Strategic Voting and Insider Ownership

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Abstract
Manager incentives are viewed as being better aligned with those of shareholders when they have an ownership stake in the firms they manage. However, manager ownership can exacerbate agency problems by better enabling managers to initiate and pass resolutions from which they can derive a personal benefit. We outline a model of strategic shareholder voting that allows outside shareholders to mitigate the influence of insiders. Consistent with our model, we find empirical support for strategic voting by outside shareholders and that strategic voting is more apparent when management-sponsored proposals are controversial or complex and when other agency risks are greater.

JEL classification: D72, G34

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1. Introduction

Corporate managers can derive personal benefits at the expense of shareholders. Theory suggests that allowing managers an ownership stake mitigates this moral hazard problem by better aligning manager self-interest with the interests of shareholders. However, because ownership usually comes with voting rights, the presence of manager-owners can create a new set of agency problems by allowing them to participate in shareholder votes.

Shareholder voting is a fundamental control mechanism through which owners influence firm decisions. While the aim of shareholder voting is to ensure that the firm is run in the interest of shareholders, this control mechanism can be frustrated by the presence of “inside” shareholders, i.e., managers and directors, who own a significant number of shares. Managers can initiate ballot items, and a significant ownership stake improves their ability to pass their own proposals. Consequently, they may have the power to tilt the vote in favor of projects that a majority of “outside” shareholders oppose (e.g., non-managerial individuals, institutions, and blockholders). Such proposals could involve economically significant firm policies and opportunity for rent extraction, such as management and employee compensation, securities issuance and recapitalization, restructuring, mergers and acquisitions, and changes to the corporate charter. Thus, inside ownership introduces an agency problem that favors the passage of insider-initiated proposals, weakening shareholder voting as a control mechanism for outside shareholders.

In this paper, we consider whether and how outside shareholders respond to this new category of agency problems. To address this issue, we contrast two forms of voting: sincere and strategic. “Sincere” voting is that based solely on private signals regarding the merits of the proposal, ignoring the presence of insiders. “Strategic” voting rationally anticipates and responds to management’s voting bias. Strategic voters respond by casting a portion of their

\[\text{In our sample, these non-procedural management proposals represent approximately 35\% of ballot items.}\]
votes in blind opposition to management sponsored proposals, offsetting those anticipated to be cast in favor by insiders. Extending the model of strategic voting advanced by Maug and Rydqvist (2009), we develop analytical models of sincere and strategic voting in the setting of management ownership. We demonstrate that strategic voting better preserves shareholder wealth. We then provide empirical evidence rejecting the sincere model in favor of the strategic model in a panel of voting data from 1994 to 2014.

To illustrate strategic versus sincere shareholder voting and their respective potential outcomes, consider an example where management wishes to purchase a corporate jet and submits a proposal to do so to a shareholder vote. Presume initially that management does not own any shares of the company’s stock. Outside shareholders, who are presumed to be exclusively concerned with the maximization of firm value, may be divided as to the merits of the proposal. Suppose that each shareholder votes according to his or her sincere opinion of the purchase and that the resulting vote is 45.0% in favor and 55.0% against. In this scenario, the proposal would fail.

Alternatively, consider the case where management owned 10.0% of voting shares. Management presumably votes in favor of their own proposal, and if the remaining 90.0% of shareholder votes are cast in the same proportion as before, the proposal would pass by a vote of 50.5% in favor and 49.5% against. In this scenario, the presence of a large number of inside shareholders would bias the outcome of the vote towards the preferences of insiders, and the sincere voting of outsiders allows this to occur.

Finally, consider a case illustrating strategic voting. Under our model of strategic voting, outside shareholders rationally anticipate the bias introduced by insiders and respond by devoting a portion of the votes equal to the fraction of insider votes in blind opposition to the proposal. In the aforementioned example, this would require outside owners to devote 10.0% of the overall vote against the proposal in response to the 10.0% of shares owned by insiders (which will presumably be cast in favor), effectively cancelling out their influence.
The remaining 80.0% of votes, all cast by outsiders, would therefore determine the outcome of the proposal. If these votes are sincerely cast, the vote will fail with 55% against and 45% in favor among these remaining votes.

We introduce an analytical model to formally characterize both strategic and sincere voting, and which allows us to estimate the cost to shareholders associated with both strategic and sincere voting. Our model extends that of Maug and Rydqvist (2009), who study strategic voting in the setting of supermajorities, to the economically significant setting of management ownership. The strategic model predicts equilibrium strategic voting equal to the number of shares cast by insiders. The model demonstrates the optimality of strategic over sincere voting; the shareholder welfare loss associated with misclassification of proposals (i.e., passage of negative NPV projects and rejection of positive NPV projects) is monotonically lower under the strategic model.

Strategic voting by shareholders is inherently difficult to observe. However, our model allows us to make simple, empirically testable predictions of voter behavior. Prior literature has generally observed a positive relationship between inside ownership and shareholder voting (e.g., Brickley, Lease and Smith, 1994; Morgan and Poulsen, 2001; Bethel and Gillan, 2002; Maug and Rydqvist, 2009). However, it has not been directed at the ways outside shareholders might seek to mitigate the influence of a large block of insiders; it implicitly assumes sincere voting by outside shareholders. We revisit this assumption using voting and ownership data provided by Kristian Rydqvist, Institutional Shareholder Services (ISS), and Thompson Reuters, and which extends from 1994 to 2014. Using this panel, we reject the null hypothesis of strict sincere voting and find evidence of strategic voting by outside shareholders. In the full sample, we estimate the rate of strategic voting to be 8.7% of the model-implied rate of strict strategic voting. This is consistent with outside shareholders adjusting their votes to counteract the influence of insiders.

We further consider settings where the risk of shareholder welfare loss is higher and where
strategic voting is more relevant, establishing concurrent validity of our operationalization and mitigating concern of the effect of omitted variables. When we examine controversial proposals, namely those that receive an unfavorable recommendation from proxy advisor ISS, or proposals that address complex subject matters (e.g., those involving compensation, recapitalization, restructuring, or charter amendments), we find that strategic voting is more apparent, reaching implied rates as high as 60%.

Strategic voting behavior is less apparent when it is less relevant: during low risk, uncontroversial, and simple votes. Furthermore, we consider firm-specific characteristics that justify greater strategic voting. We document that strategic behavior is most apparent in the interquartile range of insider ownership, where our model predicts that the benefits of strategic voting are greatest. In addition, we document evidence of greater strategic voting where the benefits are likely higher: for firms with greater financial risk, less mature firms, and firms with lower levels of leverage. We also find that rates of strategic voting are higher for firms with higher levels of institutional ownership.

Finally, we extend our model and empirical tests to management proposals wherein non-voting shares count “against” the proposal. This setting introduces another unique source of bias, as passive non-votes effectively bias downward the percent in favor. Thus, we modify the model to account for this offsetting bias, demonstrating that a modified form of strategy by outsiders accounting for both biases remains superior to a sincere model. We further extend our empirical analysis to the modified model, and find results consistent with our main conclusions.

Our work contributes to recent efforts to explain strategic shareholder behavior. Based on theoretical work in the political science literature, Maug and Rydqvist (2009) develop a model of strategic shareholder voting to counteract the downward bias of voting outcome due to supermajority voting requirements. We extend their work to the intersection of

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2Institutional Shareholder Services (ISS) is a proxy advisory firm that provides voting recommendations on shareholder ballot items to institutional subscribers.
management-sponsored proposals and insider ownership, demonstrating the prevalence of strategic voting in an important setting.

While equity ownership by management is generally regarded to help mitigate agency problems (e.g., Jensen and Meckling, 1976), we call attention to an unintended consequence with economically significant costs. Prior literature has largely assumed shareholder passivity to management influence over voting (e.g., Morgan and Poulsen, 2001). In contrast, we present theoretical and empirical evidence that strategic voting by outsiders is an important control mechanism in limiting such costs. Finally, our study supports the idea that shareholders are sophisticated in their voting on management sponsored resolutions.

2. Literature Review

A sincere voting model assumes that voters act according to their private signals. Austen-Smith and Banks (1996) first confront the assumption of sincere voting in the political science literature. They introduce and document the optimality of a rational voting model that properly incorporates prior and private information and that anticipates the actions of other voters. Rational voting, as described by Austen-Smith and Banks (1996), allows for each voter to consider the possible signals received by other voters. A given voter then votes in an effort to maximize the shared payoff, even if this means strategically voting opposite the signal he or she receives. Importantly, the theory does not assert that all shareholders must vote strategically at the expense of sincerity. Instead, it asserts that, in equilibrium, a necessary proportion will vote strategically in response to noise in the signals received, such that the decision reached by the vote outcome is consistent with the voters’ preference given the true state of nature.

Footnote: Voters do not, however, have the ability to coordinate votes (Austen-Smith and Banks, 1996). This is generally consistent with the shareholder voting setting, which is characterized by a dispersed voter population and anonymous ballots. We do not incorporate strategic coordination in this paper, but point the interested reader to Maug and Rydqvist (2009) and Matvos and Ostrovsky (2010).
The model of Austen-Smith and Banks (1996) assumes that all voters have the same preference for outcome. This naturally translates to the shareholder voting setting, where shareholders are presumed to prefer maximization of firm value. Thus, there is a collective preference to approve a project that is value-adding and reject a project that is value-destroying. Maug and Rydqvist (2009) first apply the theory of strategic voting to a business setting. The authors develop a model wherein shareholders neutralize the lock-in effect of supermajority rules. This is accomplished through strategic voting. Supermajority rules typically require a much higher rate in favor than a simple majority model (e.g., 75% in favor instead of 50%), making it more difficult for the proposal to pass. Since a supermajority requirement increases the proportion of votes in favor necessary to pass a proposal, a portion of shareholders strategically ignore their signal and vote favorably until this downward bias is eliminated. The remaining shareholders vote sincerely based on the individual signals they receive. Thus, the final outcome of the vote is driven by the underlying merits of the project, not the supermajority requirement. The authors also provide empirical evidence consistent with strategic voting in the setting of supermajorities.

We argue that insider ownership represents another source of bias, due to the agency conflicts it can present. Agency costs are the losses of shareholder wealth that result from a conflict of interest between owners and managers of a firm (Jensen and Meckling, 1976). Agency costs are frequently viewed as being mitigated when managers are also owners of a firm, as this ostensibly aligns the interests of both management and outside shareholders (Murphy, 2013). In Figure [1], it can be seen that the level of insider ownership has generally increased over the sample period and is not trivial. Equity-based compensation has also grown significantly since the mid-twentieth century (Murphy, 2013). However, manager ownership may also serve to exacerbate conflicts of interest by giving management a significant vote in setting corporate policy. If insiders allocate all of their shares in favor of a management-sponsored proposal, this introduces an upward bias in the voting outcome.
In other words, a higher percent of shares will be cast in favor and the proposal will be more likely to pass. If insider ownership and equity-based compensation introduce potential bias into the shareholder voting process, their prevalence speaks to the importance of this research question.

Prior theoretical and empirical evidence supports the idea of manager intervention in shareholder voting. This can affect the quality of projects proposed by management. The setting of mergers and acquisitions provides an example, as restructuring proposals are commonly held to a vote by shareholders. Managers may be motivated to “empire build” by growing the firm in ways that do not benefit shareholders (Jensen, 1986; Dominguez-Martinez, Swank, and Visser, 2006; Hope and Thomas 2008). In addition, manager wealth may be tied to short-term growth, thus incentivizing short-term performance at the expense of long-term value. For example, Grinstein and Hribar (2004) and Harford and Li (2007) show that executives are rewarded following expansions, even in the presence of weak subsequent performance. This is consistent with manager rent extraction rather than the building of shareholder wealth. Managers may also be overconfident in their managerial abilities and unintentionally advance projects that harm shareholder wealth. Malmendier and Tate (2005) document an association between CEO overconfidence and the probability of M&A activity, and find that these CEOs’ M&A actions are often value-destroying. Thus, evidence exists that managers do not always propose good projects.

Boards of directors can also suffer from ineffective advising and monitoring or be subject to conflicts of interest, despite being hired to mitigate agency costs of management (Dominguez-Martinez, Swank, and Visser, 2006; Bebchuk, Grinstein, and Peyer, 2010; Coles, Daniel, and Naveen, 2014). Given their close relationship with management, directors may not represent functionally independent advisors (Bebchuk and Fried, 2003). Consequently,
shareholders cannot always rely on the board to prevent value-destroying proposals from reaching the ballot.

Prior empirical research documents a positive relationship between insider ownership and the passage of management-sponsored proposals, evidence of management influence over shareholder voting. Brickley, Lease, and Smith (1994) study whether management influences voting outcomes of anti-takeover amendments. They find evidence of management influence, notably via ownership in the firm. Similarly, Ferri and Oesch (2016) document management influence over say-on-pay voting frequency, both via management’s recommendation and insider ownership. Morgan and Poulsen (2001) study whether compensation plans are helpful in mitigating agency conflicts. They consider insider ownership a proxy for agency costs, as “officers and directors presumably vote for plans that increase their own compensation,” and find that the management-sponsored compensation proposals receive more favorable votes with larger insider ownership (Morgan and Poulsen, 2001). Finally, Bethel and Gillan (2002) investigate whether managers have incentives to classify proposals as “routine” to allow broker votes. They document that insider ownership is positively correlated with the percentage of favorable votes cast. Importantly, however, these papers do not consider whether outside shareholders incorporate this positive relationship into their voting decision ex ante, nor do they attempt to identify the mechanism through which this occurs. Our research attempts to fill this gap.

Agency theory generally assumes rational expectations of market participants (Jensen and Meckling, 1976). Prior empirical evidence also supports an expectation that outside shareholders preempt the bias introduced by management. Previous work has demonstrated that shareholder voting can be an effective way for shareholders to assert their interests (e.g., Ferri, 2012; Ertimur, Ferri, and Oesch, 2015; Correa and Lel, 2016). Shareholders also appear to be sophisticated in their voting on complex issues (e.g., Ertimur, Ferri, and Muslu; 2010). Furthermore, Maug and Rydqvist (2009) previously demonstrated strategic voting
separate from the management ownership agency context. Thus, we consider it reasonable to expect outside shareholders in this setting to anticipate and adjust to the voting behavior of insiders.

We consolidate this research to develop our hypothesis. Given prior evidence of management influence over shareholder voting, we consider strategic voting a plausible mechanism through which outside shareholders combat bias from insiders and return the vote to an assessment of the inherent quality of the proposed project. We contribute to both the literature on shareholder voting and the literature that studies strategic voting by examining whether outsider shareholders vote in a way that mitigates agency costs.

3. Model Development

3.1. Model Formulation

We present a model of strategic voting by outside shareholders in response to inside owners. Let there be \( N \) shares in the firm of which \( I \) shares are held by insiders (namely, management) and \( \varnothing \) shares by outsiders (\( \varnothing < N \)), and where \( N = I + \varnothing \). The ownership fraction of the insiders is \( \omega = I/N \) and of the outsiders \( 1 - \omega = \varnothing/N \). We assume all \( N \) shares have one vote each and shareholders must vote either for or against a proposal.\(^4\) We also assume that votes for all shares owned by insiders, \( I \), are cast in support of the proposal.

We denote the proportion of “for” votes by \( y \), and determine that a proposal passes if the votes in favor meets the statutory majority requirement \( y > \alpha \), where \( \alpha \) is the proportion of votes required for passage and is exogenous. We focus on the case of simple majority, where \( \alpha = 1/2 \) (we extend our study to supermajorities in Appendix C). We shall further assume that \( \omega < \alpha \), so that the proposal cannot pass without support from outside shareholders. As we assume insiders always vote in favor of their proposals, we note that \( y \geq \omega \).

\(^4\)In our empirical tests, we extend the model to accommodate abstentions and non-voting shares.
Suppose a proposal passes if it gets support from a proportion $\alpha_\omega > 0$ of the outside shares. The total number of favorable votes that are necessary for a proposal to pass is made up of all insider shares, plus a minimum proportion $\alpha_\omega$ of outsider shares, and is given by

$$\alpha N = \alpha_\omega \cdot \emptyset + 100\% \cdot I = \alpha_\omega (1 - \omega) N + \omega N. \quad (1)$$

By rearranging and simplifying, the minimum proportion of outside shareholder votes required for a proposal to pass is given by

$$\alpha_\omega = \frac{\alpha - \omega}{1 - \omega}. \quad (2)$$

We interpret $\alpha_\omega$ as the effective majority requirement for a proposal to pass among outside shareholders.

Next, we derive the close-form expression of the equilibrium proportion of sincere voters.\footnote{Our model extends that of Maug and Rydqvist (2009), which examines management-sponsored proposals subject to a supermajority requirement, where the supermajority requirement introduces bias into the vote. We examine management-sponsored proposals subject a simple majority requirement, where insider ownership introduces bias into the vote.} We assume that a project is either good or bad. We define $\alpha^*$ as the optimal majority requirement among the $N$ outside shareholders. This requirement is a function of the probability $p$ that the project is good, and $\varepsilon$, the probability of shareholder $i$ receiving an incorrect signal.

Acceptance of the proposal increases the value of the firm by $v = 1$ with probability $p$ and decreases it by $v = -1$ with probability $1 - p$. Each shareholder $i$ privately observes a signal $\sigma_i \in \{0, 1\}$, which reveals the state of nature correctly with probability $1 - \varepsilon$. That is,

$$Pr(\sigma = 1|v = 1) = Pr(\sigma = 0|v = -1) = 1 - \varepsilon, \quad 0 < \varepsilon < \frac{1}{2}. \quad (3)$$

We assume the probability of error is less than $1/2$ so that the signal is at least minimal-
ly reliable. Additionally, the private signals are assumed to be statistically independent conditional on the state of nature, and thus the probability of receiving a good signal is

$$\pi = p(1 - \varepsilon) + (1 - p)\varepsilon.$$  \hspace{1cm} (4)

Finally, recall that $\alpha = 1/2$, as we impose a simple majority assumption. Given these assumptions, the equilibrium proportion of sincere voters, stated in terms of $N$ outside shares (Maug and Rydqvist, 2009), is

$$\kappa_\omega = \max\{1 - 2|\alpha^* - \alpha_\omega|, 0\},$$ \hspace{1cm} (5)

where

$$\alpha^* = \frac{1}{2} - \frac{1}{2\varnothing \ln \left(\frac{1 - \varepsilon}{\varepsilon}\right) \ln \left(\frac{p}{1 - p}\right)}.$$ \hspace{1cm} (6)

**Lemma 3.1.** Assume outsider ownership is dispersed, then for simple majority proposals and for any $\omega > 0$, we have

$$\alpha_\omega < \frac{1}{2}.$$  

All proofs are given in Appendix A\textsuperscript{6}.

**Proposition 1.** If $\omega < 1/2$, then in equilibrium, the proportion of shareholders who vote strategically “against” is equal to insider ownership $\omega$.

Proposition\textsuperscript{11} demonstrates the optimality of strategic voting, and provides an intuitive explanation of the equilibrium proportion of strategic voters: given the entire proportion\textsuperscript{6}\textsuperscript{Lemma 3.1} mathematically simplifies (5) and makes the comparative statics algebraically manageable. Therefore, the main model development and empirical analysis in the paper are based on this special case. We consider this reasonable, given the small number of empirical observations lost (1,513 observations, or 1.6%) by imposing a simple majority requirement. Further, if the outsider ownership is dispersed ($N > \varnothing \to \infty$), then $\alpha^* = 1/2$ is asymptotically true (as can be seen in Equation (6)), so this assumption is not unrealistic. We generalize the model to supermajorities in Appendix C.
of insiders will vote in favor of the management proposal, then in equilibrium an equal proportion of outsiders will strategically vote passively “against” to offset these “for” votes. In this sense, outside shareholders rationally anticipate the voting behavior of insiders and respond by modifying their own voting behavior proportionally. A simple example is provided in Appendix B.

3.2. Comparative Statics

Next, we study the dynamic influence of insider ownership on the proportion of votes in favor, shareholder welfare loss function, and the pass rate.

3.2.1. Proportion of votes in favor

First, we examine the relation between the observed proportion in favor of a proposal and the insider ownership fraction. According to Lemma 3.1, the expected outsider support for the management proposal as a proportion of $\mathcal{O}$ outside shares equals

$$E(s/\mathcal{O}) = \pi \kappa_\omega = \pi - 2\pi \alpha^* + 2\pi \left(\frac{\alpha - \omega}{1 - \omega}\right) = \pi \left(\frac{1 - 2\omega}{1 - \omega}\right),$$

(7)

where $s$ denotes the number of “for” votes from outsider shareholders.

The proportion of outside shares in favor of the proposal decreases with insider ownership, because a proportion of outside shareholders vote passively against the proposal. We multiply both sides by $1 - \omega$ so that the equation is expressed as a proportion among all $N$ shareholders. This allows for easy translation to our regression model and to publicly available voting data in the next section:

$$E(s/N) = (1 - \omega)E(s/\mathcal{O}).$$

(8)
To reach the observed proportion in favor of a proposal, we must add the insider shares:

\[ E(y) = E(s/N) + \omega. \]  

(9)

Simplified, the expected proportion in favor is:

\[ E(y) = \pi + (1 - 2\pi)\omega. \]  

(10)

Another intuitive way of reaching Equation (10) is by Proposition 1, which says that the equilibrium proportion of shareholders who votes strategically “against” is equal to \( \omega \). Notice that if another proportion of shareholders \( \omega \) (the insiders) always votes “for,” then the proportion of shareholders who votes sincerely is \( 1 - 2\omega \). Therefore, the expected proportion in favor is:

\[ E(y) = \omega + \pi(1 - 2\omega) = \pi + (1 - 2\pi)\omega, \]  

(11)

consistent with Equation (10).

Another notable observation from Equation (10) is that the proportion in favor decreases with insider ownership when \( \pi > 1/2 \), on average. It is reasonable that most proposed projects will have a relatively high \( \pi \), as it is unlikely that management will repeatedly propose projects that shareholders are expected to receive poorly. We consider this further in our hypothesis development.

For comparison, we derive the expected proportion in favor assuming instead that all outside shareholders vote sincerely, i.e., according to their signal without regard to insider ownership. The number of sincere voters among all \( N \) shares is \( \kappa N = \kappa_\omega \theta \), where

\[ \kappa = (1 - \omega)\kappa_\omega. \]  

(12)
If all outside shareholders vote sincerely then $\kappa_\omega = 1$, so $\kappa = 1 - \omega$. The expected proportion in favor of a proposal if all outsiders vote sincerely equals:

$$E(y) = \pi \kappa + \omega = \pi + (1 - \pi)\omega. \quad (13)$$

Therefore, with sincere voting, the expected proportion in favor always increases with insider ownership because $0 < \pi < 1$ (also see Figure 2).

3.2.2. Welfare

Next, we evaluate the shareholder welfare loss function, expressed in Proposition 2.

**Proposition 2.** The probability of error, or expected welfare loss, is given by

$$L = p \sum_{g<a} Pr(g|v = 1) + (1-p) \sum_{g\geq a} Pr(g|v = -1)$$

$$= pe_I + (1-p)e_{II}, \quad (14)$$

where $a$ is the effective number of yes votes needed to pass a proposal, and

1. for sincere voting,

$$e_I = \sum_{g=0}^{N/2-I-1} \binom{\emptyset}{g} (1-\varepsilon)^g \varepsilon^{\emptyset-\emptyset}, \quad (15)$$

$$e_{II} = \sum_{g=N/2-I}^{\emptyset} \binom{\emptyset}{\emptyset - g} \varepsilon^g (1-\varepsilon)^{\emptyset-\emptyset}, \quad (16)$$

2. for strategic voting, the equilibrium number of sincere voters is $k(\emptyset, N) = \max \{2\emptyset - N, 0\}$.
Intuitively, the welfare loss function $L$ can be interpreted as follows. With probability $p$, the realized state of nature is good. However, if the number of good signals $g$ received by sincere voters is less than the effective number of yes votes needed to pass a proposal, then the shareholders incorrectly reject a value-increasing proposal, a Type I error. The summation exhausts all possible combinations of sincere voters who receive good signals. Similarly, with probability $1 - p$, the realized state of nature is bad. However, if the number of good signals $g$ received by sincere voters is larger than the effective number of yes votes needed to pass a proposal, then the shareholders incorrectly accept a value-decreasing proposal, a Type II error.

For the sincere voting cases (Equations (15) and (16)), all $\emptyset$ outside shareholders vote sincerely. As the effective number of “for” votes necessary to pass a proposal is $a = N/2 - I$, the expression of $L$ follows. For the strategic voting cases (Equations (17) and (18)), the equilibrium number of sincere voters is given by $k(\emptyset, N) = \max\{2\emptyset - N, 0\}$. The expressions of $e_I$ and $e_{II}$ are similar, replacing $\emptyset$ with $k(\emptyset, N)$ while keeping the effective statutory rule $a = N/2 - I$ the same.

In Figure 3 we illustrate how the probability of error varies with insider ownership under regimes of strategic voting, sincere voting, coordinated voting, and voting with no private information. The figure emphasizes the following properties. First, it is evident that
introducing a strategic voting mechanism affects welfare. We can see that the probability of error is monotonically higher for sincere voting than for strategic voting for the entire range of interest, $0 < \omega < 0.5$. Second, strategic voting effectively slows down the incremental loss induced by insider ownership. For example in Figure 3, we see that the error rate remains very low (close to zero, the rate associated with a coordinator) for much higher levels of insider ownership under strategic voting than under sincere voting. Finally, the mechanism is especially important in the middle range of insider ownership, where outsiders are best equipped to combat the increasingly material bias introduced by management. At very low levels of insider ownership, there is relatively little bias to combat. However, as insider ownership approaches fifty percent, neither sincere voting nor strategic voting matter to outside shareholders. The voting mechanism itself breaks down, as insiders control the vote, and outsiders can do nothing but accept the probability of loss being equal to $\varepsilon$.

3.2.3. Pass rate

Third, we derive the expected pass rate of the proposal. The probability of correctly passing the proposal in the good state is 1 minus the probability of incorrectly rejecting it, or $1 - e_I$ (where $e_I$ is a Type I error). Similarly, the probability of incorrectly passing the proposal in a bad state equals $e_{II}$ (Type II error). The expressions of $e_I$ and $e_{II}$ are given in Proposition 2 above. Thus, the expected pass rate for the strategic voting equilibrium equals:

$$\text{Pass} = p(1 - e_I) + (1 - p)e_{II}. \quad (19)$$

In Figure 4, we plot the expected pass rate for a proposal at varying levels of insider ownership. For small insider ownership, the incremental pass rate is much lower for strategic voting than for sincere voting. Notably, it tracks the probability of a good state ($p$) closely over the majority of the range, unlike that of sincere voting. However, when inside ownership

We refer the reader to a discussion of this hypothetical intervention in their paper.
approaches 50%, both strategic voting and sincere voting exhibit a pass rate approaching 1, i.e. the proposal passes virtually unconditionally. This result is unsurprising as insider influence begins to dominate when their ownership approaches a majority.

[Figure 4 about here.]

4. Empirical Testing Methodology

4.1. Testing Methodology

Empirically, it is difficult to identify strategic voting, as we are not able to observe a shareholder’s rationale for a vote. However, our model offers straightforward implications that allow us to test for univariate evidence consistent with strategic voting. In this section, we apply the model to an empirical setting to examine whether strategic voting occurs in reality. We first briefly discuss possible voting schemas. A proposal typically specifies one of three vote count methods, documented on the proxy statement. These methods differ by the “base” – the categories of shares considered when calculating the outcome. The ratio of votes in favor to the base is compared to $\alpha$, the minimum percent in favor necessary to pass. Type I proposals include only votes for and against in the base. Type II proposals include votes for, against, and abstained in the base. Type III proposals include votes for, against, and abstained, as well as broker non-votes, in the base.\(^8\)

In our model development, we assumed at Type I proposal. Note, however, that abstentions in Type II proposals and abstentions and non-votes in Type III proposals are mathematically equivalent to “against” votes. Thus, the model accommodates all three proposal types to the extent no other bias is introduced. To this end, in our main empirical analyses, we consider Type I and Type II proposal collectively. Type III proposals introduce

\(^8\)Terminology follows Maug and Rydqvist (2009).
a separate bias, which we discuss in Section 6. We therefore consider Type III proposals separately therein.

Given that shareholder welfare improves under strategic voting, we expect to observe empirical evidence of strategic voting. We transform the proportion in favor as

\[ y = \frac{\text{For}}{\text{For} + \text{Against}}. \]  

(20)

Then we estimate the following regression model:

\[ y = \gamma_0 + \gamma_1 \omega + e. \]  

(21)

The regression parameters are functions of the model imputed parameters. According to the sincere voting model (13) and strategic voting model (10), the empirical predictions are summarized in the following hypothesis.

**Hypothesis 1.** If \( 0 < \pi < 1 \), for sincere voting (Equation (13)), the model imputed parameters satisfy the condition

\[ \gamma_0 + \gamma_1 = 1, \]  

(22)

whereas for strategic voting (Equation (10)),

\[ \gamma_0 + \gamma_1 < 1. \]  

(23)

According to the above hypothesis, we can test our model by estimating \( \gamma_0 \) and \( \gamma_1 \) from (21), and performing the following tests based on these estimates:

**Test 1 (Cross-coefficient restriction).** Sincere voting implies \( \gamma_0 + \gamma_1 = 1 \), whereas s-
strategic voting implies $\gamma_0 + \gamma_1 < 1$. This provides a cross-coefficient test on the estimated intercept and slope coefficients. This test represents our primary test of strategic voting.

We also develop additional tests to corroborate our findings of Test 1. Recall that we expect $\pi > 0.5$ in most settings, as we expect managers to avoid proposing projects that are likely to be viewed as destroying value by shareholders. If we assume that $\pi > 0.5$ on average, we can test the following.

**Hypothesis 2.** If $0.5 < \pi < 1$ (i.e., the probability of receiving a good signal is larger than $1/2$ on average), for sincere voting, the model imputed parameters satisfy the condition

$$\gamma_1 > 0,$$  

(24)

whereas for strategic voting,

$$\gamma_1 < 0,$$  

(25)

This leads to the following test.

**Test 2 (Direct test on slope).** If $0.5 < \pi < 1$ (i.e., the probability of receiving a good signal is larger than $1/2$), sincere voting implies $\gamma_1 > 0$, whereas strategic voting implies $\gamma_1 < 0$.

We acknowledge that the probability of receiving a good signal is unobservable in real voting data. Therefore, we are unable to validate this assumption. For this reason, we consider Test 2 a complement to Test 1, not the primary test of the model.

It is possible that shareholders do not always vote strategically; they may only so when the potential for welfare loss is high. Thus we consider settings with a greater potential need for strategic voting. Such cross-sectional tests allow us to assess the concurrent validity of our empirical design (i.e., the degree to which our operationalization distinguishes between groups it is theoretically expected to differentiate; Trochim and Donnelly, 2008).
are indeed capturing strategic voting through our regression model, we would expect the results to be more apparent in certain settings. Although our model precludes the use of control variables in a multivariate regression, such cross-sectional splits serve to support our interpretation that strategic voting is the mechanism driving the result.

First, we will consider a negative vote recommendation by proxy advisor ISS as signal that a given proposal is more controversial. We expect evidence of strategic voting to be stronger in this setting. We will therefore bifurcate the sample by ISS recommendation “for” or “against,” and expect to find stronger results in the “against” subsample. Second, we will separate the proposals by category (e.g., charter amendments, restructuring, etc.) to identify trends.\(^{10}\) We expect to find stronger evidence of strategic voting in more contentious or complex proposals, as information asymmetry is likely larger. Third, we will run a piecewise regression, examining the changes in the regression at the interquartile range. As discussed with Figure 3, strategic voting has the greatest impact on welfare loss at moderate levels of insider ownership. Therefore, we expect strategic voting to be most apparent in the interquartile range. Fourth, we will examine firm-level economic characteristics that we expect to justify greater skepticism of management or to predict greater oversight by shareholders. These include firm financial risk, firm maturity, and firm monitoring environment.

4.2. **Evaluating Economic Significance**

In order to explain the empirical results intuitively, we derive the following estimation of the fraction of strategic voting. To do this, we assume that there are only two types of voting in equilibrium: strategic and sincere. If our observed data presented perfect sincere voting, we would have

\[
\hat{\gamma}^\text{sincere}_1 = 1 - \hat{\gamma}^\text{sincere}_0,
\]

\(^{10}\)We follow Maug and Rydqvist (2009) to map proposals into categories.
where $\hat{\gamma}_{sincere}^1$ and $\hat{\gamma}_{sincere}^0$ denote the estimated slope coefficient and intercept, respectively, under sincere voting. Alternatively, if our observed data presented perfect strategic voting, we would have

$$\hat{\gamma}_{strategic}^1 = 1 - 2\hat{\gamma}_{strategic}^0,$$

(27)

where $\hat{\gamma}_{strategic}^1$ and $\hat{\gamma}_{strategic}^0$ denote the estimated slope coefficient and intercept, respectively, assuming strategic voting. Note that that according to the models of both strategic voting (Equation (10)) and sincere voting (Equation (13)), the model implied intercepts are $\pi$. Therefore, regardless of voting mechanism, we would have

$$\hat{\gamma}_{strategic}^0 = \hat{\gamma}_{sincere}^0 = \hat{\gamma}_0.$$

(28)

To assist in interpreting economic significance, we assume the equilibrium observed slope coefficient $\hat{\gamma}_1$ (on insider ownership $\omega$) is a linear combination of model implied slope coefficients $\hat{\gamma}_{strategic}^1$ and $\hat{\gamma}_{sincere}^1$. Thus, we have

$$\hat{\gamma}_1 = W^{strategic}(1 - 2\hat{\gamma}_0) + (1 - W^{strategic})(1 - \hat{\gamma}_0),$$

(29)

where $W^{strategic}$ is the implied rate of strategic voting in the data. Solving for $W^{strategic}$, we have

$$W^{strategic} = \frac{1 - \hat{\gamma}_0 - \hat{\gamma}_1}{\hat{\gamma}_0}.$$ 

(30)

We report $W^{strategic}$ as part of our empirical results in an effort to ease the economic interpretation of our results.
4.3. Data and Sample Selection

We obtain voting result data from two sources. First, data from 1994–2003 comes from Kristian Rydqvist.\footnote{This source dataset is the same as that used by Maug and Rydqvist (2009). We are grateful to the authors for sharing this data. The data comes from Investor Responsibility Research Center (IRRC), Investext, and the SEC’s EDGAR.} We extend this sample using data covering 2004–2014 from the ISS Voting Analytics database and Thompson Reuters. Insider ownership is calculated as total shares owned by insiders as of the most recent quarter prior to the shareholder meeting (estimated using data reported by Thomson Reuters Insider Data) divided by shares outstanding as of the shareholder meeting date (as reported by ISS).

We limit our sample to resolutions proposed by management, as this is our context of interest.\footnote{Management proposals represent over 97% of the population of proposals in the ISS Voting Analytics database from 2004-2014. Thus, we consider our setting economically important. The sample provided by Kristian Rydqvist for 1994-2003 is already screened to include only management proposals.} We exclude management proposals where insider ownership is missing or insiders control more than the statutory rule. Next, we consider only simple majority proposals ($\alpha = 1/2$) and require that insider ownership $\omega < 1/2$ and ISS recommendations to be available. We further limit our sample to Type I and II proposals. The final sample consists of 90,202 management proposals, of which 56,738 (62.9%) are Type I and 33,464 (37.1%) are Type II. We also identify 5,253 Type III proposals, which we analyze separately in Section 6.

We provide descriptive statistics in Table 1. We observe the following patterns of note. First, we observe a very high average proportion in favor (94%), consistent with other literature (e.g., Ertimur, Ferri, and Oesch, 2015). Average insider ownership is 8.6%. Further, these statistics change for the ISS “against” group. The proportion in favor is lower (79.7%), and insider ownership is larger (9.8%).

[Table 1 about here.]
5. Empirical Results

5.1. Main Results

Table 2 reports the results of the panel regressions testing for strategic voting across the main sample. In all tests, standard errors, reported below the parameter estimates, are clustered by firm and by year (Petersen, 2009). Panel A reports results for the full sample, while Panels B and C report results for subsamples of proposals with ISS recommendations “for” and “against,” respectively.

Table 2 indicates the following patterns, generally consistent with our expectations. First in Panel A, according to the regression results, we reject the null hypothesis of $\gamma_0 + \gamma_1 = 1$ for the entire set of proposals (Test 1). Notably, these results are driven by relatively complex votes (compensation, recapitalization, restructuring, and charter amendments). The test is not significant for relatively simple, uncontroversial votes (procedural), or votes classified as “other.” Furthermore, we find some evidence of strategic voting examining the slope coefficient directly, as the slope coefficient is significantly negative under most specifications (Test 2).

We note that the null hypothesis is also rejected for “all” proposals in each Panels B (ISS “for”) and C (ISS “against”). Economically, the results are strongest for the proposals in Panel C. For example, the magnitude of the sum of the intercept and slope is further from 1 (0.758 for ISS “against” versus 0.959 for ISS “for”). This is also true for the subcategories. For example, the test is significant for four of the six subcategories within the ISS “against” sample, compared to only three of six within the ISS “for” sample. The magnitude of these coefficients is also further from 1 for the ISS “against” sample.
In the full sample, we estimate that the implied rate of strategic voting is 8.7%. Furthermore, we observe that the implied rate of strategic voting is higher when the proposal carries greater risk. For example, the implied rate of strategic voting is 4.4% for proposals receiving ISS support, but is 30.3% for proposals without ISS support. The highest implied rate of strategic voting captured in Table 2, nearly 60%, is attributed to charter amendments without ISS support. This again provides evidence that shareholder vote strategically, both on average and when it is most critical to the preservation of shareholder wealth. The results of Table 2 support the conclusion that shareholders vote strategically in a way generally consistent with our model. Our tests of the regression coefficients reject the interpretation that shareholders vote exclusively according to the sincere model, and the data show support for a nontrivial rate of strategic voting. In the next sections, we assess the validity of these results through a series of cross-sectional tests.

5.2. Strategic Voting at Different Levels of Insider Ownership

Does the level of insider ownership impact the benefits to strategic voting? As discussed in the model development, the benefits of strategic voting are lowest when insider ownership is either low (and where there is little insider influence to mitigate) or high (where insider influence is difficult to counteract). This is illustrated Figure 4 where the benefits of strategic voting can be characterized as the difference between the probability of a voting classification error given sincere voting and strategic voting. It can be seen that this difference is largest at moderate levels of insider ownership.

An empirical implication of our model, then, is that we should observe higher levels of strategic voting at moderate levels of insider ownership than at low or high levels of insider ownership. To examine this possibility, we run a piecewise regression, and define low, moderate, and high levels of insider ownership at the interquartile range (with breakpoints at 1.5% and 12% of insider ownership). We estimate separate intercepts and slope coefficients
for these varying levels of insider ownership, and expect strategic voting to be most apparent at moderate levels of insider ownership.

Results are tabulated in Table 3. In the full sample, we note that the null hypothesis of sincere voting is rejected for both moderate and high levels of insider ownership (Test 1). The sum of the coefficients is further from 1 for the moderate level. In addition, the slope coefficient is significantly negative for only the moderate level (Test 2). These results are consistent with strategic voting occurring more frequently in firms with moderate levels of insider ownership. Results are stronger when ISS recommends against. Within this subsample, Tests 1 and 2 are supportive of strategic voting only for moderate levels of insider ownership (the implied rate of strategic voting for the low group within this subsample is large; however, the slope coefficient estimates that are used to estimate the rate of strategic voting are not significantly different from 0). Table 3 provides evidence that strategic voting is most apparent where it is theorized to have the most impact.

5.3. Strategic Voting in Response to Agency Problems

Is strategic voting more apparent in firms where agency problems are likely to be more pronounced? If strategic voting is exercised to mitigate agency problems, we expect to see greater evidence of strategic voting at firms with greater risk of them. To answer this question, we divide our sample into terciles by year based on several proxies that capture different dimensions of agency problems. We compare the varying levels of strategic voting within each subsample.

Results are presented in Table 4. In Panel A, we consider earnings volatility, a proxy for uncertainty. Shareholders use earnings information to update their expectations for future cash flows and the stock price (Nichols and Wahlen, 2004). To the extent earnings are not
persistent, this process is more difficult (Kormendi and Lipe, 1987), and earnings volatility can thereby be viewed as a determinant of risk (Penman and Zhu, 2014). We split the sample into terciles by year based on earnings volatility, measured as the standard deviation of earnings scaled by total assets over the last five years. We expect to find more evidence of strategic voting when uncertainty is higher. Consistent with our expectation, strategic voting is more apparent in the highest tercile of earnings volatility. Across all proposals, the sum of coefficients is further from 1 in the top tercile (0.916) versus the bottom tercile (0.928), and the rate of strategic voting is higher as well (9.0% versus 7.6%). This pattern is even stronger in the subsection of ISS “against” proposals. In the top tercile, the sum of coefficients is far from 1 (0.710) and the rate of strategic voting reaches 37.8%. We do not reject the null of sincere voting in the bottom tercile.

In Panel B, we consider financial health, as represented by Altman Z-score (Altman, 1968). During times financial distress, shareholders may fear that their wealth is in jeopardy. Furthermore, they might be concerned about management becoming desperate and proposing projects inconsistent with shareholders’ best interests (Tirole, 2010). Therefore, we expect to observe more strategic voting when financial health is worse. Consistent with our expectations, strategic voting is more apparent in the bottom tercile of Altman Z-score. Across all proposals, the sum of coefficients is lower in the bottom tercile than in the top tercile (0.902 versus 0.929), and the rate of strategic voting is higher (10.4% versus 7.5%). This even more apparent when ISS recommended against the proposal (0.715 versus 0.790, and 36.1% versus 26.6%).

[Table 4 about here.]

Next, we consider firm lifecycle. Firms early in their lifecycle are associated with more uncertainty and greater growth (Mueller, 1972). This pressure for growth leads to low survival rates, as many managers propose inefficient or ineffective investments (Jovanovic,
Given these circumstances, shareholders may be more scrutinizing of management-sponsored proposals during this critical time. We approach firm lifecycle two ways: firm age (Pastor and Veronesi, 2003; Fama and French, 2004) and firm size (Fama and French, 1993), expecting less mature firms to display more strategic voting. Results in Panels C and D are consistent with this expectation. In Panel C, we observe greater evidence of strategic voting in the bottom tercile of firm age, measured as the length of time reporting in Compustat. In Panel D, the bottom tercile of total assets is associated with more strategic voting. For example, among immature firms without ISS support for a proposal, the estimated rate of strategic voting is 32.5% when measured via age and 32.4% when measured via size.

Finally we consider two aspects of a firm’s monitoring environment. First in Panel E, we consider leverage. Debt induces discipline on management by earmarking some cash flows for debt payments (Jensen, 1986; Dewatripont and Tirole, 1994). Debtholders also have strong incentives to monitor management closely. While shareholders have unlimited upside risk, the potential payoff for debtholders is capped at principal and interest (Jensen and Meckling, 1976). Thus, debtholders monitor to ensure preservation of their investment. If debtholder monitoring is a substitute to strategic voting by shareholders, we would expect to observe less strategic voting in highly levered firms. Evidence is mixed. In Panel E across all proposals, we find that strategic voting is more apparent in the top tercile of leverage than in the bottom tercile, opposite our expectation. However, when we limit the sample to the strongest setting - proposals without ISS support - the results are consistent with our expectation. Strategic voting is more apparent in the bottom tercile than in the top tercile (e.g., rates of strategic voting are 34.2% and 24.5%, respectively).

In Panel F, we split by institutional ownership. Institutional owners are commonly considered more sophisticated investors by academic literature (Hand, 1990; Jiambalvo, Rajgopal, and Venkatachalam, 2002). Institutions play an active, value-adding role in shareholder voting, and their monitoring efforts directly address agency problems of management (Gillan
and Starks, 2000; Hartzell and Starks, 2003). Furthermore, Matvos and Ostrovsky (2010) document strategic coordination by institutional investors in director elections, consistent with peer effects. If this sophisticated shareholder group is more scrutinizing and skeptical of management, we would expect to observe more strategic voting under high institutional ownership. Similar to leverage, our results are mixed. Across all proposals, strategic voting appears slightly higher in the bottom tercile of institutional ownership, opposite our expectation. However, when we limit our sample to the more powerful setting of ISS “against” proposals, the rate strategic voting jumps to 85.3% in the top tercile of institutional ownership, versus 46.3% in the bottom tercile. The results of Panels E and F are mixed, but appear to support our expectation in the most powerful setting, ISS “against” proposals.

In summary, the results of this section provide evidence consistent with strategic voting occurring in response to agency problems. In most of the analyses, strategic voting is more pronounced when agency costs are higher. Collectively, these results support the idea that outside shareholders vote strategically in an effort to mitigate agency costs.

6. A Generalized Model Allowing Non-Voted Shares

6.1. Model Formulation for Type III Proposals

As previously noted, Proposition 1 applies to all three proposal types. The proportion of strategic shares cast to combat the bias of insider ownership is $\omega$ across all proposals. However, Type III proposals, which include non-voting shares in the base, introduce an additional bias that we now consider. Non-votes are unique because they occur when a shareholder simply does not attend the meeting or bother to cast any vote. Thus, although non-votes may represent deliberate dissent, they more likely represent apathy or disinterest. Thus, these passive shareholders introduce a downward bias to the vote, as non-votes are mathematically equivalent to “against” votes in Type III proposals. This is vastly different
from abstentions. Abstentions require a mailed ballot or attendance at the shareholder meeting and exhibit deliberate choice. Abstentions are effectively sincere “against” votes in Type II and Type III proposals. We now address this additional bias.

Suppose there are \( \omega \) insider shares that are committed in favor of a Type III proposal, and \( \eta \) nonvoting shares that count as votes against the proposal. Therefore the net bias resulting from committed votes is \( \omega - \eta \). First, suppose that the remaining shares \( 1 - \omega - \eta \) are voted sincerely. Under sincere voting, the expected proportion in favor of the proposal equals:

\[
E(y) = \omega + \pi (1 - \omega - \eta),
\]

\[
= \pi + (1 - \pi)\omega - \pi\eta. \quad (31)
\]

Next, suppose that a portion of the remaining \( 1 - \omega - \eta \) outsider shares vote strategically to offset both the voting bias from insider shares and the bias from the nonvoting shares. In equilibrium, among the \( 1 - \omega - \eta \) active outside shares, \( \omega \) shares vote strategically “against” to offset the voting bias from insider shares, while another \( \eta \) shares vote strategically “for” to offset the voting bias from nonvoting shares. This leaves \( 1 - 2\omega - 2\eta \) shares to vote sincerely. Then, the expected proportion in favor of the proposal equals:

\[
E(y) = \omega + \pi (1 - \omega - \eta - \omega - \eta) + \eta,
\]

\[
= \pi + (1 - 2\pi)\omega + (1 - 2\pi)\eta. \quad (32)
\]
6.2. Testing Methodology for Type III Proposals

Next, we develop an addition testing method for Type III proposals. According to (31) and (32), for Type III proposals we shall estimate a regression model of the form:

\[ y = \gamma_0 + \gamma_1 \omega + \gamma_2 \eta + e, \]  

(33)

where the dependent variable \( y \) is defined as the percentage of votes in favor, i.e.,

\[ y = \frac{For}{Shares \ Outstanding}, \]  

(34)

and \( \omega \) is insider ownership proportion and \( \eta \) is the proportion of nonvoting shares.

**Hypothesis 3.** For Type III proposals, sincere voting implies:

\[ \begin{cases} 
\gamma_0 + \gamma_1 = 1, \\
\gamma_0 + \gamma_2 = 0,
\end{cases} \]  

(35a)

\[ \begin{cases} 
\gamma_0 + \gamma_1 < 1, \\
\gamma_0 + \gamma_2 > 0,
\end{cases} \]  

(35b)

whereas strategic voting implies:

\[ \begin{cases} 
\gamma_0 + \gamma_1 < 1, \\
\gamma_0 + \gamma_2 > 0.
\end{cases} \]  

(36a)

(36b)

Therefore, Hypothesis 3 provides another set of cross-coefficient tests for type III proposals, according to the estimated intercept and slope coefficient from regression (33).

**Test 3a (Cross-coefficient restriction).** Sincere voting implies \( \gamma_0 + \gamma_1 = 1 \), whereas strategic voting implies \( \gamma_0 + \gamma_1 < 1 \). This provides a cross-coefficient test on the estimated intercept and slope coefficients.

**Test 3b (Cross-coefficient restriction).** Sincere voting implies \( \gamma_0 + \gamma_2 = 0 \), whereas strategic voting implies \( \gamma_0 + \gamma_2 > 0 \). This provides a cross-coefficient test on the estimated
intercept and slope coefficients.

Tests 3a and 3b extend Test 1, our primary evidence of strategic voting, to the Type III setting. We cannot disentangle nonvoting outside shareholders who withhold voting as a method of dissent (strategic or sincere) from those who simply do not bother to cast a vote. As such, \( \eta \) is measured with error, and the coefficient \( \gamma_2 \) is biased towards zero. Note, however, that this biases against our finding evidence of strategic voting for Type III proposals.

6.3. Empirical Results for Type III Proposals

We report regression results for Type III proposals in Table 5. The results generally support strategic, over sincere, voting. In Test 3a, \( \gamma_0 + \gamma_1 \) is significantly less than 1 in the full sample. This is driven by management proposals with higher need for strategic voting, as represented by ISS “against” recommendation. Further, in Test 3b, \( \gamma_0 + \gamma_2 \) is significantly greater than 0 in all specifications. In conclusion, the results from Table 5 provide supporting evidence of our main conclusion: a strategic voting model better explains actual shareholder voting than a sincere voting model.

[Table 5 about here.]

7. Conclusion

Agency problems arise at firms due to the separation of ownership and control. Giving managers an ownership stake in the firm has been viewed as one way these agency problems can be mitigated. However, manager ownership also comes with manager voting rights, which may serve to exacerbate, not mitigate, agency problems. In this paper we build upon the work of Maug and Rydqvist (2009) to develop a simple model of strategic voting in
which outsiders blindly cast a portion of their vote in opposition to insiders. This allows outside shareholders to offset the influence of insider owners and thereby improve the welfare of outsiders.

We test the empirical predictions of our model and find evidence that outside shareholders vote strategically. Consistent with our model, we find that strategic voting is more pronounced and economically meaningful when agency problems are likely to be more severe: when ISS recommends a vote “against” a proposal and when firm characteristics imply a greater likelihood of agency problems within a firm. We also find more strategic voting for moderate levels of insider ownership, also consistent with the predictions of our model. Previous work has generally assumed that shareholders vote sincerely in reference to management ownership. Our study contributes to the literature by characterizing a form of strategic voting wherein some shareholders do not vote sincerely and by providing evidence that shareholders are sophisticated in their voting behavior.
Appendix A. Proofs

In this section, we prove all the lemmas and propositions presented in the body of the paper.

**Proof of Lemma 3.1.** Since outsider ownership is dispersed, i.e., \( N > \emptyset \rightarrow \infty \), we have \( \alpha^* = 1/2 \). According to Equation (6),

\[
\alpha_\omega = \frac{\alpha - \omega}{1 - \omega} = \frac{1/2 - \omega}{1 - \omega} = \frac{1}{2} - \frac{1}{2} \cdot \frac{\omega}{1 - \omega} < \frac{1}{2} = \alpha^*.
\]

**Proof of Proposition 1.** If \( \omega < 1/2 \), then according to (5), the equilibrium proportion of sincere voters among the \( \emptyset \) outside shareholders is

\[
\kappa_\omega = \max \left\{ 1 - 2|\alpha^* - \alpha_\omega|, 0 \right\} = \max \left\{ 1 - 2 \cdot (1/2 - \omega), 0 \right\} = \max \{ 2\alpha_\omega, 0 \}
\]

\[
= \max \left\{ 2 \left( \frac{1/2 - \omega}{1 - \omega} \right), 0 \right\} = \max \left\{ \frac{1 - 2\omega}{1 - \omega}, 0 \right\} = \frac{1 - 2\omega}{1 - \omega}.
\]

Therefore, the equilibrium proportion of sincere voters among the \( N \) shareholders is

\[
\kappa = (1 - \omega)\kappa_\omega = 1 - 2\omega.
\]

Note that a proportion \( \omega \) of insiders always vote passively in favor regardless of information, then the proportion of shareholders who vote strategically against is

\[
1 - (1 - 2\omega) - \omega = \omega.
\]

**Proof of Proposition 2.** Note that

\[
\alpha_\omega = \frac{1/2 - \omega}{1 - \omega} = \frac{1/2 - I/N}{1 - I/N} = \frac{1/2 - (N - \emptyset)/N}{1 - (N - \emptyset)/N} = \frac{2\emptyset - N}{2\emptyset},
\]
then the equilibrium number of sincere voters among the \(N\) shareholders is

\[
K = \theta \cdot \kappa \omega = \theta \cdot \max \{2\alpha \omega, 0\} = \theta \cdot \max \left\{ 2 \left( \frac{2\theta - N}{2\theta} \right), 0 \right\} = \max \{2\theta - N, 0\}.
\]

Then, by Bayes’ Rule and the definition of probability of loss, the proof is complete.

**Appendix B. An Illustrative Example**

The purpose of this section is to provide a simple example to demonstrate differences between proposal types and between sincere and strategic voting. Consider a simple example of a company with ten shares outstanding, of which managers (insiders) own two (\(\omega = 0.2\)). A simple majority (>50% in favor) is required to pass the vote. These managers always vote in favor of management-sponsored proposals. Suppose the probability of receiving a good signal is \(\pi = 0.5\). Finally, two shareholders are always unaware of the general meeting and instead go “drinking coffee” (\(\eta = 0.2\)).

For Type I and II proposals, the coffee drinkers are inconsequential, and the remaining six shareholders may vote either sincerely or strategically. If all outsiders vote sincerely, three (\(\pi \cdot [1 - \omega - \eta]\)) vote in favor and three vote opposed. The proposal passes, as it receives 5/8 in favor. If two outsiders vote strategically, then the remaining four vote sincerely. Thus two (\(\pi \cdot [1 - 2\omega - \eta]\)) vote in favor and two vote opposed. The proposal fails, as it receives 4/8 in favor (not >50%).

However, for Type III proposals, the coffee drinkers have the same consequences as voting against the proposal. Therefore in order for strategic voting to be effective, the remaining six shareholders must take both the insider voting bias and the “coffee drinking” effect into account. Thus, two (\(\omega\)) shareholders vote passively “against” to offset the voting bias from the insiders, and another two (\(\eta\)) shareholders vote passively “for” to offset the coffee
drinking effect from the oblivious nonvoting shareholders. This leaves four \((1 - 2\omega - 2\eta)\) shareholders vote sincerely, of whom two \((\pi \cdot [1 - 2\omega - 2\eta])\) vote in favor and two opposed. Thus, the proposal fails, as it receives 5/10 in favor (not > 50%). We summarize the cast of votes for each case in Table [A-1].

[Table A-1 about here.]

Appendix C. Generalized Model

Maug and Rydqvist (2009) demonstrate evidence of strategic voting against bias introduced by supermajority requirements. In this section, we consider the conflicting biases of supermajority requirements and insider ownership.

We are interested in the relation between the observed proportion in favor of a proposal and the insider ownership fraction. The expected outside support for a management proposal as a proportion of the \(\Omega\) outside shares equals

\[
E(s/\Omega) = \begin{cases} 
\pi \kappa_\omega & = \pi - 2\pi \alpha^* + 2\pi \left(\frac{\alpha - \omega}{1 - \omega}\right), \text{ if } \alpha_\omega < \alpha^*, \\
\pi \kappa_\omega + 1 - \kappa_\omega & = \pi - 2(1 - \pi)\alpha^* + 2(1 - \pi) \left(\frac{\alpha - \omega}{1 - \omega}\right), \text{ if } \alpha_\omega \geq \alpha^*.
\end{cases}
\]

(37)

The proportion of outside shares in favor of the proposal decreases with insider ownership, because a proportion of outside shareholders vote passively against the proposal. Since our data are expressed as proportions among all \(N\) shareholders, we multiply both sides of (37) with \(1 - \omega\):

\[
E(s/N) = (1 - \omega)E(s/\Omega)
\]

(38)
To get the observed proportion in favor of a proposal, we must add the insider shares:

\[ E(y) = E(s/N) + \omega. \]  

(39)

Combining (37), (38), and (39) gives the expected proportion in favor:

\[
E(y) = \begin{cases} 
\pi - 2\pi\alpha^* + 2\pi\alpha + (1 - \pi - 2\pi(1 - \alpha^*))\omega, & \text{if } \alpha\omega < \alpha^*, \\
\pi - 2(1 - \pi)\alpha^* + 2(1 - \pi)\alpha + (1 - \pi - 2(1 - \pi)(1 - \alpha^*))\omega, & \text{if } \alpha\omega \geq \alpha^*.
\end{cases}
\]  

(40)

The relation is linear, and the expected proportion in favor may increase or decrease with the insider ownership fraction depending on parameter values. The mixed comparative statics depend on the tradeoff between the positive insider effect and the negative strategic voting effect.

**Special Case: \( \alpha^* = 1/2 \)**

In this case, the expression for the proportion in favor simplifies to:

\[
E(y) = \begin{cases} 
2\pi\alpha + (1 - 2\pi)\omega, & \text{if } \alpha\omega < \alpha^*, \\
2\pi - 1 + 2(1 - \pi)\alpha, & \text{if } \alpha\omega \geq \alpha^*.
\end{cases}
\]  

(41)

The top line of (41) occurs, for example, when the proposal is subject to simple majority and the insider ownership fraction is positive, \( \alpha = 1/2 \) and \( \omega > 0 \). We refer to this as the simple-majority subset. Then, the proportion in favor decreases with insider ownership whenever \( \pi > 1/2 \) and increases whenever \( \pi < 1/2 \). The bottom line of (41) occurs, for example, when there is supermajority and the insider ownership fraction is small, \( \alpha > 1/2 \) and \( \omega \leq (\alpha - \alpha^*)/(1 - \alpha^*) \). We refer to this as the supermajority subset. Notably, the proportion in favor does not depend on the insider ownership fraction.
Special Case: $\alpha_\omega = \alpha^*$

This assumption implies that all outside shareholders vote sincerely $\kappa_\omega = 1$, so that
$\kappa = 1 - \omega$. The expected proportion in favor of a proposal equals:

$$E(y) = \pi \kappa + \omega = \pi + (1 - \pi)\omega. \quad (42)$$

With sincere voting, the proportion in favor increases with insider ownership. The statutory
rule is irrelevant. This model is observationally equivalent to a model where shareholders do
not collect information and vote randomly.

Testing Methodology

We focus on the special case $\alpha^* = 1/2$ and split the data into two subsets: simple-majority
proposals with significant insider ownership ($\alpha = 1/2$ and $\omega \geq 5\%$) and supermajority
proposals ($\alpha > 1/2$) and simple-majority proposals with insignificant insider ownership ($\alpha =
1/2$ and $\omega \geq 5\%$). The former subset corresponds to $\alpha_\omega < \alpha^*$ and the latter to $\alpha_\omega \geq \alpha^*$.
Under those assumptions, we can estimate the following regression model:

$$y = \begin{cases} 
\gamma_01 + \gamma_11 \omega + \xi, & \text{if } \alpha_\omega < \alpha^*, \\
\gamma_02 + \gamma_12 \alpha + \xi, & \text{if } \alpha_\omega \geq \alpha^*,
\end{cases} \quad (43)$$

The regression parameters are functions of the model parameters.

$$\begin{align*}
\gamma_{01} &= \pi, & \gamma_{11} &= 1 - 2\pi, & \text{if } \alpha_\omega < \alpha^*, \\
\gamma_{02} &= 2\pi - 1, & \gamma_{12} &= 2(1 - \pi), & \text{if } \alpha_\omega \geq \alpha^*,
\end{align*} \quad (44)$$
The strategic voting model predicts that

\[ 2\gamma_{01} + \gamma_{11} = 1, \]
\[ \gamma_{02} + \gamma_{12} = 1. \]

These tests allow \( \pi \) to be different across the two subsets. If we force \( \pi \) to be equal, four additional restrictions are possible by summing the coefficients across the two subsets.

We shall also examine the other special case (\( \alpha_\omega = \alpha^* \)) by estimating the regression:

\[ y = \gamma_{03} + \gamma_{23}\alpha + \gamma_{13}\omega + \xi, \]

The regression parameters are:

\[ \gamma_{03} = \pi \quad \gamma_{13} = 0 \quad \gamma_{23} = 1 - \pi. \]

and the model predicts that:

\[ \gamma_{13} = 0 \quad \text{and} \quad \gamma_{03} + \gamma_{23} = 1. \]
References


Fig. 1. Historical Insider Ownership Rates. This figure depicts the mean (solid line) and median (dashed line) percent of shares outstanding owned by managers (“insiders”), estimated from Thompson Reuters Insider Data. Estimates cover the period 1986, the beginning of available data from Thompson Reuters, to 2014, the end of our sample period.
Fig. 2. Expected Proportion in Favor. This figure depicts the expected relationship between insider ownership (x-axis) and expected proportion of votes in favor of the proposal (y-axis) under strategic (dashed-dotted line) and sincere (solid line) voting regimes. Parameter assumptions are listed above. Variables are defined in the narrative.
Fig. 3. Probability of Error. This figure depicts the expected relationship between insider ownership ($x$-axis) and probability of error ($y$-axis). Probability of error is the probability that the vote outcome (for/against) is mismatched with the true nature of the proposal (good/bad), i.e. Type I plus Type II error. We consider this relationship under four regimes: strategic (dashed-dotted line), sincere (dashed line), the presence of a coordinator (solid line), and the absence of signals (dotted line). Parameter assumptions are listed above. Variables are defined in the narrative.
Fig. 4. Pass Rate. This figure depicts the expected relationship between insider ownership (x-axis) and proposal pass rate (y-axis) under strategic (dashed-dotted line) and sincere (dashed line) regimes. Parameter assumptions are listed above. Variables are defined in the narrative.
Table 1: Descriptive Statistics

This table provides the descriptive statistics of our variables of interest. Data 1994-2003 is provided by Kristian Rydqvist. Data 2004-2014 is from ISS Voting Analytics and Thompson Reuters. We report descriptive statistics for the entire sample (Panel A), for observations with ISS recommendation “for” (Panel B), and for observations with ISS recommendation “against” (Panel C).

<table>
<thead>
<tr>
<th>Panel A: All Proposals</th>
<th>Percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>Proportion in Favor ((y))</td>
<td>95,455</td>
</tr>
<tr>
<td>Insider Ownership ((\omega))</td>
<td>95,455</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: ISS recommendation = For</th>
<th>Percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>Proportion in Favor ((y))</td>
<td>85,122</td>
</tr>
<tr>
<td>Insider Ownership ((\omega))</td>
<td>85,122</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel C: ISS recommendation = Against</th>
<th>Percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>Proportion in Favor ((y))</td>
<td>10,333</td>
</tr>
<tr>
<td>Insider Ownership ((\omega))</td>
<td>10,333</td>
</tr>
</tbody>
</table>
where $y$ is the proportion of “for” votes and $\omega$ is the proportion of insiders. Under the sincere model of voting, $\gamma_0 + \gamma_1 = 1$, and under strategic voting, $\gamma_0 + \gamma_1 < 1$. Panel A includes regression results for all proposals, as well as subcategories of proposals (which include compensation, recapitalization, restructuring, charter amendment, procedural, and other). Panels B and C report results for the subsample of votes that have received either a “for” or “against” recommendation from ISS, respectively. Standard errors are adjusted for clustering by firm and year and are reported in parentheses (with ****, **, and * denoting statistical significance at the 1, 5, and 10 percent levels, respectively). $W_{strategic}$ measures the implied rate of strategic voting, as defined in Section 4.

### Table 2: Panel Regression for Strategic Voting

This table summarizes the results of regressions where the dependent variable is the proportion vote in favor and the independent variable is insider ownership for a sample of 90,202 Types I and II management proposals. Coefficient estimates of the following model are estimated,

\[
y = \gamma_0 + \gamma_1 \omega + \epsilon,
\]

where $y$ is the proportion of “for” votes and $\omega$ is the proportion of insiders.

<table>
<thead>
<tr>
<th>Panel A: All Proposals</th>
<th>All</th>
<th>Compensation</th>
<th>Recapitalization</th>
<th>Restructuring</th>
<th>Charter Amendment</th>
<th>Procedural</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.943***</td>
<td>0.902***</td>
<td>0.840***</td>
<td>0.973***</td>
<td>0.911***</td>
<td>0.971***</td>
<td>0.880***</td>
</tr>
<tr>
<td>(0.004)</td>
<td>(0.006)</td>
<td>(0.009)</td>
<td>(0.005)</td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.017)</td>
<td></td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>-0.025**</td>
<td>-0.029*</td>
<td>-0.059***</td>
<td>-0.023</td>
<td>-0.105**</td>
<td>0.018**</td>
<td>0.068</td>
</tr>
<tr>
<td>(0.009)</td>
<td>(0.015)</td>
<td>(0.021)</td>
<td>(0.026)</td>
<td>(0.053)</td>
<td>(0.009)</td>
<td>(0.109)</td>
<td></td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.918***</td>
<td>0.873***</td>
<td>0.781***</td>
<td>0.996</td>
<td>0.807***</td>
<td>0.989</td>
<td>0.949</td>
</tr>
<tr>
<td>(0.008)</td>
<td>(0.015)</td>
<td>(0.017)</td>
<td>(0.023)</td>
<td>(0.052)</td>
<td>(0.007)</td>
<td>(0.097)</td>
<td></td>
</tr>
<tr>
<td>$W_{strategic}$</td>
<td>0.087</td>
<td>0.140</td>
<td>0.261</td>
<td>0.004</td>
<td>0.212</td>
<td>0.012</td>
<td>0.058</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.001</td>
<td>0.001</td>
<td>0.002</td>
<td>0.002</td>
<td>0.005</td>
<td>0.001</td>
<td>0.005</td>
</tr>
<tr>
<td>Observations</td>
<td>90,202</td>
<td>16,303</td>
<td>5,819</td>
<td>273</td>
<td>1,642</td>
<td>57,866</td>
<td>8,299</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: ISS recommendation = For</th>
<th>All</th>
<th>Compensation</th>
<th>Recapitalization</th>
<th>Restructuring</th>
<th>Charter Amendment</th>
<th>Procedural</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.958***</td>
<td>0.928***</td>
<td>0.866***</td>
<td>0.975***</td>
<td>0.946***</td>
<td>0.974***</td>
<td>0.906***</td>
</tr>
<tr>
<td>(0.003)</td>
<td>(0.007)</td>
<td>(0.008)</td>
<td>(0.005)</td>
<td>(0.007)</td>
<td>(0.001)</td>
<td>(0.009)</td>
<td></td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>0.000</td>
<td>0.009</td>
<td>0.016</td>
<td>0.041**</td>
<td>-0.005</td>
<td>0.015***</td>
<td>0.088*</td>
</tr>
<tr>
<td>(0.006)</td>
<td>(0.009)</td>
<td>(0.025)</td>
<td>(0.020)</td>
<td>(0.039)</td>
<td>(0.005)</td>
<td>(0.046)</td>
<td></td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.958***</td>
<td>0.938***</td>
<td>0.882***</td>
<td>1.017</td>
<td>0.940</td>
<td>0.939**</td>
<td>0.994</td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.011)</td>
<td>(0.020)</td>
<td>(0.015)</td>
<td>(0.037)</td>
<td>(0.005)</td>
<td>(0.038)</td>
<td></td>
</tr>
<tr>
<td>$W_{strategic}$</td>
<td>0.044</td>
<td>0.067</td>
<td>0.136</td>
<td>-0.017</td>
<td>0.063</td>
<td>0.011</td>
<td>0.0065</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.014</td>
<td>0.000</td>
<td>0.001</td>
<td>0.014</td>
</tr>
<tr>
<td>Observations</td>
<td>81,349</td>
<td>14,339</td>
<td>4,600</td>
<td>267</td>
<td>1,371</td>
<td>56,899</td>
<td>3,873</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel C: ISS recommendation = Against</th>
<th>All</th>
<th>Compensation</th>
<th>Recapitalization</th>
<th>Restructuring</th>
<th>Charter Amendment</th>
<th>Procedural</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.788***</td>
<td>0.684***</td>
<td>0.713***</td>
<td>0.816***</td>
<td>0.692***</td>
<td>0.766***</td>
<td>0.858***</td>
</tr>
<tr>
<td>(0.015)</td>
<td>(0.008)</td>
<td>(0.012)</td>
<td>(0.021)</td>
<td>(0.021)</td>
<td>(0.016)</td>
<td>(0.029)</td>
<td></td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>-0.027</td>
<td>-0.002</td>
<td>-0.057</td>
<td>-0.122</td>
<td>-0.106</td>
<td>0.025</td>
<td>0.054</td>
</tr>
<tr>
<td>(0.042)</td>
<td>(0.050)</td>
<td>(0.049)</td>
<td>(0.669)</td>
<td>(0.132)</td>
<td>(0.128)</td>
<td>(0.185)</td>
<td></td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.761***</td>
<td>0.682***</td>
<td>0.656***</td>
<td>0.694</td>
<td>0.586***</td>
<td>0.791*</td>
<td>0.912</td>
</tr>
<tr>
<td>(0.042)</td>
<td>(0.048)</td>
<td>(0.044)</td>
<td>(0.509)</td>
<td>(0.121)</td>
<td>(0.117)</td>
<td>(0.166)</td>
<td></td>
</tr>
<tr>
<td>$W_{strategic}$</td>
<td>0.303</td>
<td>0.464</td>
<td>0.482</td>
<td>0.375</td>
<td>0.598</td>
<td>0.272</td>
<td>0.103</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.000</td>
<td>0.000</td>
<td>0.002</td>
<td>0.003</td>
<td>0.003</td>
<td>0.000</td>
<td>0.002</td>
</tr>
<tr>
<td>Observations</td>
<td>8,853</td>
<td>1,964</td>
<td>1,219</td>
<td>6</td>
<td>271</td>
<td>967</td>
<td>4,426</td>
</tr>
</tbody>
</table>
Table 3: Piecewise Linear Regression

This table summarizes the results of piecewise regressions where the dependent variable is the proportion vote in favor and the independent variable is insider ownership for a sample of 90,202 Types I and II management proposals. Coefficient estimates of the following model are estimated,

\[ y = \gamma_0^{low} I^{low} + \gamma_0^{med} I^{med} + \gamma_0^{high} I^{high} + \gamma_1^{low} \omega I^{low} + \gamma_1^{med} \omega I^{med} + \gamma_1^{high} \omega I^{high} + e, \]

where \( y \) is the proportion of “for” votes, \( \omega \) is the proportion of insiders, and \( I^{low}, I^{med}, \) and \( I^{high} \) are indicator variables that are equal to one if the given vote involves insider ownership levels in the low, medium, and high quantiles, respectively, and zero otherwise. Quantiles are divided at insider ownership levels of 1.5% and 12%, corresponding approximately to the 25th and 75th percentiles. Results are reported for the full sample as well as the subsample of votes that have received either a “for” or “against” recommendation from ISS. Standard errors are adjusted for clustering by firm and year and are reported in parentheses (with ***, **, and * denoting statistical significance at the 1, 5, and 10 percent levels, respectively). \( W^{strategic} \) measures the implied rate of strategic voting, as defined in Section 4.

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td>( I^{low} )</td>
<td>0.952***</td>
<td>0.964***</td>
<td>0.834***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.025)</td>
</tr>
<tr>
<td>( I^{med} )</td>
<td>0.944***</td>
<td>0.957***</td>
<td>0.817***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.004)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>( I^{high} )</td>
<td>0.934***</td>
<td>0.953***</td>
<td>0.734***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.005)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>( \omega \cdot I^{low} )</td>
<td>-0.196</td>
<td>-0.236</td>
<td>-2.491</td>
</tr>
<tr>
<td></td>
<td>(0.287)</td>
<td>(0.213)</td>
<td>(3.305)</td>
</tr>
<tr>
<td>( \omega \cdot I^{med} )</td>
<td>-0.124***</td>
<td>-0.015</td>
<td>-0.760***</td>
</tr>
<tr>
<td></td>
<td>(0.036)</td>
<td>(0.025)</td>
<td>(0.178)</td>
</tr>
<tr>
<td>( \omega \cdot I^{high} )</td>
<td>0.017</td>
<td>0.024</td>
<td>0.197***</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.012)</td>
<td>(0.058)</td>
</tr>
<tr>
<td>Test: ( \gamma_0^{low} + \gamma_1^{low} = 1 )</td>
<td>0.756</td>
<td>0.727</td>
<td>-1.657</td>
</tr>
<tr>
<td></td>
<td>(0.286)</td>
<td>(0.213)</td>
<td>(0.808)</td>
</tr>
<tr>
<td>Test: ( \gamma_0^{med} + \gamma_1^{med} = 1 )</td>
<td>0.820***</td>
<td>0.941***</td>
<td>0.057***</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.024)</td>
<td>(0.168)</td>
</tr>
<tr>
<td>Test: ( \gamma_0^{high} + \gamma_1^{high} = 1 )</td>
<td>0.951***</td>
<td>0.977***</td>
<td>0.931</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.009)</td>
<td>(0.047)</td>
</tr>
<tr>
<td>( W^{strategic} ) (low)</td>
<td>0.256</td>
<td>0.283</td>
<td>3.186</td>
</tr>
<tr>
<td>( W^{strategic} ) (med)</td>
<td>0.190</td>
<td>0.061</td>
<td>1.154</td>
</tr>
<tr>
<td>( W^{strategic} ) (high)</td>
<td>0.052</td>
<td>0.025</td>
<td>0.094</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.004</td>
<td>0.001</td>
<td>0.013</td>
</tr>
<tr>
<td>Observations</td>
<td>90,202</td>
<td>81,349</td>
<td>8,853</td>
</tr>
</tbody>
</table>
Table 4: Strategic Voting in Response to Agency Problems

This table summarizes the results of the regressions where the dependent variable is the proportion vote in favor and the independent variable is insider ownership. The data is sorted by year into terciles based on earnings volatility scaled by total assets (Panel A), Altman Z-Score (Panel B), firm age in Compustat (Panel C), total assets (Panel D), book leverage (Panel E), and the proportion of shares held by institutional investors (Panel F). Coefficient estimates of the following model are estimated,

$$y = \gamma_0 + \gamma_1 \omega + \epsilon,$$

where $y$ is the proportion of “for” votes and $\omega$ is the proportion of insiders. Under the sincere model of voting, $\gamma_0 + \gamma_1 = 1$, and under strategic voting, $\gamma_0 + \gamma_1 < 1$. In each panel, results are reported for the full sample and for subsamples of votes that have received either a “for” or “against” recommendation from ISS, respectively. Standard errors are adjusted for clustering by firm and year and are reported in parentheses (with ***, **, and * denoting statistical significance at the 1, 5, and 10 percent levels, respectively). $W^{strategic}$ measures the implied rate of strategic voting, as defined in Section 4.

<table>
<thead>
<tr>
<th>Panel A: Earnings Volatility</th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.951***</td>
<td>0.946***</td>
<td>0.933***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>-0.023**</td>
<td>-0.010</td>
<td>-0.017</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.015)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.928***</td>
<td>0.936***</td>
<td>0.916***</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.014)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>$W^{strategic}$</td>
<td>0.076</td>
<td>0.068</td>
<td>0.090</td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Observations</td>
<td>28,826</td>
<td>28,767</td>
<td>28,712</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Altman Z-score</th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.937***</td>
<td>0.941***</td>
<td>0.947***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>-0.035**</td>
<td>-0.036***</td>
<td>-0.018*</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.011)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.902***</td>
<td>0.905***</td>
<td>0.929***</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.011)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>$W^{strategic}$</td>
<td>0.104</td>
<td>0.101</td>
<td>0.075</td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td>(0.072)</td>
<td>(0.059)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.001</td>
<td>0.001</td>
<td>0.000</td>
</tr>
<tr>
<td>Observations</td>
<td>22,471</td>
<td>22,409</td>
<td>22,397</td>
</tr>
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</table>

(Continued on next page)
(Table 4 Continued)

Panel C: Age

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.937***</td>
<td>0.942***</td>
<td>0.949***</td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.912***</td>
<td>0.932***</td>
<td>0.951***</td>
</tr>
<tr>
<td>$W^{strategic}$</td>
<td>0.094</td>
<td>0.073</td>
<td>0.051</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Observations</td>
<td>30,032</td>
<td>28,500</td>
<td>28,461</td>
</tr>
</tbody>
</table>

Panel D: Total Assets

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.930***</td>
<td>0.944***</td>
<td>0.950***</td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.924***</td>
<td>0.961***</td>
<td>0.935***</td>
</tr>
<tr>
<td>$W^{strategic}$</td>
<td>0.081</td>
<td>0.041</td>
<td>0.068</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Observations</td>
<td>29,050</td>
<td>28,978</td>
<td>28,965</td>
</tr>
</tbody>
</table>

Panel E: Book Leverage

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.942***</td>
<td>0.945***</td>
<td>0.944***</td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.925***</td>
<td>0.923***</td>
<td>0.911***</td>
</tr>
<tr>
<td>$W^{strategic}$</td>
<td>0.080</td>
<td>0.081</td>
<td>0.094</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.000</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Observations</td>
<td>28,928</td>
<td>28,853</td>
<td>28,850</td>
</tr>
</tbody>
</table>

Panel F: Institutional Ownership

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Intercept ($\gamma_0$)</td>
<td>0.953***</td>
<td>0.950***</td>
<td>0.944***</td>
</tr>
<tr>
<td>$\omega$ ($\gamma_1$)</td>
<td>(0.003)</td>
<td>(0.004)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Test: $\gamma_0 + \gamma_1 = 1$</td>
<td>0.918***</td>
<td>0.905***</td>
<td>0.925***</td>
</tr>
<tr>
<td>$W^{strategic}$</td>
<td>0.086</td>
<td>0.100</td>
<td>0.079</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.002</td>
<td>0.002</td>
<td>0.000</td>
</tr>
<tr>
<td>Observations</td>
<td>26,155</td>
<td>26,095</td>
<td>26,057</td>
</tr>
</tbody>
</table>
Table 5: Panel Regression for Type III Proposals

This table summarizes the results of the regressions where the dependent variable is the proportion vote in favor and the independent variable is insider ownership for a sample of 5,253 Type III management proposals. Coefficient estimates of the following model are estimated,

\[ y = \gamma_0 + \gamma_1 \omega + \gamma_2 \eta + \epsilon, \]

where \( y \) is the proportion of “for” votes out of shares outstanding, \( \omega \) is the proportion of insiders, and \( \eta \) is the proportion of non-voting shares. Under the sincere model of voting, \( \gamma_0 + \gamma_1 = 1 \) and \( \gamma_0 + \gamma_2 = 0 \). Under strategic voting, \( \gamma_0 + \gamma_1 < 1 \) and \( \gamma_0 + \gamma_2 > 0 \). Results are reported for the full sample as well as the subsample of votes that have received either a “for” or “against” recommendation from ISS. Standard errors are adjusted for clustering by firm and year and are reported in parentheses (with ***, **, and * denoting statistical significance at the 1, 5, and 10 percent levels, respectively).

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>ISS for</th>
<th>ISS against</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept (( \gamma_0 ))</td>
<td>0.979***</td>
<td>0.979***</td>
<td>0.945***</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.009)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>( \omega ) (( \gamma_1 ))</td>
<td>-0.032</td>
<td>0.035*</td>
<td>-0.171</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.021)</td>
<td>(0.121)</td>
</tr>
<tr>
<td>( \eta ) (( \gamma_2 ))</td>
<td>-0.835***</td>
<td>-0.878***</td>
<td>-0.545***</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.041)</td>
<td>(0.127)</td>
</tr>
<tr>
<td>Test: ( \gamma_0 + \gamma_1 = 1 )</td>
<td>0.947**</td>
<td>1.014</td>
<td>0.774*</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.020)</td>
<td>(0.128)</td>
</tr>
<tr>
<td>Test: ( \gamma_0 + \gamma_2 = 0 )</td>
<td>0.143***</td>
<td>0.101**</td>
<td>0.400***</td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td>(0.044)</td>
<td>(0.116)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.479</td>
<td>0.634</td>
<td>0.102</td>
</tr>
<tr>
<td>observations</td>
<td>5,253</td>
<td>3,773</td>
<td>1,480</td>
</tr>
</tbody>
</table>
Table A-1: Cast of Votes for Illustrative Example

This table presents the voting outcomes of a simple example (see Appendix B). Panel A reports strategic and sincere outcomes for Type I and Type II proposals, where non-voted shares have no consequence. Panel B considers Type III proposals, where non-voted shares effectively count as votes against. In each panel, sincere voting means voting based on information, and strategic voting means outside shareholders try to offset the voting bias from insiders (and non-voted shares in Panel B).

Panel A: Type I and Type II

<table>
<thead>
<tr>
<th>Voters</th>
<th>Sincere Voting</th>
<th>Strategic Voting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shares</td>
<td>For</td>
</tr>
<tr>
<td>Insider</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Unaware</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Strategic</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Sincere</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Panel B: Type III

<table>
<thead>
<tr>
<th>Voters</th>
<th>Sincere Voting</th>
<th>Strategic Voting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shares</td>
<td>For</td>
</tr>
<tr>
<td>Insider</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Unaware</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Strategic</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Sincere</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>