GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
KOBE UNIVERSITY
ROKKO KOBE JAPAN

2002. 27

Unwinding of Cross Shareholding under Managerial Entrenchment

Nobuyuki Isagawa

Discussion Paper Series

Unwinding of Cross Shareholding under Managerial Entrenchment

Nobuyuki Isagawa

Graduate School of Business Administration
Kobe University
2-1, Rokko, Nada, Kobe, Hyogo
657-8501, Japan

phone & fax: +81-78-803-6907
e-mail: isagawa@rose.rokkodai.kobe-u.ac.jp

1. Introduction

Cross shareholding has long been a prominent feature of Japanese corporate finance. However, since the 1990s, cross shareholdings among Japanese firms have been declining. Kuroki (2001) has reported that the proportion of cross shareholdings in the overall market decreased gradually in the 1990s, from about 17% at the end of 1990 to about 10% at the end of 2000. Ang and Constand (2002) also reported that corporate and financial institution holdings tended to decrease during the 1990s in Japan. Given the recent decline in cross shareholdings, this paper provides a simple entrenchment model in which corporate managers dynamically possess cross shareholdings and then unwind such shareholdings in response to external conditions. Although several studies have focused on cross shareholdings among Japanese firms, little attention has been paid to the theoretical issue of the unwinding of cross shareholdings. This paper is an initial attempt to explore the subject of the unwinding of cross shareholdings explicitly.

There are two interpretations with regard to managerial behavior under conditions of cross shareholding.[1] One interpretation holds that cross shareholding acts as a potential disciplining device in a corporative long-term relationship among member firms. In line with this interpretation, Osano (1996) theoretically showed that cross shareholding plays an important role in avoiding inefficient myopic behavior among managers. Berglof and Perotti (1994) provided a model to show that cross shareholding provides a reciprocal monitoring mechanism among member firms and avoids managerial opportunism. Empirically, Ferris, Kumar, and Sarin (1995) and Douthett and Jung (2001) demonstrated that the magnitude of costs caused by informational asymmetry is lower for *keiretsu* firms than for independent firms. Since cross shareholdings among

[1] Hoshi and Kashyap (2001, Chapter 6) summarize the benefits and costs of cross shareholdings.

keiretsu firms are tighter than those of independent firms, these results are consistent with the hypothesis that cross shareholding is an effective mechanism for corporate operations.

Another interpretation is that cross shareholdings enhance managerial entrenchment and insulate corporate managers from interference by corporate control markets such as hostile takeovers (e.g., Nakatani (1984), Corbett (1994), Sheard (1994), Gilson and Roe (1993), and Morck and Nakamura (1999)). In general, a hostile takeover tends to be more problematic and/or expensive when a target firm engages in cross shareholding, because the shares in cross shareholdings are rarely translated.[2] As a result, member firms attempt to maximize management and employee utility, rather than shareholder utility.[3]

Many empirical studies appear to support the hypothesis that cross shareholding may dampen the disciplinary effectiveness of the markets for corporate control. Nakatani (1984), Prowse (1992), Douthett and Jung (2001), and Ang and Constand (2002) have reported that the profitability of firms in a *keiretsu* group is lower than that of independent firms. Nakatani (1984) and Ang and Constand (2002) also reported that independent firms have higher growth rates than *keiretsu* firms. Nakatani (1984), Brown, Soybel, and Stickney (1994), as well as Gibson (2000), have argued that the average compensation of employees of *keiretsu* firms exceeds that of employees of independent firms. With regard to dividend payments, Nakatani (1984) found that *keiretsu* firms pay fewer dividends than do independent firms. These results, taken together, suggest that firms possessing tight cross shareholdings do not seek to maximize the shareholders'

---

[2] According to Ito (1992) and Morck and Nakamura (1999), one traditional motivation for the formation of cross shareholdings was to prevent hostile takeovers.

[3] In the U.S., Karpoff and Malatesta (1995) showed that an introduction of state anti-takeover legislation was associated with reduced firm value.

wealth.

In addition, Douthett and Jung (2001) reported that *keiretsu* firms have significantly lower management holdings than independent firms. They also noted that *keiretsu* firms are significantly larger than independent firms. For independent firms, Prowse (1992) suggested that the top (individual) shareholders control management so well that firms generate high returns. These findings are consistent with the hypothesis that conflict between management and outside shareholders is more serious in the case of firms with cross shareholdings than in the case of firms without cross shareholdings.[4]

In this paper, corporate strategies regarding cross shareholding and the unwinding of cross shareholding are considered from the perspective of managerial entrenchment. For the reasons mentioned above, it is assumed that cross shareholding is an entrenchment device allowing self-interested managers to pursue their own interests. In the entrenchment model, entrenched managers make decisions about corporate financial policy subject to pressures from the market for corporate control. Such an approach appears to be appropriate for analyzing large listing firms, in which management is separated from ownership. Most Japanese firms that have cross shareholdings share this feature. The managerial entrenched approach has recently been developed in both the empirical corporate finance literature (e.g., Morck, Shleifer, and Vishny (1988) and Berger, Ofek, and Yermack (1997)), and in the theoretical corporate finance literature (e.g., Zweibel (1996), Isagawa (2002), and Novaes (2003)).

In the present study, two firms' strategies of cross shareholding are analyzed. Managers come to a decision about cross shareholding under the potential pressure exerted by the threat of a hostile takeover. A common agency problem takes place

---

[4] In contrast to Ferris, Kumar, and Sarin (1995) and Douthett and Jung (2001), a study by Dewenter, Novaes, and Pettway (2001) reported that the magnitude of informational asymmetry is larger for *keiretsu* firms than for independent firms.

between managers and outside shareholders. The value of a hostile takeover in such a situation equals to the shareholders' losses caused by managerial opportunism. The total cost of a takeover is dependent on whether or not cross shareholding exists. Cross shareholding enhances managerial entrenchment, so that additional costs are incurred during takeover. In this sense, cross shareholding is a desirable entrenchment device for self-interested managers.

When the value of a takeover is relatively small (i.e., when the agency problem between outside shareholders and management is not overly serious), entrenched managers can avoid takeovers by choosing cross shareholding. Cross shareholding raises the cost of a takeover to such an extent that the takeover cannot succeed. In other words, cross shareholding enhances managerial entrenchment and helps managers to avoid pressure from markets for corporate control. Thus, under the conditions of cross shareholding, managers of member firms entrench themselves with each other, thereby rendering it impossible to control managerial opportunism.

On the other hand, when the value of a takeover is relatively large (i.e., when the agency conflict between outside shareholders and management is extremely serious), managers cannot avoid takeovers by engaging in cross shareholding, because the value of a takeover exceeds its cost, even though cross shareholding exists. In such a situation, managers can avoid takeovers by decreasing the value of a takeover rather than by increasing the cost of a takeover. To achieve the goal of a decrease in takeover value, managers voluntarily unwind cross shareholding and relinquish their entrenchment. This option implies that managers cannot pursue their own interests at the cost of the shareholders' wealth, because the managers would be easily replaced by hostile takeovers without entrenchment. Once cross shareholding is unwound, managers have to act to increase the shareholders' wealth in order to retain their managerial positions. Thus, the unwinding of cross shareholding is a credible message from managers that they will not behave opportunistically in the future. Since the value of a takeover

decreases in response to the unwinding of cross shareholding, no hostile takeover occurs. In the present model, managers dynamically change firms' cross shareholding strategies in response to the external conditions that affect the relationship between the cost of a takeover and the value of a takeover.

The present model has several implications regarding cross shareholding and the unwinding of cross shareholding among Japanese firms. First, firms tend to unwind cross shareholdings when the cost of corporate control declines (or the relative value of corporate control increases). As noted earlier, cross shareholdings among Japanese firms declined during the 1990s. During the same period, Japanese financial markets underwent substantial deregulation. For example, commissions on stock transactions were gradually freed in 1994 and 1998, and they were completely freed in 1999. This liberalization directly lowered the transaction costs of hostile takeovers. Thus, the cost of controlling corporations through the financial markets, represented by hostile takeover activity, became lower in the 1990s. The fact that Japanese firms unwound cross shareholdings at a time when corporate control was relatively easy is consistent with the prediction of the model.

Second, the present model predicts that profitability is lower in firms with cross shareholdings than in firms without cross shareholdings. While managers will pursue their own interests under conditions of cross shareholding, they have to act in support of the shareholders' wealth once the cross shareholdings are unwound. As a result, the profitability of firms with cross shareholdings is lower than that of firms without cross shareholdings. This prediction is consistent with the empirical findings cited above. The present model also predicts that stock prices will rise in response to the unwinding of cross shareholdings, as such unwinding is a signal that managers will act to increase the shareholders' wealth.

Third, the present model provides a mean of comparing cross shareholding and self-shareholding (holding treasury stock) from the viewpoint of an anti-takeover device.

Until the 2001 revision of the Commercial Law, Japanese firms were prohibited from possessing treasury stocks. However, since the 2001 revision, Japanese firms have been able to choose between possessing cross shareholdings or self-shareholdings as an anti-takeover device. The present model suggests the conditions under which each of these options might be desirable for entrenched managers.

The remainder of this paper is organized as follows. In Section 2, an entrenchment model is presented. Section 3 demonstrates how to determine the stock price of a firm when cross shareholdings are involved. Section 4 analyzes firms' strategies regarding cross shareholding and the unwinding of cross shareholding in a case in which two firms face the same external conditions. Section 5 analyzes cases in which each of the two firms faces a different condition. In Section 6, several empirical implications of the model are considered. Section 7 concludes the paper.

2. An Entrenchment Model

There are two all-equity firms, firm *a* and firm *b*. Each firm is run by a single entrenched manager (the incumbent manager). The number of outstanding shares of each firm is normalized to one. Without a loss of generality, it is assumed that neither firm has any initial financial slack. All participants are risk-neutral, and the interest rate is zero. For the sake of analytical simplicity, it is assumed that the two firms are identical, and therefore the subscripts representing firm *a* and firm *b* are sometimes omitted.

The sequence of events and decisions, described in Figure 1, are as follows. At date-0, each incumbent manager makes a decision about cross shareholding. If both managers agree on cross shareholding, then each firm issues *n* shares to the other firm. In the current model, the optimal number of shares issued for cross shareholding is not considered. Instead, as described in Berglof and Perotti (1994) and Osano (1996), it is

assumed that each firm holds a $n/(1+n) \equiv \alpha$ $(0<\alpha<1/2)$ fraction of the other firm's shares as a cross shareholding. After observing the firms' decision on cross shareholding, potential raiders decide whether or not to launch takeovers (takeover stage).

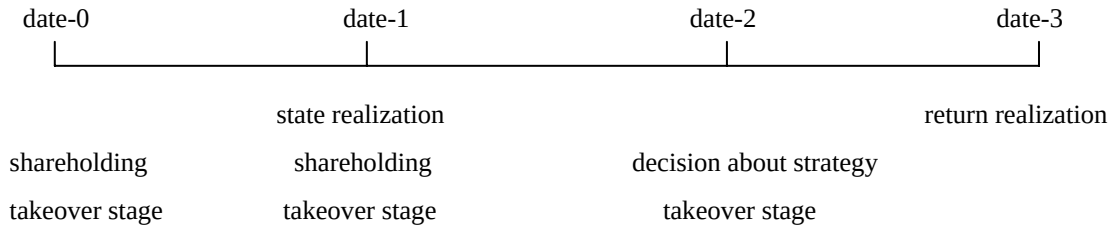

Figure 1. Sequence of Events and Decisions

At date-1, it is commonly revealed whether the product market condition for each firm is good (state *G*) or bad (state *B*). The prior probability of state *G* is θ $(0<\theta<1)$, and that of state *B* is $1-\theta$. In this section and section 4, it is assumed that both firms experience the same state. That is, both firms face state *G* with probability θ, and both firms face state *B* with probability $1-\theta$. In section 5, the case is considered in which each firm experiences a different state.

Knowing the true state, each manager reconsiders the question of whether or not to engage in cross shareholding. If cross shareholding was agreed upon at date-0, but one manager does not wish to maintain it, then the cross shareholding is unwound. In this case, each firm sells the other firm's shares on the market.[5] Note that while cross shareholding is bilateral, the unwinding of cross shareholding is unilateral. If both managers decide to engage in (or maintain) cross shareholding at date-1, then cross

[5] As argued in the introduction, Japanese firms were prohibited from owning their own shares until 2001. In response to this issue, it is assumed in the present model that the firm cannot buy its own shares from the other firm when cross shareholding is unwound.

shareholding will be maintained until date-3. The takeover stage occurs just following the firms' decision regarding cross shareholding as it did at date-0.

At date-2, each manager chooses the firm's operating strategy. There are two possible strategies the incumbent manager could pursue, strategy *M* or strategy *S*. Strategy *M* gives the incumbent manager private benefits, but decreases the shareholders' wealth. In contrast, strategy *S* increases the shareholders' wealth, but gives no private benefits to the incumbent manager. After the manager chooses an operating strategy, the takeover stage occurs as it did at date-0 and date-1.

At date-3, each firm's operating return is realized. The operating return depends on both the state realized at date-1 and the strategy undertaken at date-2. Let X_i denote the operating return conditional on strategy *M* being undertaken in state $i \in \{G, B\}$, and let Y_i denote the operating return conditional on strategy *S* being undertaken in state $i \in \{G, B\}$. Also, let define $\Delta_i \equiv Y_i - X_i$. It is assumed that

$$0 < \Delta_G < \Delta_B < 2\Delta_G . \qquad (1)$$

In assumption (1), $\Delta_i > 0$ ($i=G, B$) indicates that strategy *S* generates a larger return than strategy *M* in both states. In this sense, strategy *S* is more desirable for the shareholders than strategy *M*, regardless of the state realization. The second inequality in (1), $\Delta_G < \Delta_B$, indicates that the difference between the return generated by strategy *S* and that generated by strategy *M* is larger in state *B* than in state *G*. This implies that the shareholders' loss caused by managerial opportunism in state *G* is less than that in state *B*. Therefore, as long as strategy *M* is undertaken, state *G* is desirable for the shareholders. The last inequality is assumed for a technical reason mentioned below.

In the current model, the takeover stage occurs at each date (date-0, date-1, and date-2). If a takeover succeeds, then a new manager replaces the incumbent manager. A new manager, who behaves in support of the shareholders' wealth, always undertakes strategy *S*. However, if strategy *M* has already been undertaken, a switching cost, $Z>0$,

is required to change the firm's operating strategy. It is assumed that

$$\Delta_B - \Delta_G < Z < \Delta_G . \qquad (2)$$

It follows from the third inequality of assumption (1) that there exists a Z that satisfies (2). If the incumbent manager chooses strategy M, then the switching cost decreases the value of the firm, resulting in a decrease in the value of a takeover. Then, the incumbent manager can make a takeover more difficult by investing in strategy M. In the current setting, the managerial investment decision is itself an entrenchment device, as pointed out by Shleifer and Vishny (1989) and Noe and Rebello (1997).

The process of takeover is basically in accordance with the process as described by Zweibel (1996). The value of a takeover is given by the difference between the firm's stock price under an incumbent manager and that under a new manager. The cost of a takeover depends on whether cross shareholding exists or not. Cross shareholding enhances an incumbent manager's entrenchment, which presents an additional cost in the event of a takeover. Formally, the cost of a takeover is C without cross shareholding and $C+E$ under conditions of cross shareholding, where $C \geq 0$ and $E>0$. Cross shareholding increases the cost of a takeover by E. For the sake of simplicity, it is assumed for the present that $C=0$. A takeover succeeds if its value is larger than its cost.

An incumbent manager may act in her own interest in conflict with the shareholders' wealth. An incumbent manager derives utility $A>0$ from being in the same managerial position until the final date (date-3), and utility $B>0$ from completing strategy M. It is assumed that that an incumbent manager does not have any utility if she is replaced by a takeover. For an incumbent manager, to undertake strategy M without a takeover is the best outcome, and to undertake strategy S without a takeover is the second best outcome. To be replaced by a takeover is the worst outcome (i.e., utility is zero). As shown later, no takeover occurs in the equilibrium, because an incumbent manager can avoid a takeover by committing to not undertake strategy M.

3. Cross Shareholding and Stock Price

This section analyzes the stock price of a firm under conditions of cross shareholding, and the stock price that occurs just after the unwinding of cross shareholding. Let $F^j(ch)$ denote the expected operating return of firm $j \in \{a, b\}$ under conditions of cross shareholding. Also let $P^j(ch)$ denote the stock price of firm $j \in \{a, b\}$ under cross shareholding. Firm a has n shares of firm b under cross shareholding, then the total value of the assets of firm a is $F^a(ch)+nP^b(ch)$. Since firm a issues $1+n$ shares,

$$P^a(ch) = [F^a(ch) + nP^b(ch)]/(1+n). \quad (3)$$

Similarly,

$$P^b(ch) = [F^b(ch) + nP^a(ch)]/(1+n). \quad (4)$$

By solving (3) and (4) and using $n/(1+n) \equiv \alpha$, the stock price of firm j under cross shareholding is given by

$$P^j(ch) = [F^j(ch) + \alpha F^k(ch)]/(1+\alpha), \quad j,k \in \{a,b\}, j \neq k. \quad (5)$$

In particular, when two firms have identical expected operating returns as those of the current setting, $F^a(ch)=F^b(ch)$, then,

$$P^j(ch) = [F^j(ch) + \alpha F^j(ch)]/(1+\alpha) = F^j(ch), \quad j \in \{a,b\}. \quad (6)$$

Next, consider the stock price of a firm after cross shareholding has been unwound. Let $F^j(uw)$ denote the expected operating return of firm $j \in \{a, b\}$ just after the unwinding of the cross shareholding. Also let $P^j(uw)$ denote the stock price of firm $j \in \{a, b\}$, conditional on cross shareholding being unwound. When cross shareholding is unwound, firm j sells n shares of the other firm k on the market. Then, the total value of the assets of firm j is $F^j(wh)+nP^k(uw)$. Since the total number of shares is $1+n$, the stock

price of firm j is given by

$$P^j(uw) = [F^j(uw) + nP^k(uw)]/(1+n), \quad j,k \in \{a,b\},\ j \neq k. \tag{7}$$

It follows from (7) that

$$P^j(uw) = [F^j(uw) + \alpha F^k(uw)]/(1+\alpha), \quad j,k \in \{a,b\},\ j \neq k. \tag{8}$$

In particular, when two firms have identical expected returns, the stock price of firm $j \in \{a, b\}$, conditional on cross shareholding being unwound, is given by

$$P^j(uw) = [F^j(uw) + \alpha F^j(uw)]/(1+\alpha) = F^j(uw). \tag{9}$$

It follows from (5) and (8) (or (6) and (9)) that cross shareholding and the unwinding of cross shareholding do not affect the stock price of a firm if the firm's expected operating return is identical in both cases. However, in the present setting, both the operating return and the stock price of a firm change in response to strategies regarding cross shareholding.

4. Cross Shareholding and Unwinding of Cross Shareholding

First, it is assumed that

$$\Delta_G < E < \Delta_B. \tag{10}$$

This section demonstrates that, under (1), (2), and (10), the two firms agree on cross shareholding at date-0, maintain cross shareholding in state *G*, and unwind cross shareholding in state *B*. Since the two firms are completely identical, only one firm is considered and the subscripts of firm $j \in \{a, b\}$ are omitted in this section.

4. 1. Maintaining Cross Shareholding in State *G*

This subsection examines what takes place after state G is realized. Figure 2 illustrates a decision tree in state G. The boldface lines in the Figure correspond to the equilibrium outcome at each decision stage, as argued below. Backwards-induction arguments are used to analyze the equilibrium path.

Suppose that an incumbent manager is still in control and cross shareholding exists at date-2 (see the upper node of T2 in Figure 2). It follows from (6) that the stock price of a firm, conditional on strategy M being undertaken, is equal to X_G. On the other hand, if a takeover occurs and a new manager is employed, then the stock price of a firm is Y_G-Z. Note that a switching cost, Z, is required at date-2 to change the firm's operating strategy. Then, the value of a takeover at date-2 in state G, conditional on cross shareholding being retained, $V_2(G, ch)$, is given by

$$V_2(G, ch) = (Y_G - Z) - X_G = \Delta_G - Z . \tag{11}$$

When cross shareholding exists, the cost of a takeover is E. Since condition (10) implies $V_2(G, ch)<E$, a takeover cannot succeed. Therefore, the incumbent manager undertakes strategy M under conditions of cross shareholding (see the upper node of M2 in Figure 2).

Turning to the date-1 takeover stage (see the upper node of T1 in Figure 2), it follows from the above argument that the stock price of a firm under the incumbent manager, with cross shareholding, is given by X_G. On the other hand, the stock price of a firm changes to Y_G if a new manager is employed. Note that no switching cost is required at date-1, because the firm's operating strategy has not been chosen. Then, the value of a takeover at date-1 under conditions of cross shareholding, $V_1(G, ch)$, is given by

$$V_1(G, ch) = Y_G - X_G = \Delta_G . \tag{12}$$

It follows from (10) that $V_1(G, ch)<E$. Thus, no takeover succeeds in such a situation.

As shown formally in the next subsection, the incumbent manager chooses strategy *S* once cross shareholding is unwound at date-1. It is clear that if strategy *S* has been undertaken or will be undertaken, then the value of a takeover is zero so that no takeover will occur. The boldface lines succeeding the lower node of T1 in Figure 2 represent this outcome.

These results suggest that the incumbent manager can undertake strategy *M* in state *G*, provided cross shareholding still exists. That is, by possessing cross shareholdings, the incumbent manager can achieve the best outcome. Then, both managers make the decision to retain cross shareholding at date-1 after state *G* is realized. Now, the following proposition can be obtained.

Proposition 1. Suppose that (1), (2), and (10) are satisfied. In state *G*, both incumbent managers possess cross shareholdings at date-1 and they undertake strategy *M* at date-2. No takeover occurs in the equilibrium.

4.2. Unwinding Cross Shareholding in State *B*

This subsection examines what occurs after state *B* is realized. A decision tree is illustrated in Figure 3. Suppose that cross shareholdings are maintained and that strategy *M* is undertaken at date-2. By the logic of the same argument as that used in the case of state *G*, the value of a takeover at date-2 under conditions of cross shareholding, $V_2(B, ch)$, is given by

$$V_2(B, ch) = (Y_B - Z) - X_B = \Delta_B - Z . \tag{13}$$

It follows from (2) and (10) that $V_2(B, ch) < \Delta_G < E$. Since the value of a takeover is smaller than its cost, a takeover does not succeed at date-2 (see the upper node of T2 in Figure 3). As a result, the incumbent manager undertakes strategy *M* at date-2 under

conditions of cross shareholding in state *B* (see the upper node of M2 in Figure 3).

However, in contrast to state *G*, in state *B* the incumbent manager is replaced by a takeover at date-1, if the corporate control markets believe that the manager will choose strategy *M*. The reason for this is that the date-1 value of a takeover under conditions of cross shareholding, $V_1(B, ch)=\Delta_B$, is larger than its cost, *E*, when (10) is satisfied. This would be the worst possible outcome for the incumbent manager (see the boldface lines succeeding the upper node of T1 in Figure 3).

In order to avoid a takeover, the incumbent manager has to commit to undertaking strategy *S*. Unwinding of cross shareholdings is an effective strategy to avoid a takeover. Suppose that cross shareholding is unwound at date-1, such that the cost of a takeover becomes zero. The value of a takeover is positive, dependent on strategy *M* being undertaken, which is given by (13); in this case, the incumbent manager is replaced by the date-2 takeover if she undertook strategy *M* (see the lower node of T2 in Figure 3). Therefore, the incumbent manager undertakes strategy *S* after cross shareholding had been unwound at date-1 (see the lower node of M2 in Figure 3). Unwinding of cross shareholding is a credible signal that the incumbent manager will never choose strategy *M*.

Predicting that strategy *S* would be undertaken in the future, there is no reason for the corporate control markets to launch a takeover at date-1 (see the lower node of T1 in Figure 3). The incumbent manager can avoid a hostile takeover by unwinding cross shareholding at date-1. Since this is the second best outcome for the incumbent manager, she chooses to unwind cross shareholding at date-1 (see node M1 in Figure 3). The following proposition summarizes the equilibrium path in state *B*.

Proposition 2. Suppose that (1), (2), and (10) are satisfied. In state *B*, both incumbent managers unwind cross shareholdings at date-1 and undertake strategy *S* at date-2. No takeover occurs in the equilibrium.

The only difference between Figure 2 and Figure 3 is that, conditional on cross shareholding being maintained, a takeover occurs at date-1 in Figure 3, whereas no takeover occurs in Figure 2 (see the upper node of T1 in each Figure). The crucial difference occurs in these cases because condition (10) is satisfied.

Intuitively, condition (10) says that in state *G*, the value of a takeover is relatively small compared to the cost of a takeover, and in state *B*, the value of a takeover is relatively large compared to its cost. The incumbent manager can avoid a hostile takeover by increasing the cost of a takeover in state *G*, because the value of a takeover is relatively small. In state *B*, however, the manager can no longer avoid a takeover by increasing its cost, because the value of a takeover is larger than its cost. In such a situation, the manager has to decrease the value of a takeover in order to retain her current position. Unwinding cross shareholdings is a good way to decrease the value of a takeover. As shown just above, the unwinding of cross shareholding is a credible signal that an opportunistic manager will have to promote the shareholders' wealth in the future.

4.3. Formation of Cross Shareholding at Date-0

Given Propositions 1 and 2, it can be shown that cross shareholding is agreed upon at date-0. Since strategy *M* is undertaken with probability θ, and strategy *S* is undertaken with probability 1-θ, the value of a takeover at date-0, V_0, is equal to $\theta\Delta_G$. It follows from (1) and (10) that

$$0 < V_0 = \theta\Delta_G < E \,. \tag{14}$$

The first inequality indicates that a takeover succeeds if cross shareholding does not exist. The second inequality means that a takeover does not succeed if cross

shareholding exists. It is clear that both managers should agree on cross shareholding in order to avoid a hostile takeover at date-0.

Proposition 3. Cross shareholding is agreed upon at date-0.

In the current setting, two firms possess cross shareholdings at the beginning, and they maintain their cross shareholdings if the product market conditions are good (state *G*), and they unwind their cross shareholdings if the product market conditions are bad (state *B*). Although cross shareholding and the unwinding of cross shareholding are both methods that can help prevent a hostile takeover, the two mechanisms of prevention differ. Cross shareholding prevents a takeover by increasing the cost of the takeover. On the other hand, the unwinding of cross shareholding avoids a takeover by decreasing the value of the takeover.

5. When Each Firm Faces a Different State

This section addresses the case in which each of the two firms faces a different state. Suppose that firm *a* faces state *B* and firm *b* faces state *G* at date-1. First, consider what occurs at date-2. Let $P_2^a(M, M; ch)$ denote the date-2 stock price of firm *a* under cross shareholding, under the condition that strategy *M* is undertaken by both firms. It follows from (5) that

$$P_2^{\,a}(M, M; ch) = \frac{X_B + \alpha X_G}{1+\alpha}. \tag{15}$$

Note that the date-2 value of a takeover for firm *a* is maximized when both firms change their operating strategies from strategy *M* to strategy *S*. Let $P_2^a(S, S)$ denote the date-2 stock price of firm *a*, provided that both firms will change their strategies. It follows from (5) and (8) that, regardless of whether cross shareholding is retained or

not,

$$P_2^{\,a}(S,S) = \frac{Y_B + \alpha Y_G}{1+\alpha} - Z\,. \tag{16}$$

The date-2 takeover value for firm *a* in the above case is denoted by $V_2^a(M, M; ch)$. Then, the following relation is obtained.

$$V_2^{\,a}(M,M;ch) \le P_2^{\,a}(S,S) - P_2^{\,a}(M,M;ch) = \frac{\Delta_B + \alpha\Delta_G}{1+\alpha} - Z < \Delta_B - Z\,. \tag{17}$$

The last inequality follows from assumption (1). Since Δ_B-Z<E under (2) and (10), no takeover can succeed for firm *a*. By using a similar argument, it can be shown that a takeover does not succeed for firm *b* at date-2. These results imply that, under conditions of cross shareholding, both incumbent managers undertake strategy *M* at date-2.

Next, consider what occurs at date-1. Suppose that cross shareholding exists, and a takeover occurs for firm *a*, but does not occur for firm *b*. In this case, a new manager is employed in firm *a* and acts in support of the shareholders' wealth. It is assumed that a new manager would reconsider cross shareholding between date-1 and date-2. In addition, it is assumed that

$$(1+\alpha)Z < \Delta_G\,. \tag{18}$$

If cross shareholding is retained, the incumbent manager of firm *b* chooses strategy *M* because a takeover does not occur at date-2. Then, regarding the issue of the shareholders' wealth, the new manager of firm *a* has no incentive to retain the cross shareholding with firm *b*. If she decides to unwind cross shareholding with firm *b*, then the incumbent manager of firm *b* has no choice but to choose strategy *S* at date-2. To better clarify this point, let $V_2^b(S, M; uw)$ denote the date-2 value of a takeover for firm *b*, provided firm *a* chooses strategy *S*, and the firm *b* chooses strategy *M* after the cross shareholding had been unwound. Note that a new manager of firm *a* always undertakes

strategy *S*. It follows from (8) and (18) that

$$V_2^{\,b}(S, M; uw) = \frac{\Delta_G}{1+\alpha} - Z > 0 . \tag{19}$$

Since the cost of a takeover without cross shareholding is zero, the takeover occurs for firm *b* if the incumbent manager chooses strategy *M*. In order to retain her position, the manager of firm *b* will choose strategy *S* once the cross shareholdings are unwound. Thus, the unwinding of cross shareholding increases the operating return of firm *b*, as does the stock price of firm *a*. It is clear that a new manager of firm *a* will unilaterally unwind cross shareholding before date-2.

Given the above arguments, the date-1 value of a takeover for firm *a* under conditions of cross shareholding when firm *a* faces state *G* and firm *B* faces state *G*, denoted by $V_1^{\,a}(B, G)$, is given by

$$V_1^{\,a}(B, G) = \frac{\Delta_B + \alpha\Delta_G}{1+\alpha} . \tag{20}$$

A similar argument holds for firm *b*. That is, if a takeover succeeds for firm *b* at date-1, then cross shareholding is unwound before date-2 and the manager of firm *a* undertakes strategy *S* (even if the manager is an incumbent). Then, the date-1 value of a takeover of firm *b* in this case, denoted by $V_1^{\,b}(B, G)$, is given by

$$V_1^{\,b}(B, G) = \frac{\Delta_G + \alpha\Delta_B}{1+\alpha} . \tag{21}$$

Since $\Delta_G<\Delta_B$, $V_1^{\,b}(B, G)<V_1^{\,a}(B, G)$ holds.

If $V_1^{\,b}(B, G)<V_1^{\,a}(B, G)<E$, then both incumbent managers can avoid takeovers at date-1 by maintaining cross shareholding. In contrast, if $E<V_1^{\,b}(B, G)<V_1^{\,a}(B, G)$, both managers must unwind their cross shareholdings in order to avoid takeovers. As discussed in the previous section, the unwinding of cross shareholdings becomes a

credible signal that both managers will undertake strategy *S*.[6]

In the case of $V_1^b(B, G)<E<V_1^a(B, G)$, while the manager of firm *b* can avoid a takeover by maintaining cross shareholdings, the manager of firm *a* cannot. In order to avoid a takeover, the manager of firm *a* has to discontinue cross shareholding and commit to not undertake strategy *M* in the future. Since the unwinding of cross shareholding is unilateral, cross shareholding is unwound in this case. After the unwinding of cross shareholding, both managers will undertake strategy *S*. As a result, no takeover occurs at date-1. The same result holds when firm *a* faces state *G* and firm *b* faces state *B*. Then, the following proposition can be obtained.

Proposition 4. Assume that each of two firms faces a different state at date-1. In that case, cross shareholding is maintained if

$$\frac{\Delta_B + \alpha\Delta_G}{1+\alpha} < E < \Delta_B . \tag{22}$$

On the other hand, cross shareholding is unwound if

$$\Delta_G < E < \frac{\Delta_B + \alpha\Delta_G}{1+\alpha} . \tag{23}$$

Lastly, consider what happens at date-0. Suppose that both firms face state *G* with

---

[6] To understand this point formally, consider a situation in which cross shareholding had been unwound at date-1 and both incumbent managers are still in control at date-2. It follows from (8) that the date-2 minimum value of a takeover of firm *a* is $\Delta_B/(1+\alpha)-Z$, and that of firm *b* is $\Delta_G/(1+\alpha)-Z$. The cost of a takeover is zero because cross shareholding was unwound. Since $0<\Delta_G/(1+\alpha)-Z<\Delta_B/(1+\alpha)-Z$ under (18), both managers will be replaced by takeovers if they undertake strategy *M*. In order to avoid takeovers, both managers have no choice but to undertake strategy *S*.

probability θ_{GG}, both firms face state *B* with probability θ_{BB}, firm *a* faces state *G* and firm *b* faces state *B* with probability θ_{GB}, and firm *a* faces state *B* and firm *b* faces state *G* with probability θ_{BG}. Let V_0^j denote the date-0 value of a takeover of firm $j \in \{a, b\}$.

When (23) is satisfied, both managers undertake strategy *M* only if their firms both face state *G* at the same time. Since $0<V_0^j=\theta_{GG}\Delta_G<E$, both incumbent managers agree on cross shareholding in order to avoid takeovers at date-0.

When (22) holds, both managers undertake strategy *S* only if both firms face state *B*; otherwise they undertake strategy *M*. Therefore, for firm *a*,

$$V_0^{\ a} = \theta_{GG}\Delta_G + \theta_{BG}\frac{\Delta_B + \alpha\Delta_G}{1+\alpha} + \theta_{GB}\frac{\Delta_G + \alpha\Delta_B}{1+\alpha} < (1-\theta_{BB})\frac{\Delta_B + \alpha\Delta_G}{1+\alpha}. \qquad (24)$$

The last inequality holds because $\Delta_G<\Delta_B$. It follows from (22) and (24) that $0<V_0^a<E$. Similarly, $0<V_0^b<E$ holds for firm *b*. Therefore, both managers agree on cross shareholding at date-0 as well.

6. Empirical Implications

6.1. Costs of Corporate Control and the Unwinding of Cross Shareholding

In the 1990s, cross shareholding among Japanese firms declined. During the same period, Japanese financial markets experienced substantial deregulation, resulting in the decreased cost of corporate control. Among a series of deregulations, the most important one could affect the potential of corporate control might be the liberalization of commissions on stock transactions. In 1994, commissions on stock transactions of over 1 billion Yen were freed, and then in 1998, those of over 50 million Yen were freed. Then, in 1999, fixed brokerage commissions were freed on stock transactions of all amounts. The liberalization of commissions on equity transactions directly lowered the cost of takeovers. In addition, in the process of the Japanese “Big Bang”, many other

restrictions of financial markets were removed. According to an argument presented by Gibson (2000, p.309), Big Bang deregulation could push the Japanese financial system in the right direction by focusing on strengthening corporate governance. Thus, in the 1990s, corporate control through financial markets, represented by hostile takeover activity, was becoming easy for outside shareholders.

At first glance, it may appear curious that corporate managers decided to unwind cross shareholdings at a time when the costs of corporate control were relatively low. The current model provides a plausible answer to this puzzle. That is, in this model, entrenched managers have no choice but to unwind cross shareholdings (i.e., relinquish their entrenchment) in order to retain their positions when the cost of a takeover decreases compared to the value of a takeover. As shown in Section 4, the unwinding of cross shareholding is a commitment that managers will not pursue their own interests at the cost of the shareholders' wealth. This commitment decreases the value of a takeover, so that no takeover occurs and managers can retain their positions. Thus, the present model suggests that the lower the cost of a takeover, the more frequently cross shareholdings are unwound.

To understand this point formally, consider the situation analyzed in Section 4. Suppose that the cost of a takeover without cross shareholding, C, is positive and satisfies the following equation:

$$\Delta_G < E < \Delta_B < C + E \,. \tag{25}$$

Since the cost of a takeover under conditions of cross shareholding, $C+E$, is larger than its value, no takeover occurs, regardless of any managerial decision regarding the firm's operating strategy. In such a situation, both incumbent managers always maintain cross shareholdings and choose strategy M at date-2. In particular, cross shareholding is not unwound, even after state B is realized.

Suppose that the deregulation of financial markets decreases C to zero. As shown in

Section 4, cross shareholding is unwound in state *B* when *C*=0. Thus, as the cost of a takeover decreases, cross shareholding is likely to be unwound. This scenario accounts for why cross shareholdings among Japanese firms have declined at a time when the deregulation of financial markets has been promoted.

6.2. Firm Profitability and Stock Price Behavior

The present model predicts that cross shareholdings are not desirable in terms of firm profitability. This is because cross shareholding can weaken pressures from corporate control markets, such that managers tend to pursue their own interests at the cost of the shareholders' wealth. The tighter the cross shareholding is, the less profitability a firm will experience. Empirically, Nakatani (1984), Prowse (1992), Douthett and Jung (2001), and Ang and Constand (2002) found that, on average, the profitability of *keiretsu* firms is lower than that of non-*keiretsu* firms. Nakatani (1984) and Ang and Constand (2002) also found that the average growth rate of a firm's operating performance is lower for *keiretsu* members than for non-*keiretsu* members. In particular, the study of Ang and Constand (2002) covered a period that included 1984 -1997, and therefore both the lower profitability and the slower growth rate of *keiretsu* firms were long-term. Since cross shareholdings among *keiretsu* firms are tighter than those of non-*keiretsu* firms, these findings are consistent with the predictions made by the present model.

With regard to stock price behavior, the present model predicts that stock prices will rise in response to news of the unwinding of cross shareholdings. In the present model, as suggested by Proposition 2 and Proposition 4, the unwinding of cross shareholdings is a signal that managers will pursue the shareholders' wealth in the future.

6.3. Cross Shareholding and Self-Shareholding as an Entrenchment Device

Japanese firms have been prohibited from possessing their own shares as treasury stocks. However, the 2001 revision of Commercial Law enabled firms to possess treasury stocks. Now, managers of Japanese firms can engage in self-shareholding as well as in cross shareholding as an entrenchment device.[7] The present model provides insights regarding the difference between cross shareholdings and self-shareholdings (i.e., possessing treasury stocks) as a financial instrument for managerial entrenchment.

Suppose that each firm uses self-shareholding as an anti-takeover device. For example, a firm can own α fraction of its own shares by issuing and repurchasing n shares at the same time. Then, it follows from the results in Section 4 that each firm holds its own shares at the beginning, maintains self-shareholding in state G, and relinquishes self-shareholding in state B. Therefore, the incumbent manager of a firm can achieve her best outcome, undertaking strategy M without takeover, with probability θ under conditions of self-shareholding. On the other hand, it follows from Proposition 4 that a manager of a firm can achieve the best outcome with probability $\theta_{GG}+\theta_{GB}+\theta_{BG}$ when (22) holds, and with probability θ_{GG} when (23) holds.

Consider the situation in which each manager chooses self-shareholding as well as cross shareholding. Since $\theta \geq \theta_{GG}$ and $1-\theta \geq \theta_{BB}$, it is clear that cross shareholding is a better entrenchment device when (22) holds. On the other hand, self-shareholding is a better entrenchment device when (23) holds. In the former case, cross shareholding is preferable to self-shareholding because the incumbent manager can undertake strategy M as long as the other firm experiences state G. For example, suppose that firm a faces state B and firm b faces state G. While the manager of firm a must give up self-shareholding and undertake strategy S under conditions of self-shareholding, she

---

[7] Stulz (1988) has shown that an increase in the fraction of shares controlled by management (e.g., treasury stocks) decreases the probability of the occurrence of a hostile takeover.

can undertake strategy *M* under conditions of cross shareholding. This is because the value of a takeover under conditions of cross shareholding is smaller than the value of a takeover under self-shareholding. In other words, the stock price under cross shareholding is larger than the stock price under self-shareholding. The manager of firm *a* can avoid an extreme stock price decline by investing in firm *b*. This effect can be interpreted as a cross shareholdings diversification effect. Nakatani (1984) and Douthett and Jung (2001) have found that *keiretsu* firms perform in more stable manner than do independent firms.

Equations (22) and (23) show under what conditions a firm tends to choose cross shareholding rather than self-shareholding. First, when the cost of a takeover, *E*, is larger (smaller), a firm will tend to choose cross shareholding (self-shareholding). Second, note that

$$\Delta_B - \frac{\Delta_B + \alpha\Delta_G}{1+\alpha} = \frac{\alpha(\Delta_B - \Delta_G)}{1+\alpha}. \tag{26}$$

Then, all other things being equal, it can be concluded that the larger the α, the larger the set of parameters satisfying (22). Under such parameters, a firm chooses cross shareholding. When a firm has more cash in hand, it can buy more shares issued by other firms. When initial managerial entrenchment (or discretion) is greater, the manager can use more free cash to obtain other firms' shares. The present model predicts that a firm belonging to such a category will prefer cross shareholding to self-shareholding.

7. Conclusion

This paper proposes a motivation for corporate management to possess cross shareholdings and, in particular, to unwind cross shareholdings. While cross shareholding enhances managerial entrenchment and insulates corporate management

from the potential threat of a takeover, the increased agency spending associated with managerial entrenchment increases incentives for a hostile takeover. In particular, when the cost of a takeover is relatively small compared to its value, maintaining cross shareholding leads to managerial opportunistic behavior, and a hostile takeover can occur. In order to avoid a takeover, corporate management must commit to not behaving opportunistically by unwinding cross shareholding. Since the unwinding of cross shareholding is a credible signal that management will pursue the shareholders' wealth in the future, the stock price of a firm will increase, and a takeover will not occur.

The present model accounts for why Japanese firms have unwound cross shareholdings at a time when the Japanese financial markets experienced substantial deregulation, resulting in a decrease in the cost of corporate control.

In this paper, it is assumed that cross shareholding decreases the effectiveness of firm performance, because managements under conditions of cross shareholding may protect each other in the markets for corporate control and pursue their own interests at the shareholders' expense. In such a situation, if the shareholders practice discretion with regard to the firms' financial policy, it is agreed upon that no cross shareholding will take place. From this perspective, it can be seen that corporate financial policy, including the ownership structure itself, creates a conflict between management and shareholders.

[2002.10.18 631]

References

Ang, J., and R. Constand, 2002, The Portfolio Behavior of Japanese Corporations' Stable Shareholders, *Journal of Multinational Financial Management* 12, 89-106.

Berger, P., E. Ofek, and D. Yermack, 1997, Managerial Entrenchment and Capital

Structure Decisions, *Journal of Finance* 52, 1411-1438.

Berglof, E., and E. Perotti, 1994, The Governance Structure of the Japanese Financial Keiretsu, *Journal of Financial Economics* 36, 259-284.

Brown, P., V. Soybel, and C. Stickney, 1994, Comparing U.S. and Japanese Corporate Level Operating Performance Using Financial Statement Data, *Strategic Management Journal* 15, 75-83.

Corbett, J., 1994, An overview of the Japanese Financial System, in N. Dimsdale and M. Prevezer, ed., *Capital Market and Corporate Governance*, Oxford University Press, Oxford.

Dewenter, K., W. Novaes, and R. Pettway, Visibility versus Complexity in Business Groups: Evidence from Japanese *Keiretsu*, *Journal of Business* 74, 79-100.

Douthett, E., and K. Jung, 2001, Japanese Corporate Groupings (*Keiretsu*) and the Informativeness of Earnings, *Journal of International Financial Management and Accounting* 12, 133-159.

Ferris, S., R. Kumar, and A. Sarin, 1995, The Role of Corporate Groupings in Controlling Agency Conflicts: The Case of *Keiretsu*, *Pacific-Basin Finance Journal* 3, 319-335.

Gibson, M., 2000, Big Bang Deregulation and Japanese Corporate Governance: A Survey of the Issues, in T. Hoshi, and H. Patrick ed., *Crisis and Change in the Japanese Financial System*, Kluwer Academic Publishers.

Gilson, R., and M. Roe, 1993, Understanding the Japanese Keiretsu: Overlaps between Corporate Governance and Industrial Organization, *The Yale Law Journal* 102, 871-906.

Hoshi, T., and A., Kashyap, 2001, *Corporate Financing and Governance in Japan*, MIT Press.

Isagawa, N., 2002, Callable Convertible Debt under Managerial Entrenchment, *Journal of Corporate Finance* 8, 255-270.

Ito, T., 1992, *The Japanese Economy*, MIT Press.

Karpoff, J., and P. Malatesta, 1995, State Takeover Legislation and Share Values: The wealth Effects of Pennsylvania's Act 36, *Journal of Corporate Finance* 1, 367-382.

Kuroki, F., 2001, The Present Status of Unwinding of Cross-shareholding: The Fiscal 2000 Survey of Cross-shareholding, NLI Research Paper No. 157, NLI Research Institute.

Morck, R., and M. Nakamura, 1999, Banks and Corporate Control in Japan, *Journal of Finance* 54, 319-339.

Morck, R., A. Shleifer, and R. Vishny, 1988, Management Ownership and Market Valuation: An Empirical Analysis, *Journal* of *Financial Economics* 20, 293-315.

Nakatani, I., 1984, The Economic role of Financial Corporate Grouping, in M. Aoki ed., *Economic Analysis of the Japanese Firm*, Elsevier, New York.

Noe, T., and M. Rebello, 1997, Renegotiation, Investment Horizons, and Managerial Discretion, *Journal of Business* 70, 385-407.

Novaes, W., 2003, Capital Structure Choice When Managers Are in Control: Entrenchment versus Efficiency, *Journal of Business* 76, 49-82.

Osano, H., 1996, Intercorporate Shareholdings and Corporate Control in the Japanese Firm, *Journal of Banking and Finance* 20, 1047-1068.

Prowse, S., 1992, The Structure of Corporate Ownership in Japan, *Journal of Finance* 47, 1121-1140.

Sheard, P., 1994, Interlocking Shareholdings and Corporate Governance, in Aoki M, and R. Dore, eds., *The Japanese Firm*: *the Sources of Competitive Strength*, Oxford University Press.

Shleifer, A., and R. Vishny, 1989, Management Entrenchment, The Case of Manager-Specific Investment, *Journal of Financial Economics* 25, 123-139.

Stulz, R., 1988, Managerial Control of Voting Rights: Financial Policies and the Market for Corporate Control, *Journal of Financial Economics* 20, 25-54.

Zwiebel, J., 1996, Dynamic Capital Structure under Managerial Entrenchment, *American Economic Review* 86, 1197-1215.

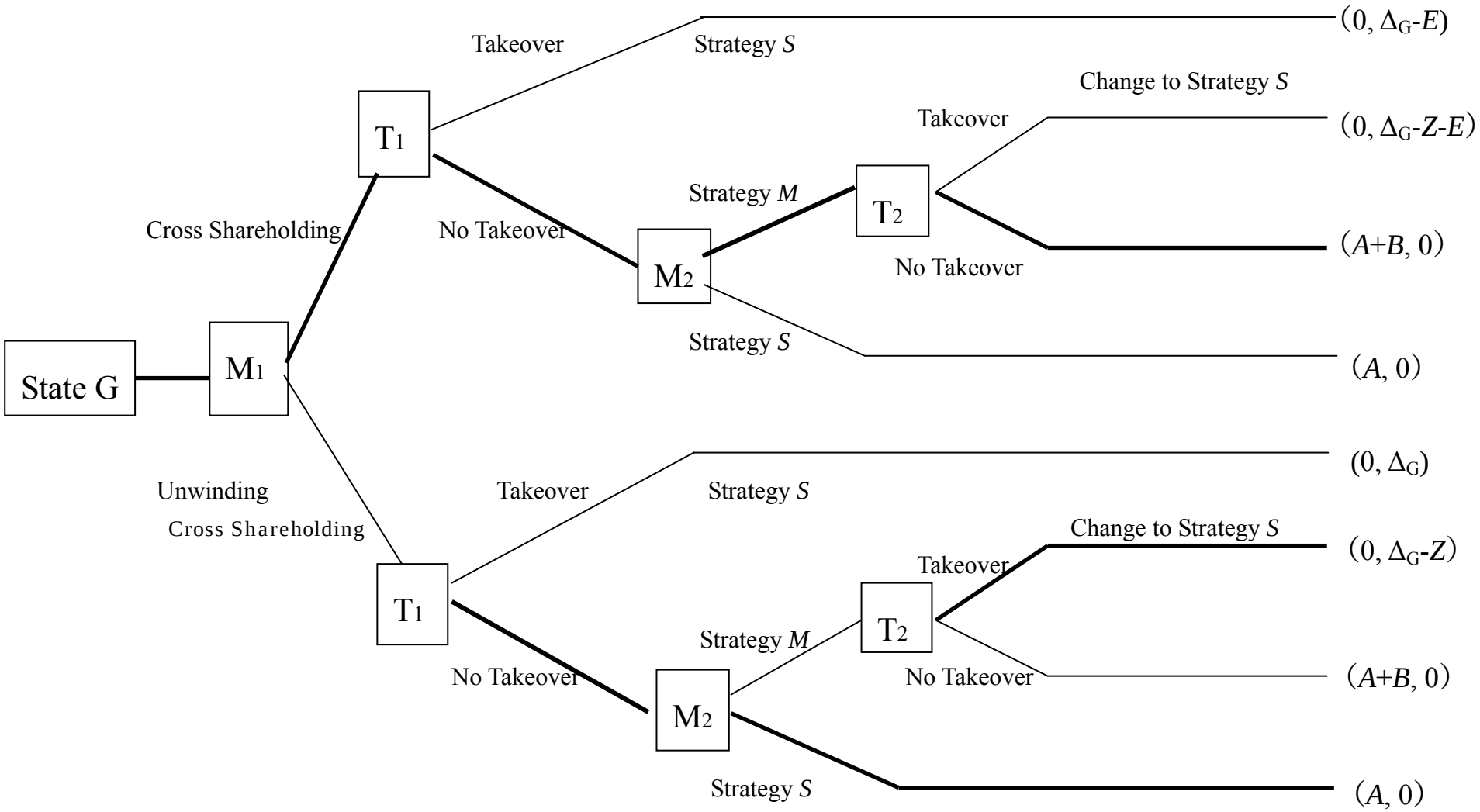

Figure 2: A Decision Tree in State G

M1 is the date-1 manager's decision stage regarding cross shareholding, T1 is the date-1 takeover stage, M2 is the date-2 manager's decision stage regarding firm's operating strategy, and T2 is the date-2 takeover stage. The first term in parenthesis at terminal nodes is the incumbent manager's payoff, and the second one is the net value of a takeover (value minus cost). The net value of a takeover is zero if no takeover occurs. All bold lines represent the equilibrium outcome at each stage.

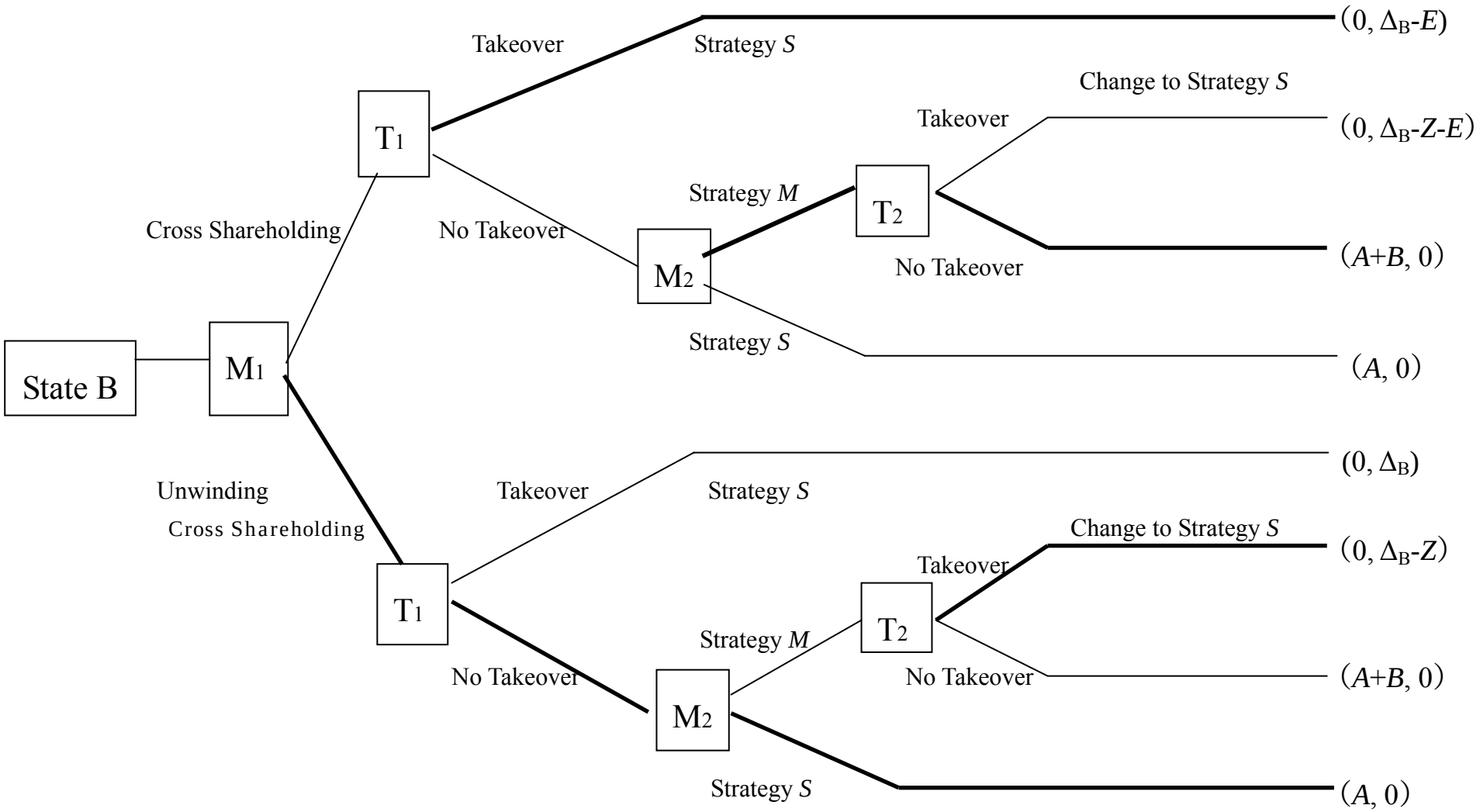

Figure 3: A Decision Tree in State B

M1 is the date-1 manager's decision stage regarding cross shareholding, T1 is the date-1 takeover stage, M2 is the date-2 manager's decision stage regarding firm's operating strategy, and T2 is the date-2 takeover stage. The first term in parenthesis at terminal nodes is the incumbent manager's payoff, and the second one is the net value of a takeover (value minus cost). The net value of a takeover is zero if no takeover occurs. All bold lines represent the equilibrium outcome at each stage.

Discussion Paper

No.	Author	Title		Date
2001・1	Takashi Hatakeda Nobuyuki Isagawa	Stock Price Behavior Surrounding Repurchase Announcements: Evidence from Japan		1／2001
2001・2	Michiyasu Nakajima Takeshi Mizuguchi Katsuhiko Kokubu Yasushi Onishi	Material Flow Cost Accounting of IMU (October 2000)	(in Japanese)	1／2001
2001・3	Koji Okubayashi	Japanese Manufacturers Without Factories: Cases of Sony, Matsushita, Misumi, People		1／2001
2001・4	Katsuhiko Kokubu Akihiro Noda Yasushi Onishi Tomomi Shinabe	Determinants of Environmental Report Publication in Japanese Companies		2／2001
2001・5	Kunio Miyashita	Logistics Strategy of Japanese Port Management		2／2001
2001・6	Akinobu Sakashita	Issues and Method of Organizational Culture Studies: Functionalism Approach	(in Japanese)	3／2001
2001・7	KOKUBU, Katsuhiko NASHIOKA, Eriko DAIKUHARA, Rie	Environmental Accounting in Japanese Companies as of November 2000	(in Japanese)	3／2001
2001・8	KOKUBU, Katsuhiko KURASAKA, Tomoko	Corporate Environmental Accounting: A Japanese Perspective		3／2001
2001・9	Shuzo Murata	The Comparative Study of Japanese & U.S. Companies (6) The Health & Long Term Care-The Management Education	(in Japanese)	4／2001
2001・10	Makoto Yano Fumio Dei	A Trade Model with Vertical Production Chain and Competition Policy in the Downstream Sector		12／2000
2001・11	Mahito Okura	Risk Classification: A Study of the Tradeoff between Quantity and Quality of Insured	(in Japanese)	5／2001
2001・12	Mahito Okura	Is the Separating Equilibrium Really Desirable?	(in Japanese)	5／2001
2001・13	Shuzo Murata	The Comparative Study of Japanese & U.S. Companies (5) The Conflict Among Companies	(in Japanese)	6／2001
2001・14	Koji Okubayashi Toshinori Takashina	Research Report on the relations between the re-employment process and former job career at the compulsory retirement of workers of a firm	(in Japanese)	7／2001
2001・15	Takuji Hara	The Social Shaping of Medicines	(in Japanese)	7／2001
2001・16	Shuzo Murata	The Comparative Study of Japanese & U.S. Companies (7) Toward Restructuring Japanese Corporations	(in Japanese)	7／2001
2001・17	Norio Kambayashi	Cultural influences on IT usage among workers: a UK-Japanese comparison		7／2001
2001・18	Yuichi Fukuta	A Test for Rational Bubbles in Stock Prices		7／2001
2001・19	Kazuhiro Tanaka Kentaro Nobeoka	Toward the Effective Reform of Japanese Corporate Governance	(in Japanese)	7／2001
2001・20	Kazuhiro Tanaka	Structural Changes in Top Management—The Effect of Corporate Governance Reform in Japan	(in Japanese)	7／2001
2001・21	Mahito Okura	In the Separating Equilibrium Really Desirable ? —revised version of No.2001・12—	(in Japanese)	8／2001
2001・22	Kazuhiro Tanaka	Introduction to Corporate Governance	(in Japanese)	8／2001
2001・23	Mahito Okura	The Role of Some Insurance Contracts in a Subjective Equilibrium Model with Observable Effort	(in Japanese)	8／2001
2001・24	Katsuhiko Kokubu Akihiro Noda Yasushi Onishi Tomomi Shinabe Akira Higashida	Environmental Disclosure of Japanese companies	(in Japanese)	8／2001

Discussion Paper

No.	Author	Title		Date
2001・25	Katsuhiko Kokubu Tomomi Shinabe Akira Higashida Yasushi Onishi Akihiro Noda	Environmental Reporting of Japanese companies	(in Japanese)	8／2001
2001・26	Katsuhiko Kokubu Eriko Nashioka	Environmental Accounting of Japanese companies	(in Japanese)	8／2001
2001・27	Masakazu Takagi	Elementary Study of East Asian Corporate and Management System		9／2001
2001・28	Mahito Okura	Vertical Differentiation in the Insurance Market	(in Japanese)	9／2001
2001・29	Atsushi Takao	A Study on the Penetration Process of Modern Insurance by Evolutionary Economics—Why do the Modern Insurance and the Premodern Mutual Society coexist?—	(in Japanese)	9／2001
2001・30	Mahito Okura	An Essay in the Economics of Post-loss Minimisation: An Analysis of the Effectiveness of the Insurance Law and Clauses		9／2001
2001・31	Masakazu Takagi	Co-operation between Hanshin(Osaka-Kobe) Area and South-east Asia-Finding business opportunities of mutual benefits	(in Japanese)	9／2001
2001・32	Norio Kambayashi Harry Scarbrough	Cultural influences on IT use amongst factory managers：A UK-Japanese comparison		10／2001
2001・33	Fumitoshi Mizutani Shuji Uranishi	The Post Office vs. Parcel Delivery Companies：Competition Effects on Costs and Productivity		10／2001
2001・34	Mahito Okura	An Essay in the Economics of Post-loss Minimisation: An Analysis of the Effectiveness of the Insurance Law and Clauses —revised version of No.2001・30—		11／2001
2001・35	Tsutomu Harada	An Examination of IT Paradox in Japan	(in Japanese)	11／2001
2001・36	Nobuyuki Isagawa	Open-Market Repurchase Announcements, Actual Repurchases, and Stock Price Behavior in Inefficient markets		12／2001
2001・37	Nobuyuki Isagawa	Corporate Financial Strategy and Stock Price Behavior in a Noise Trader Model with Limited Arbitrage		12／2001
2002・1	Nobuyuki Isagawa	Cross Holding of Shares, Unwinding Cross Holding of Shares, and Managerial Entrenchment	(in Japanese)	1／ 2002
2002・2	Nobuyuki Isagawa	A Theory of Stock Price Behavior following Repurchase Announcements	(in Japanese)	1／ 2002
2002・3	Mahito Okura	An Equilibrium Analysis of the Insurance Market with Vertical Differentiation		2／2002
2002・4	Elmer Sterken Ichiro Tokutsu	What are the determinants of the number of bank relations of Japanese firms?		3／2002
2002・5	Mahito Okura	Review Article：Adverse Selection in Insurance Market	(in Japanese)	3／2002
2002・6	Mahito Okura	Welfare Effect of Firm Size in Insurance Market		3／2002
2002・7	Nobuyuki Isagawa	Does Investment Horison Affect Investment Strategy ?	(in Japanese)	3／2002
2002・8	Koji Okubayashi Toshinori Takashina	Research Report of Careers and Employment Process of Workers over 60 years old :a Case of a Japnaese Manufacturing Company	(in Japnaese)	4／2002
2002・9	Hajime Shimizu	On the Existence of Tax Equilibrium : Incomplete Market with Capital Income Tax	(in Japnaese)	4／2002
2002・10	Nobuyuki Isagawa	Cost of Financial Distress and Debt Restructuring : Debt Forgiveness and Equity-for-Debt Swap	(in Japnaese)	4／2002
2002・11	Nobuyuki Isagawa	Open-Market Repurchase Announcements, Actual Repurchases, and Stock Price Behavior in Inefficient Markets —revised version of No.2001・36—		5／2002

Discussion Paper

No.	Author	Title		Date
2002・12	Kenji Kutsuna Richard Smith	Why Does Book Building Drive Out Auction Methods of IPO Issuance? Evidence and Implications from Japan		5／2002
2002・13	Kunio Miyashita	International Logistics and Modal Choice		6／2002
2002・14	Hajime Shimizu	Incomplete markets with capital income tax and public goods	(in Japnaese)	6／2002
2002・15	Hajime Shimizu	On the possibility of Pareto improving of tax-equilibrium	(in Japnaese)	6／2002
2002・16	Koji Okubayashi	China-Japan Comparison of Work Organization		7／2002
2002・17	Fumitoshi Mizutani Shuji Uranishi	The Post Office vs. Parcel Delivery Companies: Competition Effects on Costs and Productivity —revised version of No.2001・33—		7／2002
2002・18	Kazuhisa Otogawa	Earnings Forecast and Earnings Management of Japanese Initial Public Offerings Firms		8／2002
2002・19	Atsuo Takenaka	The Classification of Foreign R&D Units	(in Japanese)	8／2002
2002・20	Tsuneo Nakano	The Dutch East India Company and its Corporate Governance —revised version of No.2000・40—	(in Japanese)	8／2002
2002・21	Tsuneo Nakano	The British East India Company and its Corporate Governance	(in Japanese)	8／2002
2002・22	Fumitoshi Mizutani Shuji Uranishi	Privatization Effects on TFP Growth and Capital Adjustments		8／2002
2002・23	Atsushi Takao Mahito Okura	Some Notes on the Privatization of Postal Life Insurance in Japan	(in Japanese)	9／2002
2002・24	Fumitoshi Mizutani	Privately Owned Railways' Cost Function, Organization Size and Ownership		9／2002
2002・25	Fumitoshi Mizutani Takuya Urakami	A Private-Public Comaprison of Bus Service Operators		9／2002
2002・26	Yasuyuki Miyahara	Principal-Multiagent Relationships with Costly Monitoring		10／2002
2002・27	Nobuyuki Isagawa	Unwinding of Cross Shareholding under Managerial Entrenchment		10／2002