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Weak Governance by Informed Active Shareholders

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Eitan Goldman
Indiana University and ECGI

Wenyu Wang
Indiana University

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Keywords: informed shareholders, trading, influencing, corporate governance, takeover

JEL Classifications: G14, G23, G34

Eitan Goldman*
Associate Professor of Finance
Indiana University, Kelley School of Business
1309 East 10th Street
Bloomington, IN 47405, United States
phone: +1 812 856 0749
e-mail: eigoldma@indiana.edu

Wenyu Wang
Associate Professor of Finance
Indiana University, Kelley School of Business
1309 E. 10th St.
Bloomington, IN 47405, United States
phone: +1 812 855 0189
e-mail: wenywang@indiana.edu

*Corresponding Author

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Eitan Goldman
Kelley School of Business,
Indiana University

Wenyu Wang
Kelley School of Business,
Indiana University

Abstract

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Introduction

Concerns about the governance of public corporations have taken center stage in recent years. Part of the debate on how to improve corporate governance has focused on policies that will give active shareholders, typically, institutional investors, greater influence power[1] over corporate decisions. Indeed, some theoretical and empirical papers support the governance role of institutional shareholders.[2] The underlying view is that these shareholders have both the ability and incentive to maximize the value to all shareholders. They may improve governance either through active monitoring or through passive trading and both activities are expected to improve firm value (e.g., McCahery, Sautner, and Starks 2016).

In this paper, we propose a complementary view that highlights a setting in which a shareholder's joint ability to influence corporate policies and to trade on his private information, may actually *weaken* corporate governance and *lower* firm value. We demonstrate these ideas in a model of corporate takeovers, in which a self-interested manager may either push the firm to pursue takeovers with a negative expected return (i.e., an overinvestment problem) or oppose the firm from pursuing takeovers with a positive expected return (i.e., an underinvestment problem).

The active shareholder can play two governance roles to mitigate the agency problems described above: first, he can influence the firm's pursuit of takeovers (i.e., the *ex ante* governance), and, second, once a takeover target is identified, he can collect private information about the quality of this specific deal and then influence deal completion (i.e., the *ex post* governance). The active shareholder can also trade his shares based on his private information, and this will affect his ownership stake and hence the strength of his ex post governance.

Our model demonstrates that giving the active shareholder more influence power does not always help mitigate these agency problems and may sometimes even aggravate them. This is because the active shareholder's ability to collect information and trade creates a misalignment between his expected gains from takeovers and firm value. This endogenous misalignment distorts both his ex ante and ex post governance decisions. More importantly, his ability to trade ex post and profit from the uncertainty created by pursuing takeovers distorts his ex ante governance role and can lead to a lowered firm value.

[1] We use the term "influence power" to broadly represent the (per share) ability of active investors to influence corporate decisions through the combination of explicit voting and behind-the-scene negotiations with the manager and/or other shareholders.

[2] See, for example, Gillan and Starks (2007) and Edmans (2014) for surveys of the literature.

Specifically, ex post, firm value is maximized if the active shareholder uses his private information and influence power to block bad deals. The active shareholder, however, may choose to sell his shares and exit instead, if his expected profits from trading are larger than his expected gains from influencing.

Ex ante, firm value is maximized if the active shareholder supports the firm's decision to pursue value-enhancing takeovers and opposes its decision to pursue value-destroying takeovers. The active shareholder, however, may deviate from these actions, distorting his ex ante governance role. This may happen because the active shareholder's ability to trade on his private information becomes more valuable when takeovers create significant uncertainty to firm value. Thus, the active shareholder may want the firm to pursue takeovers because doing so would generate profitable trading opportunities for himself.

Our model characterizes a key scenario in which the active shareholder may reduce firm value. In this scenario the active shareholder promotes value-destroying takeovers for the purpose of generating ex post trading opportunities.

We also identify a second scenario in which the active shareholder harms governance through avoiding value-enhancing takeovers. In this second setting, the active shareholder may find it optimal, ex post, to buy more shares in order to block a bad deal. Buying these shares, however, creates a trading loss that constitutes a private cost of influencing to the active shareholder, but the benefits of his actions are shared with all shareholders. This free-riding problem may create a situation in which takeovers have a positive expected return to shareholders but the active shareholder will choose to oppose the takeovers ex ante. This is a setting in which the active shareholder's actions aggravate the underinvestment problem.[3]

A regulatory policy that gives the active shareholder greater influence power helps mitigate the distortion to his ex post governance. In particular, greater influence power induces the active shareholder to retain more shares and influence rather than to sell and exit. Greater influence power per share also increases his likelihood of successfully blocking bad deals ex post. In this regard, giving the active shareholder more influence power improves corporate governance and enhances firm value.

Giving the active shareholder greater influence power, however, does not always improve his ex ante governance. When the active shareholder's ex ante governance decisions are distorted (because of his ability to trade ex post), greater influence power only makes it more likely

[3]We believe that the first scenario (overinvestment) is more empirically relevant than the second scenario (underinvestment). However, for theoretical completeness we present both settings in our analysis.

that he implements actions that are harmful to the firm. In this regard, giving the active shareholder greater influence power *may* weaken corporate governance and *lower* firm value.

The overall effect of influence power on firm value is determined by this trade-off between the ex ante and ex post governance consequences. For example, we find that when the active shareholder's initial ownership in the firm is relatively small, he may opportunistically propose the firm to pursue takeovers ex ante even if such takeovers have a negative expected return to the firm. In this case, he also sells all his shares ex post in the face of a bad deal. Greater influence power aggravates distortion to his ex ante governance and lowers firm value. This active shareholder resembles an opportunistic investor with a short-term vision who seeks trading opportunities generated by takeovers.

When the active shareholder's initial ownership is sufficiently large and his influence power is relatively high, he is likely to oppose the firm's decision to pursue value-destroying takeovers ex ante, and he also retains enough shares and tries to block bad deals ex post. In this case, we find that giving him greater influence power unambiguously increases firm value. This active shareholder resembles a long-term, dedicated investor who seeks to improve the firm's fundamental value.

Finally, when the active shareholder's initial ownership is intermediate, our model suggests more nuanced results. For example, we find settings in which the active shareholder either proposes that the firm pursues value-destroying takeovers or opposes the firm from pursuing value-enhancing takeovers. Meanwhile, he also tries to block bad deals ex post. In these settings, giving him greater influence power may increase or decrease firm value, depending on whether the ex ante (negative) or the ex post (positive) governance consequence is more dominant. This shareholder resembles an investor who makes distorted governance decisions ex ante but tries to improve firm value ex post.

To highlight the key tradeoff between ex ante and ex post governance discussed above, we make a few simplifying assumptions in the baseline model. In particular, we assume exogenous managerial preference for takeovers, we shut down the possible disciplining effect of short selling on the probability that a bad takeover completes, and we also assume that the active shareholder is always informed. To confirm the robustness of our main conclusion, we consider several extensions of the baseline model: First, we consider a manager who endogenously decides on whether or not to propose pursuing takeovers based on her private benefit from takeovers. In the second extension, we allow for a negative effect of short-selling pressure on the likelihood of deal completion. We find that our main results remain robust to these two extensions.

We also consider a third extension in which we allow for the active shareholder's probability of becoming informed to depend on his initial equity stake in the firm. In this extension, we find that having a larger initial ownership may sometimes exacerbate distortion to his ex ante governance problem. This extension highlights the idea that the concern of weak governance may exist for the typical hedge funds (i.e., low ownership and high influence power), as well as for active mutual funds (i.e., larger ownership and lower influence power).

Overall, our findings challenge the view that relying on an informed, active shareholder, such as an institutional investor, *always* improves corporate governance. Note that we do not argue that informed, active shareholders always reduce firm value. Instead, we demonstrate that there exist settings in which these investors may, for endogenous reasons, have different objectives from firm value maximization and that in these settings, giving them greater influence power can lower firm value.

The novelty of our model starts with the idea that institutional shareholders can play an ex ante governance role by influencing corporate policy. A growing body of empirical work suggests that this indeed happens in various aspects of corporate policies (e.g., corporate social responsibility (Dimson, Karakaş, and Li, 2015; Dyck, Lins, Roth, and Wagner, 2019), payout policy (Gaspar, Massa, Matos, Patgiri, and Rehman, 2012), innovation (Aghion, Van Reenen, and Zingales, 2013), and executive compensation (Hartzell and Starks, 2003). In the setting of corporate takeovers, institutional shareholders can influence, ex ante, the acquisitiveness of a firm by appointing their representatives to the board, by pressuring the manager directly in shareholder meetings, or through other behind-the-scenes intervention. A few empirical studies provide supporting evidence. For example, Qiu (2006) finds that mutual fund holdings are positively associated with firms' acquisitiveness and this association is likely causal. Chen, Harford, and Li (2007) show that firms held by short-term investors pursue worse takeovers, compared with those held by long-term independent institutional investors. These studies suggest that active shareholders can indeed influence a firm's takeover policy in general.

Our paper relates to previous studies that have examined the governance role of shareholders who can become informed about future firm value and/or actively influence firm decisions. A few theoretical papers, such as Shleifer and Vishny (1986), Huddart (1993), Admati, Pfleiderer, and Zechner (1994), Maug (1998), Kahn and Winton (1998), and Bolton, Thadden, et al. (1998), present governance models of shareholders' active intervention in firm decisions, whereas other papers, such as Holmström and Tirole, 1993, Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2010), emphasize the role of shareholder governance in trading and exit decisions. These papers consider settings in which shareholders first

become informed and then make governance related decisions, and they all suggest that having informed and/or active shareholders is beneficial to corporate governance.

In contrast, we consider a slightly different setting in which an active shareholder plays a governance role both ex ante (before he collects private information) and ex post (after he collects the information). In this setting, we analyze how the active shareholder's ex ante and ex post governance related decisions can be distorted by his ability to collect information and trade. Our analyses lead to novel results that are not fully analyzed in previous work. In particular, we show that giving the active shareholder greater influence power may generate opposing effects on his ex ante and ex post governance. Unlike existing models, we show that there exist settings where stronger shareholder empowerment can actually lead to weaker governance and a lower firm value.

Our model also relates to theoretical work by Burkart, Gromb, and Panunzi (1997), Pagano and Röell, 1998, Goldman and Strobl (2013), and Matsusaka and Ozbas (2014), who demonstrate different settings in which block shareholders may be detrimental to firm value because their presence can negatively affect managerial actions. Finally, our model is similar in spirit to Brennan and Thakor (1990), who show that the ability to collect information creates a different preference between informed and uninformed shareholders for dividends and share repurchases.

1 Model Setup

1.1 The manager

We model an all-equity financed firm with one manager and two types of shareholders. The manager is characterized by her preference towards promoting the firm's decision to pursue takeovers (i.e., to implement a *takeover policy*). Specifically, we make the following assumption regarding the manager's preference for the takeover policy:

Assumption 1. *The manager proposes that the firm implement the takeover policy with a probability z, and she proposes that the firm disregard the policy with a probability 1-z.*

If a takeover policy is implemented, the manager will then search for a takeover target. There is a probability θ that the target firm she identifies is a good fit and it results in a high-quality takeover, and there is a probability $1-\theta$ that the target firm is a bad fit and it results in a

low-quality takeover. We denote the takeover quality as H (high) and L (low), respectively. We assume that the firm's stand-alone value is V_0, a high-quality takeover increases firm value to V_H, and a low-quality takeover decreases firm value to V_L if completed.

Assumption 2. *The value of the firm satisfies the condition that:* $V_H > V_0 > V_L$.

Though the takeover quality is stochastic and remains unknown to any agent in our model *before* the takeover policy is implemented and the target firm is eventually identified, all agents understand the distribution of the takeover quality and thus its expected intrinsic value determined by nature (i.e., $\overline{V} = \theta V_H + (1-\theta)V_L$). As will become clear later, the *expected return* generated by a takeover policy is determined by both its *intrinsic value* defined here and the active shareholder's ex post influence.

Note that we assume the manager's preference for the takeover policy may not always maximize firm value, which can create two types of agency problems that call for governance: an overinvestment problem emerges if the manager prefers that the firm implements a takeover policy with a negative expected return (e.g., because of her empire-building motive). And an underinvestment problem occurs if the manager prefers that the firm forgoes a takeover policy with a positive expected return (e.g., because of shirking).

1.2 Shareholders

There are two types of shareholders in our model. The first type of shareholder can be thought of as an active institutional shareholder who can influence firm decisions and therefore may play an active role in corporate governance. We assume that this shareholder starts with an initial equity stake of X_0 in the firm, with the total number of shares outstanding normalized to one. We also assume that this shareholder has a technology that allows him to collect private information about the takeover quality *after* the target firm is identified but *before* the takeover outcome is realized and observed by the market (e.g., during the bid negotiation period). Our model therefore features a period in which this shareholder has an information advantage relative to other investors in the market. We refer to this shareholder as an *informed* and *active* shareholder. Other shareholders are assumed to be uninformed and passive, comprising the second type of shareholder in our model.

The informed, active shareholder makes three important decisions central to our model. First, he can influence the firm's decision on whether to implement the takeover policy ex ante: He can side with the manager's preference or try to overturn the manager's proposal with the

shares he owns initially. Second, if a takeover policy is implemented, he can trade the firm's stocks after receiving his private information regarding the takeover quality. Third, he can use his shares after trading to influence the final deal outcome ex post. For example, he may attempt to block a takeover before it completes.

We make two assumptions below regarding the active shareholder's influencing (both ex ante and ex post) and trading.

Assumption 3. *If the informed, active shareholder owns X shares by the time of his influencing, there is a probability $f(X) = max(\xi X, 0)$ that he can successfully implement the action he prefers, and a probability $1 - f(X)$ that he fails.*

Here, the parameter ξ captures the shareholder's power (per unit of ownership) in influencing the firm's decisions. Strictly speaking, we shall define $f(X) = max\{min(\xi X, 1), 0\}$ so that the probability never exceeds one, but throughout our analyses, we will focus on the cases in which $\xi X \leq 1$, which is the empirically relevant setting for most publicly traded companies. The parameter ξ can thus be viewed as a regulatory tool that governs the extent to which corporate regulation allows the voting shareholders to influence corporate decisions. The larger fraction of equity owned by the active shareholder, the more powerful he is in influencing corporate decisions. We normalize the total number of shares outstanding to be one, so a value of $\xi = 2$, for example, will imply a simple majority rule: as long as the active shareholder owns more than 50% of shares (i.e., $X \geq 0.5$), he gains full control over corporate decisions. An important goal of our analysis is to see how changes in ξ affect firm value.

The active shareholder's trading activity is characterized by the standard Kyle (1985) model. Specifically,

Assumption 4. *If the informed, active shareholder chooses to trade X shares, he submits an order to a market maker who sets a transaction price based on the aggregate order flow:*

$$P_2 = P_1 + \lambda [X + U - E(X)], \tag{1}$$

where P_1 represents the market maker's assessed stock price before the trading starts; X represents the demand of the informed, active shareholder; U represents the demand of liquidity traders with an expected value of $E(U) = 0$; and $E(X)$ represents the market maker's expectation of the demand by the informed, active shareholder. The market maker only observes the combined order flow $X+U$ and must set the price to satisfy the equilibrium condition that $E(P_2) = P_1$. This is achieved as long as the market maker correctly anticipates the expected demand by the informed, active shareholder. The parameter λ captures the

price impact of trades and is assumed exogenous in our setting, without loss of generality. A high value of λ represents low stock liquidity. Assumption 4 thus captures the notion that the informed, active shareholder has information advantage, because the true value of the takeover is still unknown to the market when he trades. In the next section, we present the detailed time line of the model, which demonstrates the information sets and the actions taken by the different agents.

1.3 Model time line

Figure 1 illustrates the model's time line. At the initial stage of the model, $t = 0$, the manager (MGR) first proposes the firm's takeover policy, and then the active shareholder (ASH) decides whether to support the manager's proposal.

A takeover policy is implemented in three situations: (1) the manager promotes the takeover policy and the active shareholder supports the manager; (2) the manager promotes the takeover policy and the active shareholder opposes it but fails; and (3) the manager proposes to reject the takeover policy, but the active shareholder successfully overturns the manager's proposal.

If a takeover policy is rejected, the model ends at $t = 0$, and the firm value remains at V_0. If a takeover policy is implemented, the model proceeds to the next period, denoted as $t = 1$. At the beginning of period $t = 1$, a target firm is identified and the takeover bid is announced. Nature determines the quality of the takeover, which remains unknown to the market in this period. The active shareholder, however, can collect private information regarding the quality of the deal. Specifically, we assume that he receives a signal S that perfectly reveals deal quality (i.e., $S = H$ or $S = L$). The active shareholder then determines how to use his information to trade his shares before the terminal value of the takeover is fully revealed to the market.

In addition, we assume that *after* the active shareholder trades, he can use his remaining shares to influence the likelihood of deal completion. We assume that at this stage, the takeover deal will complete unless the active shareholder attempts to block it, and the probability of successfully blocking a deal depends on his ownership at the time of his influencing.

Finally, at $t = 2$, the deal completes if it is not blocked by the active shareholder and the post-merger, terminal value of the firm is revealed to the market (either V_H or V_L). If the deal is blocked by the active shareholder, the value of the firm reverts back to V_0.

1.4 Discussion of model assumptions

In this section, we discuss a few model assumptions and specifications.

First, we assume that the active shareholder can collect private information only *after* the target firm is identified and the takeover bid is announced. Thus, the private information we consider is the type of information that is legally obtained through the shareholder's superior ability in aggregating and processing public information. Such information advantage may arise from the active shareholder's better judgment on whether the target is a good fit and whether the offer price constitutes an overpayment. This assumption precludes the type of private information that renders the shareholder to illegally front-run passive, uninformed shareholders (e.g., receive tips from the CEO about a potential deal and trade shares before the takeover bid is publicly announced).

Second, the manager's probability of promoting a takeover policy, captured by the parameter z, is exogenously specified. This specification assumes that the manager's ex ante preference for takeovers is independent of the active shareholder's governance actions. This assumption simplifies our analyses and allows us to focus on the main tension we hope to capture in the model (i.e., the trade-off between the active shareholder's ex ante and ex post governance role). To examine whether our model implications are robust to relaxing of this assumption, we extend the model to endogenize the manager's preference for the takeover policy in Section 2.3.1. Specifically, we assume that the manager receives private benefits from a completed takeover but needs to pay a cost to search for a target. The informed, active shareholder's actions thus affect the likelihood of deal completion ex post, which in turn affect the manager's expected gains from promoting the takeover policy ex ante. The manager therefore chooses whether to promote the takeover policy based on her expectation of the active shareholder's subsequent governance decisions. We show that endogenizing managerial preference does not eliminate the active shareholder's governance problems we highlight in this paper, and our main results still hold.

Third, we assume that short selling by the informed, active shareholder does not affect takeover outcomes in the baseline model. Some empirical studies (e.g., Luo, 2005) document that acquirer stock price drop during the negotiation process decreases the likelihood of deal completion. Given that short-selling pressure may lead to significant price drop, we extend our model in Section 2.3.2 to incorporate the effect of short selling. Specifically, we assume that short selling by the informed, active shareholder reduces the likelihood of deal completion and thus can play a positive governance role. We find that, in some settings, the

impact of short selling may help mitigate the active shareholder's governance problem, but it does not eliminate the active shareholder's incentive to promote value destroying takeovers ex ante and thus our main results still prevail.

Fourth, we assume that the influence function $f(X)$ is specified exogenously. This function implicitly captures the idea that when the active shareholder buys more shares, then $f(X)$ increases and hence so does the probability that the takeover vote will pass. One can think of the function $f(X)$ as derived from the actions of the active shareholder to try and convince other shareholders to vote with him. The key to this exogenous specification is that the active shareholder's actions to influence others are more successful when he has more shares at stake and that there are unmodeled frictions that prevent him from fully convincing small dispersed shareholders to go and vote his way. Thus, for reasonable levels of $X < 50\%$, we assume that $f(X) < 1$.

Fifth and finally, we treat the initial holding X_0 as exogenous. In our setting, X_0 only plays a positive role in helping align the active shareholder with passive shareholders. It does not play any significant role in affecting the main tension of our model, which is between the active shareholder's ex ante and ex post governance actions. Therefore, finding optimal X_0 requires adding an exogenous cost function, and the resultant implications will be mostly tangential to our key point of focus. However, we do provide additional analysis in Section 2.3.3, where we allow for the possibility that X_0 affects the likelihood that the active shareholder becomes informed.

2 Model Solution

To solve the model, we need to characterize the active shareholder's decision at $t = 0$, on whether he supports the takeover policy and his decision at $t = 1$, on his optimal trading and influencing on the deal outcome, upon receiving his private signal. In addition, the model solution requires that the market maker sets the price by taking into account the informed, active shareholder's expected trading and influencing decisions.

We derive the solution to the model by backward induction. In Section 2.1 we derive the optimal trading quantity and the optimal ex post influencing decision by the active shareholder at $t = 1$. We then compute his ex ante expected profits from the firm's takeover policy and characterize his optimal decision on whether to support the policy at $t = 0$, assuming that he makes the optimal decisions at $t = 1$. In Section 2.2, we analyze how firm value

at the beginning of $t = 0$ relates to the active shareholder's power of influence in model equilibriums.

2.1 Optimal decisions by the active shareholder

If the firm implements a takeover policy, it identifies a takeover target and makes an announcement to the market. The market understands the distribution of potential targets and how they affect firm value but does not know the realization of the quality of the specific target identified. This creates an opportunity for the active shareholder to collect information and use his information to trade and influence deal outcome.

To ease our interpretation, we use the terms "voting" and "influencing" interchangeably henceforth to refer to the active shareholder's influence on the completion of the takeover. Here, the term "voting" should not be literally interpreted, because the active shareholder's influence can include both explicit voting and behind-the-scenes intervention.

2.1.1 Optimal ex post voting.

Before the voting stage, the active shareholder already received his private signal about the deal quality and traded his shares accordingly. The active shareholder has to decide, at the voting stage, whether to support deal completion or to vote against it. Lemma 1 below summarizes his optimal voting choice on the outcome of the takeover.

Lemma 1. *If the active shareholder has no remaining shares after his trading (i.e., holds zero shares or takes a short position), he has no power to influence the final takeover outcome. If the active shareholder has remaining shares after his trading, he votes in favor of deal completion if he receives a high signal and he votes against the deal completion if he receives a low signal.*

The proof to Lemma 1 is straightforward. The active shareholder's influence power, $f(X_0 + X) = max(\xi(X_0 + X), 0)$, is determined by the amount of shares he owns at the time of voting. If he sells all his shares or even takes a short position at the trading stage, his influence power becomes zero at the voting stage and thus he cannot influence the deal outcome. If the active shareholder retains some shares after his trading, his influence power is positive, and he will use his influence power to vote for his preferred outcome. Because he owns positive shares in this case, he always votes to maximize the share value. As a result, if he receives a

high signal, he votes for the completion of the deal, which increases the share value to V_H; and if he receives a low signal, he votes against the completion of the deal, hoping to revert the share value to V_0.

Define ℓ as the active shareholder's voting decision at this stage, conditioning on him having positive shares to vote:

$$\ell = \begin{cases} support & if \quad S = H \\ block & if \quad S = L. \end{cases} \tag{2}$$

2.1.2 Optimal trading quantity.

At the trading stage, the active shareholder already received his private signal regarding deal quality. He decides on his optimal trading quantity based on his signal. The active shareholder chooses the amount of shares, X, to maximize his expected gains from trading, taking into account the potential benefits of influence generated by any remaining shares after his trading. The market maker sets the trading price, P_2, taking expectations of these strategic decisions. Specifically, the active shareholder solves the following maximization problem:

$$\underset{X}{Max}\, U_{ACT} = (X + X_0) \cdot [f(X + X_0)V_\ell + (1 - f(X + X_0))V_S] - X \cdot E\left[P_2(X)\right], \tag{3}$$

where $f(X + X_0) = max\left(\xi(X + X_0),\, 0\right)$ is the active shareholder's influencing power post-trading, V_S represents the active shareholder's assessment of the value of the firm based on his private signal S:

$$V_S = \begin{cases} V_H & if \quad S = H \\ V_L & if \quad S = L \end{cases}$$

and V_ℓ represents the firm's value when the active shareholder's preferred deal outcome is realized,

$$V_\ell = \begin{cases} V_H & if \quad S = H \\ V_0 & if \quad S = L, \end{cases}$$

where ℓ is the active shareholder's voting decision defined in Equation (2).

The market maker's expectation of the price of a share prior to observing the order flow is

$$P_1 = \theta V_H + (1 - \theta)\left[f^e V_0 + (1 - f^e)V_L\right], \tag{4}$$

where we denote by $f^e = E[f(X_L + X_0)]$ the market maker's expectation of the active shareholder's influence power after he completes his trades. The pricing function takes into account the market maker's expectation of the active shareholder's optimal trading and voting strategy. In particular, the market maker correctly anticipates that the active shareholder will use his influence power ex post to support a good deal and vote against a bad deal if he still has a positive number of shares at the voting stage.

Substituting in Equations (4) and (1) and taking the first-order condition with respect to X in Equation (3), we obtain the following two lemmas:

Lemma 2a. *If the active shareholder starts out with an initial ownership stake of* $0 \leq X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$, *he makes the following trades:*

$$X_S = \begin{cases} \frac{1-\theta}{2\lambda}(V_H - V_L) & if \quad S = H \\ -\frac{\theta}{2\lambda}(V_H - V_L) & if \quad S = L \end{cases} \tag{5}$$

Lemma 2b. *If the active shareholder starts out with an initial ownership stake of* $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$, *he makes the following trades:*

$$X_S = \begin{cases} \frac{1-\theta}{2\lambda}(V_H - V_L) & if \quad S = H \\ -\frac{\theta}{2\lambda}(V_H - V_L) + \triangle X_L & if \quad S = L \end{cases} \tag{6}$$

where $\triangle X_L \equiv \frac{\xi(V_0 - V_L)}{\lambda} \frac{[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}{[1 - \xi\frac{V_0 - V_L}{\lambda}]}$.

Proof. See Section 3 in the Appendix.

As mentioned before, the derivation of the above lemmas assumes that the active shareholder's probability of influence is bounded above by one. For this to be true, we need to make the following assumption regarding the permissible range of the parameter ξ.

Assumption 5. *The active shareholder's influence power per unit of ownership,* ξ, *is bounded above by* $\xi < \frac{1}{\frac{V_0 - V_L}{\lambda} + [X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}$.

Assumption 5 is derived by using the equilibrium value of X_L and restricting the parameter space such that $\xi(X_L + X_0) < 1$.[4] If we allow ξ to be above this value, then the equilibrium

[4]Note that, according to Lemma 1, the active shareholder supports deal completion if he receives a high signal, so his influence does not change the deal outcome regardless of his voting power (in our model, a deal always completes unless the active shareholder votes against it). As a result, we only need to make sure that his probability of influence is bounded above by one when he receives a low signal.

in this setting will be an active shareholder who secures 100% of the voting power. In this case, all bad deals are blocked ex post. Given that this situation is less empirically relevant, we do not focus our analysis on this parameter space.

Lemmas 2a and 2b characterize the active shareholder's optimal trading quantity following observing his private information about deal quality. As Lemma 2a and Lemma 2b suggest, the active shareholder finds it optimal to buy the same amount of shares when he receives a high signal regardless of his initial ownership stake X_0. The key difference between the two lemmas arises from the active shareholder's optimal trading quantity when he receives a low signal, which is captured by the term $\triangle X_L$. Corollary 1 below characterizes $\triangle X_L$ and Corollary 2 characterizes the active shareholder's remaining influence power after his trading.

Corollary 1. *$\triangle X_L$ is positive and is increasing in X_0, increasing in ξ, and increasing in $V_0 - V_L$.*

Proof. See Section 3 in the Appendix.

Corollary 2. *If $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$, the active shareholder sells all his shares or even takes a short position if he receives a low signal, and, in this case, he has no influence power left after trading; if $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$, the active shareholder sells less aggressively if he receives a low signal, and, in this case, he retains a positive number of shares post-trading and thus has positive influence power on deal outcome.*

Proof: See Section 3 in the Appendix.

The lemmas and corollaries above demonstrate how the active shareholder's trading decisions are affected by the value from selling shares in a market with a partially informed market price and the benefit from using his remaining shares to vote and influence deal outcome. The difference in trading quantity is measured by the term $\triangle X_L$ which is positive and is higher when the option to block a bad deal is more valuable.

2.1.3 Ex ante preference for the takeover policy.

Given the active shareholder's optimal trading and voting decisions derived above, we can compute his expected gains from the firm implementing a takeover policy. The active shareholder decides whether or not to support the firm's decision to pursue takeovers ex ante based on the expected gains. Note that the expected gains are computed based on the active

shareholder's information set *prior to* observing his signal about deal quality, because he makes the decision on whether to promote the takeover policy before observing his signal.

Lemma 3a. *If the active shareholder starts out with an initial ownership stake of* $0 \leq X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$*, his expected gains from the firm implementing a takeover policy are equal to,*

$$E(\Pi_{ACT}) = X_0\left[\theta V_H + (1-\theta)V_L - V_0\right] + \frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 \tag{7}$$

Proof: See Section 3 in the Appendix.

Lemma 3b. *If the active shareholder starts out with an initial ownership stake of* $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$*, his expected gains from the firm implementing a takeover policy are equal to,*

$$\begin{aligned} E(\Pi_{ACT}) = {} & X_0[\theta V_H + (1-\theta)V_L - V_0] + (1-\theta)\lambda X_0 \Delta X_L \\ & + \frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 - \frac{(1-\theta)\theta}{2}(V_H - V_L)\Delta X_L \end{aligned} \tag{8}$$

Proof: See Section 3 in the Appendix.

For ease of notation, we can define a new variable ΔY_L:

$$\Delta Y_L = \begin{cases} 0 & if \quad 0 < X_0 < \frac{\theta}{2\lambda}(V_H - V_L) \\ \triangle X_L & if \quad X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L) \end{cases} \tag{9}$$

Given ΔY_L, we can combine Lemma 3a and Lemma 3b and rewrite the expected gains to the active shareholder from the firm pursuing takeovers as follows,

$$\begin{aligned} E\left(\Pi_{ACT}\right) = {} & \underbrace{X_0\left[\theta V_H + (1-\theta)V_L - V_0\right]}_{intrinsic\, M\&A\, value} + \underbrace{(1-\theta)\lambda X_0 \Delta Y_L}_{benefits\, of\, voting} \\ & + \underbrace{\frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 - \frac{(1-\theta)\theta}{2}(V_H - V_L)\Delta Y_L}_{trading\, profits} \end{aligned} \tag{10}$$

We decompose the expected gains presented in Equation (10) into three parts. The first term represents the active shareholder's expected gain or loss due to the *intrinsic* value of the takeover policy. This term captures the expected value of takeovers without the active shareholder's influence on deal outcome. If takeovers, on average, destroy firm value, then this term will be negative and decreasing with X_0. Otherwise, it will be positive and increasing with X_0.

The second term captures the benefits from the active shareholder's influence on deal outcome. As discussed above, when the active shareholder starts with a small initial holding, he sells all his shares after observing a low signal and has no influence power. In this region, $\Delta Y_L = 0$ and the benefits from voting are zero as well. When the active shareholder starts out with a relatively large initial holding, he retains some influence power after trading and attempts to block the deal if he receives a low signal. In this region, $\Delta Y_L > 0$ and the benefits from voting are positive. To see the intuition behind this term, we can use the solution to ΔY_L and X_L and verify that $\lambda \Delta Y_L = \xi(X_0 + X_L)(V_0 - V_L)$. Substituting this in, we can rewrite the voting benefits as $(1-\theta)\xi(X_0 + X_L)(V_0 - V_L)X_0$. The variable $1-\theta$ captures the probability of having a bad deal, $\xi(X_0 + X_L)$ captures the probability that the active shareholder successfully blocks the bad deal, and $(V_0 - V_L)X_0$ is the gain from blocking a bad deal. The product of these terms therefore produces the expected benefits from voting against a bad deal.

The third term in Equation (10) represents the active shareholder's trading profits. When he starts out with a small initial holding, $\Delta Y_L = 0$ and his trading profits are constant with respect to X_0. When he starts out with a relatively large initial holding, $\Delta Y_L > 0$ and because ΔY_L is proportional to X_0, his trading profits decline linearly with X_0. The decline in his trading profits is mainly driven by the fact that the active shareholder now sells ΔY_L shares less than before following observing a low signal. This is because he prefers to give up part of his trading profits for gaining more influence power over the deal outcome. We can verify that the value he gains from an increase in voting power outweighs the value he loses from the decrease in trading profits, that is,

$$(1-\theta)\lambda X_0 \Delta Y_L > \frac{(1-\theta)\theta}{2}(V_H - V_L)\Delta Y_L \tag{11}$$

because $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$ in this region.

Figure 2 illustrates an example of how each component in Equation (10) varies with the active shareholder's initial ownership, X_0. In this example, the takeover policy has a negative expected return without the active shareholder's influence on deal outcome, and thus we see that as X_0 grows, the total *loss* due to the intrinsic value of the takeover policy increases linearly, represented by the dotted line in the figure. Second, the active shareholder's trading profits remain constant when his initial holding X_0 is below the threshold and they start declining linearly afterwards, represented by the dash-dash line. Third, when the active shareholder's initial holding is below the threshold, he optimally sells all his shares following a low signal and hence his influence power on the final outcome of the deal is zero. This

means that his benefits from voting are also zero in this range. As X_0 goes beyond the threshold, the benefit of voting increases quadratically with X_0, which is represented by the dashed line.

The red, solid line shows the combined profits, or the total expected profits to the active shareholder if a takeover policy is implemented. The active shareholder will support a takeover policy if the total expected profits from trading and voting are positive and vote against the policy if they are negative.

One key implication of our model is that, the informed, active shareholder's interest is not fully aligned with the interest of passive shareholders because of his ability to collect information and trade.[5] This ability endogenously changes the active shareholder's preference for the ex ante takeover policy even when the takeover policy has a negative expected return to the firm.

We demonstrate this point more clearly by comparing the total expected gains to both types of shareholders when the firm implements a takeover policy. For ease of comparison, we create a hypothetical uninformed, passive shareholder who owns the same amount of initial shares as the active shareholder. However, we assume that this uninformed, passive shareholder does not trade or vote, and the active shareholder still follows his optimal trading and voting strategy as in the equilibrium. In this case, the expected gains to the passive uninformed shareholder are:

$$E\left(\Pi_{PASS}\right) = \underbrace{X_0\left[\theta V_H + (1-\theta)V_L - V_0\right]}_{intrinsic\,M\&A\,value} + \underbrace{(1-\theta)\lambda X_0 \Delta Y_{L,ACT}}_{benefits\,of\,voting} \tag{12}$$

Note that $\Delta Y_{L,ACT}$ in the equation above denote the ΔY_L defined for the active shareholder. Comparing Equation (12) with Equation (10), we see that the expected gains to the uninformed, passive shareholder capture both the intrinsic value of the takeover policy and the potential benefits from the active shareholder's ex post influencing. His gains, however, do not contain any trading profits. The active shareholder's trading profits, therefore, create a wedge between the preference of the informed, active shareholder and that of the uninformed, passive shareholder.

Figure 3 demonstrates an example of this wedge or disagreement between the two shareholders. In this figure, disagreement arises when the informed, active shareholder's expected gains (plotted by the red line) have a different sign from the uninformed, passive shareholder's

[5]The uninformed, passive shareholders' interest is fully aligned with the firm value.

expected gains (plotted by the blue line). In this example, we find that such disagreement occurs in two shaded areas.

In the first shaded area, where X_0 is relatively low, the red line is above zero, whereas the blue line is below zero, so the informed, active shareholder prefers to promote the takeover policy, whereas this policy is harmful to the uninformed, passive shareholder (and also to the firm). This disagreement occurs because, in this area, the informed, active shareholder earns positive trading profits from the takeover policy and such trading profits are unavailable to the uninformed, passive shareholder. The trading profits induce the active shareholder to support the takeover policy even if it destroys firm value and hurts the uninformed, passive shareholder. A simple numerical example helps demonstrate the intuition: assume that the takeover policy has an intrinsic return of -5%, and the active shareholder's ex post influence on deal outcome increases the expected return by 3%. The active shareholder earns an expected trading profit of 4%. In this case, the total expected gain for the uninformed, passive shareholder is -2% (-2% = -5% + 3%), and the total expected gain for the informed, active shareholder is 2% (2% = -5% + 3% + 4%). As a result, the informed, active shareholder prefers to implement the takeover policy that hurts the uninformed, passive shareholder.

In the second shaded area, where X_0 is relatively high, we observe the opposite situation. Here, the red line is below zero, whereas the blue line is above zero, so the informed, active shareholder opposes the takeover policy, whereas this policy creates value for the uninformed, passive shareholder. This disagreement occurs because of a free-riding problem. In our model, the active shareholder's ex post influence is *not* free, even if we do not have an explicit cost of influence in the model. To gain sufficient influence power, the active shareholder has to retain enough shares after his trading, which requires him to sell less or even buy more shares in the face of a bad deal. This reduces his expected trading profits and may even turn the expected trading profits to negative when his initial ownership is high, as we show in Figure 2. The decreased expected trading profits, therefore, can be viewed as an endogenous cost of influencing. While only the active shareholder bears this cost of influencing, the benefits of his influencing are shared with the uninformed, passive shareholders, creating a free-riding problem: in some circumstances, the active shareholder does not want to implement the takeover policy because it generates a negative expected gain for him while the passive shareholder hopes to implement the policy and free-ride the active shareholder's ex post influence effort. A simple numerical example helps demonstrate the intuition: assume that the takeover policy has an intrinsic return of -5%, and the active shareholder's ex post influence increases the expected return by 6%. The active shareholder's expected trading profit is -2%. In this case, the total expected gain for the uninformed, passive shareholder

is 1% (1% = -5% + 6%), and the total expected gain for the informed, active shareholder is -1% (-1% = -5% + 6% - 2%). As a result, the informed, active shareholder, ex ante, opposes the takeover policy that benefits the uninformed, passive shareholder.

In sum, our model highlights two settings in which an informed, active shareholder and the uninformed, passive shareholder may endogenously disagree on whether to implement the takeover policy ex ante. First, when the takeover policy has a negative expected return, the active shareholder may promote the firm to implement this policy due to his expected trading profits. Second, when the takeover policy has a positive expected return with the active shareholder's ex post influencing, he may oppose this policy ex ante because of the free-riding problem. In these situations, giving the active shareholder greater influence power may not maximize firm value. In what follows, we characterize how firm value varies with the active shareholder's influence power per unit of ownership, ξ. We demonstrate that there exist settings in which empowering the informed, active shareholder can lead to weaker or even bad governance.

2.2 Firm value and influence power

In the model, the active shareholder's influence power per unit of ownership, ξ, affects firm value through two channels. First, ξ affects the active shareholder's chance of blocking a bad deal ex post. Through this channel, giving the active shareholder greater influence power (i.e., a larger ξ) enhances firm value if he chooses to influence ex post. Second, ξ affects the active shareholder's chance of determining the takeover policy ex ante. Through this channel, giving the active shareholder greater influence power may enhance or destroy firm value, depending on whether the active shareholder's preference for the takeover policy conflicts with the passive shareholder's preference (and thus firm value), as we discussed in detail above. The overall effect of the active shareholder's influence power on firm value, therefore, is determined jointly by his ex ante preference for the takeover policy and his ex post decision on whether to retain shares and influence deal outcome (e.g., vote against a bad deal). To perform the analyses below, we consider four possible equilibrium regions. Note that for any given set of parameters, only one equilibrium region is realized as the model solution. Different equilibrium regions may emerge as the model solution for different parameter sets.

We label the four regions as S-V (support policy ex ante and vote ex post), S-NV (support policy ex ante and not vote ex post), NS-V (not support policy ex ante and vote ex post), and

NS-NV (not support policy ex ante and not vote ex post), in which S (NS) means the active shareholder promotes (opposes) the takeover policy ex ante and V (NV) means the active shareholder retains some shares to vote (sells all shares and does not vote) against a bad deal ex post. Note that even if the active shareholder opposes the takeover policy ex ante (i.e., NS), he succeeds only with a certain probability. So the firm could possibly pursue a takeover with the active shareholder's ex ante objection, and in this case, the active shareholder still needs to make decisions on his trading and voting ex post. NS-V and NS-NV characterize these situations.

Below we will focus on the setting in which the takeover policy has a negative *intrinsic* return, because this is the setting where the informed, active shareholder and the uninformed, passive shareholder may disagree on their preference for the takeover policy ex ante. Recall that this is the setting that gives rise to the novel model implications we wish to highlight in the paper. It is straightforward to show that, when the takeover policy has a positive *intrinsic* return, the two types of shareholders always agree with each other on their preference for the takeover policy and therefore giving the active shareholder greater influence power always improves corporate governance and enhances firm value.[6]

Given the above, we can now make the following assumption for the remaining analyses below.

Assumption 6. *The takeover policy has a negative intrinsic return to the firm:* $\theta V_H + (1-\theta)V_L - V_0 < 0$

It is worth noting that Assumption 6 does *not* suggest that the expected return of the takeover policy is always negative. This is because the *intrinsic* return does not include the active shareholder's influence on deal outcome ex post. It is possible that a takeover policy has a negative intrinsic return but a positive expected return, with the active shareholder's influence ex post.

2.2.1 S-NV region.

If the active shareholder has a small initial stake (i.e., $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$) and his expected gains from the takeover policy is positive (i.e., $E(\Pi_{ACT}) > 0$ in Equation (7)), then he uses

[6] To see this, note in Eq.(10), the sum of the active shareholder's expected benefits from voting (the second term) and his expected profits from trading (the third term) must be positive (as proved in Equation (11)), so if the intrinsic return of the takeover policy (the first term) is positive, the active shareholder has a positive total expected gain if the firm implements the takeover policy, and, thus, he always supports the policy ex ante. Because this policy also creates value for the firm, the active shareholder's preference for the takeover policy ex ante fully aligns with firm value.

his influence power to promote the takeover policy ex ante, and he sells all his shares or even takes a short position if he receives a low signal and hence have no influence power to block bad deals ex post. In this case, we get the S-NV equilibrium. In this equilibrium, we can write the ex ante value of the firm at $t = 0$ as

$$V(\xi) = \underbrace{[z(\theta V_H + (1-\theta)V_L) + (1-z)V_0]}_{value\ with\ only\ manager} + \underbrace{[(1-z)\xi X_0(\theta V_H + (1-\theta)V_L - V_0.)]}_{value\ of\ ex\ ante\ influence} \quad (13)$$

Equation (13) decomposes firm value into two components. The first component captures the firm's value under the manager's full control. Without any influence from the active shareholder, the manager implements the takeover policy with a probability z and this has the expected value of $\theta V_H + (1-\theta)V_L$, and with a probability $1-z$, she prefers that the firm not pursue takeovers and firm value remains at V_0. The second component captures the value derived from the active shareholder's influence on the takeover policy. The term $(1-z)\xi X_0$ represents the probability that the manager does not want to implement the takeover policy but the active shareholder successfully overrules her decision, and $\theta V_H + (1-\theta)V_L - V_0$ represents the expected return from the takeover policy. In this region, the active shareholder does not influence deal outcome ex post, so the expected return from the takeover policy is simply equal to the intrinsic return of the takeover policy, which is assumed to be negative in Assumption 6.

Proposition 1 summarizes how firm value varies with the active shareholder's influence power per unit of ownership, ξ.

Proposition 1. *When $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$ and $E(\Pi_{ACT}) > 0$ holds in Equation (7), the active shareholder promotes the takeover policy ex ante and sells all his shares and does not vote against a bad deal ex post. In this setting, giving the active shareholder greater influence power always reduces the ex ante value of the firm.*

Proof. See Section 3 in the Appendix.

Proposition 1 highlights the simplest setting in which a more influential active shareholder can weaken corporate governance and lower firm value. This happens because in this S-NV region, the active shareholder promotes a value-destroying takeover policy ex ante but does not use his influence power to block bad deals ex post. As a result, his influence power unambiguously destroys firm value. Given his preference for the value-destroying takeover policy ex ante, he does not correct a manager's bad decision. In some circumstances, he even overturns a manager's good decision, thereby aggravating the overinvestment problem.

2.2.2 NS-NV region.

If the active shareholder has a small initial stake (i.e., $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$) and his expected gains from the takeover policy are negative (i.e., $E(\Pi_{ACT}) < 0$ in Equation (7)), then he opposes the takeover policy ex ante, and if the firm eventually pursues a takeover, he sells all his shares or even takes a short position if he receives a low signal and hence has no influence power to block bad deals ex post. In this case, we get the NS-NV equilibrium. In this equilibrium, we can write the ex ante value of the firm at $t = 0$ as

$$V(\xi) = \underbrace{[z(\theta V_H + (1-\theta)V_L) + (1-z)V_0]}_{value\ with\ only\ mgr} + \underbrace{[z\xi X_0 (V_0 - \theta V_H - (1-\theta)V_L)]}_{value\ of\ ex\ ante\ influence}. \quad (14)$$

Equation (14) decomposes the value of the firm into two components. The first component captures the firm's value under the manager's full control, as we discussed above. The second component captures the value derived from the active shareholder's influence on the takeover policy ex ante. Here $z\xi X_0$ represents the probability that the manager proposes to implement the takeover policy and the active shareholder successfully overturns her decision. $V_0 - \theta V_H - (1-\theta)V_L$ represents the value created by the active shareholder overruling the manager's bad decision ex ante.

Proposition 2 summarizes how firm value varies with the active shareholder's influence power per unit of ownership, ξ.

Proposition 2. *When $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$ and $E(\Pi_{ACT}) < 0$ holds in Equation (7), the active shareholder opposes the takeover policy ex ante and he has no influence power to vote against a bad deal ex post. In this setting, giving the active shareholder greater influence power increases the ex ante value of the firm.*

Proof: See Section 3 in the Appendix.

Proposition 2 highlights the simplest setting in which a more influential active shareholder can strengthen corporate governance and increase firm value. This happens because in this NS-NV region, the active shareholder opposes the firm's decision to implement a value-destroying takeover policy, so his influence power can be used to overturn the manager's bad decision ex ante (i.e., the overinvestment problem). The active shareholder, however, does not create more value for the firm ex post if the firm eventually pursues a takeover, because he sells all his shares if he observes a low signal, and, hence, he will have no influence power left to block bad deals ex post.

The above two equilibrium regions represent the settings in which the active shareholder finds it optimal not to use his influence power to vote ex post. Below we analyze the two regions in which he finds it optimal to retain some shares and vote ex post. Here we obtain more nuanced results on how influence power can affect firm value.

2.2.3 S-V region.

We next turn to the region in which the active shareholder prefers promoting the takeover policy ex ante but also retain a positive ownership stake to vote ex post if he observes a bad deal (i.e., the S-V region). The region obtains when the active shareholder has a relatively large initial stake (i.e., $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$) and his expected gains from the takeover policy are positive (i.e., $E(\Pi_{ACT}) > 0$ in Equation (8)).

In this region, we can write the value of the firm at $t = 0$ as

$$V(\xi) = \underbrace{[z(\theta V_H + (1-\theta)V_L) + (1-z)V_0]}_{value\ with\ only\ mgr} + \underbrace{[(1-z)\xi X_0(\theta V_H + (1-\theta)V_L - V_0)]}_{value\ of\ ex\ ante\ influence} + \underbrace{[(z + (1-z)\xi X_0)(1-\theta)\xi(X_0 + X_L)(V_0 - V_L)]}_{value\ of\ ex\ post\ influence}. \quad (15)$$

Equation (15) decomposes firm value into three components. The first component captures the firm's value under the manager's full control, and the second component captures the value derived from the active shareholder's influence on the takeover policy ex ante. Equations (13) and (14) touch on these two components. The last component captures the value derived from the active shareholder's influence on the ex post outcome of the deal. Specifically, $z + (1-z)\xi X_0$ is the probability that the takeover policy is implemented, $1 - \theta$ is the probability that a bad deal is identified (the active shareholder's ex post influence creates value only when the deal is bad), $\xi(X_0 + X_L)$ is the probability that the active shareholder is able to block the bad deal, and $V_0 - V_L$ is the gain from blocking a bad deal.

The second and third components in Equation (15) highlight the cost and benefit of giving the active shareholder greater power to influence corporate decisions, which is the main tension highlighted in our paper. On the one hand, giving the active shareholder more influence power increases the chance that the firm implements a takeover policy that could be value destroying on average (even with the active shareholder's ex post influence); on the other hand, giving the active shareholder more influence power also increases the chance that a bad deal will be blocked ex post and thus increases the expected return to the takeover policy.

The overall effect of the active shareholder's influence power depends on which component dominates, which in turn depends on the level of the influence power ξ, as summarized next in Proposition 3.

Proposition 3. *When $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$ and $E(\Pi_{ACT}) > 0$ holds in Equation (8), the active shareholder promotes the takeover policy ex ante and retains a positive ownership stake to vote against a bad deal ex post. In this setting, the relation between firm value and the active shareholder's influence power can be nonmonotonic. Specifically, there exists a cutoff level ξ_c such that firm value is decreasing in ξ for $\xi \leq \xi_c$ and increasing in ξ for $\xi > \xi_c$.*

Proof. See Section 3 in the Appendix.

This result obtains because in this region, the benefit of the active shareholder's influence power is quadratic in ξ while the cost is linear in it. Hence, when the level of ξ is low, the cost may overweigh the benefit, leading to a negative relation between firm value and influence power. However, when influence power is sufficiently large, the benefit always outweigh the cost, and, thus, the relation turns positive.

2.2.4 NS-V region.

Last, we turn to the region in which the active shareholder opposes the takeover policy ex ante, but if the takeover policy is implemented, he retains a positive ownership stake and votes against bad deals ex post (i.e., the NS-V region). This region obtains when the active shareholder has a relatively large initial stake (i.e., $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$) and his expected gains from the takeover policy are negative (i.e., $E(\Pi_{ACT}) < 0$ in Equation (8)).

In this region, we can write the value of the firm at $t = 0$ as

$$V(\xi) = \underbrace{[z(\theta V_H + (1-\theta)V_L) + (1-z)V_0]}_{value\ with\ only\ mgr} + \underbrace{[z\xi X_0 (V_0 - \theta V_H - (1-\theta)V_L)]}_{value\ of\ ex\ ante\ influence} + \underbrace{[z(1-\xi X_0)(1-\theta)\xi(X_0 + X_L)(V_0 - V_L)]}_{value\ of\ ex\ post\ influence}. \quad (16)$$

Similar to Equation (15), Equation (16) decomposes firm value into three components. The first component captures the firm's value under the manager's full control, and the second component captures the value derived from the active shareholder's influence on the takeover policy ex ante. The last component captures the expected value derived from the active shareholder's influence on deal outcome ex post. Specifically, $z(1 - \xi X_0)$ is the probability

that the firm implements the takeover policy, $1-\theta$ is the probability that a bad deal is identified, $\xi(X_0+X_L)$ is the probability that the active shareholder is able to block the bad deal, and V_0-V_L is the gain from blocking a bad deal.

Comparing Equation (16) with Equation (14), we notice that firm value is always higher in this NS-V region than in the NS-NV region because the third component is always positive. But, interestingly, this does not suggest that firm value in this NS-V region *always* increases with ξ as it does in the NS-NV region. To see this, note that although the second component is always increasing in ξ as in the NS-NV region, the third component, which is unique to this NS-V region is nonmonotonic in ξ. This is because the expected value created by the active shareholder through his influence on deal outcome depends on two factors: (1) the probability that a takeover policy is implemented and thus he may need to influence ex post (i.e., $z(1-\xi X_0)$) and (2) the expected value he can create if he influences (i.e., $(1-\theta)\xi(X_0+X_L)(V_0-V_L)$). We see that ξ affects these two factors in the opposite direction. On the one hand, giving the active shareholder greater influence power reduces the probability that the firm will pursue a takeover, because the active shareholder opposes the takeover policy ex ante in this region. This force reduces the probability that he creates value by influencing. On the other hand, giving him greater influence power increases his chance of blocking a bad deal ex post and thus increases the expected value he can create through his influence. When the first factor dominates, the third component can be decreasing in ξ.

Proposition 4 summarizes the relation between firm value and the active shareholder's influence power in this region.

Proposition 4. *When $X_0 \geq \frac{\theta}{2\lambda}(V_H-V_L)$ and $E(\Pi_{ACT})<0$ holds in Equation (8), the active shareholder opposes the takeover policy ex ante, but if the policy is implemented, he retains some influence power to vote against a bad deal ex post. In this setting, we find that (1) if $X_0 \leq \frac{V_0-V_L}{\lambda}$, firm value always increases with the active shareholder's influence power, and (2) if $X_0 > \frac{V_0-V_L}{\lambda}$, then there exists a cutoff ξ_d such that firm value is increasing in ξ for $\xi \leq \xi_d$ and decreasing in ξ for $\xi > \xi_d$.*

Proof. See Section 3 in the Appendix.

Proposition 4 suggests that in this NS-V region, it is more likely that firm value increases with the active shareholder's influence power, but the opposite can also happen for some parameter sets. In particular, when the active shareholders' initial ownership is high and when he has high influence power, giving him even more influence power may hurt firm value. This intriguing situation happens when the active shareholder's influence on deal outcome

turns the expected return of the takeover policy positive, and yet the active shareholder still opposes the takeover policy ex ante. In this case, giving the active shareholder greater influence power reduces the firm's probability of implementing a value-enhancing takeover policy and thus may hurt firm value. If the takeover policy has a positive expected return, then why does the active shareholder oppose it ex ante? This is because of the free-riding problem we analyzed at the end of Section 2.1.3.

It is worth noting that each of the above propositions only holds in its respective region. It is possible that changing ξ may also cause a switch of regions. In this case, the model prediction has to combine propositions in different regions. For example, Proposition 4 only holds in the NS-V region. That means, when one increases ξ beyond ξ_d, firm value may initially decrease with ξ. But once ξ becomes large enough, the active shareholder's ex ante preference for the takeover policy may switch from NS to S, and the region will switch from NS-V to S-V accordingly. And in this case, we showed in Proposition 3 that increasing ξ would eventually enhance firm value.

2.3 Model Extensions

In this section we present several extensions of the baseline model and investigate how these extensions affect our main results concerning the way in which the active shareholder's influence power relates to firm value.

2.3.1 Strategic manager.

In the baseline model, we have assumed that the manager has a preference for takeovers by modeling an exogenous parameter z which captures the probability that the manager supports the policy of engaging in takeovers ex ante. In this section, we consider an extension in which the manager's preference for takeovers is endogenous (i.e., we endogenize the parameter z) and study how the effect of the active shareholder's influence power ξ on firm value changes.

First, because the active shareholder's trading and governance decisions are made after the manager decides on pursuing a takeover strategy, the active shareholder's optimal trading quantity and ex ante and ex post governance actions do not depend on the manager's preference for takeovers. Thus, endogenizing the manager's decision will not change the boundary of the four regions we identified in our baseline model (i.e., NS-NV, S-NV, NS-V, and S-V).

However, the manager's preference for pursuing acquisitions may depend on the active shareholders ex post trading and governance decisions and hence may affect how firm value varies with the active shareholder's influence power ξ.

To keep the analysis simple, we assume that the manager only cares about her private benefits of control which she derives only if a takeover deal is completed. Specifically, let B denote the utility derived by the manager from a completed takeover and assume that initially this variable is given by $\tilde{B}$, which takes a value from a commonly known distribution with the support of $[-L, +L]$.[7] A positive value means that the manager is biased towards over investing in takeovers (i.e., empire-building motive), and a negative value implies that the manager has a bias against takeovers (i.e., seeks the quiet life). In addition, we assume that if the firm decides to pursue takeovers, then identifying an actual target requires the manager to spend a (utility) search cost of C.

Thus, the manager's expected gains from promoting a takeover may depend on the active shareholder's ex post action, because these actions affect the likelihood of deal completion.

Given the above, we analyze the manager's optimal choice under two scenarios: (1) the equilibrium region is NS-NV or S-NV and hence the manager anticipates the informed active shareholder will sell all his shares in the face of a bad deal), and (2) the equilibrium region is NS-V or S-V, and, hence, the manager anticipates the informed active shareholder will maintain a positive equity stake and vote against bad deals. These two scenarios depend on whether or not $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$, as analyzed in the baseline model.

Our main findings, formally proved in the Online Appendix, are as follows:

Scenario 1: In Lemma OA.1 we show that in the regions in which the informed active shareholder does not vote ex post, endogenizing managerial preference for takeovers does not generate a disciplinary effect, and hence the manager's decision on whether or not to propose a takeover policy is not affected by ξ. For this reason, it is also the case that in these regions, the effect of ξ on firm value is the same as in the baseline model.

Scenario 2: In Lemma OA.2, we will show that in the regions in which the informed active shareholder votes ex post, increasing his influence power has an additional governance effect that decreases the ex ante likelihood that the manager promotes the takeover policy. This setting captures the intuition that due to the ex post ability of the active shareholder to vote

[7] The initial uncertainty regarding managerial private benefits can either come from it being unobservable to shareholders and policy makers or it can be viewed as representing heterogeneity of this variable across firms.

down a bad takeover, the manager will be less likely to receive her private benefits, and hence will have a lower ex ante incentive to propose pursuing takeovers.

The remaining question then is how a change in influence power affects firm value in these regions (i.e., where $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$). Our formal analysis of how firm value varies with ξ in the S-V and NS-V regions demonstrates that it is still the case that firm value may decrease with ξ, but also that endogenizing the manager's decision creates an additional disciplinary effect of $\frac{dz(\xi)}{d\xi}$. This additional effect enhances the governance role of the active shareholder. Section A.1 of the Online Appendix formally shows this.

2.3.2 Effect of short-selling pressure.

2.3.2.1 Optimal trading quantity.

In our baseline model, we assume that the active shareholder cannot influence the probability of deal completion when he sells short. Previous studies have suggested that short selling by institutional investors may generate price pressure that sometimes diminishes the likelihood of deal completion. We explore this mechanism in this subsection and examine how it affects the model's implications.

To do so, we add a function $s(X) = min\{max\left(-sX,\, 0\right), 1\}$ to the model such that $s(X)$ is deducted from the probability of deal completion. $s(X)$ therefore reduces the likelihood of deal completion when $X < 0$. The parameter $s > 0$ captures the pressure of short selling. Function $s(X)$ is analogous to function $f(X) = max\{min\left(\xi X,\, 1\right), 0\}$ which captures the effect of active shareholder's influence on deal outcome via his ex post voting.

In this extension of the model, both positive and negative holdings by the active shareholder may affect the probability of completion of a bad deal. This extension therefore allows for a nonmonotonic relation between deal completion rate and active shareholder holding (i.e., an inverted V shape centered on zero). Note that the parameter s can be different from the parameter ξ, so we allow for asymmetric effects of positive holdings (through influencing) and negative holdings (through short-selling pressure) on deal outcomes.

Overall, the probability of deal completion can be written as

$$Prob(deal\,completion) = \begin{cases} 1; & if\ S = H \\ 1 - g(X); & if\ S = L \end{cases}$$

where $g(X) = f(X)$ if $X > 0$ and $g(X) = s(X)$ if $X \leq 0$. It is worth noting that $f(X)$ and $s(X)$ *cannot* be nonzero simultaneously.

The extended model can be solved similar to the baseline model. As we show more formally in Lemmas OA.3a and OA.3b of the Online Appendix, we have that when $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$ the model results remain as before. But when $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$ we show that the optimal trading is such that for $S = L$ the active shareholder trades $X_S = -\frac{\theta}{2\lambda}(V_H - V_L) + \triangle X_L^-$ and $\triangle X_L^- \equiv \frac{(-s)(V_0 - V_L)}{\lambda} \frac{[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}{[1-(-s)\frac{V_0 - V_L}{\lambda}]}$.

Thus, when $0 \leq X_0 < \frac{\theta}{2\lambda}(V_H - V_L)$ the active shareholder short sells shares if his signal is low , and given that his short-selling pressure results in a reduced probability of the bad deal being completed, the optimal trading quantity is different in the two models.

Finally, we further demonstrate in Corollaries OA.1 and OA.2 of the Online Appendix that $\triangle X_L^-$ is positive and is decreasing in X_0, increasing in s, and increasing in $V_0 - V_L$. Hence, the ability to influence deal outcome via short selling induces the active shareholder to sell less aggressively if he receives a low signal, and that in turn affects the probability of deal completion.

2.3.2.2 Ex ante preference for the takeover policy.

Given the active shareholder's optimal trading quantity and his influence over deal outcome (through short-selling pressure or explicit voting) derived above, we can compute his expected gains from a takeover policy. The expected gains determine whether or not the active shareholder supports the firm's decision to pursue takeovers ex ante in this extended model.

What we find from this extension is as follows. Let $E\left(\Pi_{ACT}^{EXT}\right)$ denote the active shareholder's expected gains in the extended model and $E\left(\Pi_{ACT}^{BS}\right)$ denote his expected gains in the baseline model. Given the above we find that when $0 \leq X_0 < \frac{\theta}{2\lambda}(V_H - V_L)$, then $E\left(\Pi_{ACT}^{EXT}\right) < E\left(\Pi_{ACT}^{BS}\right)$ and we have that $E\left(\Pi_{ACT}^{EXT}\right)$ is decreasing in s. And when $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$, then $E\left(\Pi_{ACT}^{EXT}\right) = E\left(\Pi_{ACT}^{BS}\right)$. Lemmas OA.4 and OA.5 of the Online Appendix provide a formal discussion and proof.

We, therefore, conclude that in the region of $0 \leq X_0 < \frac{\theta}{2\lambda}(V_H - V_L)$, his preference for the takeover policy is reduced in the extended model compared with that in the baseline model, because $E\left(\Pi_{ACT}^{EXT}\right) < E\left(\Pi_{ACT}^{BS}\right)$. Furthermore, the larger is the effect of shorting on the ex post probability of deal completion, the lower will be the active shareholder's profits from the takeover policy. The intuition is that the if shorting reduces the chance of deal completion

it also reduces the active shareholders ability to trade profitably. Trading profits distort the active shareholders' governance incentive, so the distortion is decreased.

2.3.2.3 Firm value and influence power

Finally, an analysis of how firm value varies with the active shareholder's influence power in the presence of short-selling pressure (Proposition OA.1.) shows that nothing changes for $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$. However, when $0 \leq X_0 < \frac{\theta}{2\lambda}(V_H - V_L)$ (Proposition OA.2.), we find three regions based on the parameter s.

In particular, we show that if $E\left(\Pi_{ACT}^{EXT}\right) |_{s=0} > 0$ (i.e., our baseline assumption) then there exists two cutoffs for the marginal effect of short selling s_1^* and s_2^* such that firm value decreases with ξ for $s < min\{s_1^*, s_2^*\}$, firm value increases with ξ for $min\{s_1^*, s_2^*\} < s < max\{s_1^*, s_2^*\}$, and firm value decreases with ξ for $s > max\{s_1^*, s_2^*\}$.

This means that when short-selling pressure has a relatively small effect on the probability of deal completion (i.e., $s < min\{s_1^*, s_2^*\}$), then the active shareholder will still promote the takeover policy ex ante and an increase in his influence power will still lead to a reduction in firm value, as in the baseline model. This result is well expected, because the extended model's implications are continuous with respect to the parameter s, and it nests the baseline model when $s = 0$. Once the short-selling effect, s, is in the intermediate range ($min\{s_1^*, s_2^*\} < s < max\{s_1^*, s_2^*\}$), the model generates two possible scenarios, both of which lead to a positive relation between the active shareholder's influence power ξ and firm value.

When the effect of short selling is very large ($s > max\{s_1^*, s_2^*\}$), we find that firm value decreases with the active shareholder's influence power again. The reason for this third region is similar to the result in Proposition 4 in which firm value was decreasing in ξ for $\xi > \xi_d$. The intuition is that, when s is very large, the active shareholder's expected gains from the takeover policy may become negative,[8] and, thus, he would oppose the takeover policy ex ante. The problem is that following a bad signal he will still short sell, and his short-selling pressure will reduce the likelihood of the bad deal being completed. This will turn the expected value of the takeover policy to be positive for dispersed shareholders, but will also imply a negative trading profit for the active shareholder. As a result, he opposes it ex ante. In this case, giving the active shareholder more influence power merely reduces the likelihood that the value-enhancing takeover policy be implemented. His influence power

[8] This happens because the active shareholder short sells in bad deals, but if his short selling is very likely to block the bad deals and therefore revert the firm value back to V_0 ex post, his trading profits from short selling is significantly reduced, which can turn his total expected gains from the takeover policy to negative.

plays no role ex post (because he short sells and thus does not vote ex post), so the combined effect is therefore negative.

2.3.3 The probability of being informed

The baseline model suggests that the most misaligned active shareholder is one with a zero initial equity stake (e.g., a hedge fund). This results is due to the simplifying assumption that the active shareholder is always fully informed. In this extension of the model we consider the posibility that the probability of becoming informed is a function of the initial position and demonstrate that a larger ownership stake (e.g., a mutual fund) can increase the level of misalignment.

In particular, we assume that the active shareholder becomes informed with a probability $\psi(X_0)$ and remains uninformed with a complement probability $1 - \psi(X_0)$. The function $\psi(X_0)$ is assumed to be weakly increasing in X_0 and this captures the intuition that a larger equity stake increases the informational advantage of the active shareholder. To simplify the analysis, we further assume that all agents in the model know whether or not the active shareholder becomes informed and that he trades and/or influences only when he is informed.

The focus of our analysis is a comparative static of an active shareholder with a zero stake to one with a positive stake, we consider the parameter region in which $0 \leq X_0 < \frac{\theta}{2\lambda}(V_H - V_L)$.

Given the active shareholder's expected gains from takeovers when informed and uninformed we can recompute the active shareholder's expected gain from takeovers in the extended model as

$$\begin{aligned} E(\Pi_{ACT}) &= \psi(X_0) \cdot E(\Pi_{ACT}|informed) + (1 - \psi(X_0)) \cdot E(\Pi_{ACT}|uninformed) \\ &= X_0 [\theta V_H + (1-\theta)V_L - V_0] + \psi(X_0)\frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2. \end{aligned}$$

The second term is his expected gains from becoming informed and trading. The first term is decreasing in X_0, and the second term is increasing in X_0, so adding $\psi(X_0)$ into the baseline model generates richer interpretations of the effects of initial ownership X_0 on the active shareholder's ex ante preference for the takeover policy. More specifically, the active shareholder now pursues takeovers if $E(\Pi_{ACT}) > 0$, that is,

$$\psi(X_0) > \frac{[V_0 - (\theta V_H + (1-\theta)V_L)]}{\frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2} X_0. \tag{17}$$

Now define the right-hand side of Equation (17) as

$$h(X_0) = \frac{[V_0 - (\theta V_H + (1-\theta)V_L)]}{\frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2} X_0. \tag{18}$$
$$= cX_0$$

Our model predicts that the distortion to the active shareholder's ex ante governance decision is determined by the value of $\psi(X_0) - h(X_0)$. More specifically, if $\psi(X_0) - h(X_0) > 0$, the active shareholder's ex ante governance decision is distorted; otherwise, his ex ante governance decision is aligned with dispersed shareholders. Moreover, when $\psi(X_0)$ is differentiable, the derivative of $\psi(X_0) - h(X_0)$ with respect to X_0 (i.e., $\frac{d\psi(X_0)}{dX_0} - c$) determines how this distortion changes with X_0.

In Lemma OA.6, we prove that the distortion to the active shareholder's ex ante governance decision will be increasing in X_0 whenever $\frac{d\psi(X_0)}{dX_0} > c$, where $c = \frac{[V_0 - (\theta V_H + (1-\theta)V_L)]}{\frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2}$. Thus, the model applies to mutual funds who hold positive equity stakes.

3 Conclusion

Previous studies have documented that informed, active shareholders may improve corporate governance through active monitoring, passive trading, or both. In this paper, we present a model of corporate takeovers in which a manager may sometimes propose a takeover policy that harms shareholders. In this setting, we demonstrate that an informed, active shareholder's joint ability to influence corporate decisions and trade on his private information, may sometimes weaken corporate governance. We further show that giving this shareholder greater power to influence corporate decisions, even if it is ex post beneficial to all shareholders, may lower the ex ante value of the firm.

Overall, our paper highlights one important reason informed, active shareholders, such as institutional investors, may make distorted governance decisions that can be harmful to the firm. Our paper adds to the corporate governance debate on whether shareholder empowerment necessarily leads to better governance and highlights settings in which the answer to this is negative.

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Figure 1: **Model time line**

This figure illustrates the model's time line. During the period $t = 0$, the manager (MGR) first decides whether or not to propose that the firm pursues a takeover, and then the active shareholder (ASH) decides whether to support or oppose the manager's proposal. If the firm abandons a takeover, the model ends at $t = 0$. If the firm pursues a takeover, period $t = 1$ starts. A target firm is identified, and a takeover bid is announced. Then nature determines the quality of the deal. The ASH collects private information about deal quality and decides the quantity to trade. After trading, the ASH then decides to support the deal completion or to attempt to block it. The true value of the deal remains unknown to the market at $t = 1$, and it is realized and made public at $t = 2$. If the ASH supports the deal or he tries to block the deal but fails, the firm value becomes V_H or V_L at $t = 2$, depending on the deal quality. If the ASH succeeds in blocking the deal, firm value reverts to V_0. The ASH's influence power, defined as the probability of implementing the outcome he prefers, is $f(X) = min\,(\xi_1 X,\, 0)$.

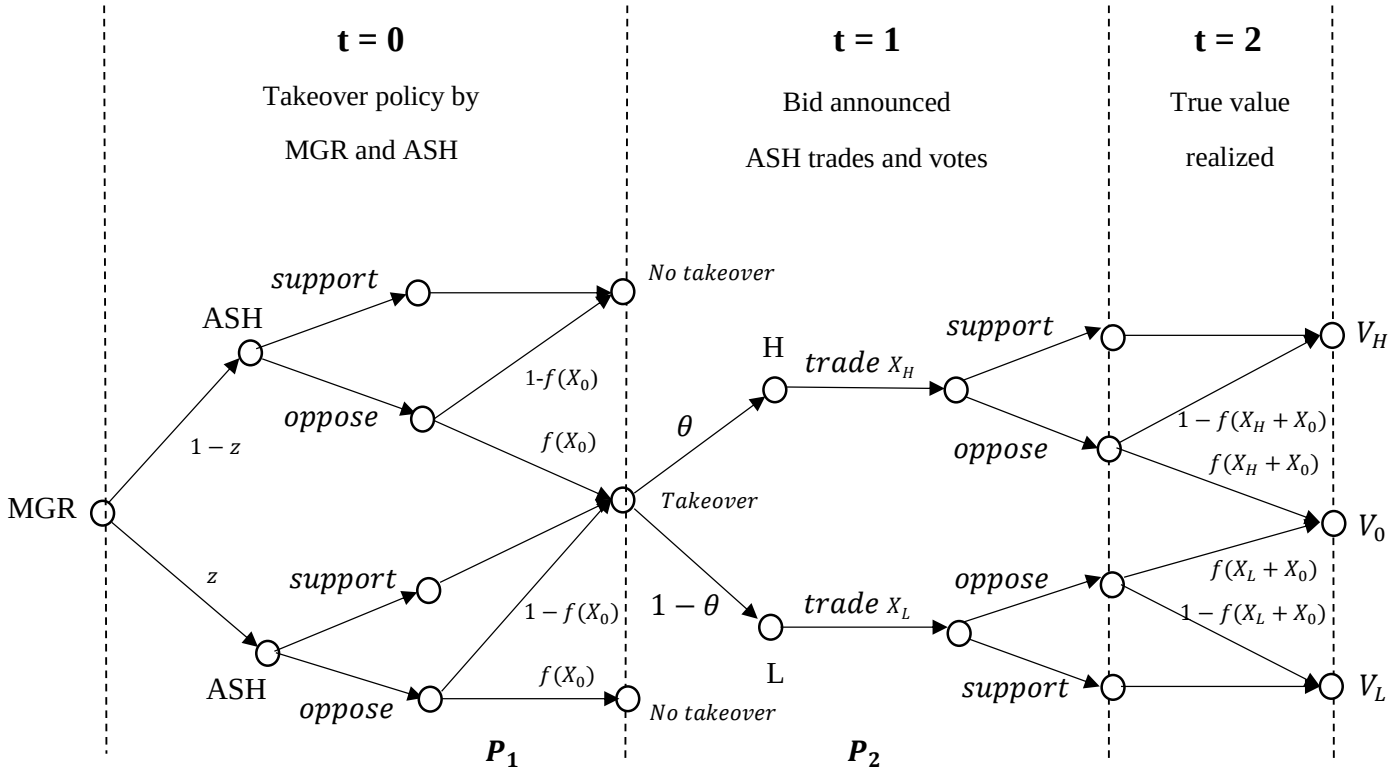


Figure 2: **Decomposition of expected gains to the active shareholder**

This figure shows the decomposition of net benefits to the active shareholder if he promotes the takeover policy ex ante. The net benefits can be decomposed into three parts: the intrinsic value of M&A, the trading profits, and the benefits from influencing the deal outcome. The figure illustrates how the dollar value of each component varies with the active shareholder's initial ownership X_0 assuming that the active shareholder follows his optimal trading and voting strategy.

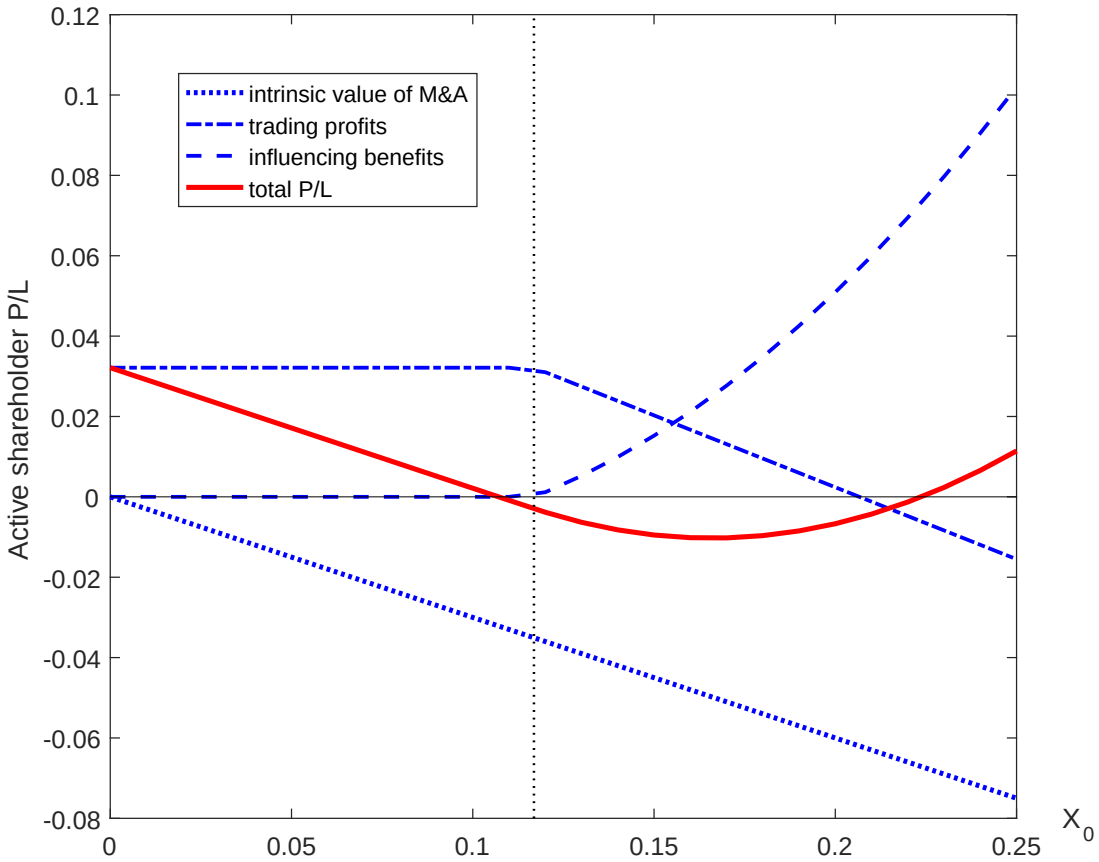
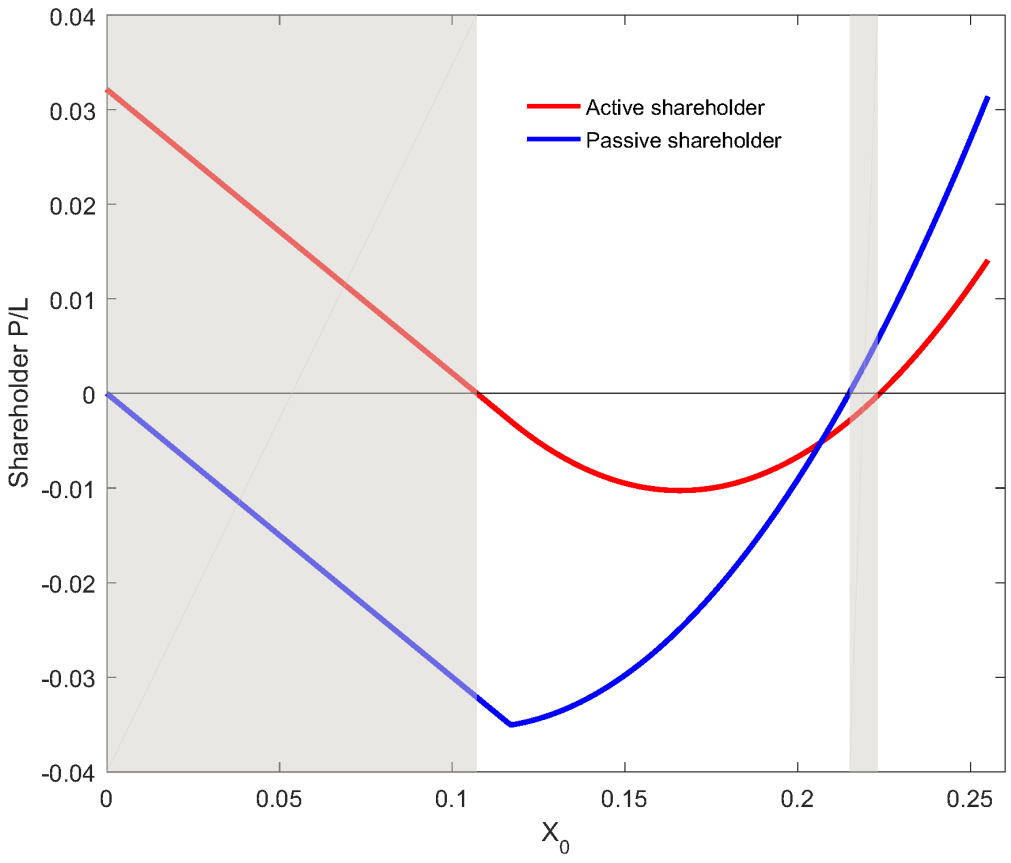


Figure 3: **Disagreement between the active shareholder and passive shareholders**

This figure illustrates the expected profits to an informed, active shareholder (red line) and those to an uninformed, passive shareholder (blue line) when the firm implements a takeover policy. The shaded area represents the area in which the informed, active shareholder's preference for the takeover policy conflicts with the uninformed, passive shareholder's preference for the takeover policy.



Appendix A Model Proofs

A.1 Proof of Lemmas 2a and 2b

The first-order condition (F.O.C.) of Equation (3) characterizes the optimal trading strategy. We can express the F.O.C. as

$$f(X+X_0)V_\ell+(1-f(X+X_0))V_S-P_2(X)+\frac{df(X+X_0)}{dX}(V_\ell-V_S)(X+X_0)-\lambda X=0. \quad \text{(A.1)}$$

If $S=H$, the active shareholder supports the takeover ex post, and hence $V_\ell=V_S=V_H$. After writing the market maker's price function as in Equation (1), we get the F.O.C. as

$$V_H-P_1-2\lambda X_H+\lambda E(X)=0 \quad \text{(A.2)}$$

and hence that

$$X_H=\frac{1}{2\lambda}(V_H-P_1)+\frac{1}{2}E(X). \quad \text{(A.3)}$$

If $S=L$, the active shareholder votes against the bad acquisition and tries to block the deal if he can. In this case, $V_\ell=V_0$ and $V_S=V_L$, and the F.O.C. depends on whether or not $X_0+X_L>0$. Lemmas 2a and 2b present the results based on this key assumption.

Note that the solution to X_H, presented in Equation (A.3), applies to both Lemma 2a and 2b, but the solution to X_L differs in these two lemmas, which we prove below separately.

To prove Lemma 2a, we notice that when $X_0+X_L\leq 0$, the active shareholder will sell all his shares or even take a short position if $S=L$, and therefore he has no influence power left after his trades, and thus $f(X_L+X_0)=0$ and $\frac{df(X_L+X_0)}{dX}=0$. The F.O.C., when $S=L$, simplifies to

$$V_L-P_1-2\lambda X_L+\lambda E(X)=0 \quad \text{(A.4)}$$

and hence,

$$X_L=\frac{1}{2\lambda}(V_L-P_1)+\frac{1}{2}E(X). \quad \text{(A.5)}$$

The active shareholder has no power to influence deal outcome ex post when $S=L$ and the market maker correctly anticipates this in equilibrium, so we have that

$$P_1=[\theta V_H+(1-\theta)V_L]. \quad \text{(A.6)}$$

Substituting Equations (A.3), (A.5) and (A.6) into the definition of $E(X)$, we get

$$E(X) = \theta X_H + (1-\theta)X_L = \frac{1}{2\lambda}[\theta V_H + (1-\theta)V_L - P_1 + \lambda E(X)]. \tag{A.7}$$

Thus, we get that $E(X) = \frac{1}{2}E(X)$, and the only fixed point solution is that $E(X) = 0$.

Finally, substituting Equations (A.6) and (A.7) back to Equations (A.3) and (A.5), we get

$$X_H = \frac{1-\theta}{2\lambda}\left(V_H - V_L\right),$$
$$X_L = -\frac{\theta}{2\lambda}\left(V_H - V_L\right).$$

Lastly, we verify that the condition $X_L + X_0 \leq 0$ holds if and only if $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$. Lemma 2a follows.

To prove Lemma 2b, we note that when $X_0 + X_L > 0$, the active shareholder would have remaining influence power after his trades when $S = L$, and thus $f(X_L + X_0) = \xi(X_L + X_0)$ and $\frac{df(X_L+X_0)}{dX} = \xi$. The F.O.C., when $S = L$, becomes

$$\xi(X_L + X_0)V_\ell + (1 - \xi(X_L + X_0))V_S - P_2(X_L) + \xi(V_\ell - V_S)(X_L + X_0) - \lambda X_L = 0. \tag{A.8}$$

Again, note that when $S = L$, the active shareholder would vote against the bad deal ex post, so $V_\ell = V_0$ and $V_S = V_L$ in Equation A.8, and we rewrite the F.O.C. as

$$\xi(X_L + X_0)V_0 + (1 - \xi(X_L + X_0))V_L - P_2(X_L) + \xi(V_0 - V_L)(X_L + X_0) - \lambda X_L = 0. \tag{A.9}$$

We can now substitute $P_2(X_L)$ in Equation (1) to get

$$X_L = \frac{(V_L - P_1) + \lambda E(X) + 2\xi X_0(V_0 - V_L)}{2\lambda - 2\xi(V_0 - V_L)}. \tag{A.10}$$

Substituting Equation (A.3) into the definition of $E(X)$, we get

$$E(X) = \theta X_H + (1-\theta)X_L = \theta[\frac{1}{2\lambda}\left(V_H - P_1\right) + \frac{1}{2}E(X)] + (1-\theta)X_L,$$

and rearranging terms we get that

$$E(X) = \frac{1}{(2-\theta)\lambda}[\theta\left(V_H - P_1\right) + 2\lambda(1-\theta)X_L].$$

We can now plug the value of $E(X)$ into the equation for X_L above to get

$$(2\lambda - 2\xi(V_0 - V_L))X_L = (V_L - P_1) + \frac{\theta}{2-\theta}(V_H - P_1) + 2\lambda\frac{1-\theta}{2-\theta}X_L + 2\xi X_0(V_0 - V_L).$$

Now note that because the market maker correctly anticipates the active shareholder's decision to influence the deal outcome in equilibrium which implies that

$$P_1 = \theta V_H + (1-\theta)\left[f^e V_0 + (1-f^e)V_L\right], \tag{A.11}$$

where $f^e = E\left[f(X_L + X_0)\right]$ is a function of the market maker's expectation of X_L. In equilibrium, rational expectation fulfills, and $E\left[f(X_L + X_0)\right] = \xi(X_L + X_0)$.

Thus, we can calculate

$$V_H - P_1 = (1-\theta)(V_H - V_L) - (1-\theta)\xi(X_0 + X_L)(V_0 - V_L)$$

and

$$V_L - P_1 = -\theta(V_H - V_L) - (1-\theta)\xi(X_0 + X_L)(V_0 - V_L),$$

which are both functions of X_L. If we plug these into the X_L equation above and rearrange terms we get that

$$\begin{aligned}(2\lambda - 2\xi(V_0 - V_L))X_L = -\theta(V_H - V_L) + \frac{\theta(1-\theta)}{2-\theta}(V_H - V_L) + 2\lambda\frac{1-\theta}{2-\theta}X_L \\ + 2\xi X_0(V_0 - V_L) - \xi(X_0 + X_L)(V_0 - V_L)(1-\theta)[1 + \frac{\theta}{2-\theta}].\end{aligned}$$

Combining like terms and moving terms with $X_L$to the left-hand side this simplifies to

$$(2\lambda - 2\xi(V_0 - V_L))X_L = -\theta(V_H - V_L) + 2\xi X_0(V_0 - V_L).$$

We can divide both sides by 2λ and write the solution of X_L in the form of

$$X_L = -\frac{\theta}{2\lambda}(V_H - V_L) + \Delta X_L,$$

where $\triangle X_L \equiv \frac{\xi(V_0 - V_L)}{\lambda}\frac{[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}{[1 - \xi\frac{V_0 - V_L}{\lambda}]}$.

To find $E(X)$, we return to the expected value definition and input the values of $X_L$and X_H. Doing so yields

$$E(X) = \theta X_H + (1-\theta)X_L = (1-\theta)\Delta X_L.$$

Finally, one can check that the condition that $(X_L + X_0) \geq 0$ holds whenever $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$. So Lemma 2b follows.

Q.E.D.

A.2 Proof of Corollary 1 and Corollary 2

To prove Corollary 1, we reproduce the definition of $\triangle X_L$ below:

$$\triangle X_L \equiv \frac{\xi(V_0 - V_L)}{\lambda} \frac{[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}{[1 - \xi\frac{V_0 - V_L}{\lambda}]}. \tag{A.12}$$

Note $V_0 > V_L$, $\xi > 0$, and $\lambda > 0$ by the parameter definition in our model. Also, $\triangle X_L$ is only defined in the region when $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$, so we just need to prove that $\xi\frac{V_0 - V_L}{\lambda} < 1$. Based on Assumption 5, we have

$$\xi < \frac{1}{\frac{V_0 - V_L}{\lambda} + [X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}.$$

Both sides are positive, so we can rewrite it as

$$\xi\frac{V_0 - V_L}{\lambda} + \xi[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)] < 1.$$

In the region when $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$, we further have

$$\xi\frac{V_0 - V_L}{\lambda} < \xi\frac{V_0 - V_L}{\lambda} + \xi[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)] < 1$$

and thus $\xi\frac{V_0 - V_L}{\lambda} < 1$ holds and $\triangle X_L > 0$.

We then compute the derivatives of $\triangle X_L$ with respect to X_0, ξ, and $V_0 - V_L$. First,

$$\frac{d(\triangle X_L)}{dX_0} = \frac{\xi(V_0 - V_L)}{\lambda} \frac{1}{[1 - \xi\frac{V_0 - V_L}{\lambda}]} > 0.$$

Second,

$$\frac{d(\triangle X_L)}{d\xi} = \frac{(V_0 - V_L)}{\lambda} \frac{[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}{\left(1 - \xi\frac{V_0 - V_L}{\lambda}\right)} + \frac{\xi(V_0 - V_L)^2}{\lambda^2} \frac{[X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}{\left(1 - \xi\frac{V_0 - V_L}{\lambda}\right)^2} > 0.$$

And third,

$$\frac{d\left(\triangle X_L\right)}{d\left(V_0-V_L\right)}=\frac{\xi}{\lambda}\frac{\left[X_0-\frac{\theta}{2\lambda}\left(V_H-V_L\right)\right]}{\left(1-\xi\frac{V_0-V_L}{\lambda}\right)}+\frac{\xi^2(V_0-V_L)}{\lambda^2}\frac{\left[X_0-\frac{\theta}{2\lambda}\left(V_H-V_L\right)\right]}{\left(1-\xi\frac{V_0-V_L}{\lambda}\right)^2}>0.$$

Therefore, $\triangle X_L$ increases with X_0, ξ, and V_0-V_L.

To prove Corollary 2, we first note that when $X_0 \leq \frac{\theta}{2\lambda}\left(V_H-V_L\right)$, the active shareholder trades

$$X_L=-\frac{\theta}{2\lambda}\left(V_H-V_L\right)$$

when he receives a low signal, and, therefore, the total number of shares he owns after trading, X_L+X_0, is less than or equal to zero. His influence power post-trading, $f(X_L+X_0)=max(0,\,\xi(X_L+X_0))$, is also zero.

When $X_0>\frac{\theta}{2\lambda}\left(V_H-V_L\right)$, the active shareholder trades

$$X_L=-\frac{\theta}{2\lambda}\left(V_H-V_L\right)+\triangle X_L$$

when he receives a low signal. Because $X_0>\frac{\theta}{2\lambda}\left(V_H-V_L\right)$ and $\triangle X_L>0$, the total number of shares he owns after trading, X_L+X_0, is strictly positive, and his influence power is positive too.

Q.E.D.

A.3 Proof of Lemmas 3a and 3b

If the firm pursues an acquisition, the active shareholder's value is characterized by Equation (3) conditional on his signal S. We can substitute his optimal trading quantity and voting strategy solved by Lemmas 1, 2a, and 2b into his value function U,

$$U_{ACT,S}=(X_0+X_S)\cdot\left[f(X_0+X_S)V_\ell+(1-f(X_0+X_S))V_S\right]-X_S\cdot P_2(X_S).$$

When $0\leq X_0\leq\frac{\theta}{2\lambda}\left(V_H-V_L\right)$, we have

$$U_{ACT,H}=\frac{(1-\theta)^2}{4\lambda}\left(V_H-V_L\right)^2+V_HX_0$$
$$U_{ACT,L}=\frac{\theta^2}{4\lambda}\left(V_H-V_L\right)^2+V_LX_0$$

and therefore the active shareholder's expected value *prior to* receiving the signal is

$$\begin{aligned} E\left[U_{ACT}\right] &= \theta U_{ACT,H} + (1-\theta)U_{ACT,L} \\ &= \frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 + X_0\left[\theta V_H + (1-\theta)V_L\right]. \end{aligned}$$

The active shareholder's expected gains from the firm pursuing an acquisition is equal to his value from the firm pursuing an acquisition minus his value from the firm standing alone:

$$\begin{aligned} E\left[\Pi_{ACT}\right] &= E\left[U_{ACT}\right] - V_0 X_0 \\ &= \frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 + X_0\left[\theta V_H + (1-\theta)V_L - V_0\right]. \end{aligned}$$

Similarly, when $X_0 > \frac{\theta}{2\lambda}\left(V_H - V_L\right)$, we have

$$\begin{aligned} U_{ACT,H} &= \frac{(1-\theta)^2}{4\lambda}\left(V_H - V_L\right)^2 + V_H X_0 \\ U_{ACT,L} &= \frac{\theta^2}{4\lambda}\left(V_H - V_L\right)^2 + V_L X_0 + \lambda X_0 \Delta X_L - \frac{\theta}{2}\left(V_H - V_L\right)\Delta X_L \end{aligned}$$

and therefore the active shareholder's expected gains from the firm pursuing an acquisition is

$$\begin{aligned} E\left[\Pi_{ACT}\right] &= E\left[U_{ACT}\right] - V_0 X_0 \\ &= \frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 + (1-\theta)\lambda X_0 \Delta X_L \\ &\quad + X_0\left[\theta V_H + (1-\theta)V_L - V_0\right] - \frac{\theta(1-\theta)}{2}\left(V_H - V_L\right)\Delta X_L. \end{aligned}$$

They are the results presented in Lemmas 3a and 3b.

Q.E.D.

A.4 Proof of Proposition 1

Taking the derivative of $V(\xi)$ in Equation (13) with respect to ξ, we get,

$$\frac{dV(\xi)}{d\xi} = (1-z)\left[\theta V_H + (1-\theta)V_L - V_0\right].$$

Because $\theta V_H + (1-\theta)V_L < V_0$ is based on Assumption 6 for our analysis in this section, $\frac{dV(\xi)}{d\xi} < 0$ holds, and, therefore, firm value decreases with ξ.

Q.E.D.

A.5 Proof of Proposition 2

Taking the derivative of $V(\xi)$ in Equation (14) with respect to ξ, we get

$$\frac{dV(\xi)}{d\xi} = z\left[V_0 - \theta V_H - (1-\theta)V_L\right].$$

Because $\theta V_H + (1-\theta)V_L < V_0$ based on Assumption 6 for our analysis in this section, $\frac{dV(\xi)}{d\xi} > 0$ hold, and, therefore, the firm value increases with ξ.

Q.E.D.

A.6 Proof of Proposition 3

Taking the F.O.C of the value function in Equation (15) with respect to the influence power ξ, we get

$$\begin{aligned}\frac{dV(\xi)}{d\xi} &= (1-z)X_0\left(\theta V_H + (1-\theta)V_L - V_0\right) + (1-z)X_0\xi(X_0+X_L)(1-\theta)(V_0-V_L) \\ &\quad + \left[z(1-\theta)(V_0-V_L) + (1-z)(1-\theta)(V_0-V_L)X_0\xi\right]\frac{\partial\xi(X_0+X_L)}{\partial\xi}. \qquad \text{(A.13)}\end{aligned}$$

Note that X_L is a function of ξ solved in the equilibrium. Substituting the solution of X_L in Equation (6), we can prove the following

$$\xi(X_0+X_L) = \frac{\xi}{1-X_m\xi}X_{vote}, \qquad \text{(A.14)}$$

where we simplify the notation by defining $X_m = \frac{V_0-V_L}{\lambda}$ and $X_{vote} = X_0 - \frac{\theta}{2\lambda}(V_H - V_L)$ henceforth.

Substituting Equation (A.14) into Equation (A.13), we can write the F.O.C. as

$$\frac{dV}{d\xi} = \frac{(1-z)\left[-(\alpha X_m^2 + \beta X_m X_0)\xi^2 + 2(\alpha X_m + \beta X_0)\xi + \frac{z}{1-z}\beta - \alpha\right]}{(1-X_m\xi)^2}, \qquad \text{(A.15)}$$

where

$$\alpha = X_0 \left(V_0 - \theta V_H - (1-\theta)V_L\right)$$
$$\beta = (1-\theta)\left(V_0 - V_L\right) X_{vote},$$

and both α and β are positive constants based on the model's assumptions on parameter values in this region.

The denominator in Equation (A.15) is nonnegative, so the sign of the derivative is determined by the sign of the numerator only. Let

$$g(\xi) = -(\alpha X_m^2 + \beta X_m X_0)\xi^2 + 2(\alpha X_m + \beta X_0)\xi + \frac{z}{1-z}\beta - \alpha$$

denote the numerator, and it is a quadratic function of ξ. The coefficient on the square term is negative (i.e., $-(\alpha X_m^2 + \beta X_m) < 0$), so $g(\xi)$ has a maximum. First, we show that $g(\xi)$ is positive at its maximum. It is easy to verify that $g(\xi)$ attains its maximum value when $\xi = \frac{1}{X_m}$. Substituting it into $g(\xi)$, we get the maximum value of the numerator is

$$g(\frac{1}{X_m}) = \beta\left(\frac{X_0}{X_m} + \frac{z}{1-z}\right) > 0.$$

Function $g(\xi)$ has two roots, and let's denote the first root (i.e., the smaller one) as ξ_c. We can solve it from $g(\xi) = 0$

$$\xi_c = \frac{1}{X_m}\left(1 - \sqrt{1 + (\frac{z}{1-z}\beta - \alpha)\left(\frac{X_m}{\alpha X_m + \beta X_0}\right)}\right).$$

We know that for any $\xi < \xi_c$, $g(\xi)$ is negative and therefore $\frac{dV}{d\xi}$ is also negative. In this region, giving the active shareholder more influence power decreases firm value. For any $\xi_c < \xi < \frac{1}{X_m}$, $g(\xi)$ is positive and thus $\frac{dV}{d\xi}$ is also positive. In this region, giving the active shareholder more influence power increases firm value. To complete the proof, we last show that $\xi < \frac{1}{X_m}$ always hold with the parameter restrictions, so $g(\xi)$ never turns negative again beyond ξ_c for the permissible range of ξ in our model. To see this, we notice that from Assumption 6, we have

$$\xi < \frac{1}{\frac{V_0 - V_L}{\lambda} + [X_0 - \frac{\theta}{2\lambda}(V_H - V_L)]}.$$

For proposition 3 and 4, we also have $X_0 > \frac{\theta}{2\lambda}(V_H - V_L)$, and thus

$$\xi < \frac{1}{\frac{V_0 - V_L}{\lambda}} = \frac{1}{X_m}.$$

It is worth noting that ξ_c can be negative (i.e., when $\frac{z}{1-z}\beta > \alpha$), and in this case, firm value increases with the active shareholder's influence power in the whole permissible region of ξ.

Q.E.D.

A.7 Proof of Proposition 4

Taking the F.O.C of the value function in Equation (16) with respect to the influence power ξ, we get

$$\begin{aligned}\frac{dV(\xi)}{d\xi} = {} & zX_0\left(V_0 - \theta V_H - (1-\theta)V_L\right) - zX_0(1-\theta)\xi(X_0 + X_L)(V_0 - V_L) \\ & + z(1 - \xi X_0)(1-\theta)(V_0 - V_L)\frac{\partial \xi(X_0 + X_L)}{\partial \xi}. \end{aligned} \tag{A.16}$$

Substituting in Equation (A.14), we can write the F.O.C. as

$$\frac{dV}{d\xi} = \frac{z\left[(\alpha X_m^2 + \beta X_m X_0)\xi^2 - 2(\alpha X_m + \beta X_0)\xi + \alpha + \beta\right]}{(1 - X_m\xi)^2} \tag{A.17}$$

where

$$\begin{aligned}\alpha &= X_0\left(V_0 - \theta V_H - (1-\theta)V_L\right) \\ \beta &= (1-\theta)\left(V_0 - V_L\right)X_{vote}\end{aligned}$$

and both α and β are positive constants based on the model's assumptions on parameter values.

The sign of $\frac{dV}{d\xi}$ in Equation (A.17) is determined by the sign of its numerator. Let

$$g(\xi) = (\alpha X_m^2 + \beta X_m X_0)\xi^2 - 2(\alpha X_m + \beta X_0)\xi + \alpha + \beta$$

and it is a quadratic function of ξ. The coefficient on the square term is positive (i.e., $\alpha X_m^2 + \beta X_m X_0 > 0$), so $g(\xi)$ reaches its minimum at $\xi = \frac{1}{X_m}$ and $g(\xi)$ decreases with ξ for $\xi < \frac{1}{X_m}$, which is the relevant range in our model. Note that $g(\xi)$ is positive at $\xi = 0$, so we

just need to check the roots for $g(\xi) = 0$:

$$\xi_{1,2} = \frac{1}{X_m}\left(1 \pm \sqrt{1 - \frac{\alpha+\beta}{\alpha + \frac{X_0}{X_m}\beta}}\right).$$

When $X_0 \leq X_m$, there are no real roots, and, therefore, the function $g(\xi)$ is always positive. In this case, $\frac{dV}{d\xi} > 0$ always holds, and, thus, giving the active shareholder more influence power always increases firm value.

When $X_0 > X_m$, there exists two real roots but only the smaller one could be in the permissible range of ξ.[9] Define the cutoff point as

$$\xi_d = \frac{1}{X_m}\left(1 - \sqrt{1 - \frac{\alpha+\beta}{\alpha + \frac{X_0}{X_m}\beta}}\right)$$

and thus $\frac{dV}{d\xi} > 0$ hold for $\xi < \xi_d$, and $\frac{dV}{d\xi} < 0$ hold for $\xi > \xi_d$. It is worth noting that ξ_d may fall out of the permissible range of ξ even if it is lower than $\frac{1}{X_m}$, and in this case, firm value always increases with the active shareholder's influence power ξ.

Q.E.D.

[9] When $X_0 > X_m$, the root $\xi_2 = \frac{1}{X_m}\left(1 + \sqrt{1 - \frac{\alpha+\beta}{\alpha+\frac{X_0}{X_m}\beta}}\right)$ is clearly above $\frac{1}{X_m}$ and thus must fall out of the permissible range of ξ.

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