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# The Role of Large Shareholders in Hostile Takeovers

## Abstract

We show that the holdout problem in takeovers pointed out by Grossman and Hart (1980) is resolved by concentrated ownership of the target firm. However, even though a large shareholder of the target firm can facilitate a value-enhancing takeover, the takeover may fail because the large shareholder can improve shareholder value by directly exercising its control rights against the incumbent manager of the target firm. Our results clarify the conditions under which takeovers succeed. In particular, we show that the probability of success in takeovers is either increasing or decreasing in the initial holding of the large shareholder, which depends on whether the post-raid cost to the raider is larger or smaller than the intervention cost to the large shareholder.

**JEL Classification:** G30, G32.

**Keywords:** takeover, holdout problem, large shareholder, bid price, managerial intervention.

# 1 Introduction

Given limited resources and information, shareholders who are dissatisfied with the managerial performance of firms may be better off replacing the current management with third parties who propose a superior solution to increase the value of the firms. The purpose of this paper is to show that large shareholders of target firms play an important role in value-enhancing takeovers even though they can directly discipline the manager of the firm. In particular, we consider the conditions under which large shareholders relinquish control of firms to third parties who are competent to increase the value of the firms.

Suppose that a takeover succeeds if more than 50% of the shares of a firm are tendered to a raider. Grossman and Hart (1980) argued that the takeover will fail if the firm is owned by atomistically dispersed shareholders. As each shareholder's stake is too small to affect the outcome of the bid, shareholders prefer to hold out for tendering unless a bid price reflects the full worth of the post-raid firm. However, such a price would not be offered because the raider cannot make profits in the presence of takeover costs. As a result, the raider never succeeds even though shareholders know that a successful raid would increase the shareholder value. This *holdout problem* among shareholders can be resolved by a dominating shareholder of the target firm.<sup>1</sup> In particular, if the target firm is owned by a large shareholder with an initial holding of more than 50% of the shares, its tender decision directly affects the allocation of the control rights of the target firm.<sup>2</sup> As the minimum fraction of the stake required for transferring control rights is 50%, the large shareholder can tender 50% of its holdings in order to maximize the value of its retained shares, which reach their full value under the post-raid firm.

At the same time, the large shareholder with more than 50% of shares can exercise the control rights to intervene in the management of the firm. Suppose, for simplicity, that the manager of the firm is rewarded only by control benefits in cash, which are derived from the managerial incumbency. The large shareholder can exercise its control rights to force the manager to pay out a fraction of the benefits as dividends in exchange for the manager's incumbency. The incumbent manager has an incentive to pay dividends as long as he receives more by staying than by leaving the firm.

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<sup>1</sup>As we discuss briefly later in this section, Shleifer and Vishny (1986) derived similar results in a different setting from ours.

<sup>2</sup>As mentioned in the following section, the large shareholder need not be a single entity: for example, it can be a coalition of blockholders who share the costs and benefits equally among them.

Based on the discussion above, we model a raider who offers a bid price to the shareholders of a target firm with a highly concentrated ownership structure. Initially, the firm is run by a manager who is rewarded only by his incumbency. We assume that, as a professional investor, the raider has a better strategy to improve the performance of the firm than does the large shareholder. In particular, if the raider can succeed in a takeover, it can replace the incumbent manager with a new one who will be better at improving the performance of the target firm than the incumbent one. The success of the takeover depends on the tender decision made by the large shareholder with more than 50% of the shares of the target firm. In fact, because the large shareholder can intervene in the management and receive dividends from the incumbent manager in exchange for the managerial incumbency, the takeover occurs only if the large shareholder gains more by accepting the tender offer than it does by rejecting it and conducting managerial intervention.<sup>3</sup>

Our results show that the probability of success in takeovers increases when the value of the post-raid firm and the large shareholder's intervention costs are large, and the control benefits of the incumbent manager are small. In addition, we indicate that the probability of success in takeovers increases as the wage paid to the new manager decreases. The intuition behind this result is that the large shareholder is more likely to accept the tender offer when the bid price is higher, which corresponds to a smaller wage for the new manager. Furthermore, we suggest that the probability of success in takeovers is either increasing or decreasing in the initial holding of the large shareholder, which depends on whether the post-raid cost to the raider is larger or smaller than the intervention cost to the large shareholder.

In the basic model, we suppose that the large shareholder that rejects a tender offer provides *public goods* for dispersed shareholders by forcing the incumbent manager to pay dividends. In the extension of the basic model, we discuss the case in which the managerial intervention conducted by the large shareholder provides additional profits only for itself, not for dispersed shareholders. We show that the probability of success in the takeover is smaller if the large shareholder intervenes in the management for its own sake than if the intervention provides public goods. This result may explain why East Asian firms, in which managers are more affiliated with large shareholders, are less likely to be exposed to hostile takeovers. The East Asian case corresponds to the one in our model in which the affiliated manager makes a side payment to the large shareholder in exchange for his incumbency. Our results show that

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<sup>3</sup>Although the large shareholder can choose not to discipline the incumbent manager, our parametric assumption excludes such an equilibrium.

if the large shareholder and the incumbent manager collude, the value-enhancing takeover is less likely to occur, even though the large shareholder plays a pivotal role in the success of takeovers.

Our results also show that we cannot exclude the possibility of the bid price below the status quo market price if the tender offer is made to the firm with a highly concentrated ownership structure. In particular, if the large shareholder's initial holding is large and the managerial intervention is costly, the large shareholder gains more from the managerial replacement followed by the successful takeover than from intervening in the incumbent management.

This paper is related to a line of literature that regards the concentrated ownership of target firms as a remedy for the holdout problem pointed out by Grossman and Hart (1980). Shleifer and Vishny (1986) showed that value-increasing takeovers are more likely to occur if a shareholder with a large toehold in the target firm makes a tender offer to dispersed shareholders. By contrast, we model a takeover attempted by a raider with no toehold, which is similar to the model of Holmstrom and Nalebuff (1992). In their setting, the large shareholder chooses whether to tender the shares to the raider. In contrast, in our model, the large shareholder is allowed to choose between two devices for disciplining the incumbent manager: accepting the tender offer, which results in managerial replacement; and rejecting the tender offer, which corresponds to intervention in the incumbent's management of the firm.

A recent strand of literature on corporate ownership and control (including Kang and Shivdasani (1995), Yafeh and Yosha (1996), La Porta et al. (1998, 1999), and Claessens et al. (2000)) has shown that large corporations in many countries have large shareholders that are active in corporate governance. Several theoretical papers have focused on the role of a large shareholder as a monitor of the firm. Kahn and Winston (1998), Maug (1998), and Faure-Grimaud and Gromb (2004) examined the incentives of large shareholders to intervene in the management of a firm to improve its performance instead of selling their shares in the stock market. In their models, the large shareholder cannot replace the manager regardless of its own action choice. In contrast, in our setting, the large shareholder can replace the incumbent manager by accepting the tender offer made by the raider.

The rest of the paper is organized as follows. Section 2 presents the model. Section 3 analyzes the model and derives the main results. Section 4 extends the model by allowing the large shareholder to exercise its control rights against the firm's management for its own

sake instead of forcing the manager to pay dividends. Section 5 concludes the paper.

## 2 The Model

We focus on a firm with a concentrated ownership structure that exists over periods  $t = 0, 1,$  and  $2$ . There are four types of participants in the market: an incumbent manager of the firm, a large shareholder, dispersed shareholders, and a raider. There is no discounting and all agents are risk neutral.

Suppose that a fraction  $\alpha > 1/2$  of the firm's shares is held by the large shareholder and the remaining  $1 - \alpha$  is held by atomistically dispersed small shareholders.<sup>4</sup> The large shareholder may be an alliance of blockholders, such as institutional investors, or a family of the firm's founder. If blockholders form an alliance, we suppose that the blockholders act as a group and the cost and profit is shared equally among them. To show how the ownership concentration works in a takeover, we take  $\alpha$  to be fixed.

We consider a situation where the success of a takeover maximizes the value of the target firm. The takeover succeeds if the large shareholder accepts the tender offer. If the large shareholder rejects the offer, it directly exercises its control right against the incumbent manager and the takeover fails. We elaborate the model below.

Initially, the firm is run by the incumbent manager. If the incumbent manager completes the project, the value of the firm is  $v_0$ . The latent maximum value of the firm is  $v(> v_0)$ . We assume that the value of the firm becomes  $v$  if the raider takes control of the target firm by replacing the incumbent manager with a superior one found by the raider. For simplicity, we suppose that there is a single superior manager in a pool of potential managers in this economy and that the raider is the only player who can find such a manager. In addition, we suppose that, except for the superior manager, the potential managers are identical to the incumbent one. This assumption suggests that even though the large shareholder, as a controlling blockholder, can dismiss the incumbent manager, it cannot find a better manager than the incumbent one by itself. Hence, if the large shareholder desires to discipline the incumbent manager, it needs to choose between accepting the tender offer and rejecting it to intervene in the incumbent's management itself. The values  $v_0$  and  $v$  are specific to the incumbent manager and the superior manager, respectively.

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<sup>4</sup>Our results are not affected if  $1 - \alpha$  is held by another blockholder as long as there is no bargaining between the large shareholder and the blockholder.

As long as the large shareholder chooses not to discipline the incumbent manager by either accepting the tender offer or intervening in the management, the manager can retain his incumbency and receive  $b(> 0)$  in cash at the end of  $t = 2$ . We can regard  $b$  as the control benefit by which the incumbent manager is rewarded.<sup>5</sup> The reservation payoff to the incumbent manager in  $t = 0$  is assumed to be zero. Hence, as long as  $b > 0$  holds, the participation constraint on the incumbent manager is always satisfied. If the large shareholder chooses to intervene in the management of the firm, it can force the incumbent manager to pay the shareholders a fraction of  $b$  as dividends.<sup>6</sup> In addition, we suppose that the incumbent manager can receive  $\gamma$  if he leaves the firm in  $t = 1$ . The value of  $\gamma$  is assumed to be the externally appraised value of the incumbent manager's human capital. This assumption suggests that the incumbent manager pays the shareholders dividends as long as his payoff is not less than  $\gamma$ ; otherwise, he chooses to leave the target firm and receives  $\gamma$  by working somewhere else in this economy. The size of  $\gamma$  is uncertain at  $t = 0$  and is uniformly distributed in the interval  $[0, b]$ .

The structure of the game is described as follows.

In  $t = 0$ , the raider decides whether to make a bid. If the raider chooses to make a bid, it offers a bid price  $p$  to the shareholders of the firm with a raid cost of  $c_R$ . The bid price satisfies the condition  $p < v$ , which ensures that the raider makes a profit from the takeover.

In  $t=1$ ,  $\gamma$  is realized. Not only the incumbent manager, but also the large shareholder is supposed to be able to observe the realized  $\gamma$ .<sup>7</sup> The large shareholder decides whether to discipline the incumbent manager. In fact, as we elaborate in the next section, the parametric assumption restricts our analysis to the case in which the large shareholder always decides to discipline the incumbent manager rather than allowing the manager to enjoy  $b$ . Knowing that the incumbent manager pays dividends as long as the payoff from his incumbency is not less than  $\gamma$ , the large shareholder decide whether to tender its shares to the raider. Dispersed shareholders free ride on the large shareholder's decision. If the large shareholder accepts the tender offer, it sells 1/2 of its holding of the firm's shares, which is the minimum requirement for transferring the control rights of the firm to the raider. The large shareholder retains

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<sup>5</sup>We can regard  $b$  as extra cash about which the incumbent manager has a discretion. The incumbent manager can enjoy  $b$  by, for example, spending it on his pet projects or enjoying managerial perquisites. This assumption is based on the free cash flow theory introduced by Jensen (1986).

<sup>6</sup>In Section 4, we extend our model to consider the situation in which the incumbent manager pays the large shareholder a fraction of  $b$ .

<sup>7</sup>As the large shareholder has control rights against the incumbent management, we suppose that the large shareholder is sufficiently close to the firm to obtain the information about the realized  $\gamma$  without any costs.



$\alpha - 1/2$  shares because  $p < v$ . The raider who acquires the control rights of the firm replaces the incumbent manager with a superior one. The wage contract between the raider and the new manager is such that the raider pays  $w$ , which is the minimum wage that induces the new manager to achieve  $v$  with a probability of one. The incumbent manager leaves the firm and receives  $\gamma$ . On the other hand, if the large shareholder rejects the tender offer, the raider fails in the takeover. Instead, the large shareholder intervenes in the management of the firm to force the incumbent manager to pay a fraction  $\delta(\in [0, 1])$  of  $b$  as dividends in exchange for his incumbency.<sup>8</sup> The managerial intervention is assumed to cost the large shareholder  $c_L$ , incurred when the large shareholder monitors the incumbent manager to ensure that he pays dividends to shareholders. Notice that we assume that the large shareholder is able to make a commitment equal to the size of  $\delta$ . If not, the incumbent manager may be deprived of the whole of  $b$  by the large shareholder at the end of  $t = 2$ . Anticipating this, the incumbent manager always chooses to leave the firm at  $t = 1$  without the large shareholder's commitment to  $\delta$ .

In  $t = 2$ , the value of the firm is realized. The realized value of the firm is  $v$  if the takeover succeeds and  $v_0$  if it fails. The entire payoff is realized and the firm is liquidated.

We assume that success in the takeover achieves the first-best outcome because of the following assumption.

**Assumption 1:**  $v > v_0 + b$ .

This assumption implies that, even though the incumbent manager pays the full amount of  $b$  for dividends, the value of the firm under the incumbent management is strictly less than the post-raid value of the firm.

As success in the takeover achieves the first-best outcome, we focus on the equilibrium in which the raid succeeds. In the following sections, we solve the model by backward induction, proceeding from the large shareholder's decision to accept or reject the tender offer in  $t = 1$  to the raider's tender decision in  $t = 0$ . After characterizing the equilibrium, we carry out a comparative static analysis on the probability of success in the takeover.

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<sup>8</sup>As the large shareholder can replace the incumbent manager with the new one by tendering 1/2 of its shares to the raider, the large shareholder can make the incumbent manager a take-it-or-leave-it offer for an amount of dividends.

### 3 Analysis

The large shareholder decides in  $t = 1$  whether to discipline the incumbent manager. If the large shareholder chooses to discipline the incumbent manager, its decision in  $t = 1$  is whether to accept the tender offer made by the raider. If the large shareholder accepts the tender offer, it receives  $p/2$  by selling  $1/2$  of its shares to the raider at the bid price in  $t = 1$  and gains  $(\alpha - 1/2)v$  by retaining  $\alpha - 1/2$  of the shares until  $t = 2$ . Hence, the expected payoff to the large shareholder is given by:

$$\pi_L^a = \frac{1}{2}p + \left(\alpha - \frac{1}{2}\right)v = \alpha v - \frac{v - p}{2}. \quad (1)$$

Next, if the large shareholder rejects the tender offer and intervenes in the incumbent management with costs  $c_L$ , it makes an offer to the incumbent manager for his incumbency in exchange for dividends. If the incumbent manager accepts the large shareholder's offer, he pays a fraction  $\delta (\in [0, 1])$  of  $b$  as the additional dividends. As the incumbent manager can gain  $\gamma$  by leaving the firm, he pays the additional dividends as long as the following constraint is satisfied:<sup>9</sup>

$$(1 - \delta)b \geq \gamma. \quad (2)$$

Hence, if the large shareholder rejects the tender offer, its maximization problem with respect to  $\delta$  is represented by:

$$\begin{aligned} \max_{\delta \in [0, 1]} \quad & \alpha(v_0 + \delta b) - c_L, \\ \text{subject to} \quad & (2). \end{aligned}$$

As the large shareholder can determine  $\delta$  so as to set (2) to be binding, the expected payoff to the large shareholder is given by:

$$\pi_L^r = \alpha(v_0 + b - \gamma) - c_L. \quad (3)$$

The large shareholder accepts the tender offer if and only if  $\pi_L^a \geq \pi_L^r$  holds. As  $\gamma$  realized at  $t = 1$  is observable, the large shareholder accepts the tender offer if and only if  $\gamma$  satisfies the following inequality for a given  $p$ :

$$\gamma \geq \hat{\gamma}, \quad (4)$$

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<sup>9</sup>As we assume that the reservation payoff to the incumbent manager in  $t = 0$  is zero, (2) ensures that the manager has an incentive to run the firm as long as  $\gamma \geq 0$  is satisfied.

where

$$\hat{\gamma} \equiv \frac{v-p}{2\alpha} - v + v_0 + b - \frac{c_L}{\alpha}. \quad (5)$$

On the other hand, if  $\gamma < \hat{\gamma}$ , the large shareholder conducts a costly intervention in the incumbent management.

If the large shareholder decides not to discipline the incumbent manager in  $t = 1$ , the expected payoff of the large shareholder is  $\alpha v_0$ .

In fact, Assumption 2, which is introduced shortly in this section, ensures that the expected payoff to the large shareholder that disciplines the incumbent manager is larger than  $\alpha v_0$ , which excludes the equilibrium in which the large shareholder chooses not to discipline the incumbent manager in  $t = 1$ .

We proceed to derive the optimal bid price determined by the raider at  $t = 0$ . At this stage,  $\gamma$  is uncertain and uniformly distributed in  $[0, b]$ , which is represented by the distribution function  $F(\gamma)$ . We suppose that  $F(\gamma)$  is common knowledge. As the takeover succeeds only if  $\gamma$  realized at  $t = 1$  satisfies (4) and (5), the expected payoff to the raider who offers the bid price  $p$  is given by:

$$\begin{aligned} \pi_R &= \left[ \frac{1}{2}(v-p) - w \right] \text{Probab}[\gamma \geq \hat{\gamma}] - c_R \\ &= \int_{\hat{\gamma}}^b \left[ \frac{1}{2}(v-p) - w \right] dF(\gamma) - c_R \\ &= \frac{1}{b} \left[ \frac{1}{2}(v-p) - w \right] \left( v - v_0 - \frac{v-p}{2\alpha} + \frac{c_L}{\alpha} \right) - c_R. \end{aligned} \quad (6)$$

Hence, the raider's maximization problem is expressed by:

$$\begin{aligned} &\max_{p \geq 0} \pi_R, \\ &\text{subject to } \pi_R \geq 0. \end{aligned}$$

As  $\frac{\partial^2 \pi_R}{\partial p^2} = -\frac{1}{2\alpha b} < 0$  holds, the solution to the raider's maximization problem is characterized by the first-order condition  $\frac{\partial \pi_R}{\partial p} = 0$  under the following parametric assumptions.

**Assumption 2:**  $0 \leq c_L + w \leq \min(v_0, \frac{v-v_0}{2})$ .

**Assumption 3:**  $[\alpha(v-v_0) + c_L - w]^2 \geq 4bc_R$ .

Assumptions 2 and 3 ensure that the solution to  $\frac{\partial \pi_R}{\partial p} = 0$ , which we denote as  $p^*$ , satisfies  $p^* > 0$ ,  $\pi_R(p^*) > 0$  and  $\pi_L^r(p^*) = \pi_L^a(p^*) > \alpha v_0$ . This ensures that  $p^*$  is the optimal solution

to the raider's maximization problem and hence, the large shareholder always chooses to discipline the incumbent manager by either accepting the tender offer or intervening in the incumbent management itself.

Notice that  $c_L$  is the cost to the large shareholder that rejects the tender offer and  $w$  is the cost to the raider with a successful takeover. Hence, Assumption 2 implies that, even though the managerial discipline imposes costs on either the large shareholder or the raider, the sum of these costs is not so large to exceed either  $v_0$  or  $\frac{v-v_0}{2}$ . Assumption 3 allows us to suppose that the raid cost  $c_R$  is sufficiently small for the raider to propose the tender offer at  $t = 0$ .

Now, we derive the following lemma.

**Lemma 1** *The optimal bid price offered by the raider is uniquely determined by:*

$$p^* = v - [\alpha(v - v_0) + c_L + w]. \quad (7)$$

Rearranging (7), we see that the optimal level of *dilution* is given by  $v - p^* = \alpha(v - v_0) + c_L + w > 0$ . Because of  $\alpha > 1/2$ ,  $v - v_0 > 0$ ,  $c_L \geq 0$ , and  $w \geq 0$ , the dilution is strictly positive and increases with  $\alpha$ . Intuitively, the large shareholder with a larger  $\alpha$  can retain more shares after selling 1/2 to the raider. Hence, even though the raider offers a lower bid price, the large shareholder accepts it as long as its gains from retaining  $\alpha - 1/2$  of the shares cover the dilution cost. Although the setting is different from ours, Shleifer and Vishny (1986) obtained the same result, namely that an increase in a large shareholder's initial holding decreases a bid price. In their model, the bidder is a large shareholder that initially owns less than half of the shares of the firm, but aims to buy the shares to increase its holding to 1/2 in order to gain control. They show that a large shareholder with a larger initial holding offers a lower bid price because the large shareholder can enjoy the full worth of the initial holding if the takeover succeeds.

Dilution increases with  $c_L$  and  $w$ . Recall that  $c_L$  is the large shareholder's cost of intervening in the incumbent management if the large shareholder rejects the tender offer. As the large shareholder is less likely to reject the tender offer when the intervention is more costly, the raider can offer the lower bid price when  $c_L$  is larger. On the other hand,  $w$  is the raider's post-raid cost because it has to pay  $w$  to the new manager if the takeover bid succeeds. The raider can lower the bid price in order to transfer part of the post-raid cost to the large shareholder.

Substituting (7) into (5), we obtain the optimal cutoff value of the large shareholder accepting the tender offer,  $\hat{\gamma}^*$ , in the following lemma.

**Lemma 2** *The takeover occurs if and only if  $\gamma$  satisfies  $\gamma \geq \hat{\gamma}^*$ , where*

$$\hat{\gamma}^* = b - \frac{v - v_0}{2} - \frac{c_L - w}{2\alpha}. \quad (8)$$

As the probability of success in the takeover is given by  $\frac{b - \hat{\gamma}^*}{b}$ , the smaller  $\hat{\gamma}^*$  corresponds to the higher probability of success. Notice that  $\hat{\gamma}^*$  is independent of  $c_R$ , which is the raider's cost of making a raid. As the raider makes a tender offer as long as  $c_R$  is small enough to satisfy Assumption 3,  $c_R$  does not affect the probability of success in the takeover.

Now, we are ready to make a comparative static analysis of the probability of success in the takeover. We set  $\alpha$  to be fixed and examine how the remaining parameters affect the probability of success. The result is summarized in the following proposition.

**Proposition 1** *Suppose that  $\alpha$  is fixed. The probability of success in the takeover is increasing in  $v - v_0$  and  $c_L$ , but decreasing in  $b$  and  $w$ .*

Intuitively, a larger  $v - v_0$  implies that the large shareholder gains more by accepting the tender offer because it enjoys the full worth of the remaining shares of  $\alpha - 1/2$  after the takeover. A larger  $c_L$  makes it more attractive for the large shareholder to accept the tender offer because the cost of intervening in the incumbent management is greater. A smaller control benefit,  $b$ , accrued by the incumbent manager, induces the large shareholder to accept the tender offer because the large shareholder cannot expect larger additional dividends if  $b$  is smaller. Furthermore, the takeover is more likely to occur as a new manager's wage,  $w$ , decreases. Intuitively, the large shareholder is more likely to accept the tender offer for a smaller  $w$  because Lemma 1 indicates that the optimal bid price increases as  $w$  decreases.

Next, we investigate the impact of the large shareholder's initial holding on the probability of success in the takeover. Note that the higher probability of success in the takeover corresponds to the smaller  $\hat{\gamma}^*$  given by (8). As  $\alpha$  appears only in the last term of the right-hand side of (8), the effect of  $\alpha$  on  $\hat{\gamma}^*$  depends on the sign of  $c_L - w$ , as given by the following proposition.

**Proposition 2** *The probability of success in the takeover is either increasing or decreasing in the size of the large shareholder's initial holding, which depends on the sign of  $c_L - w$  as*

follows:

(i) Suppose that  $c_L - w < 0$  holds. The probability of success in the takeover increases with  $\alpha$ .

(ii) Suppose that  $c_L - w = 0$  holds. The probability of success in the takeover is independent of  $\alpha$ .

(iii) Suppose that  $c_L - w > 0$  holds.

(iii-1) If  $v - v_0 \geq 2b$ , the takeover occurs with a probability of one regardless of  $\alpha$ .

(iii-2) If  $v - v_0 < 2b$ , the probability of success in the takeover increases as  $\alpha$  decreases.

First, let us consider how the sizes of  $c_L$  and  $w$  affect the expected payoff of the raider. The raider with a successful takeover gains from dilution, which implies that the raider gains more from larger values of  $c_L$  and  $w$  because of (7). At the same time, the successful takeover costs the raider the wage of the new manager, which implies that the raider's gain decreases as  $w$  increases.

Based on the discussion above, the intuition behind Proposition 2 is given as follows. If  $c_L - w < 0$ , the successful takeover costs the raider. The raider has an incentive to decrease the bid price in order to recoup such a cost. As equation (7) indicates that a larger  $\alpha$  corresponds to a lower  $p^*$ , the probability of success in the takeover increases with  $\alpha$ . Thus, Proposition 2(i) holds.

On the other hand, if  $c_L - w > 0$ , the successful takeover brings the raider additional gains via dilution. Hence, the raider can increase the bid price in order to induce the large shareholder to accept the tender offer. With  $w$  and  $c_L$  fixed, equation (7) indicates that a smaller  $\alpha$  corresponds to a higher  $p^*$ . Thus, Proposition 2(iii-2) holds. In particular, if  $v - v_0$  is large enough to satisfy  $v - v_0 \geq 2b$ ,  $p^*$  is high enough to ensure the large shareholder always accepts the tender offer, as long as  $\alpha > 1/2$  holds. Thus, Proposition 2(iii-1) holds.

Finally, suppose that  $c_L - w = 0$  holds. As the successful takeover does not result in either costs or additional gains to the raider, Proposition 2(ii) holds.

Proposition 2 shows that the probability of success in the takeover is either increasing or decreasing in the size of the large shareholder's initial holding, which differs from the result given by Shleifer and Vishny (1986). In their model, the large shareholder with a larger toehold offers a lower bid price as a bidder in the takeover. As a result, the probability of success in the takeover is increasing in the large shareholder's initial holding. In contrast, in our model, the tender decision is made by a large shareholder who is not a bidder. The

probability of success in the takeover depends on whether the costs borne by the large shareholder when it intervenes in the incumbent management exceed the raider's costs incurred in paying the wage to the new manager via the bid price.

In equilibrium, the raider can choose a higher bid price for a higher probability of success. Moreover, the large shareholder with a smaller  $\alpha$  gains more by tendering with a higher bid price, whereas the large shareholder with a larger  $\alpha$  gains more by tendering with a larger fraction of the retained shares. Hence, the relationship between the probability of success in the takeover and the large shareholder's initial holding depends on the sign of  $c_L - w$ .

Now, we reconsider the optimal bid price given in Lemma 1. Grossman and Hart (1980) indicated that if the firm is owned only by dispersed shareholders, bids never take place at less than the status quo market value, which corresponds to  $v_0$  in our setting. As each shareholder's stake in dispersed ownership is infinitesimally small, none of the shareholders want to sell their shares at a bid price below  $v_0$  if they recognize that the value of the firm is at least  $v_0$ . By contrast, as the large shareholder in our setting can retain  $\alpha - 1/2$  of the shares to enjoy the full post-raid value of the firm, we will show that it may sell  $1/2$  of the shares to the raider at a bid price which is even lower than  $v_0$ .

Suppose that  $p^* < v_0$  holds. Substituting (7) into this inequality and rearranging it, we obtain:

$$\frac{v - v_0}{2} < \frac{c_L + w}{2(1 - \alpha)}. \quad (9)$$

On the other hand, if  $\hat{\gamma}^* < b$  is satisfied, the probability of success in the takeover is positive. It follows from (8) that the condition under which  $\hat{\gamma}^* < b$  holds is expressed by:

$$\frac{v - v_0}{2} > \frac{w - c_L}{2\alpha}. \quad (10)$$

Hence, if both (9) and (10) hold, the takeover succeeds even though the optimal bid price is below  $v_0$ . Indeed, combining (9) and (10), we have:

$$\frac{c_L + w}{2(1 - \alpha)} > \frac{w - c_L}{2\alpha}.$$

Rearranging this inequality yields:

$$c_L > (1 - 2\alpha)w,$$

which always holds because of  $c_L \geq 0$ ,  $w \geq 0$ , and  $1 - 2\alpha < 0$ . This implies that there exists a value of  $(v, v_0)$  with  $v > v_0$  that satisfies both (9) and (10) simultaneously.

The argument above is summarized in the following remark.

**Remark 1** *Even if  $p^* < v_0$  holds, the takeover occurs with a positive probability if there exists  $(v, v_0)$  with  $v > v_0$  that satisfies:*

$$\frac{w - c_L}{\alpha} < v - v_0 < \frac{w + c_L}{1 - \alpha}. \quad (11)$$

Although bids below the status quo market price are rarely observed in practice, our results show that a bid price below  $v_0$  cannot be excluded.<sup>10</sup> For a given  $v - v_0$ , the inequality (11) is more likely to be satisfied with a larger initial holding,  $\alpha$ , or a larger intervention cost,  $c_L$ . As  $p^* - v_0$  is a control premia enjoyed by the large shareholder when it tenders the shares at  $t = 1$ , Remark 1 implies that if  $\alpha$  and  $c_L$  are large enough to satisfy (11), the large shareholder must reconcile itself to a negative control premia when tendering its shares to the raider. Notice that the large shareholder's intervention cost can be a proxy for the inability of the large shareholder to improve the managerial performance. Hence, our results suggest that if the large shareholder is not competent to discipline the incumbent manager, it may transfer the control rights of the firm to the raider by accepting the tender offer with a bid price that is lower than the status quo value of the firm.

## 4 Extension

Until now, we have assumed that the large shareholder's interest is perfectly aligned with that of the dispersed shareholders when it intervenes in the incumbent management. The large shareholder's managerial intervention can be interpreted as providing public goods because the intervention increases the shareholder value by providing dividends. In this section, we suppose the other extreme case in which the large shareholder's intervention in the incumbent management does not provide any benefits to dispersed shareholders.

Now, the large shareholder can reject the tender offer and force the incumbent manager to pay all of  $b - \gamma$  to the large shareholder in exchange for the manager's incumbency.<sup>11</sup> The large shareholder can enjoy  $b - \gamma$  by, for example, forcing the incumbent manager to appoint family members of the large shareholder as directors and pay them high compensations.<sup>12</sup> As

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<sup>10</sup>The recent takeover event in Japan showed that shareholders of Nippon Broadcasting accepted the takeover bid offered by Fuji Television Network Incorporation with a bid price that was lower than the market price of the target firm.

<sup>11</sup>Notice that the large shareholder can make a take-it-or-leave-it tender offer. Hence, the large shareholder can receive all of the surplus value resulting from the takeover.

<sup>12</sup>Alternatively, if the large shareholder is another firm that has a close business relationship with the



the large shareholder holds more than half of the firm's shares, dispersed shareholders cannot oppose the large shareholder's decision, even though the large shareholder's intervention in the incumbent management disadvantages dispersed shareholders. The expected payoff to the large shareholder that rejects the tender offer is then given by:

$$\phi_L^r = \alpha v_0 + b - \gamma - c_L.$$

The expected payoff to the large shareholder accepting the tender offer, denoted as  $\phi_L^a$ , is the same as  $\pi_L^a$ , which is represented by (1). Hence, the cutoff value of  $\gamma$  derived from  $\phi_L^a \geq \phi_L^r$  is expressed by:

$$\hat{\gamma} = \frac{v - p}{2} - \alpha(v - v_0) + b - c_L. \quad (12)$$

Now, the raider's expected payoff is given by:

$$\phi_R = \left[ \frac{1}{2}(v - p) - w \right] \text{Probab}[\gamma \geq \hat{\gamma}] - c_R.$$

Thus, the maximization problem of the raider is characterized by:

$$\begin{aligned} & \max_p \phi_R, \\ & \text{subject to } \phi_R \geq 0. \end{aligned}$$

Assumptions 2 and 3 ensure that the large shareholder's maximization problem given above has an interior solution, which is the same as  $p^*$  given by (7).

The optimal cutoff value of  $\hat{\gamma}$  is obtained by substituting (7) into (12):

$$\hat{\gamma}^* = b - \frac{\alpha(v - v_0)}{2} - \frac{c_L - w}{2}.$$

Now, we compare  $\hat{\gamma}^*$  with  $\hat{\gamma}^*$  given by (8). Suppose that Assumption 4 holds. Because of  $\alpha \in (1/2, 1)$ , we have:

$$\hat{\gamma}^* = b - \frac{v - v_0}{2} - \frac{c_L - w}{2} < b - \frac{\alpha(v - v_0)}{2} - \frac{c_L - w}{2} = \hat{\gamma}^*.$$

As a lower cutoff value of  $\gamma$  corresponds to a higher probability of success in the takeover, we obtain the following proposition.

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incumbent manager, the incumbent manager pays  $b - \gamma$  to the large shareholder by, for example, selling its products with price reductions.

**Proposition 3** *The probability of success in the takeover is smaller if the large shareholder can disadvantage dispersed shareholders than if it cannot.*

The intuition behind Proposition 3 is clear. In this setting, the incumbent manager pays all of  $b - \gamma$  to the large shareholder in order to retain his incumbency. Hence, Proposition 3 implies that, even though the large shareholder can be a driving force behind the takeover bid offered by a third party, the probability of success in the takeover is reduced if the large shareholder and the incumbent manager collude.

Claessens et al. (2000) found that the ownership of firms in East Asian countries is highly concentrated and that the top management of firms is related to the family of the controlling shareholder. In particular, as suggested by Claessens and Fan (2002), the controlling large shareholder and the manager are congruent in these countries. The result of Proposition 3 may explain the casual observation that hostile takeovers are rare in East Asian countries.

## 5 Conclusion and Discussion

We show that the holdout problem in a takeover, initially pointed out by Grossman and Hart (1980), is resolved if the target firm is owned by a large shareholder whose tender decision directly affects the success or failure of the takeover by a raider. The large shareholder facilitates a successful takeover because its initial holding is large enough to allow it to retain a fraction of its shares, through which it can enjoy the full value of the post-raid firm. Even so, the takeover may fail because the large shareholder can improve shareholder value by directly exercising its control rights against the incumbent manager of the firm.

We derive the conditions under which the takeover successfully occurs. We show that the probability of success in the takeover is either increasing or decreasing in the size of the large shareholder's initial holding, which depends on whether the post-raid cost to the raider is larger or smaller than the intervention cost to the large shareholder. Furthermore, we indicate that the bid price may be below the status quo market value of the firm. Finally, we suggest that the takeover is less likely to occur if the large shareholder can intervene in the incumbent management by expropriating the benefits of dispersed shareholders.

Our results depend heavily on the assumption that the raider is superior to the large shareholder in finding a competent manager who can increase the value of the target firm up to its latent maximum. Although such an assumption may seem extreme, empirical findings suggest that managerial replacement following the activism of institutional shareholders does

not increase the value of the firm (see Karpoff (1998) for a survey of these results). This suggests that the large shareholder may lack the ability to find a competent replacement manager.

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