predicted director support is based on the regressions in Panel A. Columns (1) and (2) use predictions based on column (1) of Panel A, while columns (3) and (4) use predictions from column (2) of Panel A. The results show that the negative relation between the voting premium and turnout is statistically significant only among firms with lower predicted director support (columns 1 and 3), settings where dissent is more likely to arise. In contrast, when expected support is high, and hence outcomes are expected to be largely uncontested, turnout has little effect on the voting premium.

The results complement our findings on future contentious events by showing that turnout affects not only the likelihood of governance conflict but also its realization in director elections. Consistent with our framework, de facto voting power is most valuable in settings where outcomes are more likely to be contested and individual votes are more likely to be influential.

6. Conclusion

This paper shows that the value of voting rights is determined by their expected influence over outcomes, which depends on shareholder participation and the likelihood that votes are influential. We first show that shareholder turnout is highly persistent at the firm level, allowing investors to anticipate participation. We then provide robust evidence that lower shareholder turnout predicts a higher value of voting rights, measured by the option-implied voting premium, consistent with investors pricing de facto voting power. Exploiting the 2010 NYSE Rule 452 amendment as a quasi-natural experiment, we provide plausibly causal evidence that declines in shareholder participation induced by the elimination of broker discretionary voting increased the market value of voting rights. We further show that low turnout predicts lower director support and a higher likelihood of contentious governance events, such as activist campaigns and close votes, where votes tend to be more pivotal. Consistent with this mechanism, the relation between turnout and the value of voting rights is strongest among firms most likely to experience such events.

Taken together, our findings highlight that the economic value of corporate control depends not only on ownership structures or governance provisions, but also on persistent patterns of shareholder engagement. By linking shareholder participation to both the valuation of voting rights and the likelihood of governance conflict, we uncover an important channel through which collective action, or the lack thereof, affects the market's perception of control.

Our results have implications for theory and practice. For theorists, they provide empirical

support for models in which the pivotality of individual votes determines their economic value and challenge the common assumption of full participation. For practitioners and policymakers, they suggest that voting rules and institutional practices affecting shareholder participation can meaningfully alter both the distribution of control and its market valuation.[31] Future research could examine how participation interacts with investor heterogeneity and institutional settings to shape the market for corporate control. An important open question is how emerging pass-through voting programs (e.g., BlackRock's voting choice program[32]) affect turnout and the voting premium. By shifting voting authority closer to beneficial owners, such programs may amplify or dampen the role of participation in determining voting power. Relatedly, a pending Texas Stock Exchange rule would require brokers to allocate uninstructed shares in proportion to votes cast (Grogan-Fenn, 2026), mechanically narrowing the gap between de jure and de facto voting power—though its net effect on turnout is unclear, as retail investors who disagree with more engaged shareholders may be induced to vote rather than abstain. More broadly, our findings suggest that the value of corporate control is state-dependent and varies with expected participation.

[31] Our evidence suggests that Delaware's one-third minimum ownership threshold for controlling shareholder status, which is based on de jure ownership of voting rights, may not capture all shareholders who can actually dominate voting outcomes at shareholder meetings, given their de facto voting power. This conclusion is consistent with Zytnick (2026) who studies the difference between investors' ownership stakes and their voting power using measures of investor pivotality based on corporate ownership (not voting premia or voter turnout).

[32] https://www.blackrock.com/corporate/insights/thought-leadership/investment-stewardship/blackrock-voting-choice.

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Figure 1. Voter turnout by year

This figure presents time-series trends in voter turnout from 2003 to 2022. The solid black line with circle markers represents the mean turnout across firms in each year. The dashed-dot line with square markers shows the median turnout, while the dashed lines with diamond and triangle markers represent the 10th percentile and 90th percentile, respectively. The vertical line in 2010 corresponds to the NYSE Rule 452 reform restricting brokers' discretionary voting rights.

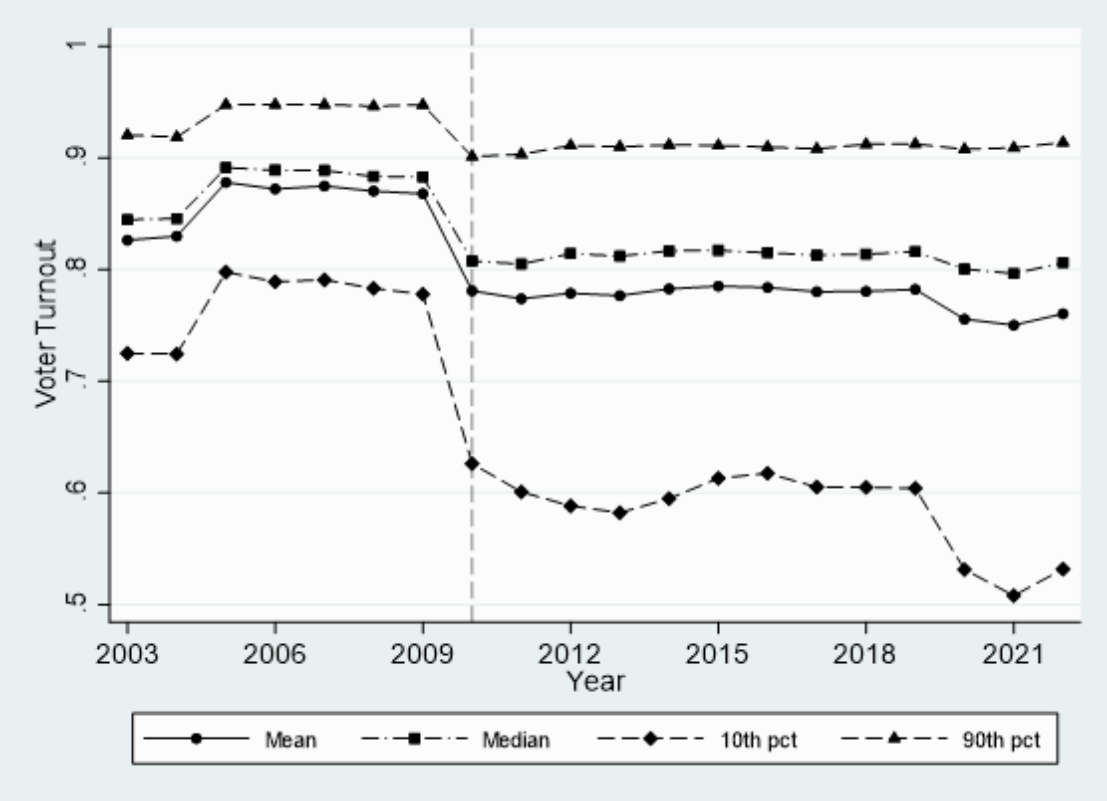


Figure 2. One-year transition probability of voter turnout

This figure presents a heatmap of the one-year transition probabilities of voter turnout across deciles. Each year, firms are sorted into voter turnout deciles, and the figure shows the probability of transitioning from one decile to another in the following year.

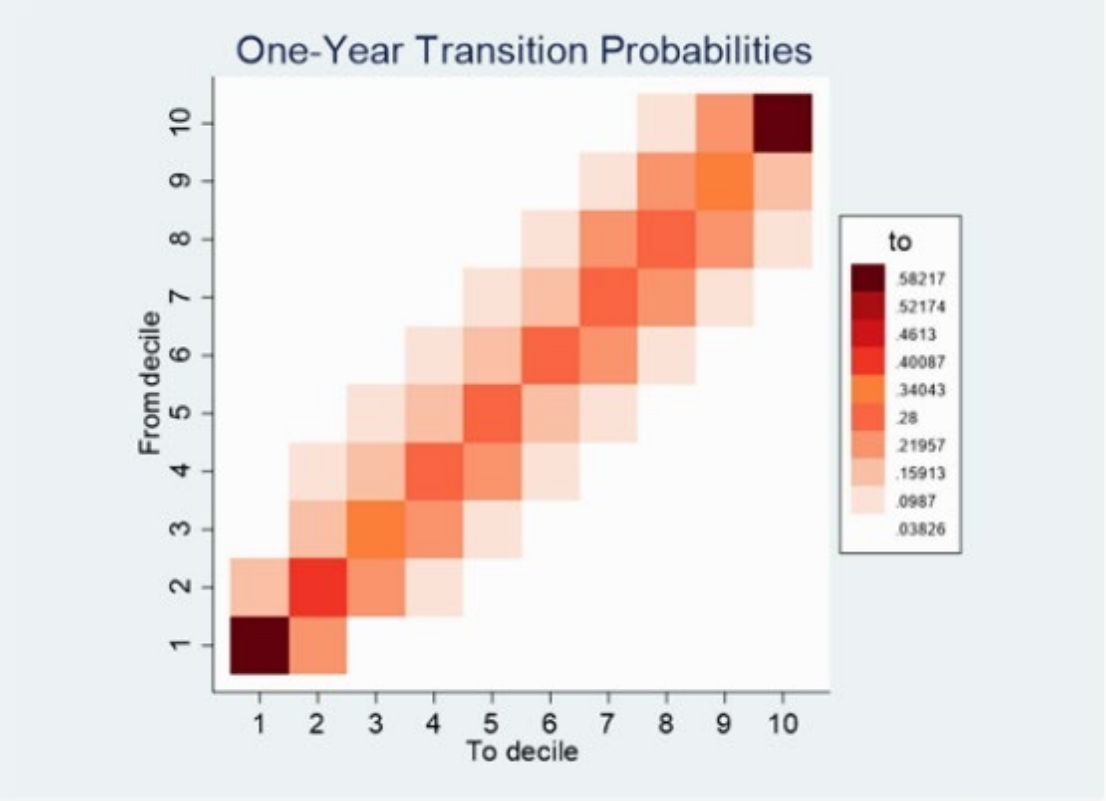


Figure 3. Voting premium and voter turnout

This figure illustrates the relationship between the voting premium and voter turnout. Each year, voter turnout is sorted into 100 groups. Within each group and across years, we compute the mean voter turnout and the mean voting premium. The grey dots represent the 100 groups, and the black line shows the fitted locally weighted scatterplot smoothing (LOWESS) curve. LOWESS is a nonparametric regression technique used to reveal the underlying trend in a scatterplot without assuming a specific functional form.

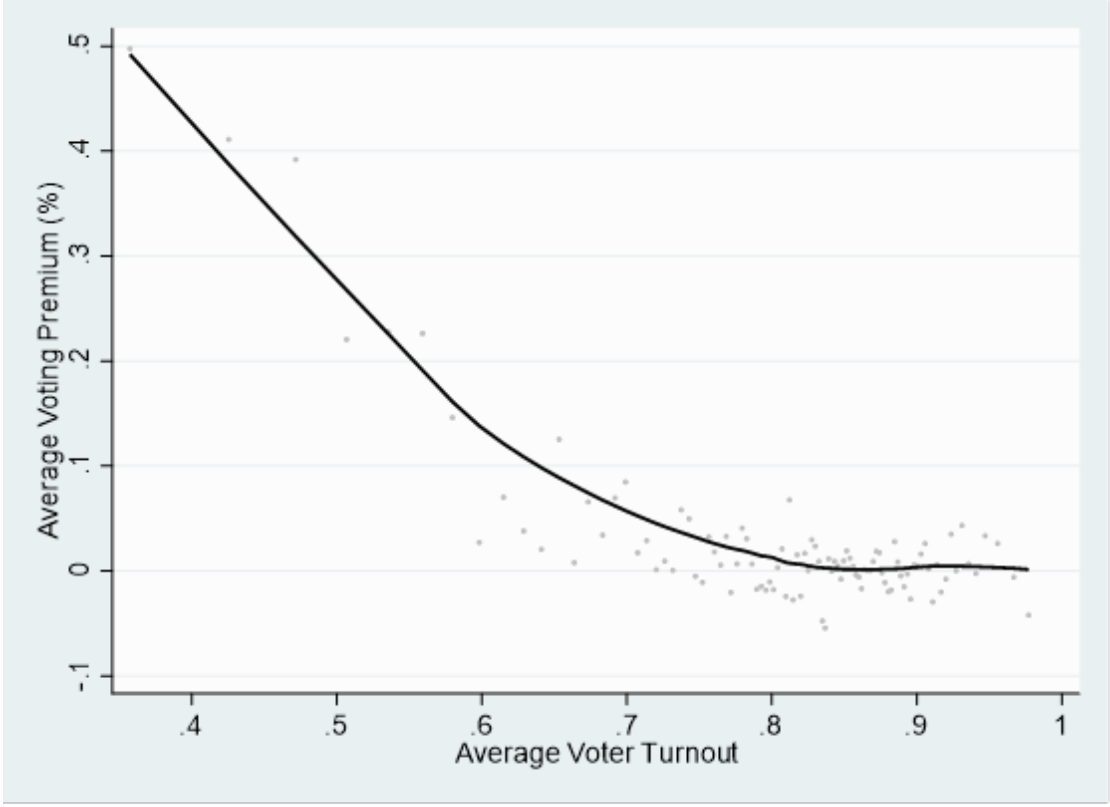
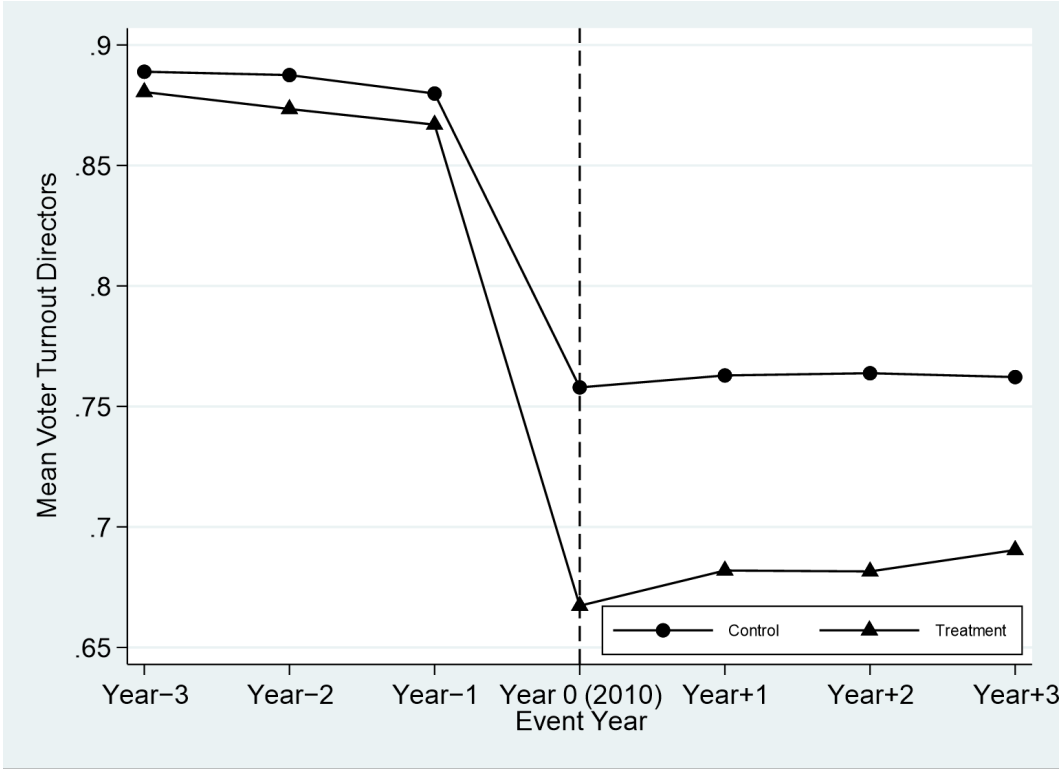


Figure 4. Voter turnout and voting premium around 2010 regulatory shock

Panels A and B plot voter turnout in director elections and voting premiums, respectively, for treatment and control groups around the 2010 regulatory shock that restricted broker voting, after entropy balancing. Firms in the top decile of broker non-votes percentages are classified as the treatment group, while the remaining firms comprise the control group. We define 2006, 2007, and 2009 as the pre-treatment period (Year −3, Year −2, and Year −1, respectively) and 2010, 2011, 2012, and 2013 as the post-treatment period (Year 0, Year +1, Year +2, and Year +3, respectively) after excluding the financial crisis year of 2008. The solid line with triangle markers represents the treatment group, while the solid line with circular markers represents the control group.

Panel A. Voter turnout around 2010 shock by treatment and control groups



Panel B. Voting premium around 2010 shock by treatment and control groups

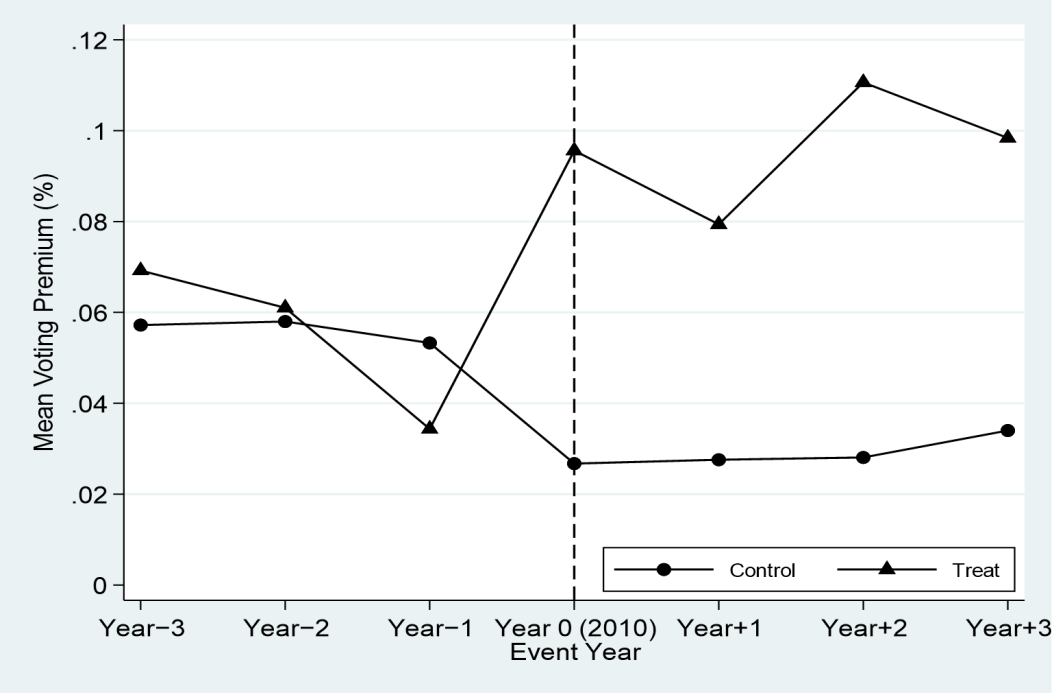


Figure 5. Institutional ownership (concentration) around 2010 regulatory shock

This figure presents dynamic DiD estimates of the effects of Rule 452 on total institutional ownership (*IO*), ownership by the ten largest institutional investors (*IO Top 10*), and institutional ownership concentration (*IO HHI*). Firms in the top decile of pre-reform broker non-vote percentages are classified as the treatment group, while the remaining firms comprise the control group. We define 2006, 2007, and 2009 as the pre-treatment period (Year −3, Year −2, and Year −1, respectively) and 2010, 2011, 2012, and 2013 as the post-treatment period (Year 0, Year +1, Year +2, and Year +3, respectively), excluding the financial crisis year 2008. Points represent coefficient estimates relative to the omitted base year (2009), and error bars denote 95% confidence intervals.

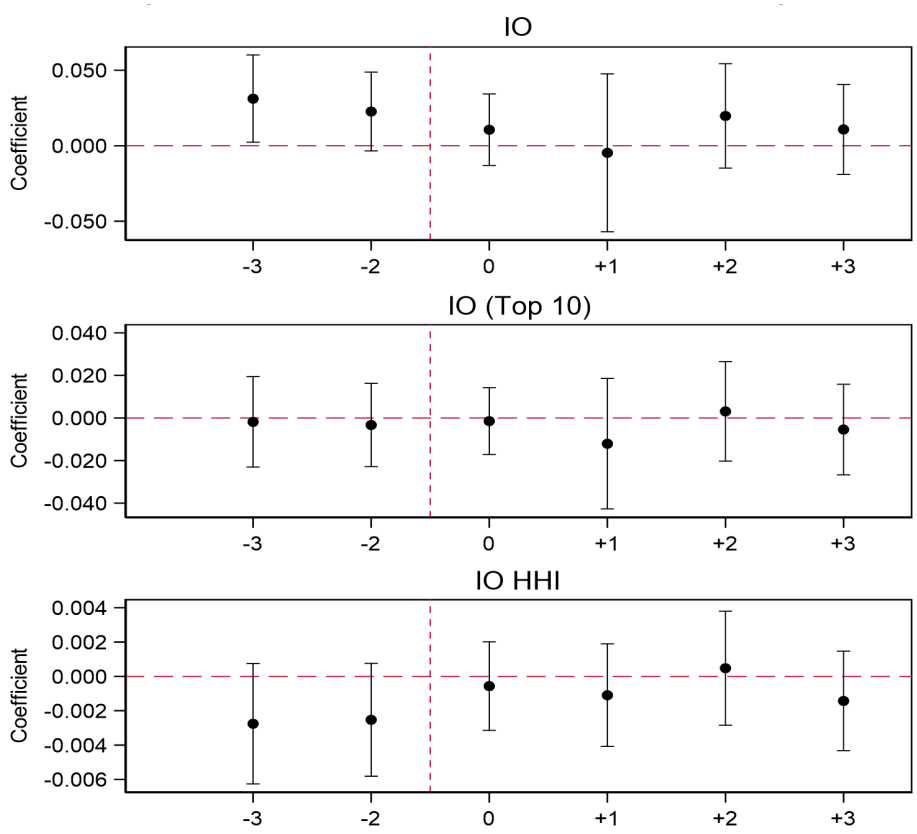


Table 1. Summary statistics

This table reports the descriptive statistics of voting premium, voter turnout, and firm characteristics for the sample used in our analyses. The sample contains 42,277 firm-year observations from 2003 to 2022. *Voting Premium* is the mean of all daily voting premium observations from one annual general meeting to the subsequent one for a firm. *Voter Turnout* is the average voter participation rate across all voting items in a firm's annual meeting. *Total Assets (log)* is the natural logarithm of total assets (in $ millions). *Firm Age (log)* is defined as the natural logarithm of the number of years since the firm first appeared in Compustat. *Book Leverage* is the total book value of debt over total assets. *ROA* is defined as operating income divided by total assets. *Tangibility* is the ratio of total tangible assets over total assets. *Loss* is an indicator equal to one if the firm reports negative income, and zero otherwise. *IO (non-BIG3)* is total institutional ownership excluding that of the Big Three asset managers. *IO (BIG3)* is the total institutional ownership by the Big Three asset managers.

	N	Mean	St. Dev.	P25	P50	P75
Voting Premium (in %)	42,277	0.030	0.562	−0.053	0.006	0.082
Voter Turnout	42,277	0.799	0.130	0.751	0.833	0.887
Control Variables						
Total Assets (log)	42,277	7.401	1.990	6.011	7.324	8.711
Firm Age (log)	42,277	2.690	0.915	2.079	2.833	3.367
Book Leverage	42,277	0.235	0.217	0.040	0.197	0.361
ROA	42,277	−0.023	0.213	−0.017	0.030	0.073
Tangibility	42,277	0.219	0.231	0.044	0.129	0.318
Loss	42,277	0.295	0.456	0.000	0.000	1.000
IO (non-BIG3)	42,277	0.602	0.235	0.483	0.645	0.762
IO (BIG3)	42,277	0.117	0.079	0.046	0.111	0.176

Table 2. Persistence of shareholder voter turnout

This table presents an analysis of the persistence of voter turnout. The dependent variable is next year's voter turnout. The independent variable in columns (1), (3), and (5) is current year *Voter Turnout*, defined as the average shareholder participation rate across all voting items at a firm's annual meeting. In columns (2), (4), and (6), the independent variable is the three-year average of voter turnout, *Voter Turnout (3-yr avg.)*, calculated over the current and previous two years. *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Voter Turnout (lead)					
	(1)	(2)	(3)	(4)	(5)	(6)
Voter Turnout	**0.839*** **		**0.723*** **		**0.360*** **	
	(153.735)		**(93.794)**		**(30.760)**	
Voter Turnout (3-yr avg.)		**0.881*** **		**0.755*** **		**0.368*** **
		(138.842)		**(85.677)**		**(26.003)**
Total Assets (log)			0.002***	0.001***	0.004***	0.004***
			(5.233)	(3.840)	(3.408)	(2.698)
Firm Age (log)			−0.004***	−0.004***	−0.013***	−0.015***
			(−6.698)	(−5.592)	(−5.774)	(−5.764)
Book Leverage			0.002	−0.003	−0.021***	−0.025***
			(0.963)	(−1.094)	(−4.918)	(−5.390)
ROA			0.049***	0.059***	0.019***	0.027***
			(12.764)	(13.699)	(3.785)	(5.091)
Tangibility			0.008**	0.006	−0.028***	−0.035***
			(2.144)	(1.341)	(−3.068)	(−3.548)
Loss			−0.004***	−0.004***	−0.004***	−0.004***
			(−3.204)	(−3.152)	(−2.891)	(−2.932)
IO (non-BIG3)			0.044***	0.048***	0.018***	0.025***
			(15.875)	(15.427)	(4.607)	(6.029)
IO (BIG3)			0.045***	0.039***	0.064***	0.059***
			(4.792)	(3.597)	(4.308)	(3.641)
Constant	0.125***	0.034***	0.184***	0.065***	0.509***	0.213***
	(27.390)	(14.141)	(29.859)	(19.083)	(37.894)	(26.904)
Industry FE	No	No	Yes	Yes	No	No
Firm FE	No	No	No	No	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
N	37,515	37,515	37,510	37,510	36,827	36,827
Adj. R-squared	0.671	0.641	0.712	0.694	0.773	0.762

Table 3. Panel regressions of voting premium on voter turnout

This table presents the results of panel regressions for the dependent variable, *Voting Premium*, which is the mean of all daily voting premia observations from one annual general meeting to the subsequent one for a firm. In Panel A, the variable of interest is *Voter Turnout* (*Voter Turnout (3-yr avg.)*), which is the average voter participation across all voting items in a firm's annual meeting (over the past three years). Panel B reports the results from piecewise non-linear specifications of the baseline regression with a kink at 75% voter turnout. We use both the continuous voter turnout variable as well as fractional ranks following Sirri and Tufano (1998). *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Baseline linear regressions

	Voting Premium (in %)			
	(1)	(2)	(3)	(4)
Voter Turnout	**−0.381*** **		**−0.185*** **	
	(−8.753)		**(−3.233)**	
Voter Turnout (3-yr avg.)		**−0.378*** **		**−0.131***
		(−7.987)		**(−1.736)**
Total Assets (log)	−0.013***	−0.013***	−0.016**	−0.017**
	(−5.632)	(−5.577)	(−2.027)	(−2.100)
Firm Age (log)	−0.027***	−0.026***	−0.069***	−0.068***
	(−5.477)	(−5.416)	(−4.333)	(−4.241)
Book Leverage	0.086***	0.089***	0.128***	0.133***
	(4.037)	(4.168)	(4.285)	(4.409)
ROA	−0.086**	−0.094**	0.017	0.013
	(−2.317)	(−2.510)	(0.384)	(0.292)
Tangibility	0.074**	0.075**	0.185***	0.189***
	(2.297)	(2.327)	(2.992)	(3.049)
Loss	0.021*	0.022**	0.024**	0.025**
	(1.948)	(2.012)	(2.181)	(2.252)
IO (non-BIG3)	−0.120***	−0.126***	0.016	0.010
	(−5.920)	(−6.183)	(0.640)	(0.380)
IO (BIG3)	−0.062	−0.062	−0.005	−0.013
	(−0.813)	(−0.814)	(−0.054)	(−0.124)
Constant	0.540***	0.539***	0.395***	0.355***
	(13.048)	(12.272)	(5.620)	(4.535)
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	42,272	42,272	41,381	41,381
Adj. R-squared	0.041	0.041	0.196	0.196

Panel B. Non-linear regressions

	Voting Premium (in %)			
	(1)	(2)	(3)	(4)
Min (Voter Turnout, 0.75)	−0.321***			
	(−3.088)			
Max (0, Voter Turnout – 0.75)	−0.002			
	(−0.027)			
Min (Voter Turnout (3-yr avg.), 0.75)		−0.241*		
		(−1.706)		
Max (0, Voter Turnout (3-yr avg.) – 0.75)		0.003		
		(0.029)		
Min (Rank, 0.75)			−0.047**	
			(−2.239)	
Max(0, Rank – 0.75)			0.021	
			(0.388)	
Min(Rank (3-yr avg.), 0.75)				−0.042*
				(−1.715)
Max(0, Rank (3-yr avg.) – 0.75)				0.059
				(0.997)
Controls		Same as in Panel A		
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	41,381	41,381	41,381	41,381
Adj. R-squared	0.196	0.196	0.196	0.196

Table 4. Robustness: Governance, ISS recommendations, stock illiquidity, director votes, and granular ownership controls

This table presents robustness tests. Panel A reports results with additional controls and separately examines turnout for director voting items and other voting items. Columns (1) to (5) present results after controlling for firm governance variables, i.e., *E-index* and *MSCI G-score*, imputed proxy advisor recommendations (as per Zytnick, 2025), i.e., *Mean ISS rec prob* and *ISS rec Against*, as well as stock liquidity, i.e., the *Amihud* illiquidity ratio. Columns (6) and (7) examine the effects of director votes and other votes on voting premium. *Voter Turnout Directors* and *Voter Turnout Other* represent the average voter turnout for director voting items and other voting items, respectively. Panel B presents results using the S&P 500 sample from 2004 to 2020, where we control for more granular ownership structure using data from Amel-Zadeh, Kasperk, and Schmalz (2022). *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Robustness: Governance, ISS recommendations, stock illiquidity, and director votes

	Voting premium (in %)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voter Turnout	**−0.285*** **	**−0.257*** **	**−0.191*** **	**−0.195*** **	**−0.194*** **		
	(−4.483)	**(−2.984)**	**(−3.348)**	**(−3.097)**	**(−3.081)**		
Voter Turnout Directors						**−0.163*** **	
						(−3.042)	
Voter Turnout Other							**−0.133** **
							(−2.270)
E index	−0.002						
	(−0.562)						
MSCI G score		0.001					
		(0.329)					
Amihud			0.209				
			(1.499)				
Mean ISS rec prob				−0.031			
				(−1.279)			
ISS rec Against					−0.003		
					(−0.389)		
Controls	Same as in Table 3						
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	23,623	21,532	41,241	38,309	38,309	41,095	39,911
Adj. R-squared	0.106	0.159	0.194	0.192	0.192	0.195	0.195

Panel B. S&P 500 sample with more granular ownership controls

	Voting premium (in %)			
	(1)	(2)	(3)	(4)
Voter Turnout	**−0.314****	**−0.305****	**−0.298****	**−0.306****
	(−2.472)	**(−2.397)**	**(−2.382)**	**(−2.475)**
Retail Ownership	−0.070			
	(−1.558)			
Insider Ownership	0.176*	0.242**	0.233**	0.240**
	(1.862)	(2.502)	(2.428)	(2.519)
IO (non-BIG3)		0.044		
		(0.943)		
IO (BIG3)	0.437*	0.488**		
	(1.748)	(2.005)		
MF Ownership			0.065	
			(1.219)	
Other Inst Ownership			0.061	0.059
			(1.254)	(1.216)
ETF Ownership				0.937***
				(2.661)
Active MF Ownership				0.088
				(1.549)
Index MF Ownership				−0.839*
				(−1.923)
Total Assets (log)	−0.017	−0.017	−0.019	−0.018
	(−1.184)	(−1.230)	(−1.405)	(−1.278)
Firm Age (log)	−0.002	−0.002	−0.002	−0.001
	(−0.067)	(−0.053)	(−0.046)	(−0.034)
Book Leverage	0.104***	0.104***	0.105***	0.099***
	(2.794)	(2.784)	(2.847)	(2.694)
ROA	−0.169	−0.171	−0.174	−0.170
	(−1.154)	(−1.163)	(−1.192)	(−1.169)
Tangibility	0.054	0.054	0.051	0.047
	(0.837)	(0.845)	(0.814)	(0.747)
Loss	−0.008	−0.008	−0.011	−0.011
	(−0.366)	(−0.362)	(−0.525)	(−0.534)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	6,828	6,828	6,828	6,827
Adj. R-squared	0.115	0.115	0.112	0.113

Table 5. DiD estimates using the 2010 regulatory change to broker voting rules

The table presents results for the difference-in-differences (DiD) estimates based on the 2010 regulatory change restricting broker voting on director elections. *Treat* is an indicator variable equal to one if the firm's reported broker non-vote percentage in 2009 falls within the top decile among firms, and zero otherwise. *Post* equals one for the post-treatment years 2010–2013 and zero for the pre-treatment years 2006, 2007, and 2009 after excluding the financial crisis year of 2008. Panel A presents the effect on voter turnout. The dependent variable in column (1) is *Voter Turnout*, defined as the average shareholder participation rate across all voting items at a firm's annual meeting. The dependent variable in column (2) is *Voter Turnout Directors*, defined analogously but restricted to director votes, and in column (3) is *Voter Turnout Other*, defined for all voting items other than director elections. Panel B presents the effect on the voting premium. The dependent variable is *Voting Premium*, defined as the mean of all daily voting premium observations between two consecutive annual general meetings for a firm. Columns (1) and (2), respectively, report results for the unmatched sample, without and with control variables. Columns (3) and (4) report entropy-balanced and PSM 1:1 matched sample results, with all control variables and matched in 2008 year-end on the first moment. Columns (5) to (7) present dynamic DiD estimations using the unmatched, entropy-balanced sample and PSM 1:1 matched sample, where year 2009 is omitted and serves as the baseline year. Panel C presents the results from re-estimating the regressions in columns (2) to (4) of Panel B for two different post-treatment windows. Panel D presents the results from a "dose response" test for the broker non-votes DiD. Instead of defining treatment and control groups, the percentage of broker non-votes is used as a continuous measure of treatment intensity (*Broker non-votes %*) interacted with the post-shock indicator (for the 2010 NYSE Rule 452 amendment). Columns (1) and (2) examine director voter turnout, while columns (3) and (4) examine the voting premium. All control variables are included as in Table 3. *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Effect of regulatory shock on voter turnout

Dependent variables:	Voter Turnout	**Voter Turnout Directors**	Voter Turnout Other
	(1)	(2)	(3)
Treat x Post	−0.056***	**−0.092*** **	0.012*
	(−7.841)	**(−10.747)**	(1.888)
Controls		Same as in Table 3	
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	9,760	9,733	9,339
Adj. R-squared	0.680	0.695	0.597

Panel B. Effect of regulatory shock on voting premium

	Voting Premium (in %)						
	Unmatched		Entropy Balanced	PSM 1:1	Unmatched	Entropy Balanced	PSM 1:1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treat x Post	**0.072****	**0.067****	**0.071****	**0.118*****			
	(2.358)	**(2.215)**	**(2.272)**	**(3.025)**			
Treat x Year 2006					0.060	0.045	0.039
					(1.618)	(1.160)	(0.678)
Treat x Year 2007					0.066	0.059	0.058
					(1.484)	(1.281)	(0.849)
Treat x Year 2010					0.098*	0.098*	0.143**
					(1.819)	(1.770)	(2.041)
Treat x Year 2011					0.079	0.084	0.144**
					(1.547)	(1.612)	(2.027)
Treat x Year 2012					0.127**	0.123**	0.192**
					(2.380)	(2.259)	(2.561)
Treat x Year 2013					0.113**	0.102**	0.107*
					(2.475)	(2.220)	(1.681)
Controls (same as in Table 3)	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	9,769	9,767	9,752	1,786	9,767	9,752	1,866
Adj. R-squared	0.195	0.199	0.201	0.171	0.199	0.201	0.177

Panel C. Shorter post-treatment windows

	Voting Premium (in %)					
	Unmatched	Entropy Balanced	PSM 1:1	Unmatched	Entropy Balanced	PSM 1:1
	(1)	(2)	(3)	(4)	(5)	(6)
Treat x Post (2010-2012)	**0.067****	**0.070****	**0.129*****			
	(2.075)	**(2.090)**	**(3.056)**			
Treat x Post (2010 only)				**0.073**	**0.082***	**0.144****
				(1.552)	**(1.705)**	**(2.401)**
Controls (same as in Table 3)	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	8,347	8,336	1,606	5,443	5,443	1,047
Adj. R-squared	0.206	0.195	0.168	0.200	0.154	0.155

Panel D. Continuous treatment effects

	Voter Turnout Directors		Voting Premium (in %)	
	(1)	(2)	(3)	(4)
Post x Broker non-votes %	**−0.361*** **	**−0.359*** **	**0.336*** **	**0.318** **
	(−9.514)	**(−9.800)**	**(2.614)**	**(2.459)**
Controls (same as in Table 3)	No	Yes	No	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	9,735	9,733	9,769	9,767
Adj. R-squared	0.684	0.693	0.195	0.199

Table 6. Voting standards and the relation between voting premium and voter turnout

This table presents subsample analyses based on different voting procedures. Panel A separates firm-years according to whether the state in which a firm is incorporated has enacted majority-voting legislation (as per Cunat, Lü, and Wu, 2025). The sample period spans from 2003 to 2016 (i.e., three years before the first states enacted legislation and three years after the last states did, according to the list of states with majority voting legislation provided by Cunat, Lü, and Wu, 2025). Panel B separates firm-years based on whether a firm employs cumulative voting, which empowers minority shareholders by allowing them to allocate their total votes in any manner desired, where the total number of votes is the product of the number of shares owned and the number of directors to be elected (Gompers, Ishii, and Metrick, 2003). *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Majority voting

	Voting Premium (in %)			
	States w/o majority voting legislation	States with majority voting legislation	States w/o majority voting legislation	States with majority voting legislation
	(1)	(2)	(3)	(4)
Voter Turnout	**−0.307*** **	**−0.599*** **	**−0.045**	**−0.416*** **
	(−4.203)	**(−7.390)**	**(−0.466)**	**(−3.704)**
Controls	Same as in Table 3			
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	12,512	12,941	12,010	12,541
Adj. R-squared	0.048	0.057	0.157	0.231
p-value of chi2 test	0.007		0.012	

Panel B. Cumulative voting

	Voting Premium (in %)			
	Firms w/o cumulative voting	Firms with cumulative voting	Firms w/o cumulative voting	Firms with cumulative voting
	(1)	(2)	(3)	(4)
Voter Turnout	**−0.361*** **	**−0.013**	**−0.330*** **	**0.013**
	(−7.465)	**(−0.098)**	**(−4.855)**	**(0.066)**
Controls	Same as in Table 3			
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	29,811	2,188	29,352	2,091
Adj. R-squared	0.041	0.031	0.155	0.121
p-value of chi2 test	0.010		0.091	

Table 7. Voter turnout and subsequent contentious governance events

Panel A presents the mean likelihood of each type of contentious governance events defined in the study. *Contentious meeting* equals one if at least one ballot item receives less than 75% support, if the meeting includes any shareholder proposals, or if there is at least one proposal for which the management recommendation is "Against" or "Abstain", and zero otherwise. *Dissent voting* equals one if there is at least one voting item receiving less than 50% of "For" votes, or if ISS Voting Analytics flags it as "Fail", and equals zero otherwise. *Special meeting* equals one if the firm holds a special shareholder meeting during the year, and zero otherwise. *Close votes* equals one if there is at least one voting item receiving a "For" vote share within a ±5% band around 50%, and zero otherwise. *SC13D activism* equals one if a firm experiences a financial activism event identified from Schedule 13D, and zero otherwise. Panel B presents regression estimation results examining the relationship between voter turnout at annual meetings and the likelihood of subsequent contentious governance events. The dependent variables capture different definitions of contentious events as presented in Panel A. Panel C reports subsample analyses of baseline results based on the estimated future likelihood of contentious governance events. The likelihood is estimated using the specifications from Panel B. The sample is then split at the median: firms with an estimated likelihood above the median form the *High* group, while those below the median form the *Low* group. *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Contentious governance events

	N	**Mean**
Contentious meeting	35,436	35.4%
Dissent voting	35,436	15.5%
Special meeting	37,696	6.0%
Close votes	42,317	5.4%
SC13D activism	42,317	3.6%

Panel B. Voter turnout and subsequent likelihood of contentious governance events

Dependent Variables:	**Contentious meeting** (1)	**Dissent voting** (2)	**Special meeting** (3)	**Close votes** (4)	**SC13D activism** (5)
Voter Turnout	**−0.348*** **	**−0.152*** **	**−0.007**	**−0.050*** **	**−0.048*** **
	(−7.881)	**(−5.383)**	**(−0.329)**	**(−2.862)**	**(−2.878)**
Total Assets (log)	0.053***	0.055***	−0.018***	0.014***	0.007***
	(7.016)	(9.069)	(−4.926)	(3.905)	(2.661)
Firm Age (log)	0.114***	0.059***	0.046***	0.038***	0.004
	(7.784)	(5.617)	(7.475)	(6.567)	(0.831)
Book Leverage	0.003	−0.004	0.038***	−0.013	−0.003
	(0.100)	(−0.201)	(2.987)	(−1.241)	(−0.310)
ROA	−0.036	−0.026	−0.009	−0.016	−0.021*
	(−1.341)	(−1.525)	(−0.616)	(−1.274)	(−1.880)
Tangibility	0.008	0.020	0.068***	0.012	0.038**
	(0.149)	(0.546)	(2.752)	(0.590)	(2.100)
Loss	−0.002	−0.001	0.001	0.005	0.004
	(−0.212)	(−0.081)	(0.114)	(1.268)	(1.075)
IO (non-BIG3)	0.020	−0.028*	−0.027**	0.010	−0.003
	(0.881)	(−1.814)	(−2.350)	(1.074)	(−0.393)
IO (BIG3)	−0.206**	−0.042	0.032	−0.068*	−0.021
	(−2.288)	(−0.667)	(0.755)	(−1.772)	(−0.620)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
N	34,718	34,718	37,013	41,381	41,381
Adj. R-squared	0.228	0.363	0.121	0.069	0.078

Panel C. Voting premium and voter turnout by future likelihood of contentious events

	Voting Premium (%)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Contentious meeting		**Dissent voting**		**Special meeting**		**Close votes**		**SC13D activism**	
	Low	High	Low	High	Low	High	Low	High	Low	High
Voter Turnout	**−0.028**	**−0.241*****	**−0.091**	**−0.171***	**−0.114***	**−0.243*****	**0.017**	**−0.353*****	**0.065**	**−0.294*****
	(−0.389)	**(−2.722)**	**(−1.257)**	**(−1.914)**	**(−1.690)**	**(−2.684)**	**(0.192)**	**(−3.980)**	**(0.637)**	**(−3.629)**
Controls	Same as in Table 3									
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	17,206	17,236	17,267	17,176	18,386	18,056	20,501	19,904	20,453	20,114
Adj. R-squared	0.190	0.199	0.192	0.181	0.225	0.165	0.229	0.178	0.235	0.168
p-value of chi2 test	0.061		0.492		0.251		0.003		0.006	

Table 8. Voter turnout and director support

This table examines the relation between voter turnout and director voting outcomes. Panel A reports regressions of director elections for-vote percentages on voter turnout. *Director "For" votes* is the mean "For" vote percentage across all director election items at a given shareholder meeting. Column (1) includes voter turnout as the main explanatory variable, while column (2) additionally includes an indicator for majority voting and its interaction with voter turnout. Panel B presents subsample analyses of the baseline results based on the estimated future director for-votes percentage, estimated using the specifications in Panel A. The sample is split at the median into High (Low) groups. Columns (1) and (2) use estimates from column (1) of Panel A, while columns (3) and (4) use estimates from column (2). *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Voter turnout and subsequent director "For" votes percentage

	Director "For" votes	
	(1)	(2)
Voter Turnout	**0.042*** **	**0.024*** **
	(6.830)	**(3.025)**
Majority Voting		**−0.026*** **
		(−2.984)
Voter Turnout x Majority Voting		**0.033*** **
		(3.187)
Total Assets (log)	−0.004***	−0.004***
	(−2.962)	(−3.081)
Firm Age (log)	−0.017***	−0.017***
	(−8.871)	(−8.756)
Book Leverage	0.000	0.000
	(0.029)	(0.059)
ROA	0.007*	0.007
	(1.662)	(1.535)
Tangibility	−0.003	−0.003
	(−0.388)	(−0.355)
Loss	−0.002*	−0.003*
	(−1.763)	(−1.959)
IO (non-BIG3)	−0.010***	−0.010***
	(−2.973)	(−3.110)
IO (BIG3)	0.045***	0.043***
	(3.587)	(3.424)
Firm FE	Yes	Yes
Year FE	Yes	Yes
N	34,607	34,426
Adj. R-squared	0.330	0.331

Panel B. Voting premium and voter turnout by low and high predicted director "For" votes

	Voting Premium (%)			
	(1)	(2)	(3)	(4)
	Director "For" votes		**Director "For" votes**	
	Low	High	Low	High
Voter Turnout	**−0.164****	**−0.051**	**−0.176****	**−0.053**
	(−1.973)	**(−0.604)**	**(−2.114)**	**(−0.652)**
Controls (as in Panel A)	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	17,130	17,133	17,136	17,147
Adj. R-squared	0.161	0.240	0.161	0.239
p-value of chi2 test	0.342		0.281	

APPENDICES

Appendix Table 1. Voting bases

This table reports the descriptive statistics of voting bases at the item-level for all ballot items in the final sample (based on the ISS Voting Analytics data). The voting base defines which votes are included in the denominator when calculating approval rates or voting majorities.

Example: 100 shares are outstanding and the voting results are "For" = 40, "Against" = 30, "Abstain" = 10, "Not voted" = 20. Then: F+A base leads to 57.1% approval (= 40/(40+30)), F+A+AB base leads to 50.0% approval (= 40/(40+30+10)), Outstanding shares base (i.e., F+A+AB+NV) leads to 40.0% approval (= 40/(40+30+10+20)), where NV stands for not voted (or broker non-votes).

Base	**N**	**Percent**
For + Against (F+A)	294,665	80.72
For + Against + Abstain (F+A+AB)	59,667	16.34
Shares outstanding (Outstanding)	5,440	1.49
NA	5,276	1.45
Total	*365,048*	*100.00*

Appendix Table 2. Variable definitions

This table provides definitions for key variables used in this study as well as data sources.

Variable	Definition	Data Source
Voting Premium (in %)	The average of daily voting premium observations from one annual general meeting to the subsequent one for a firm. Daily voting premium data are obtained from Kalay, Karakaş, and Pant (2014).	Kalay, Karakaş, and Pant (2014)
Voter Turnout	The average voter participation rate across all voting items in a firm's annual meeting.	ISS Voting Analytics
Voter Turnout (3-yr avg.)	The average voter participation rate across all voting items in a firm's annual meeting over the previous three years.	ISS Voting Analytics
Voter Turnout Directors	The average voter participation rate across director election items in a firm's annual meeting.	ISS Voting Analytics
Voter Turnout Other	The average voter participation rate across all voting items, excluding director elections, in a firm's annual meeting.	ISS Voting Analytics
Contentious meeting	An indicator variable equals one if at least one ballot item receives less than 75% support, if the meeting includes any shareholder proposals, or if there is at least one proposal for which the management recommendation is against or abstain, and zero otherwise.	ISS Voting Analytics
Dissent voting	An indicator variable equals one if there is at least one voting item receiving less than 50% of "for" votes, or if ISS Voting Analytics flags it as "Fail", zero otherwise.	ISS Voting Analytics
Special meeting	An indicator variable equals one if a firm holds a special shareholder meeting during the year, and zero otherwise.	ISS Voting Analytics
Close votes	An indicator variable equals one if there is at least one voting item receiving a "For" vote share within a ±5% band around 50%, and zero otherwise.	ISS Voting Analytics
SC13D activism	An indicator variable equals one if a firm experiences a financially motivated activism event in a given year, and zero otherwise. Following Khurana et al. (2018) and DesJardine et al. (2025), we focus on 13D filings in which the stated purpose includes terms such as "control," "disputes," "concerns," or "discussion," and excluding those labeled "agreement," "support," or "other."	Audit Analytics

Director "For" votes	The average "For" vote percentage across all director election items at a given shareholder meeting.	ISS Voting Analytics
Control Variables		
Total Assets (log)	The natural logarithm of total assets (in $ millions).	Compustat
Firm Age (log)	The natural logarithm of the number of years since the firm first appeared in Compustat.	Compustat
Book Leverage	The ratio of total book value of debt to total assets.	Compustat
ROA	The ratio of operating income to total assets.	Compustat
Tangibility	The ratio of total tangible assets to total assets.	Compustat
Loss	An indicator variable that equals one if the firm reports negative income, and zero otherwise.	Compustat
IO (non-BIG3)	Total institutional ownership excluding that of the Big Three asset managers.	Thomson Reuters S34
IO (BIG3)	Total institutional ownership by the Big Three asset managers. Following Ben-David et al. (2021), we identify the Big Three asset managers as Vanguard (MGRNO 90457), State Street (MGRNO 81540), and BlackRock (aggregate holdings from six MGRNO identifiers: 9385, 11386, 39539, 56790, 91430, and 12588).	Thomson Reuters S34
Insider Ownership	Total percentage of shares held by corporate insiders.	Amel-Zadeh, Kasperk, and Schmalz (2022)
ETF Ownership	Total percentage of shares held by ETF funds.	Thomson Reuters S12
Active MF Ownership	Total percentage of shares held by actively-managed mutual funds.	Thomson Reuters S12
Index MF Ownership	Total percentage of shares held by index mutual funds.	Thomson Reuters S12
MF Ownership	Total percentage of shares held by ETF, actively-managed mutual funds, and index mutual funds.	Thomson Reuters S12
Other Inst Ownership	Total institutional ownership minus total mutual fund ownership.	Thomson Reuters S12, S34
Retail Ownership	One minus total institutional ownership and insider ownership.	Thomson Reuters S34; Amel-Zadeh, Kasperk, and Schmalz (2022)
E-index	The Entrenchment index developed by Bebchuk, Cohen, and Ferrell (2009), based on six governance provisions that measure the extent to which firm insiders are protected from shareholder intervention.	Bebchuk, Cohen, and Ferrell (2009)
MSCI G-score	The MSCI Governance score, which assesses a firm's corporate governance practices based on MSCI's proprietary evaluation framework.	MSCI ESG Research

Mean ISS rec prob and ISS rec Against	Imputed ISS recommendations. *Mean ISS rec prob* is the likelihood of a For recommendation for a specific ballot item averaged across all of a firm's ballot items in a year. *ISS rec Against* is an indicator variable that equals one if there is at least one Against recommendation for a firm's ballot item in a year, which we define as ISS rec prob < 1.	Zytnick (2025) https://www.jonzytnick.com/data
Amihud	The Amihud illiquidity measure is calculated as the average ratio of the absolute daily stock return to daily dollar trading volume, capturing the price impact per unit of trading volume. At the end of each year, we compute its annual average.	Amihud (2002)

Appendix Table 3. Robustness of baseline regression results: Median voting premium and exclusion of less liquid stock options

This table reports robustness tests for the baseline regression in equation (7). The dependent variable in Columns (1) and (2) is *Median Voting Premium*, defined as the median of all daily voting premium observations between one annual general meeting and the subsequent one for a firm. The dependent variable in Columns (3) to (6) is *Voting Premium*, defined as the mean of all daily voting premium observations over the same period. Columns (3) and (4) exclude firm-year observations with fewer than the 25th percentile of daily voting premium data available. Columns (5) and (6) exclude firm-year observations with fewer than the 50th percentile of daily voting premium data available. All control variables are included as in Table 3. *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variables:	**Median Voting Premium (in %)**		**Voting Premium (in %)**			
			Exclusion of firm-years for which less than the 25th percentile of daily voting premium data is available		Exclusion of firm-years for which less than the 50th percentile of daily voting premium data is available	
	(1)	(2)	(3)	(4)	(5)	(6)
Voter Turnout	**−0.263*** **	**−0.112** **	**−0.417*** **	**−0.225*** **	**−0.369*** **	**−0.163*** **
	(−7.113)	**(−2.298)**	**(−9.885)**	**(−4.515)**	**(−7.691)**	**(−2.875)**
Controls			Same as in Table 3			
Industry FE	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	42,272	41,381	31,717	30,851	21,189	20,396
Adj. R-squared	0.041	0.196	0.105	0.334	0.137	0.363

Appendix Table 4. Stock liquidity, institutional ownership, and the relation between voting premium and voter turnout

This table presents subsample analyses of our baseline regression results from Table 3, partitioned by firms' stock liquidity levels and total institutional ownership. Columns (1) and (2) report results for firms with an Amihud illiquidity measure above or below the annual median, while columns (3) and (4) report result for firms with total institutional ownership above or below the annual median. All control variables are included as in Table 3. *t*-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Voting Premium (in %)			
	Amihud illiquidity		**Total institutional ownership**	
	Low	High	Low	High
	(1)	(2)	(3)	(4)
Voter Turnout	**−0.134*** **	**−0.205** **	**−0.225*** **	**−0.173** **
	(−2.651)	**(−2.377)**	**(−2.594)**	**(−2.497)**
Controls	Same as in Table 3			
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	20,580	20,004	19,954	20,550
Adj. R-squared	0.185	0.160	0.195	0.146
p-value of chi2 test	0.465		0.329	

Appendix Table 5. Covariate balance in entropy balancing and PSM

This table presents the covariate balance checks. The first two columns report the means for the treated group in the unmatched sample, and the one-to-one propensity score matched sample, respectively. The next three columns report the means for the control group in the unmatched sample, the entropy-balanced sample, and the one-to-one propensity score matched sample. The last three columns report the differences in means between the treated and control groups for the unmatched sample, the entropy-balanced sample, and the one-to-one propensity score matched sample, respectively. Statistical significance is indicated by *, **, ***, corresponding to the 10%, 5%, and 1% significance levels.

Covariate	**Treated**		**Controls**			**Diff (Control − Treated)**		
	Unmatched	PSM	Unmatched	Entropy balanced	PSM	Unmatched	Entropy balanced	PSM
Total Assets (log)	6.859	6.837	6.820	6.859	6.805	−0.039	0.000	−0.032
Firm Age (log)	2.733	2.725	2.644	2.733	2.716	−0.089	0.000	−0.009
Book Leverage	0.232	0.228	0.217	0.232	0.251	−0.015	0.000	0.023
ROA	−0.111	−0.111	−0.031	−0.111	−0.099	0.081***	0.000	0.012
Tangibility	0.235	0.235	0.252	0.235	0.256	0.017	0.000	0.021
Loss	0.523	0.521	0.322	0.525	0.547	−0.201***	0.001	0.026
IO (non-Big3)	0.586	0.592	0.661	0.589	0.591	0.075***	0.000	−0.001
IO (BIG3)	0.057	0.057	0.058	0.058	0.056	0.001	0.000	−0.001

Appendix Table 6. Institutional ownership around the 2010 regulatory change to broker voting rules

This table presents results examining changes in institutional ownership around the 2010 regulatory change restricting broker voting in director elections. Column (1) uses total institutional ownership (IO) as the dependent variable. Columns (2) and (3) use institutional ownership held by the Big Three asset managers and by non-Big Three institutions, respectively. Column (4) uses institutional ownership held by the top 10 institutions, and column (5) uses institutional ownership concentration, measured by the Herfindahl–Hirschman Index (HHI). Treat is an indicator variable equal to one if the firm's reported broker non-vote percentage in 2009 falls within the top decile among firms, and zero otherwise. Post equals one for the post-treatment years 2010–2013 and zero for the pre-treatment years 2006, 2007, and 2009 after excluding the financial crisis year of 2008. All control variables are included as in Table 3. t-statistics (in parentheses) are based on standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	IO	**IO (BIG 3)**	**IO (Non-BIG 3)**	**IO (Top 10)**	**IO HHI**
	(1)	(2)	(3)	(4)	(5)
Treat x Post	**−0.006**	**−0.003**	**−0.004**	**−0.002**	**0.001**
	(−0.471)	**(−1.188)**	**(−0.338)**	**(−0.291)**	**(0.880)**
Controls			Same as in Table 3		
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
N	8,780	8,766	8,780	8,766	8,780
Adj. R-squared	0.739	0.725	0.766	0.748	0.758

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