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Yasuhiro Arikawa, Atsushi Kato

早稲田大学
ファイナンス総合研究所
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Yasuhiro ARIKAWA* and Atsushi KATO**

Abstract

Cross shareholding that makes takeovers difficult is not necessarily harmful to shareholders due to initiative effects. As long as manager's private benefits are to some extent in line with shareholders' benefits, cross shareholding may benefit shareholders. Cross shareholding is more likely to occur as the congruence of interests between managers and shareholders rises, the manager's private benefits becomes greater, the manager's reservation utility gets lower, and shareholders' pie in the case of a takeover becomes smaller. Due to a lack of monitoring, the corporate value of a firm tends to be smaller in cross shareholding. However, if we include managers' private benefits in social welfare function, it is possible that the social welfare is higher in cross shareholding.

Key Words: cross shareholding, takeover, initiative effect, commitment

JEL Classification No.: G32,G34

* Associate Professor, Waseda University, and Faculty Fellow, Research Institute of Economy, Trade and Industry (E-mail: arikawa@waseda.jp)

** Associate Professor, Aoyama Gakuin University

1. Introduction

In modern corporations, managerial discipline is crucial in assuring good corporate performance. The agency theory of corporate governance focuses on the question of how shareholders can ensure that managers place adequate importance on shareholders' interests. In the literature it is typically presupposed that managers tend to seek their private benefits and it is necessary for shareholders to monitor them.

Looking at the situation in Japan, shareholders do not always play a significant role in corporate governance. Until the early 1990s, most large Japanese firms had not been subject to severe monitoring by shareholders because of cross shareholdings. Cross shareholding means that firms possess each other's shares. Since cross shareholding reduces the portion of shares traded in public markets, it defends a firm against takeover and may induce managers to seek their private benefits. It seems plausible to suppose managers have sacrificed minority shareholders' interests by cross shareholding. If so, however, it is difficult to understand why cross shareholding has continued for such a long duration, nearly half a century. The purpose of this paper is to understand the reason for this.

Moreover, since the mid 1990s in Japan, the structures of shareholding and corporate governance have changed dramatically. For instance, institutional investors and foreign investors have increased their pressures on managers to keep shareholders' values high, while the ratio of cross shareholding has declined dramatically during the same period. We would like to have a better understanding of why these changes have happened and what these changes might cause.

In this paper, our main question is whether it is always beneficial for shareholders to intervene in management. In other words, are there any good reasons that shareholders should not interfere in the running of a firm? In particular, we take up cross shareholding as an institution which can be used by managers to block the interference from shareholders. As described earlier, cross shareholdings were observed among Japanese large firms as a device for allowing managers a significant degree of autonomy. Therefore, we claim here that as long as manager's private benefit is to some extent correlated with shareholders' benefits, cross shareholding may benefit shareholders.

Our model relies upon initiative effects, such as those which were analyzed by Burkart, Gromb and Panunzi (1997). Initiative effects imply that if there were less intervention by shareholders, managers would work harder because they would be able to pursue private benefits. As assumed in many corporate governance models,

managers' incentives may differ from shareholders' in our article. Managers obtain non-verifiable private benefits from projects, while shareholders (including raiders in our model), receive monetary returns. Their interests diverge, but not completely. If a raider takes over a firm he will monitor a (new) manager, and with some positive probability, he will force her to choose a project beneficial for shareholders but not so much for managers. Thus a manager's incentive to work hard is lower in a takeover. In the case of cross shareholding, shareholders of firms do not monitor each other. This can lead to managers working harder to seek private benefits. We assume that managers' benefit and shareholders' benefits are to some extent accordant, and show that cross shareholding can also be beneficial to shareholders.

In our model, managers first propose cross shareholding to shareholders, who then decide whether or not to accept it. After that, a raider may make tender offers and shareholders decide whether or not to accept. With this time sequence, we analyze why managers need cross shareholding and why shareholders support this, though cross shareholding weakens the shareholders' right to intervene in management. In our model, cross shareholding is a kind of commitment by shareholders not to monitor, or more precisely not to accept tender offers. By this commitment managers seek private benefit, which may be good for shareholders.

We show that cross shareholding is more likely to occur as the congruence of interests between managers and shareholders rises, the manager's private benefits become larger, the manager's reservation utility gets lower, and shareholders' pie in the case of takeover becomes smaller. Due to a lack of monitoring, the corporate value of a firm will be smaller in cross shareholding. On the other hand, when the difference between the benefit of shareholders and managers is not so large, we show that social welfare becomes higher by allowing for the discretion of managers, and when the benefit of shareholders is much larger than that of managers, social welfare is higher under the takeover threat.

Several scholars have analyzed cross shareholding from different viewpoints. Berglof and Perotti (1994) provide a model in which firm specific investments by trading partners enhance the profitability of a transaction. The reciprocal shareholding enables participants to make credible the threat of firing in case of deviation. In each period shareholder meetings are held after the outcome of their transaction, deciding on whether or not to fire managers. However, the shares of transactions among keiretsu firms are not necessarily large. In 1996 the average ratio of intra-keiretsu group transactions are 9.96% in terms of sales and 5.21 % in terms of purchases. Out of these numbers 82% of sales and 64% of purchases are transactions with a group general

trading company, not manufacturing firms.[1] It seems that, if a transaction among firms is beneficial, they would expand the volume of transactions among them. Nevertheless, we would more or less agree that cross shareholding enhances firm specific investments because a firm's strategy can become more stable under the same management. Then employees can be assured of their continuous employment with the same firm and can make a firm specific investment.

Nyberg (1995) considers a situation where managers utilize reciprocal shareholdings to fend off hostile tender offers. The probability of the appearance of a raider is given by a distribution function. The managers use their remuneration to resist against tender offers. Shareholders face a trade-off. Increased reciprocal shareholding means better leverage in managerial resistance but it can reduce the probability of receiving an offer. He shows that unless a manager is very inefficient, the manager benefits from reciprocal shareholding. The threat of managerial resistance may benefit shareholders by improving their bargaining power in a takeover situation. However, at least in Japan, this logic does not seem to apply. If the shareholders' intention is to obtain a higher tender offer in case of a takeover, it must be the case that takeovers occur from time to time. But in Japan hostile takeovers have rarely occurred.

Osano (1996) assumes that there are a risky project and a safe one, and that only when a manager chooses a risky one, does there arise a positive probability that a takeover will occur. Cross shareholding functions against tender offers. If any firm deviates, the other firms are not constrained by the commitment of cross shareholdings. Thus the deviating manager may face the threat of being dismissed by the raider and therefore would not deviate. Under this cross shareholding they could choose a risky but higher expected returns project. This makes cross shareholding desirable. Thus the main contribution of his paper is to clarify the conditions that lead to the desirability of cross-shareholding.

Flath (1996) explains another aspect of cross shareholding, that is, cross shareholding as a method of punishing a trading partner who does not make an appropriate investment. Assuming a Nash bargaining solution, trading partners bargain over gains from trade, the one who holds a larger share in its trading partner has a weaker bargaining power because it can obtain more from its trading partner's projects. Precisely for this reason, decreasing its share in trading partner damages its trading partner. Flath claims that cross shareholdings strengthen the power of penalizing. However, his conclusions are crucially dependent upon Nash bargaining solution over the quasi-rents including the rent from shareholding. Though theoretically interesting, we seriously doubt that firms use such indirect methods to

punish a trading partner for not making a desirable investment. They should have more direct ways of punishing the other, such as suspending trade with the firm or reducing the share of the firm among its total transactions. If he claims that his theory applies only to the case where there exists only two firms who can potentially transact, then he cannot explain why cross shareholding can be observed widely. Moreover, since firms usually trade more than one product, the effects of the determination of price in one product market on share price can be easily offset by the outcomes of other businesses. Therefore, we feel it unrealistic to assume that when a manager decides on the prices of components, they consider the effect of the decision of their prices on a trading partner's profits through capital gains or dividends from his own company.

Hence, this article is different from all the papers up to date on cross shareholding. In this paper cross shareholding induces more effort from managers. This article attempts to apply this initiative effect to the analysis of cross shareholding for the first time.

In section 2 we explain the model and solve for equilibria. In section 3 we show that cross-shareholding can be more desirable in terms of social welfare, though it may never be desirable in terms of corporate values. Section 4 concludes our paper.

2. Monitoring vs. Initiative Effects

2.1 The Model

In the studies of corporate governance it is typically presupposed that managers tend to seek their private benefits and it is detrimental for shareholders to leave them free. Thus it is considered to be necessary for shareholders to monitor them. However, it may not necessarily be true that managers' efforts to seek private benefits always hurt shareholders' benefits.

Burkart, Gromb and Panunzi (1997) claim that managers' attempts to seek private benefits is to some extent correlated with shareholders' benefits and show that there is an optimal level of shareholding owned by large shareholders. In their model shareholders may benefit from reducing monitoring and inducing managers' higher effort for private benefits. They call it initiative effect. In this section we show that cross shareholding reduces the threat of takeover and thus induces managers to exert initiative effects. This may be desirable for shareholders in some cases.

We extend Burkart, Gromb and Panunzi's (1997) model as follows. There exist two firms, firm 1 and firm 2. The manager of firm i is called manager i, where i is 1 or 2

from the other projects. Firm i faces N_i+1 potential projects. Project j of firm i, where $j \in \{0,1,2,\ldots,N_i\}$, may yield non-verifiable private benefit b^j to manager i and verifiable pecuniary benefits π^j, which is eventually attributed to shareholders. Project 0 is distinguishable and it is known that $\pi^0=b^0=0$. The other N_i projects can not be differentiated from each other unless further investigations are taken. For N_i-2 projects $\pi^j<0$ and $b^j<0$, and at least one of them yields $\pi^j=b^j=-\infty$. The remaining two projects indexed N_i-1 and N_i yield payoffs in a stochastic way as in the following table.

Probability	Project N_i-1	Project N_i
λ_i	$\{\pi_i, b_i\}$	$\{\pi_i, b_i\}$
$1-\lambda_i$	$\{\pi_i, 0\}$	$\{0, b_i\}$

If Project N_i is implemented, the pecuniary benefit π_i accrues to firm i and private benefits b_i to manager i with probability λ_i, and no benefits to firm i and private benefits b_i to manager i with probability $1-\lambda_i$. From the table above it is obvious that shareholders prefer project N_i-1 but manager i likes to choose project N_i. The parameter $\lambda_i \in [0,1]$ represents the congruence of interests between shareholders and manager of firm i. A higher λ_i implies that manager i's benefits are more closely aligned with those of the shareholders. Later this parameter has a critical role in our explanation of the current declining trend of cross shareholding in Japan.

In line with Burkart, Gromb and Panunzi (1997), we assume that, if a manager makes effort e, she will find payoffs of projects. In addition to managers and shareholders of the two firms, there are many identical potential raiders, who attempt to take over either firm 1 or firm 2. Unlike in Burkart, Gromb and Panunzi (1997), we assume here that a raider makes a discrete decision between monitoring and not monitoring, once the raider takes over a firm. If he decides to monitor, the payoffs of projects will be found with probability E, where E is a fixed number between 0 and 1. This monitoring costs him $c>0$. There is no time discount.

We begin with a situation where the shares of two firms are currently owned by dispersed shareholders. The sequence of events is as follows. In period 1 managers make a proposal to issue new shares and exchange them between the two firms. At the same time, manager i proposes to make a monetary transfer m_i to shareholders of firm i. In period 2 shareholders decide whether to accept the proposal of cross shareholding cum monetary transfer. In period 3, based on the outcome in period 2, a raider decides whether or not to make tender offers to shareholders. We assume that there are

numerous identical potential raiders who attempt to take over each of two firms. In period 4, if tender offers are made in period 3, shareholders decide to accept or not. In period 5, each manager and, raiders in case of takeover, make efforts, and profits and private benefits realize. We assume that if takeover takes place, an old manager is replaced by a new manager. The ability of a new manager is identical to that of an old manager, though the assumption of a more competent manager can be easily included. The time structure of this game is depicted in figure 1. The payoffs to each player are explained when we solve for subgame perfect equilibria of this game.

Several notes on the structure of a game are in order. First, the time sequence indicates a manager proposes cross shareholding in order to avoid a takeover, because raiders may attempt takeover later if cross shareholding is not formed. If β portion of shares is necessary to dismiss the existing management (for example, it is 2/3 in Japan and 1/2 in U.S.), then at least $1-\beta$ portion must be cross shared among firms to protect themselves against takeover. We think this sequence of events to some extent reflects the situation when Japanese firms began to form cross shareholding in 1950s and 1960s. That is, if cross shareholding had not been made, foreign investors would have attempted to takeover Japanese firms. Japanese managers, being scared of intervention and dismissal, started cross shareholding to prevent such takeovers.

Second, the assumption that managers make a monetary transfer to shareholders may sound awkward. But this setup is not crucial. As it becomes clear, the condition for cross shareholding to occur amounts to the condition that the total value accruing to both shareholders and managers is higher in cross shareholding than in takeovers. In such a situation there should arise some method of division that makes both better off.

Notice that managers are willing to make a monetary transfer to shareholders because cross shareholding can block takeovers for sure and there are no concerns about intervention in management under cross shareholding due to dispersed shareholding. Otherwise, shareholders may act in an opportunistic way, i.e., they receive monetary transfer and also accept tender offers. That is, shareholders' approval of cross shareholding is a kind of commitment not to sell shares, i.e., no monitoring to management. If shareholders can make a credible commitment to not accepting tender offers or not monitoring in some other ways, then cross shareholding is not requisite. That is, shareholders could induce initiative effects without cross shareholding.

The incentive of shareholders to respond to tender offers is subtle. If a takeover takes place, a raider will buy a certain portion of shares. As it has been discussed in the literature, unless shareholders who accept tender offers obtain the same gains as shareholders who do not, nobody would accept the offer and takeovers would not

succeed (Grossman and Hart 1980). Therefore, a raider must offer the same premium to all shareholders. Then it turns out that in terms of payoffs that each player obtains, it does not matter how many shares the raider would capture. Rather it matters how much the raider and the shareholders obtain. In this paper this ratio is assumed to be exogenously determined before the game begins. It is assumed that shareholders will get $\phi \in [0,1]$ out of the realized profits and the raider will obtain $1-\phi$. We call ϕ a dilution rate in this paper.

We assume that a raider has many other potential takeover targets and gives up a takeover attempt if this dilution rate ϕ is not acceptable. Thus we do not consider the bargaining over ϕ between shareholders and a raider.

Finally in this article we assume symmetry and will omit the index of a firm. This completes the description of players and strategy sets of our model. We will explain payoffs for each player in each case as we solve for equilibria.

Next we solve for subgame perfect equilibria by backward induction. First, we solve for equilibrium in each subgame in period 5, in takeover case and in cross shareholdings case, respectively. In period 5, depending on the resultant corporate governance structure from previous periods, managers and raiders make decisions and efforts.

2.2 Equilibrium

2.2. A: Takeover Case

We assume that, if takeover takes place in period 4, a raider will dismiss the current manager and the ousted manager would obtain a reservation utility of r. Denoting the payoff that the dismissed manager would get in case of takeover as V^{mt}, then:

$$V^{mt} = r$$

The raider will hire a new manager. The new manager makes an effort e at a cost $se^2/2$. This effort reveals the payoffs of all projects to the manager with probability e, where $0 \leq e \leq 1$. A positive parameter s captures the difficulty of raising the probability of successfully finding the payoffs of projects. As we assume that a new manager has the same competence as an old manager, s takes the same value for both the new manager and the dismissed manager. The raider decides whether he will monitor the manager or leave her free. If he chooses to monitor, he exerts effort level E at a cost c, which enables him to see the payoffs of all projects with probability E, only when the manager

finds the payoffs of projects.

If the raider decides to monitor, the new manager (hereafter we will simply refer to as manager) chooses e to maximize her payoff, denoted by V^{nmt}:

$$V^{nmt} = e[E\lambda b + (1-E)b] - s\frac{e^2}{2}$$

In the case of a manager's successful finding, project N-1 is selected if the raider successfully monitors. Then, with probability λ, private benefit b accrues to a manager. If the raider fails to monitor, project N is chosen so that private benefit b accrues to a manager with probability one.

The first order condition yields the manager's optimal effort level

$$e = \frac{b}{s}[1-(1-\lambda)E] \qquad (1)$$

Lemma 1

In case of a takeover, a new manager's effort level increases as b and λ increase or as s and E decreases.

Proof. Omitted

As private benefit b increases, the manager's effort naturally rises. As λ increases, even if a raider successfully monitored, still the manager would obtain a higher benefit, and thus make a higher effort. Conversely, as s rises, the manger's effort is more costly, thus less effort is expended. Finally, as E increases, the new manager will get monitored with higher probability, and thus exert less effort. So in the case of a takeover, the possibility of monitoring reduces the manager's efforts. Thus, a takeover adversely affects initiative effects.

Expecting a new manager to exert this effort level, the raider will choose whether to monitor or not. The raider's payoff in a takeover case is denoted by V^{rt}. If he does not monitor, E=0 in (1), so the manager's effort will be e=b/s. Then his payoff will be:

$$V^{rt} = (1-\phi)e\lambda\pi = \frac{(1-\phi)\lambda b\pi}{s} \qquad (2)$$

On the other hand, if he chooses to monitor, his payoff will be:

$$V^{rt} = (1-\phi)e[E\pi + (1-E)\lambda\pi] - c$$

The term in square brackets is the expected returns when the manager finds the payoffs of projects. In that case, if the raider successfully monitors, project N-1 is chosen, and π is realized with probability one. If the raider fails to monitor, π is realized with probability λ. Since the raider must concede ϕ portion of returns to shareholders, the whole term is multiplied by $(1-\phi)$. Finally it costs c for the raider to monitor.

Given the manager's optimal effort level, the raider's payoff is:

$$V^{rt} = \frac{(1-\phi)b\pi}{s}[E\lambda + (1-E)][E + (1-E)\lambda] - c \qquad (3)$$

From (2) and (3) the raider will monitor the manager if the following condition is met:

Condition 1 $$\frac{(1-\phi)b\pi}{s}E(1-E)(1-\lambda)^2 - c > 0$$

Notice that a raider makes no monitoring effort if condition 1 is violated. In this case, under the assumption of managers' identical abilities, there would be no incentive for shareholders to accept tender offers. This is because without this assumption the new manager's effort level and the realized corporate value are the same as in cross shareholding case. The raider will simply take away some portion of the realized corporate value without any monitoring. If so, shareholders will not accept tender offers, and expecting this, managers do not propose cross shareholding. Thus the status quo continues.

From (3) we can see that V^{rt} increases as b and π increase, while it decreases as s, ϕ and c increase. Incidentally, the new manager's payoff V^{nmt} is:

$$V^{nmt} = e[E\lambda b + (1-E)b] - s\frac{e^2}{2} = \frac{b^2[E\lambda + (1-E)]^2}{2s}$$

The payoff of the shareholders V^{st} is expressed as follows:

$$V^{st} = \phi e\left[(1-\lambda)E\pi + \lambda\pi\right]$$

Plugging e into V^{st}, we get the following expression:

$$V^{st} = \frac{\phi b \pi \{E\lambda + (1-E)\}\{E + (1-E)\lambda\}}{s} \tag{4}$$

Lemma 2

V^{st} increases as ϕ, b and π increase, or as s decreases. With respect to E V^{st} rises up to 1/2, and then decreases beyond 1/2.

Proof. Omitted

The intuitions are as follows. The change in ϕ does not affect managers' effort but affects only the portion of the corporate value given to shareholders. Thereby the increase in ϕ raises V^{st}. The increase in b enhances the effort level of a manager. The increase in π raises the expected corporate value. Both of them make V^{st} larger. As efforts become less costly (i.e., the decrease in s), a manager exerts more effort, and increases V^{st}.

2.2.B : Cross Shareholding Case

Assuming symmetry between firm 1 and firm 2, they issue the same amount of shares and simply exchange them without any payments.

We assume that each manager does not monitor each other under cross shareholding. Furthermore, since the ownership structure is dispersed, shareholders would not monitor a manager. A manager's payoff V^m is:

$$V^m = eb - s\frac{e^2}{2} \tag{5}$$

If a manager successfully finds the payoffs of projects, she will choose project N. Then b is realized with probability one. The manager must pay $se^2/2$ to expend effort level e. From the first order condition for the maximization with respect to e, a manager's effort is

$$e = \frac{b}{s} \tag{6}$$

Lemma 3
A manager's effort level increases as b increases, or s decreases.

Proof. Omitted

Intuitively, as private benefit gets bigger or effort gets less costly, a manager makes more effort.

Proposition 1
A manager exerts a higher level of effort in cross shareholding than in takeover.

Proof. In a takeover case a manager's effort is $b\{E\lambda + (1-E)\}/s$, while in a cross shareholding case it is b/s. It is easy to see:

$$\frac{b\{E\lambda + (1-E)\}}{s} < \frac{b}{s}$$ Q.E.D.

This is the source of the initiative effect. When managers are not monitored, they are willing to work harder.

Substituting e in (6) back into V^m yields:

$$V^m = eb - s\frac{e^2}{2} = \frac{b^2}{2s}$$

From this, we can see that V^m increases as b increases, or s decreases.

If α_1 portion of firm 1's shares is owned by firm 2, the returns to shareholders is only $(1-\alpha_1)$ of the total share price of firm 1. Suppose firm 1 possesses α_2 portion of firm 2's share and firm 2 possesses α_1 portion of firm 1's shares. If firm 1 realizes profit ϖ_1 and firm 2 realizes ϖ_2, the share price of firm 1 under cross-shareholding, Ω_1, is:

$$\Omega_1 = \frac{\varpi_1 + \alpha_2\varpi_2}{1-\alpha_1\alpha_2}$$

For this derivation see Flath(1996). Under cross shareholding, $\varpi_1 = e_1\lambda_1\pi_1$ and $\varpi_2 = e_2\lambda_2\pi_2$. Let V_i^s be the payoff to shareholders of firm i in cross shareholding. Then:

$$V_1^s = (1-\alpha_1)\frac{e_1\lambda_1\pi_1 + \alpha_2 e_2\lambda_2\pi_2}{1-\alpha_1\alpha_2}$$

Substituting $e_1=b_1/s_1$ and $e_2=b_2/s_2$ yields:

$$V_1^s = (1-\alpha_1)\frac{\frac{b_1}{s_1}\lambda_1\pi_1 + \alpha_2\frac{b_2}{s_2}\lambda_2\pi_2}{1-\alpha_1\alpha_2}$$

Under symmetry assumption, $\alpha=\alpha_1=\alpha_2$, $\pi=\pi_1=\pi_2$, $\lambda=\lambda_1=\lambda_2$, $b=b_1=b_2$, $s=s_1=s_2$ and $V^s = V_1^s = V_2^s$, and then we have:

$$V^s = \frac{\lambda\pi b}{s}$$

Note that V^s does not depend on α in symmetric case. It is just an expected value of pecuniary benefit accruing to firm i.

Lemm 4
V^s increases as λ, π, b increase, or s decreases.

Proof. Omitted.

2.2.C : Status Quo

If neither cross shareholding nor takeover occurs, shareholders' payoffs equal V^s, a manager's payoff equals V^m, but no monetary transfer takes place. Thus managers prefer status quo.

2.3 Takeover vs. Cross Shareholding

To see whether shareholders accept tender offers in period 4, we compare between V^s and V^{st}. If $\phi=0$, $V^s>0=V^{st}$. On the other hand, if $\phi=1$:

$$V^s - V^{st} = -\frac{b\pi}{s} E(1-E)(1-\lambda)^2 < 0$$

This means V^s is smaller than V^{st}. Since V^{st} monotonically increases in ϕ, there exists ϕ^* such that if $\phi<\phi^*$, $V^s>V^{st}$, while if $\phi>\phi^*$, $V^s<V^{st}$. We thus get, from $V^s=V^{st}$:

$$\phi^* = \frac{\lambda}{\{E\lambda + (1-E)\}\{E + (1-E)\lambda\}}$$

In period 4, shareholders would accept tender offers if $\phi>\phi^*$ and would not otherwise. We call this condition as condition 2:

Condition 2 $\quad \phi > \phi^*$

In period 3 a raider decides to make a tender offer or not. Knowing that shareholders will accept tender offers in period 4 if $\phi>\phi^*$, a raider will compare his payoffs in each case. If it makes a tender offer, it will get V^{rt}. If not, the raider will get a payoff outside. Let this outside payoff be V^o. Then a raider makes a tender offer to firm 1 or firm 2, if:

$V^{rt}>V^o$

We assume in this article that this inequality holds.

In period 2 shareholders are willing to accept cross shareholdings if the following condition is met:

$$V^s + m > V^{st} \tag{7}$$

The left-hand side of the first inequality is the payoffs to shareholders if they accept the proposal of cross shareholding with monetary transfer, while the right-hand side is the payoff when they reject it but accept tender offers in period 4.

Further back in period 1, a manager decides to propose cross shareholding with monetary transfer m. If the following inequality holds, the manager is willing to make this proposal:

$$V^m - m > r \qquad (8)$$

This inequality says that, even if a manager made monetary transfer m to shareholders, his utility would still be higher than her reservation utility r.

Combining (7) and (8), cross shareholding is proposed in an equilibrium if the following condition 3 is satisfied:

Condition 3 $V^m + V^s > V^{st} + r$

Condition 3 implies that the total values accruing to managers and shareholders in cross shareholding are higher than those in a takeover. We suppose that as long as the total values to shareholders and managers are higher in cross shareholding, they will manage to figure out a way of sharing them, so that both would be better off. For example, it is said that managers of Japanese companies receive relatively low salaries, relative to their counterparts in U.S. companies. This can be considered to be a kind of transfer mechanism from managers to shareholders. As mentioned before, the following analysis would not involve the transfer m.

Now we fully describe a subgame perfect equilibrium.

Proposition 2
The followings constitute a subgame perfect equilibrium in this model.

(A) If conditions 1, 2 and 3 are satisfied, then cross shareholding is proposed in period 1. Then, shareholders accept it in period 2 and a raider does not make a tender offer in period 3.

(B) If conditions 1 and 2 are satisfied but condition 3 is violated, then a manager does not make cross shareholding proposal in period 1. A raider makes a tender offer in period 3 and shareholders accept it in period 4. The raider monitors a new manager in period 5.

(C) If either condition 1 or 2 is violated, then a manager does not make a cross shareholding proposal in period 1. A raider does not make a tender offer in period 3. Then the manager makes efforts in period 5 without any intervention.

Proof (A) From condition 1 if a raider succeeded in a takeover, he would monitor a manager in period 5. Expecting this, and from condition 2, shareholders would accept a

tender offer in period 4 if it was offered. By assumption a raider would make a tender offer in period 3 if there was no cross shareholding. Since the threat of a takeover is real, from condition 3, a manager finds it more desirable to make a cross shareholding in period 1 and shareholders will accept it in period 2. This case is illustrated in Figure 2a.

(B) From conditions 1 and 2 the events from period 3 are the same as in case (A). However, since condition 3 is violated, a manager does not make a cross shareholding proposal in period 1. Then the takeover will succeed. This case is illustrated in Figure 2b.

(C) If condition 1 is not satisfied, it is never beneficial for shareholders to accept tender offers, thus they would not in period 4. Expecting this, a manager does not make a cross shareholding proposal in period 1. If condition 2 does not hold, shareholders would not accept tender offers in period 4. Expecting this, a manager does not make a cross shareholding proposal in period 1. In both cases the status quo continues. These cases are illustrated in Figure 2c. Q.E.D.

We can easily show that conditions 1 and 2 can occur simultaneously.[3] Temporarily, we focus on the set of parameter values that satisfy conditions 1 and 2. This implies that either possibilities (A) or (B) would occur. Then we inquire into the conditions that make cross shareholding more likely relative to takeover, i.e., those that make condition 3 more likely to be satisfied.

From condition 3, cross shareholding occurs if:

$$\frac{b^2}{2s}+\frac{\lambda\pi b}{s}-\frac{\phi b\pi\{E\lambda+(1-E)\}\{E+(1-E)\lambda\}}{s}>r$$

Define a new function:

$$F(b,\pi,\lambda,E,\phi,s,r)=\frac{b^2}{2s}+\frac{\lambda\pi b}{s}-\frac{\phi b\pi\{E\lambda+(1-E)\}\{E+(1-E)\lambda\}}{s}-r$$

The increase in F loosely indicates a higher possibility of cross shareholding.

Proposition 3

F(b,π,λ,E,ϕ,s,r) increases as r and ϕ decrease or λ and b increase.

Proof. It is obvious that F increases as r and ϕ decrease and as b increases. Rewriting F yields:

$$F(\cdot) = \frac{b^2 + 2\lambda\pi b - 2\phi b\pi\{E\lambda + (1-E)\}\{E + (1-E)\lambda\}}{2s} - r$$

Denote the numerator of the first term on the right-hand side as G( ). Then, differentiate G with respect to λ:

$$\frac{\partial G}{\partial \lambda} = -4\phi b\pi E(1-E)\lambda + 2b\pi - 2\phi b\pi\{E^2 + (1-E)^2\}, \qquad \frac{\partial^2 G}{\partial \lambda^2} = -4\phi b\pi E(1-E) < 0$$

So G is concave in λ and greatest at:

$$\lambda = \frac{1-\phi\{E^2 + (1-E)^2\}}{2\phi E(1-E)} = 1 + \frac{1-\phi}{2\phi E(1-E)} > 1$$

Thus, for $\lambda \in [0,1]$ F increases as λ increases. Q.E.D.

Note that since condition 3 includes r, which is independent of conditions 1 and 2, there always exists a low λ that satisfies condition 3. Theoretically, there is no restriction on r. Thus, if the existing manager falls into a terribly miserable situation once dismissed (i.e., a very small r), then she is willing to make large monetary transfers to shareholders. Hence cross shareholding would occur.

Thus the question is not whether condition 3 can occur or not, but what parameter values makes condition 3 more likely to be met. Given any value of ϕ, λ and b, there is a value of r that makes specific values of ϕ, λ and b threshold values for condition 3. Then those changes described in proposition 3 may become critical.

Intuitively, other things being equal, the decrease in ϕ makes takeover less attractive for shareholders. On the other hand, as private benefits b rises, a manager is likely to make a higher effort. Then the shareholders' benefits (which are correlated with managers' benefits) becomes greater, meaning that shareholders will not have to depend on a raider's intervention. Also lemma 2 implies that up to 1/2 the increase in E makes cross shareholding less likely and beyond that more likely. This can be seen by rearranging F:

$$F = 2\phi b\pi(1-\lambda)^2(E-\frac{1}{2})^2 + [b^2 + 2\lambda b\pi(1-\phi) - \frac{1}{2}\phi b\pi(1-\lambda)^2]$$

Therefore, F reaches its minimum at E=1/2.

Now we pay a special attention to the effect of the change in λ. Proposition 3 implies that as λ increases, cross shareholding is more likely to occur. Intuitively, as λ increases, the congruence of interests between managers and shareholders rises. In this case, the benefit from relying on a raider's monitoring is small for shareholders. Conversely, if λ is low, shareholders find cross shareholding less attractive than a takeover. Although we do not make a rigorous analysis of how shareholders would behave when λ becomes low and cross shareholding has been already established, we could just loosely say that for a small λ, shareholders have less reasons to agree to cross shareholding.

A manager's utility may increase due to various factors, which may include pecuniary remuneration, the luxury of a managers' life, prestige, power, sense of achievement or maybe the absence of stress due to conflict with employees or shareholders. It may be argued that the manager can obtain these through the growth of a company, though, of course, it is possible in other ways. This is because as a company grows fast, pecuniary rewards to a manager may be higher through bonus or stock options, people praise the manger, the manger could remain in the power for a longer time, and could feel a sense of achievement. Also, the manager could offer higher salaries and more positions to employees, which leads to a peaceful relationship with them. Shareholders should more or less be satisfied with the manager. In 1950s and 1960s in Japan the benefits of managers are closely correlated with those of shareholders, as long as managers sought company growth. In those times Japan was catching up with advanced countries and there were a plenty of opportunities for the growth of firms. In those circumstances managers were willing to exert more efforts on the growth of firms, which was also beneficial for shareholders.

However, in Japan in 1990s the opportunities for the growth of companies are relatively limited when compared to the 1950s and 1960s. Therefore, a manager must balance those factors above, which would give benefits to managers. If so, a manager might sacrifice the benefits of shareholders by enjoying a luxurious life, invests company money in unprofitable projects which satisfy the managers themselves, or compromise with the labor union to escape from stressful conflicts. Therefore, there is the possibility that under limited opportunities for company growth the correlation between the benefits of shareholders and managers may become low, which means a

lower λ. This means that for shareholders it is not optimal for them to depend on initiative effects by the current manager, but more beneficial for them to rely on a raider, or more generally, some kind of monitoring. We would argue that this is one of the reasons, among others, why cross shareholding loses its momentum in current days. Also it is implied from our arguments that the intervention by shareholders plays a larger role especially in stagnating industries.

Next we focus on the relationship between the parameters λ and c. The latter is the monitoring cost by a raider. A higher c means that a raider faces a greater difficulty in monitoring a manager. In figure 3 λ is measured on the vertical axis and c on the horizontal axis.

Condition 1 includes both c and λ. As c increases, λ must decrease in [0,1], to make

$$\frac{(1-\phi)b\pi}{s}E(1-E)(1-\lambda)^2$$

smaller. Therefore, the relationship between λ and c is expressed by a downward-sloping curve in Figure 3, which we call curve 1.

If monitoring cost c is so high that it is in the area of the northeast of curve 1, a raider will not monitor. Unless a raider monitors a manager, its existence is simply a robbery of rents from shareholders. Thus shareholders would not accept tender offers. Expecting this, a manager does not make a cross shareholding proposal. Then, regardless of the value of λ, neither takeover nor cross shareholding would occur. Hence we argue that for those firms in which a raider would have a great difficulty in monitoring a manager neither cross shareholding nor a takeover could happen.[4]

Since conditions 2 and 3 does not include c, the curves derived from condition 2 ($V^s=V^{st}$) and condition 3 ($V^s+V^m=V^{st}+r$) are two horizontal lines. We call the former line 2 and the latter line 3. With regard to relative locations of two curves, from $V^s+V^m=V^{st}+r$, we get:

$$\frac{b^2}{2s}-r+\frac{\lambda\pi b}{s}-\frac{\phi b\pi\{E\lambda+(1-E)\}\{E+(1-E)\lambda\}}{s}=0\,.$$

The left-hand side is F in proposition 3. As we have seen, F increases as λ increases in the domain [0,1] and $(b^2/2s-r)>0$. Therefore, compared with λ that satisfies condition 2, λ that satisfies condition 3 must be smaller.

In the area above line 2, shareholders would not accept tender offers in period 4.

Therefore, a similar argument to the above one implies that the status quo continues.

In the area below line 2, shareholders would accept tender offers in period 4. Thus the threat of a takeover is real to managers. In the area below line 2 and to the southwest of curve 1 two cases can occur. If it is above line 3, cross shareholding occurs, but if it is below line 3, then a takeover would occur.

From Figure 3 we could see that takeover would occur if λ goes down from the cross shareholding area to the takeover area. Intuitively, as the correlation between the manager's benefits and the shareholders' benefits decreases, shareholders would rather rely on a raider's monitoring than a manager's initiative effects. In contrast, if λ is very high, shareholders would not accept tender offers because high efforts by managers seeking for private benefits will sufficiently raise shareholders' benefits. But expecting this, a manager does not propose cross shareholding. From this argument, we would claim that a manager of a good performing firm does not need cross shareholding as a defensive device.

Furthermore, compared with a growing firm, the value of λ of a mature firm is likely to be lower while monitoring is easier. Therefore, it would be probable that a mature firm with some reputation would tend to face takeovers from corporate raiders more often.

3. The comparison of performance

In this section, we compare the performances between cross shareholding and takeover cases. The case of status quo is equivalent to cross shareholding in terms of corporate values and social welfare.

First, we consider the monetary values each firm realizes as our criteria. In a takeover case, the value of a firm, CV^t, is:

$$CV^t = e[E\pi + (1-E)\lambda\pi] = \lambda\pi e + (1-\lambda)eE\pi$$

$$= \frac{1}{s}\{E\lambda b + (1-E)b\}\{E\pi + (1-E)\lambda\pi\}$$

Only when a manager successfully finds the payoffs of projects, are any positive returns possible. When a raider succeeds in monitoring, the monetary value π is realized with a probability of one. When the raider fails, it happens only with a probability of λ.

Similarly, in cross shareholding case:

$$CV^{cs} = (1-\alpha)e\frac{\lambda\pi + \alpha\lambda\pi}{1-\alpha^2} = \lambda\pi e = \frac{\lambda\pi b}{s}$$

Proposition 4

Cross-shareholding always yields a lower monetary value than a takeover.

Proof.

$$CV^{cs} - CV^{t} = \frac{\lambda\pi b}{s} - \frac{b\pi\{E\lambda + (1-E)\}\{E + (1-E)\lambda\}}{s}$$

$$= -\frac{b\pi}{s}E(1-E)(1-\lambda)^2 < 0 \qquad \text{Q.E.D.}$$

Intuitively, when there is no monitoring, a manager would choose project N, which leads to a lower expected value of monetary payoffs, even if the effort levels are the same. This effect dominates even though a manager exerts higher efforts under cross shareholding.

We have seen that cross shareholding may occur under certain conditions. Hence, even if the corporate value of a firm is lower in cross shareholding, cross shareholding still occurs.

Second, we will take social welfare as our criterion. Here the social welfare is defined as the value a firm produces plus private benefits to managers minus the cost of efforts. The social welfare in a takeover case, SW^t, is expressed as follows:

$$SW^{t} = e[E\pi + (1-E)\lambda\pi] + e[(1-E)b + E\lambda b] - s\frac{e^2}{2} - c$$

The first term is the monetary profit that is equal to CV^t. The second term is the expected private benefits accruing to a manager. The last two terms are the costs of efforts by a manager and a raider, respectively. The difference between SW^t and CV^t is the net payoff to a manager minus monitoring cost by a raider. Substituting e into this yields:

$$SW^t = \frac{\{E\lambda b + (1-E)b\}\{E\pi + (1-E)\lambda\pi\}}{s} + \frac{\{E\lambda b + (1-E)b\}^2}{2s} - c$$

On the other hand, the social welfare in a cross shareholding case is expressed as:

$$SW^{cs} = e(\lambda\pi + b) - s\frac{e^2}{2} = \frac{b\lambda\pi}{s} + \frac{b^2}{2s}$$

In a cross shareholdings case, in addition to CV^{cs}, private benefit b accrues to a manager when he successfully finds the payoffs of projects. The last term is the cost of effort by managers. But in cross shareholding the cost of monitoring E does not incur. The difference between SW^{cs} and CV^{cs} is the net payoffs to a manager in cross shareholding case.

Define

$$SW(b,\pi,\lambda,E,s,c) = SW^{cs} - SW^t$$

$$= \frac{\lambda\pi b}{s} - \frac{1}{s_r}\{E\lambda b + (1-E)b\}\{E\pi + (1-E)\lambda\pi\} + \frac{b^2}{2s} - \frac{b^2\{E\lambda + (1-E)\}^2}{2s} + c$$

The increase in SW loosely indicates a higher possibility of a larger social welfare in cross shareholding.

Proposition 5

SW($\cdot$) increases as s decreases, c increases or b/π increases.

Proof. With respect to s and c, the claim is self-evident. Rearranging SW($\cdot$) yields:

$$SW(\cdot) = \frac{b}{2s}E(1-\lambda)[b\{2 - E(1-\lambda)\} - 2\pi(1-E)(1-\lambda)] + c$$

Thus, a sufficient condition for SW to be positive is:

$$b[1 - \{E\lambda + (1-E)\}^2] > 2\pi E(1-E)(1-\lambda)^2$$

$$\Leftrightarrow \frac{b}{\pi} > \frac{2E(1-E)(1-\lambda)^2}{1-\{E\lambda+(1-E)\}^2} = \frac{2(1-E)(1-\lambda)}{2-E(1-\lambda)}$$

which is reinforced as b increases or π decreases. Q.E.D.

To see the intuition concerning b/π, note that both pecuniary payoffs and private benefits are included in social welfare with equal weights. Monitoring effort by a raider is an attempt to transfer payoffs from managers to shareholders and raiders. It increases the payoffs of shareholders but reduce that of managers, which leads to a lower effort level by managers. But under cross shareholding, managers raise efforts because of initiative effects and society does not have to incur monitoring costs by raiders. Although shareholders' payoffs might be lower, managers' private benefits would offset this effect. The increase in b relative to π means that managers make higher efforts and this effort realizes a greater addition to social welfare.

Next we inquire into whether cross shareholding would occur when takeover is socially desirable and when it is not. As we have seen, condition 3 is satisfied independently of conditions 1 and 2. So we want to see whether conditions 1 and 2 are satisfied when takeover is socially desirable.

Condition 1 can be rearranged as:

Condition (1') $$1-\frac{cs}{b\pi E(1-E)(1-\lambda)^2} > \phi$$

Combined with condition 2, we have:

$$1-\frac{cs}{b\pi E(1-E)(1-\lambda)^2} > \phi > \frac{\lambda}{\{E\lambda+(1-E)\}\{E+(1-E)\lambda\}} \qquad (9)$$

Omitting ϕ and rearranging, cross shareholding occurs when

$$cs < b\pi E(1-E)(1-\lambda)^2 \frac{(1-E)E(1-\lambda)^2}{\{E\lambda+(1-E)\}\{E+(1-E)\lambda\}} \qquad (10)$$

is satisfied and there exists a ϕ that satisfies (9). From proposition 5 social welfare is higher in takeover case if

$$\frac{b}{2s}E(1-\lambda)\left[b\{2-E(1-\lambda)\}-2\pi(1-E)(1-\lambda)\right]+c<0 \qquad (11)$$

A close look at two conditions (10) and (11) reveals that they can simultaneously be satisfied. For example, when $c \approx 0$, inequality (10) is met for some set of parameter values. And inequality (11) is met when $\pi >> b > 0$. Therefore, cross shareholding can happen when a takeover is desirable. Conversely, when b is sufficiently large, but r is sufficiently large in condition 3, takeovers can occur when cross shareholding is desirable. Thus we can not make any general statements about the relationship between social desirability and actual governance structure.

4. Conclusion

This article shows that, in contrast with the traditional view, it is not always harmful for shareholders not to intervene in management. This result depends on initiative effects, which imply that a manager makes higher efforts if she faces no intervention by shareholders, to seek private benefits. As long as shareholders' benefits are positively correlated with a manager's private benefits, it may be the case that shareholders could also benefit from no intervention.

In this article we claim that cross shareholding is a way of commitment by shareholders not to intervene, because once cross shareholding is formed, no takeover can occur. Under the formulation where shareholders can choose whether to accept a cross shareholding proposal from a manager, we can derive several implications regarding cross shareholding. Among them, first, cross shareholding is likely to occur when the correlation between a manager's and shareholders' benefits is high. From this implication we would claim that the declining trend of cross shareholding in Japan can partially be explained by the divergence of their interests under slow economic growth. Second, cross shareholding is more likely to occur in mature industries. This is because in mature industries monitoring is less costly and the benefits of shareholders and a manager tend to diverge.

We also show that the corporate value of a firm tends to be smaller in cross shareholding due to a lack of monitoring. However, if we include managers' private benefits in social welfare function, it is possible that social welfare is higher in cross shareholding.

[Footnotes]

1. Flath(1996), based on Japan Fair Trade Commission's survey (1983), said that 20% of the sales transactions of manufacturing firms in the respectable (presidents') club in excess of one million yen were to fellow members of the same club and 12% of purchase transactions in excess of one million yen by these manufacturing firms were from fellow members in 1981. Whether these numbers should be considered large or small seems to us a matter of subjective judgment, especially considering the large scale of cross shareholdings.

2. More rigorously, this is true if a manager is not financially constrained.

3. This proof is available from authors upon request.

4. If a potential raider consists of only foreign capital, those firms could be the ones that manufacture very traditional goods such as kimono or hanafuda (a kind of Japanese card game) because foreign raiders find it difficult to find an appropriate strategy in those industries.

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Figure 1

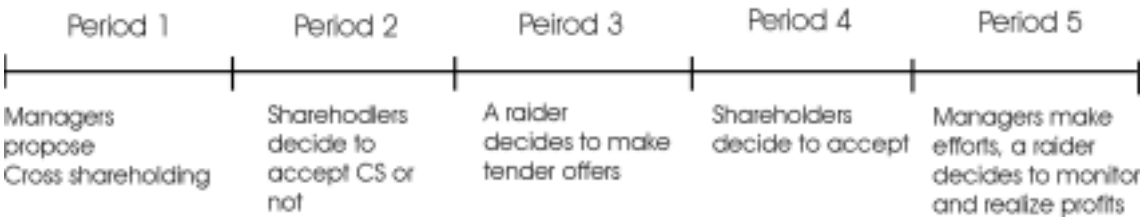

Period 1
Period 2
Peirod 3
Period 4
Period 5
Managers propose Cross shareholding
Shareholders decide to accept CS or not
A raider decides to make tender offers
Shareholders decide to accept
Managers make efforts, a raider decides to monitor and realize profits

Figure 2a Case (A)

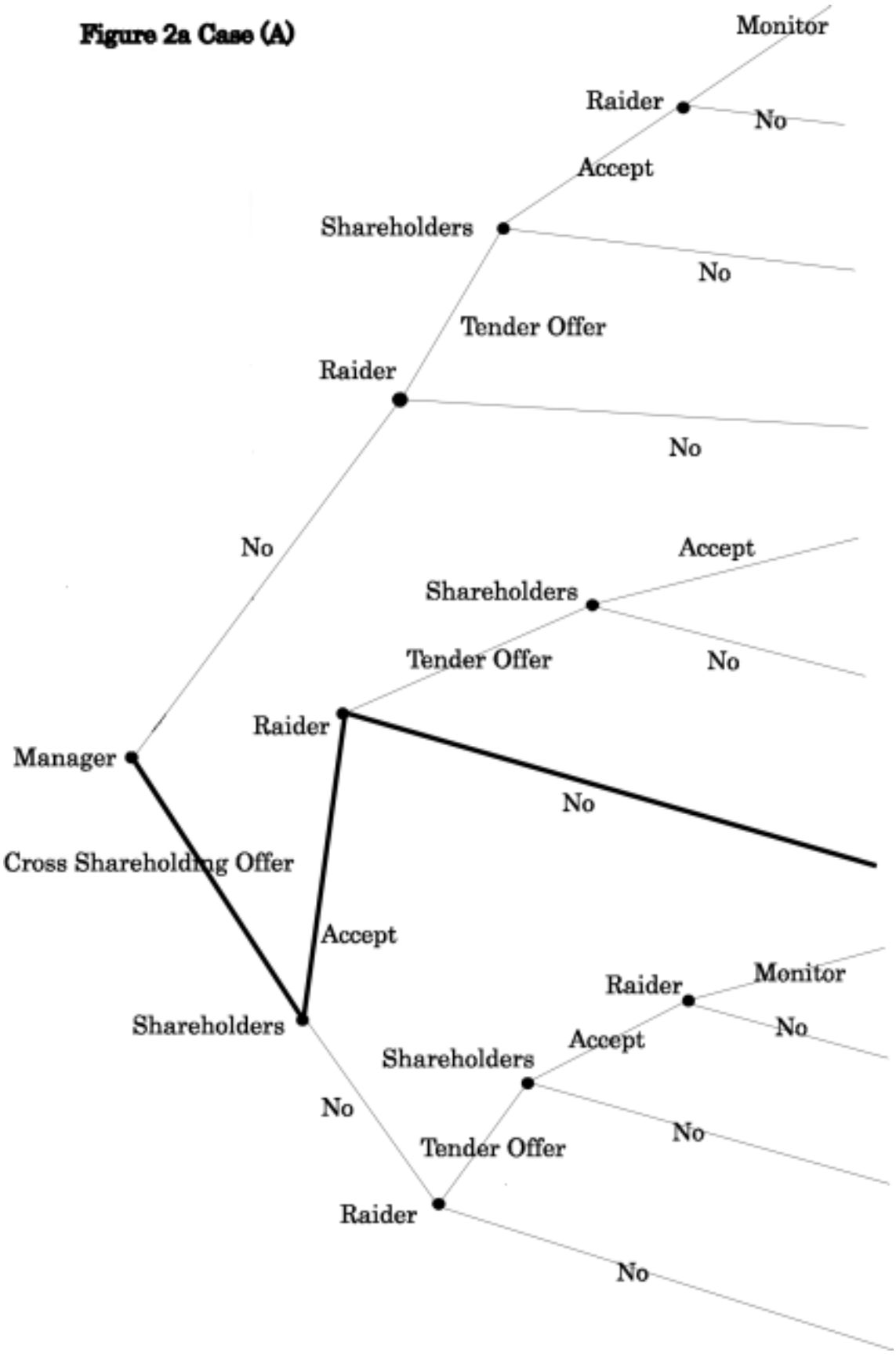


Figure 2b Case (B)

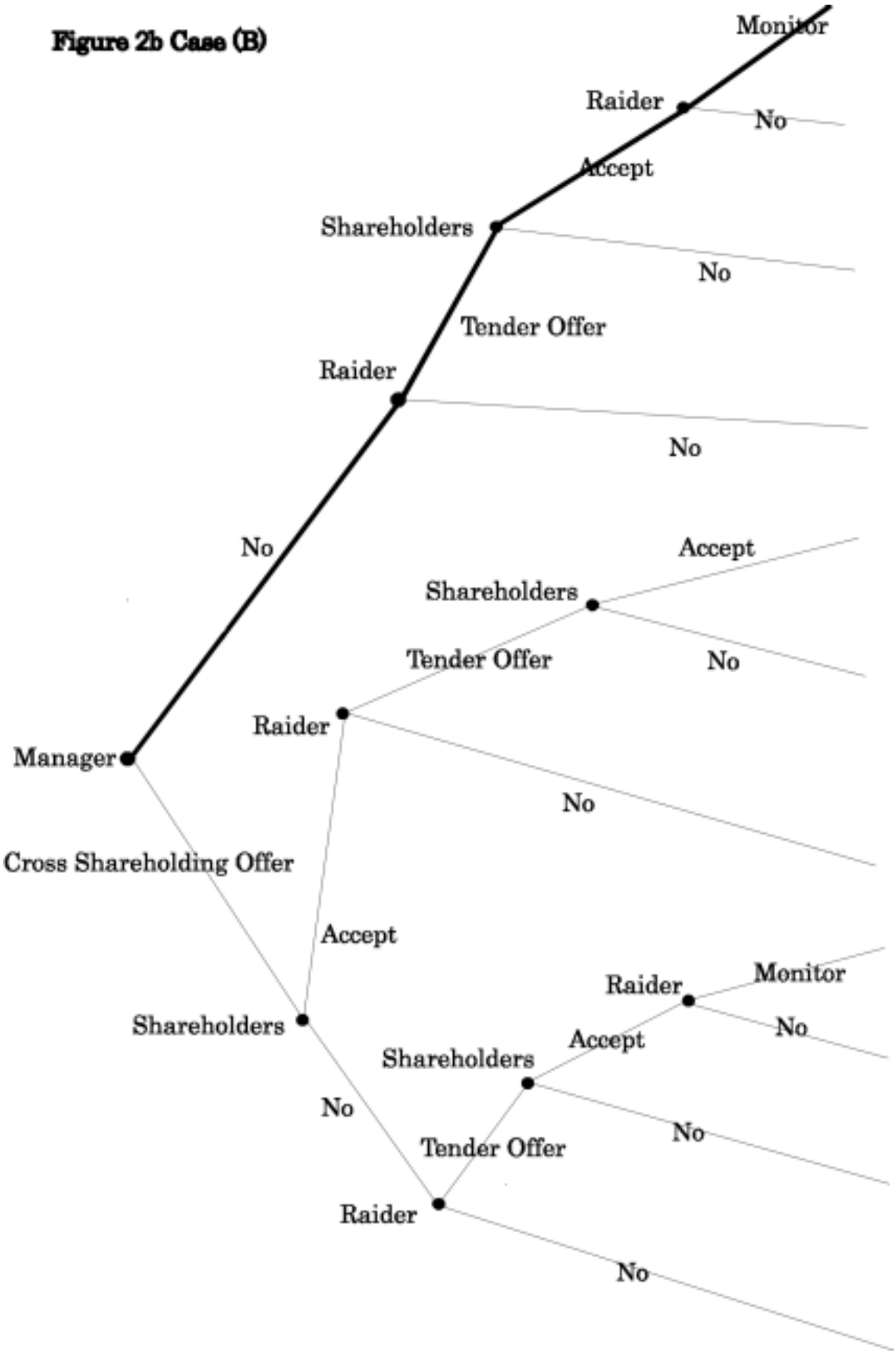


Figure 2c Case (C)

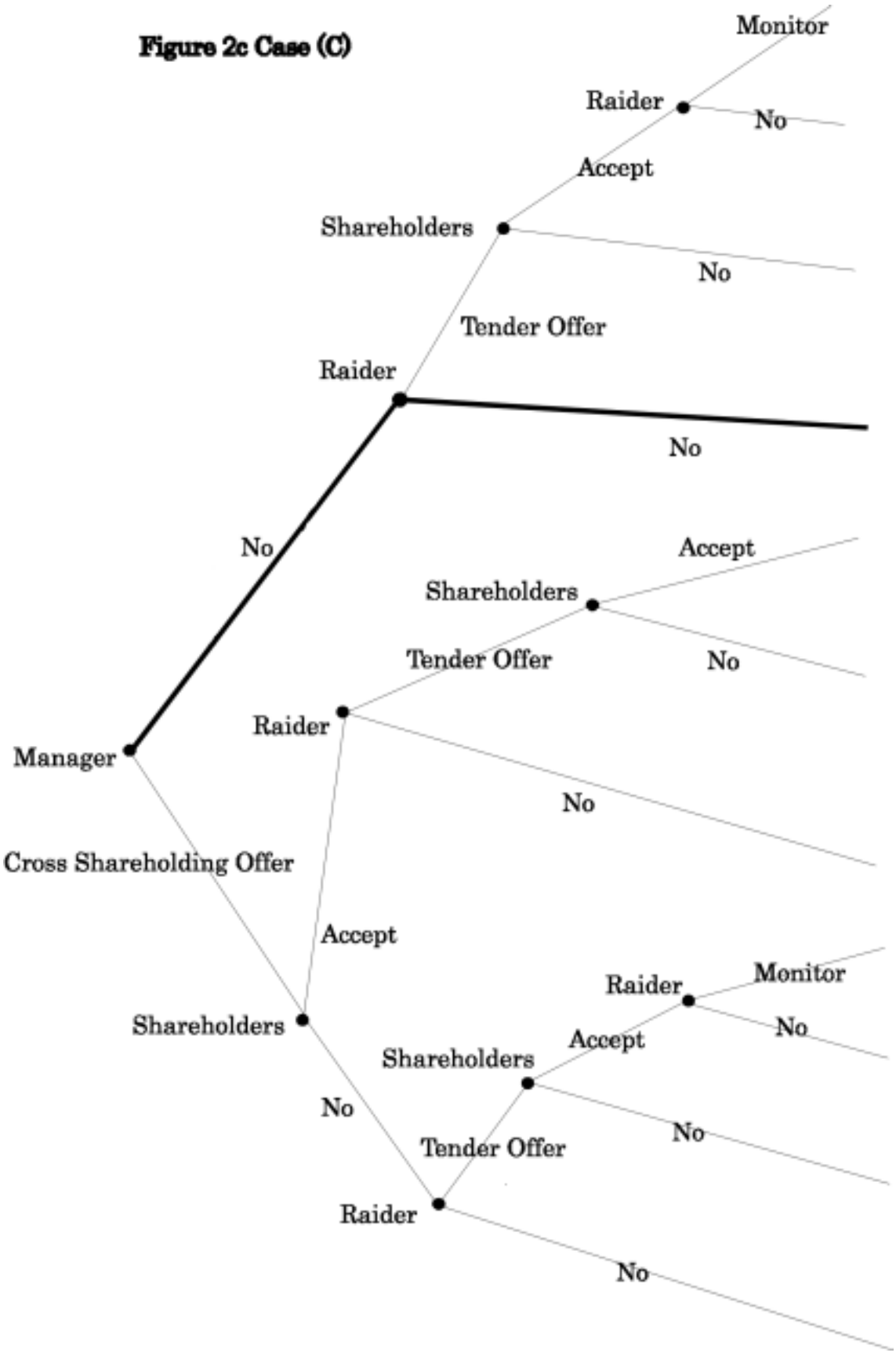
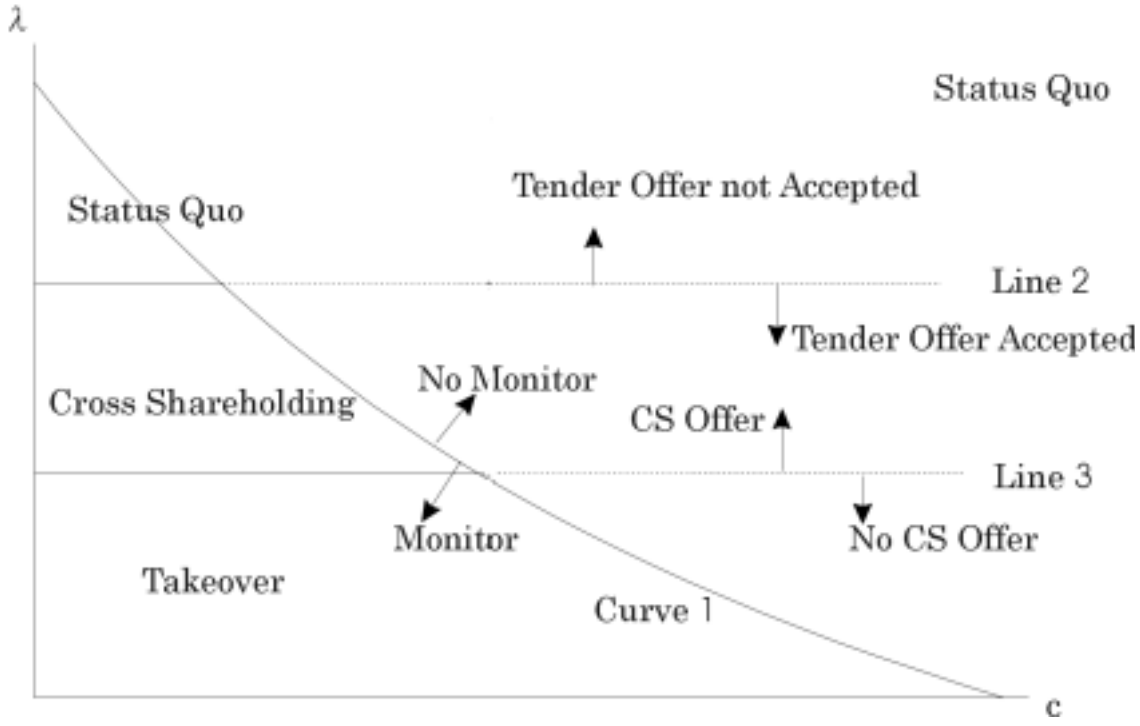


Figure 3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Status Quo
Tender Offer not Accepted
Status Quo
Line 2
Tender Offer Accepted
No Monitor
Cross Shareholding
CS Offer
Line 3
Monitor
No CS Offer
Takeover
Curve 1
c