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Weak Governance by Informed Active Shareholders

Finance Working Paper N° 469/2016
June 2018

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ECGI Working Paper Series in Finance

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Abstract

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

JEL Classifications: G30, G34

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Do informed shareholders who can influence corporate decisions improve governance? We demonstrate this may not be generally true in a model of takeovers. The model suggests that a shareholder's ability to collect information and trade ex post may cause him, ex ante, to support value-destroying takeovers or oppose value-enhancing takeovers. Surprisingly, we find conditions under which giving the active shareholder greater influence power weakens governance and reduces firm value, even if such influence power can be used to reject bad takeovers ex post. Our model sheds light on why relying on informed, active shareholders to improve governance has its limits.

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1 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 over corporate decisions. Indeed, some theoretical and empirical papers support the governance role of institutional shareholders.[1] 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 over-investment problem) or oppose the firm from pursuing takeovers with a positive expected return (i.e., an under-investment problem).

The active shareholder can play two governance roles to mitigate the agency problems above: First, he can influence the firm's likelihood of pursuing 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 the likelihood of 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.

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

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

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 in two different scenarios. First, since the active shareholder can trade on his private information, he may sometimes support the firm's decision to pursue takeovers with a negative expected return, as long as such takeovers create significant uncertainty to firm value and thus generate profitable trading opportunities for him. This may aggravate the over-investment problem. Second, the active shareholder may find it optimal, ex post, to buy more shares in order to block a bad deal, which constitutes a private cost of influencing to him. But since the benefits of his actions are shared with all shareholders, this creates a free-riding problem that may induce the active shareholder to oppose the firm's decision to pursue takeovers even if they have a positive expected return. This may aggravate the under-investment problem.

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 the 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 (due to his ability to trade ex post), greater influence power only makes it more likely that he would implement actions that are harmful to the firm. In this regard, giving the active shareholder greater influence power *may* weaken corporate governance and destroy firm value.

The overall effect of influence power on firm value is determined by the 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 small and his influence power is relatively low, he may opportunistically propose the firm to pursue takeovers ex ante even if such takeovers have a negative expected return. In this case, he would also choose to sell all his shares ex post in the face of a bad deal. Giving him greater influence power aggravates distortion to his ex ante governance and lowers firm value. This active shareholder resembles a short-term, opportunistic investor who seeks trading opportunities generated by takeovers.

When the active shareholder's initial ownership is 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 would also retain enough shares and try 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 would either propose that the firm pursue value-destroying takeovers or oppose it from pursuing value-enhancing takeovers. But meanwhile, he would also try 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.

Overall, our findings challenge the view that relying on an informed, active shareholder such as an institutional investor would *always* improve corporate governance. Note that we do not argue that informed, active shareholders always reduce firm value. Instead, we demonstrate that there exists settings where they may have different objectives from maximizing firm value and that in these settings giving them greater influence power can lower firm value.

Our paper relates to previous studies that examine 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 regarding shareholders' active intervention in firm decisions, while other papers such as Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2010) emphasize shareholders' governance role through their 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 broadly relates to the theoretical work by Burkart, Gromb, and Panunzi (1997), 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.

The remainder of the paper is organized as follows: Section 2 introduces the model setup, Section 3 presents the model solution, and Section 4 concludes.

2 Model setup

This section introduces the model setup, followed by a discussion of the key model assumptions and specifications.

2.1 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 not implement 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 standalone 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 over-investment problem emerges if the manager prefers that the firm implements a takeover policy with a negative expected return (e.g., due to her empire-building motive). And an under-investment problem occurs if the manager prefers that the firm forgoes a takeover policy with a positive expected return (e.g., due to shirking).

2.2 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. Since we normalize the total number of shares outstanding to be one, 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 timeline of the model, which demonstrates the information sets and the actions taken by the different agents.

2.3 Model timeline

The timeline of the model is illustrated in Figure 1. At the initial stage of the model, $t = 0$, the manager (MGR) first makes her proposal regarding the firm's takeover policy and then the active shareholder (ASH) decides whether to support the manager's proposal. There are three situations under which a takeover policy will be implemented: (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 not to implement 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.

2.4 Discussion of model assumptions

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

First, 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 future 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). Edmans (2009), for example, shows that an informed shareholder's ex post selling pressure may discipline the manager and mitigate the ex ante agency problem. Building this disciplinary role into our model would have helped endogenize z, but it would not have changed our main conclusions.

Second, 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).

Third, we assume that the active shareholder can influence the firm's propensity to implement a takeover policy ex ante and the firm's probability to complete a takeover deal ex post. For ex ante governance, we mean that the active shareholder can influence a firm's takeover policy in general (i.e., how acquisitive the firm can be). Active shareholders can voice their opinions on general corporate policies by appointing their representatives to the board or by pressuring the manager directly in shareholder meetings or through behind-the-scenes intervention. A few empirical studies provide supporting evidence to this assumption. For example, Chen, Harford, and Li (2007) document that firms held by long-term independent institutional investors pursue less acquisitions and when they do, they perform better in these acquisitions. Qiu (2006) finds that mutual fund holdings are positively associated with firms' acquisitiveness and this association is likely causal. These studies suggest that active shareholders can indeed influence a firm's takeover policy. For ex post governance, we mean that the active shareholder can potentially convince the manager to withdraw a bid

if he believes that such a bid is harmful to himself. Of course, his power of convincing the manager and blocking the deal depends on his stake in the firm. An active blockholder is more likely to block a deal than dispersed shareholders. This is consistent with our model specification of $f(X)$ in Assumption 3.

Since we have both ex ante and ex post governance in the model, in general, we can assume that the active shareholder's influence power per unit of ownership, captured by ξ, is different in these two stages (i.e., in $t = 0$ and $t = 1$). We, however, believe that it is more reasonable to assume that they take the same value in both stages, because we do not find strong reasons why the voting power per share should change if a firm announces a takeover. It is worth noting that, though ξ remains the same, the active shareholder's *total* influencing power differs ex ante and ex post in the model. This is because his equity stake changes from X_0 to $X + X_0$ due to his trading. Therefore, the model captures the fact that the active shareholder has to take into account how his trading decision would affect his ability to influence the final outcome of deal completion. His optimal choice of trading quantity (the variable X) is determined by the combined motives of profits from trading and benefits from influencing.

3 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 3.1 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 3.2, we analyze how firm value at the beginning of $t = 0$ relates to the active shareholder's power of influence in model equilibriums.

3.1 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 would use the term "voting" and "influencing" interchangeably henceforth to refer to the active shareholder's influence on the completion of the takeover. The term "voting" here should not be interpreted literally because the active shareholder's influence can include both explicit voting and behind-the-scenes intervention.

3.1.1 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 final 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 gets a high signal and he votes against the deal completion if he gets 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. Since 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,

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

3.1.2 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:

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

where $f(X + X_0) = max\,(\xi(X + X_0),\, 0)$ 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,

$$V_\ell = \begin{cases} V_S & if \quad \ell = support \\ V_0 & if \quad \ell = block \end{cases}$$

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

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

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

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 Equation 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 Appendix A.

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 $\xi(X_L + X_0) < 1$.[2] If we allow ξ to be above this value, then the equilibrium in this setting will be an active shareholder who always ends up with one hundred percent of voting power. In this case, all bad deals would be blocked ex post. Given that this situation is less empirically relevant, we do not focus our analysis on this parameter space.

[2]Note that, according to Lemma 1, the active shareholder would support deal completion if he gets a high signal, so his influence would 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 gets a low signal.

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 gets 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 gets 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 Appendix A.

Corollary 2. *If $X_0 \leq \frac{\theta}{2\lambda}(V_H - V_L)$, the active shareholder would sell all his shares or even take 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 would sell 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 Appendix A.

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.

3.1.3 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 expected gains determine whether or not the active shareholder would support the firm's decision to pursue takeovers ex ante. 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 Appendix A.

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 Appendix A.

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

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

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,

$$\begin{aligned} E(\Pi_{ACT}) = {} & \underbrace{X_0\left[\theta V_H + (1-\theta)V_L - V_0\right]}_{intrinsic\, M\&A\, value} + \underbrace{(1-\theta)\lambda X_0 \Delta Y_L}_{benefits\, of\, voting} \\ & \underbrace{+ \frac{\theta(1-\theta)}{4\lambda}(V_H - V_L)^2 - \frac{(1-\theta)\theta}{2}(V_H - V_L)\Delta Y_L}_{trading\, profits} \end{aligned} \tag{9}$$

We decompose the expected gains presented in Equation 9 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 would be negative and decreasing with X_0. Otherwise, it would 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 out with a small initial holding, he would sell all his shares after observing a low signal and end up with no influence power.

In this regime, $\Delta Y_L = 0$ and the benefits from voting are zero as well. When the active shareholder starts out with a relatively large initial holding, he would retain some influence power after trading and attempt to block the deal if he receives a low signal. In this regime, $\Delta Y_L > 0$ 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 9 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 since 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,

$$(1-\theta)\lambda X_0 \Delta Y_L > \frac{(1-\theta)\theta}{2}(V_H - V_L)\Delta Y_L \tag{10}$$

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

Figure 2 illustrates an example of how each component in Eq.(9) 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.

Figure 3 shows an example of the active shareholder's ex ante preference for the takeover policy as a function of his initial stake in the firm, X_0. The active shareholder would promote the takeover policy in the unshaded area where his expected profits are positive and he would vote against the policy in the shaded area where his expected profits become negative.

One key implication of our model is that, the informed, active shareholder's interest is not fully aligned with the interest of uninformed, passive shareholders because of his ability to collect information and trade.[3] This ability endogenously changes the active informed 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:

$$E\left(\Pi_{PASS}\right) = \underbrace{X_0\left[\theta V_H + (1-\theta)V_L - V_0\right]}_{intrinsic\,M\&A\,value} + \underbrace{(1-\theta)\lambda X_0 \Delta Y_{L,ACT}}_{benefits\,of\,voting} \tag{11}$$

Note that $\Delta Y_{L,ACT}$ in the equation above denote the ΔY_L defined for the active shareholder. Comparing Equation 11 with 9, 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 4 demonstrates an example of this wedge or disagreement between the two shareholders. In this figure, disagreement arises when the informed, active shareholder's expected

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

gains (plotted in red line) have a different sign from the uninformed, passive shareholder's expected gains (plotted in blue). 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 while the blue line is below zero, so the informed, active shareholder prefers to promote the takeover policy while 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 in which the red line is below zero while the blue line is above zero, so the informed, active shareholder opposes the takeover policy while this policy creates value for the uninformed, passive shareholder. This disagreement occurs due to 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. In order 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 would, ex ante, oppose to implement 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.

3.2 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 denote 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 would retain some shares to vote (would sell all shares and 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 it is still possible that the firm would 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.[4]

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.

3.2.1 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 would

[4]To see this, note in Eq.(9), 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 Eq.(10)), 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 would always support the policy ex ante. Since this policy also creates value for the firm, the active shareholder's preference for the takeover policy ex ante fully aligns with firm value.

use his influence power to promote the takeover policy ex ante, and he would sell all his shares or even take 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:

$$V(\xi) = \underbrace{[z(\theta V_H + (1-\theta)V_L) + (1-z)V_0]}_{value\ with\ only\ mgr} + \underbrace{[(1-z)\xi X_0(\theta V_H + (1-\theta)V_L - V_0)]}_{value\ of\ ex\ ante\ influence} \quad (12)$$

Equation 12 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. Since in this region, the active shareholder would not influence deal outcome ex post, 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 Appendix A.

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 would not correct a manager's bad decision. In some circumstances, he would even overturn a manager's good decision, aggravating the over-investment problem.

3.2.2 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 would oppose the takeover policy ex ante, and if the firm eventually pursues a takeover, he would sell all his shares or even take 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 NS-NV equilibrium. In this equilibrium, we can write the ex ante value of the firm at $t = 0$ as:

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

Equation 13 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 would have 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 Appendix A.

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 over-investment problem). The active shareholder, however, does not create more value for the firm ex post if the firm eventually pursues a takeover, because he would sell 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.

3.2.3 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 regime). 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:

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

Equation 14 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. These two components have been discussed in Equation 12 and 13. 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 14 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 would implement 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 in Proposition 3 below.

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 non-monotonic. 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 Appendix A.

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.

3.2.4 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 would retain a positive ownership stake and vote against bad deals ex post (i.e., the NS-V regime). 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:

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

Similar to Equation 14, Equation 15 also 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 15 with Equation 13, 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 would *always* increase 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 non-monotonic 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 would create 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 Appendix A.

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 in the end of section 3.1.3.

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 show in Proposition 3 that further increasing ξ would eventually enhance firm value.

4 Conclusion

Previous studies document 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 why 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 where the answer to this is negative.

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Figure 1: **Model Timeline**

This figure illustrates the timeline of the model. During the period $t = 0$, the manager (MGR) first decides whether to propose the firm to pursue a takeover or not, and then the active shareholder (ASH) decides to support or oppose the manager's proposal. If the firm does not pursue 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 regarding the deal quality and decides the quantity to trade. After his trading, ASH then decides to support the deal completion or 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, the firm value reverts to V_0. The ASH's influence power, defined as the probability of implementing the outcome he prefers, is $f(X) = min\,(\xi_1 X,\, 0)$.

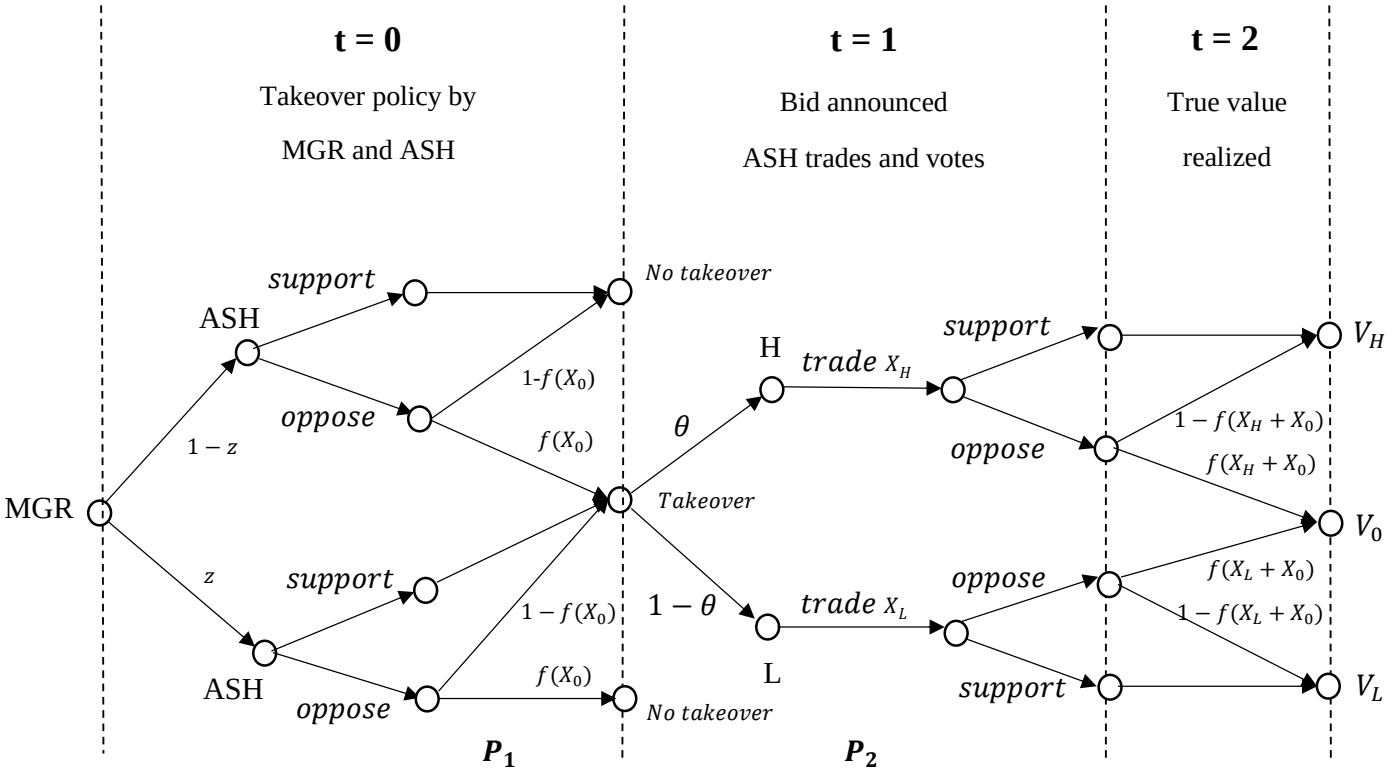


Figure 2: **Decomposition of Expected Gains to the Active Shareholder**

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.

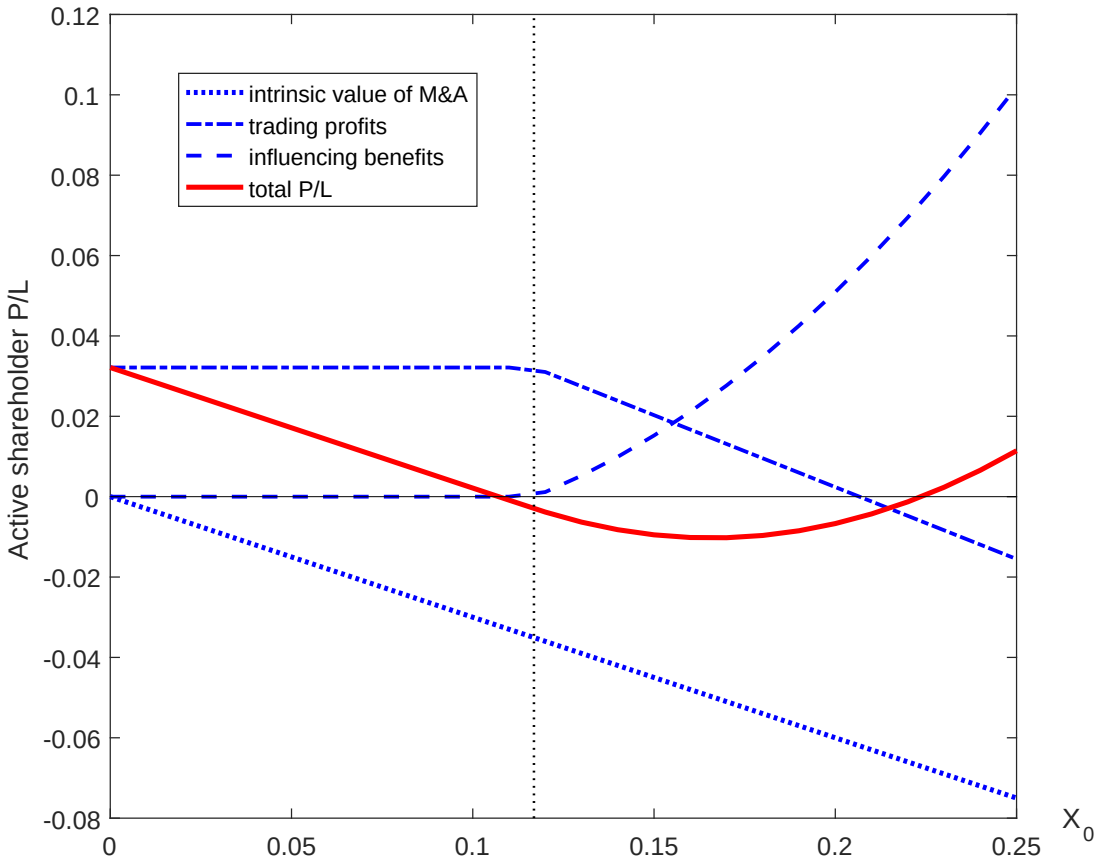


Figure 3: **Active Shareholder's Ex Ante Preference for the Takeover Policy**

This figure shows how the active shareholder decides on whether to promote a takeover policy ex ante. The red line represents his expected profits from subsequent trading and voting on the M&A event if a takeover policy is implemented. He promotes the takeover policy if the profits are positive (the unshaded area), and he votes against the policy if the profits are negative (the shaded area).

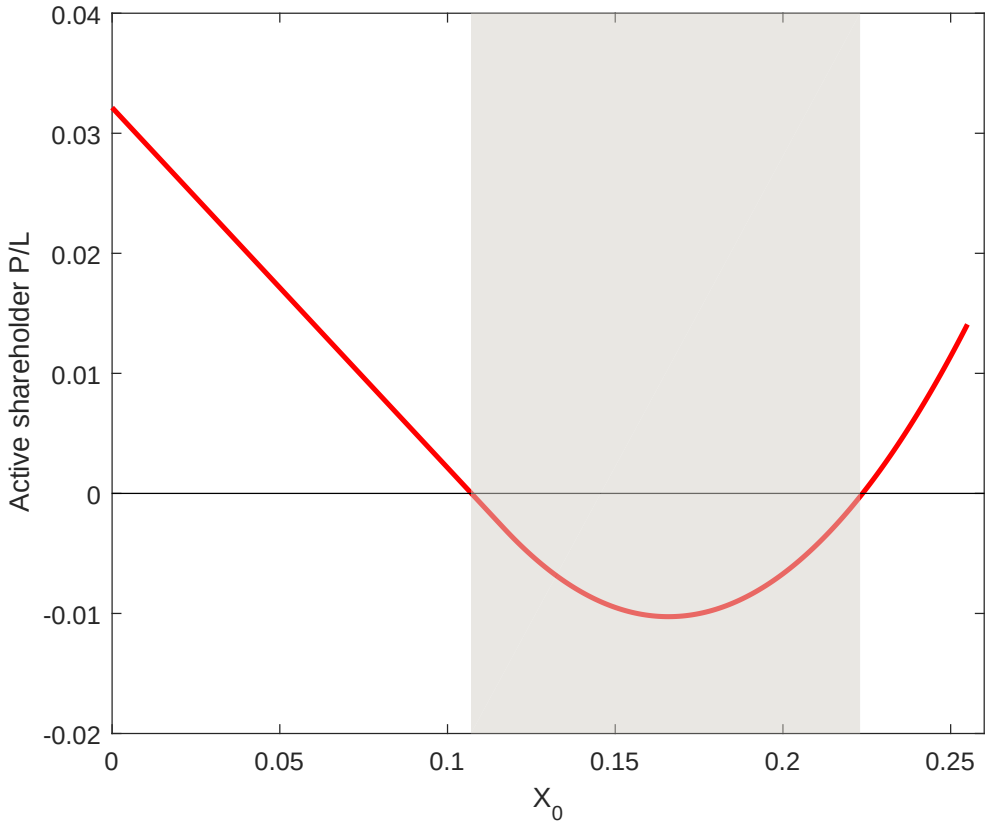
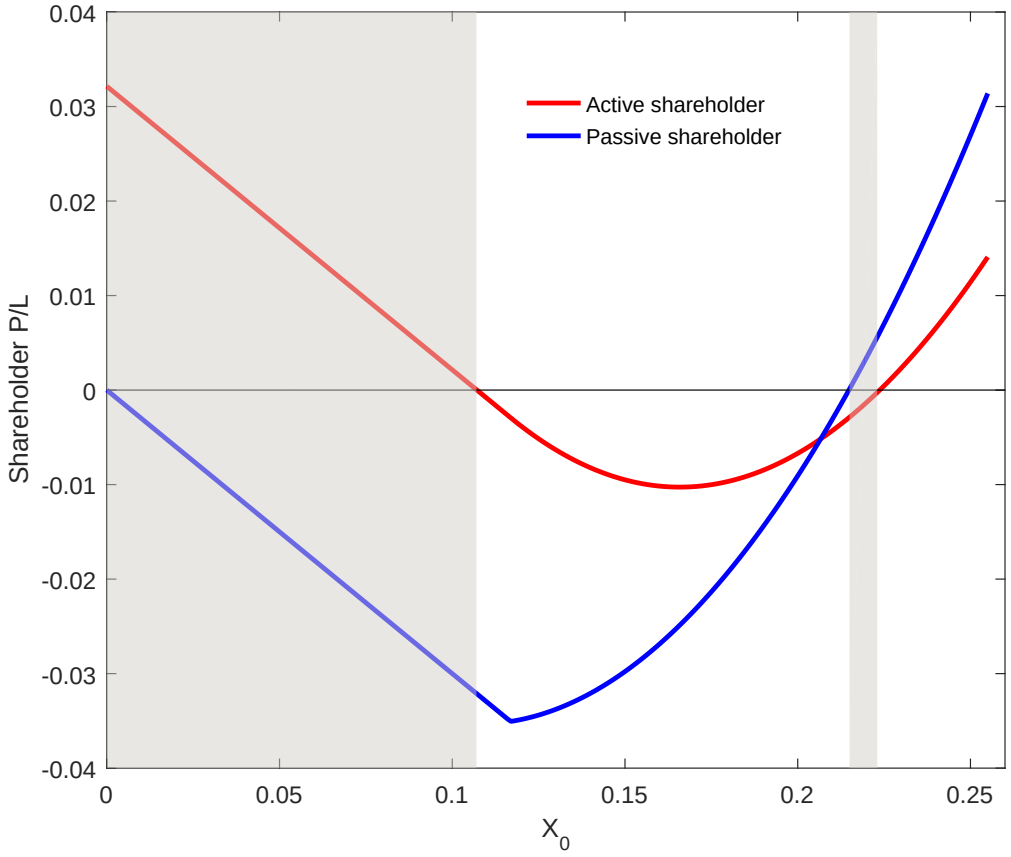


Figure 4: **Disagreement Between the Active Shareholder and Passive Shareholders**

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.



A Model proofs

A.1 Proof of Lemma 2a and Lemma 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 would vote against the bad acquisition and try 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 $X_0+X_L>0$ or not. Lemma 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 $f(X_L)=0$ and $\frac{df(X_L)}{dX}=0$. 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,

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

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

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

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

$$E(X) = \theta X_H + (1-\theta)X_L = 0 \tag{A.7}$$

Substituting Equation A.6 and A.7 back to Equation A.3 and A.5, we get:

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

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

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

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

And we can solve for X_L by substituting $P_2(X_L)$ in Equation 1,

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

In addition, since the active shareholder would influence the deal outcome and the market maker correctly anticipates this in equilibrium,

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

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 $E\left[f(X_L + X_0)\right] = \xi(X_L + X_0)$.

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

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

Since both P_1 and X_L are a function of $E(X)$, we can solve for the fixed point where the market maker's expectations are correct,

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

where $\triangle X_L \equiv \frac{\xi(V_0-V_L)}{\lambda}\frac{[X_0-\frac{\theta}{2\lambda}(V_H-V_L)]}{[1-\xi\frac{V_0-V_L}{\lambda}]}$. Substituting $E(X)$ into Equation A.11, A.10, and A.3, we get

$$X_H = \frac{1-\theta}{2\lambda}(V_H - V_L)$$
$$X_L = -\frac{\theta}{2\lambda}(V_H - V_L) + \Delta X_L$$

Finally, the condition that $(X_L + X_0) \geq 0$ holds when $X_0 \geq \frac{\theta}{2\lambda}(V_H - V_L)$. 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 regime 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 regime 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,

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

Second,

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

And third,

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

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 would trade

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

when he gets a low signal, and therefore the total number of shares he owns after trading, $X_L + X_0$, is less 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 would trade

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

when he gets a low signal. Since $X_0 > \frac{\theta}{2\lambda}\left(V_H - V_L\right)$ 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 Lemma 3a and Lemma 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 Lemma 1, Lemma 2a, and Lemma 2b into his value function U,

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

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

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

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

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

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,

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

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

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

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 Lemma 3a and Lemma 3b.

Q.E.D.

A.4 Proof of Proposition 1

Taking the derivative of $V(\xi)$ in Equation 12 with respect to ξ, we get,

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

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

Q.E.D.

A.5 Proof of Proposition 2

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

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

Since $\theta V_H + (1-\theta)V_L < V_0$ 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 14 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

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

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

Since the denominator in Equation A.15 is non-negative, the sign of the derivative is only determined by the sign of the numerator. 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. Since the coefficient on the square term is negative (i.e., $-(\alpha X_m^2 + \beta X_m) < 0$), $g(\xi)$ 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 regime, giving the active shareholder more influence power would decrease 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 regime, giving the active shareholder more influence power would increase 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 regime of ξ.

Q.E.D.

A.7 Proof of Proposition 4

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

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

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. Since the coefficient on the square term is positive (i.e., $\alpha X_m^2 + \beta X_m X_0 > 0$), $g(\xi)$ 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 $g(\xi) = 0$:

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

It is easy to see that when $X_0 \leq X_m$ there is no real roots and therefore the function $g(\xi)$ is always positive. In this case, $\frac{dV}{d\xi} > 0$ always hold 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 permis-

sible range of ξ.[5] 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.

[5]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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