Separation of CEO and Board: A Comparison of the U.S. and Japan*

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Abstract

This paper refutes the pervasive claim that the separation of management from the board of directors is necessary to enhance board monitoring. Specifically, I develop a theoretical model of the relationship between a board and a CEO to compare two governance systems, one in which the board consists entirely of independent directors and the other in which the board consists of no independent directors. I show that the latter system produces stronger monitoring than the former system under a plausible condition: a private benefit of a CEO being higher than a pay of each director. Moreover, the former system is interpreted as the U.S. system and the latter system is the traditional Japanese system. This motivates me to a further investigation of why have Japanese boards been claimed to monitor less than the U.S. boards. I provide an answer to this question by discussing Japanese governance system in light of its legal system and practices.

Keywords: Corporate Governance; The Board of Directors; Monitoring; The U.S. System; The Traditional Japanese System; The Expected Loss "Leak"

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1 Introduction

This paper shows that boards that are separate from the CEO do not necessarily produce more monitoring than boards that are related to the CEO.[1] After a series of corporate scandals, the laws have been amended in many countries, including the U.S. and Japan, to remedy defects of the corporate governance systems that could not prevent abuses in management. To be more precise, in order to prevent the future misconduct of CEOs, the number of independent directors has been increased to build boards that can produce strong monitoring. For simplicity, I define independent directors as directors who are not allowed to become CEO, which is a concept contrasted with internal directors, whom I define as directors serving on the board and qualified to become CEO.[2] Since no independent directors can become CEO while he is serving as *independent*, their presence on the board provides the opportunity to separate the board from management. This is one of the reasons why many policy makers and lawyers believe that the presence of independent directors will induce separation and hence enhance board monitoring of CEOs, so have incorporated them in laws.

My question is, does separation of the board and the CEO, generated by the presence of independent directors, always render the board a strong monitoring device? In other words, does shutting the channel to become CEO through the board of directors improve board's monitoring role? To address this issue, I consider two alternative systems; one whose board consists solely of independent directors and the other whose board consists solely of internal directors. Specifically, I consider substantive models for each case. That is, as the former system I consider the U.S. system, and as the latter system I consider the traditional Japanese system.[3] As a result of a comparison of the two alternative systems, I find that the answer to the question posed above is no; I find that the board with independent directors produces weaker monitoring as versus the board composed of all inside directors when the private benefit

[1] The term "Monitoring" in this paper is used to mean "learning CEO's talent" or "evaluating CEO decisions." I thank Eric Rasmusen for this point. However, in my model, in the case the board updates the CEO's talent by observing a bad signal, the expected corporate value is reduced. In this case, the board replaces the CEO. Therefore, having a low talent CEO can include the case in which the CEO does not act in favor of the company on purpose as well as the case in which the CEO has low management ability and reduce the company's profit by accident.

[2] A considerable number of provisions exists concerning the definition of independent directors, but in this paper I do not discuss these in detail but instead, distil what is considered to be the quintessence from the provisions. More description is provided in section two of this paper.

[3] I discuss the backgrounds of both systems in section two.

of the CEO is higher than each director's payment.[4] The result is reversed when the condition reverses. Each director receives equal amount from the expected payoff of the board, and hence the share each director receives depends on the size of the board in my model. However, in practice, it is plausible that the benefit of the CEO to be higher than the share each director receives. This suggests, in many cases, the traditional Japanese type of corporate governance produces stronger monitoring than the U.S. type of corporate governance, and hence, leads me to a further investigation of the traditional Japanese system; that is, the model predicts that Japanese corporate governance system enhances boards to produce strong monitoring, but why have Japanese system, or the board with no independent directors been claimed to produce weak monitoring? To provide an answer to this second question, I further discuss some legal systems and organizational practices in Japan beyond a comparison of monitoring levels between the U.S. model and the Japanese model.

Despite the arguments on monitoring performed by the board of directors, there has not been any theoretical model of the traditional Japanese system.[5] The model that discusses the relations between the governance system and monitoring levels for the U.S. system is provided by Hermalin and Weisbach [1998]. In their model, the board and the CEO determine the new board composition, but the monitoring level and the new board composition possess one-to-one correspondence, and hence it can be interpreted as if the board and the CEO determine monitoring levels together. They do not expect any director on the board to become CEO, which I believe is close to the real practice under the U.S. system.[6] Thus, I follow Hermalin and Weisbach [1998] in modeling the U.S. system, and I also extend it to build the relevant model for the traditional Japanese system.[7] Under the traditional Japanese system, the CEO

[4] See section 3.1 onwards for how private benefit and director payment is determined in the model.

[5] I note Osano [1997] as a literature comparing the U.S. and Japanese corporate governance from the different viewpoint from mine.

[6] Gordon [2006] provides board composition trends over five decades after 1950. Despite some noise due to the definitions of independent directors, it gives us very clear idea of how much independent directors have increased on the U.S. boards. I especially focus on the number of independent directors on the board after the establishment of Sarbanes-Oxley Act of 2002. Interested readers are also referred to Baysinger and Butler [1985] and Hermalin and Weisbach [1988] for empirical analysis on board composition.

[7] Raheja [2005] provides a model similar to mine in some respects. He considers two roles for the board of directors: advisory and monitoring, and analyzes the effect of monitoring when the outsiders' role is the latter and the insiders' role is the former. In my model, I focus on the monitoring role of both inside and independent directors. I consider two types of directors, but they do not serve on the same board at the same time. This is because the primary objective of this paper is to assess whether independent boards produce more monitoring than board without any independent directors. I consider the monitoring level of the hybrid board (where both types of directors coexist) in Sato [2006b].

must always be appointed from the board of directors. In both systems, all directors act as one player, the board, and are responsible for monitoring the CEO, where the level of monitoring is determined by the board and the CEO, as in Hermalin and Weisbach [1998].

I demonstrate that separation resulting from the adoption of independent directors does not necessarily reinforce board monitoring by inducing directors to monitor the CEO. Simply expressed, I contend the recent amendments in the laws of both countries do not always enhance board monitoring. The logic behind this finding is as follows. In the model, I assume that the board objective is aligned to the profit of the firm, which is a random variable dependent on the ability of the CEO. In period t, the initial board and the initial CEO determine the new board composition (which is later shown to have one-to-one correspondence with monitoring level). In period $t+1$, the monitoring is performed by the new board of directors to update the ability of the initial CEO.[8] If a good signal is observed by the board, the initial CEO is retained, but if a bad signal is observed by the board, the initial CEO is fired and a new CEO is hired in period $t+2$. Thus monitoring may induce an exchange of the initial CEO in period $t+2$; under the U.S. system a new CEO is recruited from outside of the board; whereas under the traditional Japanese system a new CEO is recruited from inside of the board. I assume that there are always $n+1$ players, specifically n directors and one CEO in both systems. Therefore, for the traditional Japanese system, in period $t+2$, when the initial CEO is fired and one of the incumbent directors is promoted to be the new CEO, a new director is hired to maintain the number of players at $n+1$. Then, in both systems, in period $t+3$, a new player hired in period $t+2$ (a new CEO for the U.S. system, and a new director for the Japanese system) receives his share replacing the initial CEO or the director serving at period t, and this is a loss of the expected payoff for the initial players serving at period t. I refer to this expected loss as "leak." [9] "Leak" is a *variable* that affects the expected payoffs of initial players at period t through the change of the initial CEO in period $t+2$, whereas this CEO-change is dependent on the monitoring level of the new board that is determined by the initial players at period t. In short, this "leak" is controllable by the initial players. "Leak" affects the initial players' expected payoffs via two routes; one is the possibility of having "leak," and the other is the amount of "leak." The latter is measured by parameters such as the private benefit of the CEO and the pay

[8] I later show in this paper that the more the board monitors, the higher is the profit of the firm. Hence more monitoring is assumed to be good in this paper. However, it is beyond the scope of this paper to analyze the socially optimum level of monitoring.

[9] Refer to Sato [2006b] for the general model for "leak."

each director receives. I find that when the board monitors, it surely raises the expected profit of the firm, but at the same time increases the possibility of "leak." Hence, monitoring induces the trade-off between the positive effect of the expected profit and the negative effect of the expected loss of the initial players other than monitoring cost. However, notice that the change of the board composition between t and $t+1$ does not induce "leak" in the above sense, since no initial players have control over the amount given to the newly hired director.[10] I show that the monitoring level is affected by the probability of having "leak" multiplied by the amount of "leak"(which is the amount of the private benefit of the CEO for the U.S. system, and the payment to the new director for the traditional Japanese system). Therefore, in comparing the two corporate governance systems, I conclude that the Japanese system produces more intense monitoring than the U.S. system if and only if the amount of the private benefit of the CEO is higher than the amount of the pay each director receives.

The rest of the paper is organized as follows. Section two describes the legal backgrounds of the two corporate governance systems. Section three provides some specifics on the model structure common to both governance systems. Section four discusses the U.S. model, and section five, the traditional Japanese model. Section six concludes.

2 Backgrounds

The turn of the twenty-first century witnessed many corporate scandals.[11] Lenient oversights, both internal and external, were not able to arrest the growth of the corruption of management. Therefore, the monitoring of the CEO has become the central issue of the corporate governance in many countries, including the U.S. and Japan. Among the most popular suggestions is the adoption of independent directors. Despite the subtle difference in the definition of independent directors in each nation, their presence surely provides the opportunity to separate the board from the CEO since a director cannot be independent and be manager at the same time. This paper focuses on this effect induced by the independent directors and discusses whether they can enhance monitoring by the board of directors. Thus, in this section, I first describe some recent movements concerning independent directors.

[10] All the initial directors participate in the negotiation at period t, but after they determine who to hire as new director(s), the same number of the initial director(s) stochastically leave the board to keep its size n. This is later explained in section 3.1.

[11] See Tirole [2006].

In the U.S. the law has been established to prevent future CEO misconduct after the accounting frauds of Enron came to light. The provisions for independent directors on the board are provided by Sarbanes-Oxley Act of 2002, the first Federal Law to actually state what was used to be considered to be governed by the states. [Sarbanes-Oxley Act, art. 301.] After the codification of requirement of independent directors, both the NYSE and NASDAQ have provided detailed definitions regarding independent directors, a concept that requires more than just being non-management directors.[12] Bloomenthal [2003], and Cleary [2003] discuss these in detail. In short, both the board and the committees of listed companies must be comprised of a majority of independent directors. Japan also experienced some corporate scandals such as Seibu and Kanebo. Before May, 2006, the Commercial Codes had primarily codified corporate law, but from May 2006, the new law called the Corporate Law has become effective, and now mainly provides the laws regarding corporations. Preceding the establishment of Corporate Law, a series of revisions were made to the Commercial Codes. One of them was to give a choice of governance system: companies in Japan can choose to stick with the traditional Japanese system or adopt the new system called the "Company with Committees."[13] The interesting feature of the new system is that it is a copy of the U.S. system, as is discussed by Gilson and Milhaupt [2005].[14] The law states that the boards must have committees, each committee being comprised of a majority of independent directors, whereas in the traditional system, the law does not require any presence of independent directors on the board of directors.[15] [16] In this sense, the movement to adopt independent directors on the board has spread to Japan as well, but only about seventy companies that have actually switched to this system. This fact suggests that the traditional system is still more popular than the new "*American*" type of system and motivates me to assess the monitoring level produced by the board of the pure traditional Japanese system and American system, which would provide a certain insight to the question

[12] See the standards regarding corporate governance as codified in Section 303A of NYSE and NASDAQ Rule 4200 a(15).

[13] Any company that constitutes a board of directors may choose between the two systems under the Corporate Law.

[14] Egashira [2004] discusses the revisions made to the Commercial Codes and states that it is an issue in contention whether the U.S. type of governance system is better than the traditional Japanese system. Sarra and Nakahigashi [2002] provide the recent amendments made to Japanese laws.

[15] Corporate Law, arts. 2[12], 400.

[16] In Japanese practice, there exists no statute that states the difference between independent directors and outside directors, and therefore in practice both terminologies are used to imply almost the same thing. Outside director is defined in Corporate Law, art. 2[15], whereas independent director is not a defined term.

also posed by Egashira [2004].

In theory, someone from inside the company can become CEO candidate as well as someone from outside the company. Moreover, the former can be classified into two groups, the board members and non-board members, such as employees.[17] I emphasize that the issue mainly argued in this paper is whether it is good to shut the channel through which the board members become CEO, so that the board can function as a pure internal oversight device. It is not the primary goal of this paper to discuss whether it is good or bad for an employee to become a CEO or a director. However, in discussing the separation of the board and the CEO, some description of the relations between the governing bodies, or between the governing bodies and employees, is helpful. Therefore, I describe some provisions regarding the corporate governance systems in the U.S. and Japan and also some practices in both countries with respect to my model in the rest of this section.[18]

In the U.S. practice, according to all the above mentioned rules, the board of listed companies must be comprised of a majority of independent directors. From these rules and Gordon [2006], it is innocuous to assume that the board of the U.S. system in my model to be comprised solely of independent directors. Since the board consists solely of independent directors, none of the board members can be the CEO succession candidate and thereby, a new CEO is always hired outside of the board. An employee cannot become an independent director until he quits and a three-to-five year "cooling-off" period has passed, so I assume directorship is always given to someone outside the company. However, an employee may become a CEO as well as someone from outside of the board. Thus, in section four, where I analyze the U.S. system, it is assumed that the CEO is always hired from outside of the board, and if the board lacks a director, a new director is hired from outside of the company.

In the traditional Japanese practice, usually successful employees become directors, and then, from among them becomes the chairman of the board, where the chairman of the board is the CEO under Japanese corporate law. [Corporate Law, art. 349.][19] There is no rule to

[17] In Japan, some companies must constitute a board of statutory auditors called *kansayaku*. [Corporate Law, art. 381.] They are not directors, but the role of *kansayaku* is only to check the legitimacy of the conducts of the boards and the CEO. See the Supreme Court decision of May. 22, 1973, vol.27, *min-shu*, no.5 at 655. Because of this limitation and its number being so small, I do not consider them in this paper.

[18] Interested readers are referred to Charkham [2005] and Institute of Directors [2005] for overview of the legal framework of several countries including Japan and the U.S.A. As for the recent Japanese corporate governance studies, refer to Osano [2001], [2005].

[19] CEO, or the chairman of the board in Japan is usually referred to as *shacho*, but this is not a defined term in the law.

restrict the board members to employees, but it has been considered that, if an employee works for a long time in the company and is successful, he becomes a candidate of the directors or other executives.[20] The CEO, on the other hand, is restricted to be appointed from the board of directors, and chosen by them. [Corporate Law, art. 362 paras. 2[3], 3.] What is notable is that there is no law that states the presence of independent directors on the board. Expressed simply, independent directors are not compulsory under the board of the traditional Japanese corporate governance system. Therefore, many companies that have the traditional Japanese type of corporate governance do not have any independent directors on the board, and Canon, Toyota, and Nintendo are good examples. Thus, in section five, where I analyze the Japanese traditional system, it is assumed that CEO is always hired from the board of directors that is comprised solely of internal directors, and also when the board lacks a director, one of the employees is promoted to the board.

3 Model

I begin this section with some specifics on the timings which are common in both governance systems. Section 3.2 explains the problems of the players. Section 3.3 states assumptions. The model is built on Hermalin and Weisbach [1998]. Specifically, all directors make a decision collectively, so the board of directors is regarded as one player and the monitoring level is determined by Nash bargaining between the initial board and the initial CEO. Then, the board members change after the bargaining and hence the board that actually monitors the CEO is a different board from the initial board. On the other hand, there are some notable differences in extending their model to allow for a comparison of the two systems. For instance, I use discrete distribution rather than normal distribution about the CEO's ability, and also shortened the model to four stages from what they originally have seven stages, for simplicity. Another difference is that I assume the number of players are always maintained at $n+1$: one CEO and n directors. Most importantly, the term "independent" in my paper is used to mean directors who cannot become CEO themselves.

[20] See Abegglen [1985].

3.1 Timing

There are four stages.[21] The number of directors n, and the initial board's measure of monitoring cost $\overline{k}_{0,}$ and the private benefit b the CEO receives at the last stage, are exogenously given.

First stage - Nash bargaining between the initial board and the initial CEO: The initial CEO and the board that consists of initial n directors negotiate over the wage of the CEO denoted w, and the new board composition. When board members are changed, the new board will have a different measure of monitoring cost from the initial board that is composed of original directors. The new board's measure of monitoring cost is denoted $\overline{k}_1$, as compared to $\overline{k}_0$, which is the measure of monitoring cost of the initial board. (Both $\overline{k}_0$ and $\overline{k}_1$ are defined in detail in section 3.2.2). All the initial directors participate in the negotiation, but after they determine who to hire as new director(s), the same number of the initial director(s) stochastically leave the board to keep its size n. Therefore, when they enter into the negotiation, none of the directors is sure to leave the board, so the board acts as one player that maximizes its payoff in the next stage onwards. The ability of the initial CEO is either high (H) or low (L). I assume that the initial CEO's priors are $\gamma > \frac{1}{2}$ for being H, whereas the priors for any CEO succession candidates are assumed to be precisely $\frac{1}{2}$ for both H and L.[22] When the bargaining succeeds, both w and $\overline{k}_1$ are endogenously determined. Wage w is paid to the CEO right after it is determined regardless of whether he will serve to the last stage.

If there is a breakdown of negotiation, I assume the initial CEO is dismissed or resigns and the board hires a new CEO. Since prior beliefs on the ability of any CEO succession candidates are $\frac{1}{2}$ for H and L, the new CEO does not have any bargaining power. Therefore, I assume that if the negotiation breaks down, the initial board determines the wage of the CEO and the new board composition. This is done by maximizing the expected payoff of the board assuring at least the reservation utility of the newly hired CEO.

Second stage - Monitoring by the new board: After the negotiation, the new board whose measure of monitoring cost is $\overline{k}_1$ chooses the monitoring level $\zeta \in [0, 1]$, which at the same time is interpreted as the probability of succeeding in monitoring. The board disutility of monitoring

[21] See Timeline in Figure one.

[22] I assume $\gamma > \frac{1}{2}$ to drop the first three stages as provided in Hermalin and Weisbach [1998]. The interpretation of the first three stages in their model could be the trial period, where they hire a new CEO whose ability is no different from any other CEO candidates. They let the board do the first update on the ability of this CEO before proceeding to Nash bargaining to give a bargaining power to the incumbent CEO, but this process can be shortened by assuming $\gamma > \frac{1}{2}$.

is expressed as $\overline{k}_1 \cdot d(\zeta)$. Then, with probability ζ, the board succeeds in monitoring and observes signal $y \in Y = \{y_H, y_L\}$. With probability $1-\zeta$, the board fails to monitor and obtains no signal.

Third stage - The new board decides to retain the initial CEO, or fire him and hire a new CEO: The board decides to retain or fire the initial CEO depending on the signal.[23] With probability ζ, the board succeeds in obtaining the signal; when y_H is observed (that is, the initial CEO is believed to be likely to be H) by the board, the initial CEO is retained, and fired if y_L is observed (that is, the initial CEO is believed to be likely to be L). When the initial CEO is fired, a new CEO is hired. With probability $1-\zeta$, the board fails to get signal y on the initial CEO's ability and if so, it has no choice but to retain the initial CEO.

Fourth stage - The profit of the firm is realized : The profit is a random variable denoted by $\widetilde{X}$ dependent on the ability of the CEO. I denote by X the realized profit which belongs to $\{X_H, X_L\}$ where $X_H > X_L$. The board receives φ from X, specifically $\rho X = \varphi$ where ρ is exogenously given and $\rho \in (0,1)$. The remaining $(1-\rho)X$ will be distributed to shareholders, investment, and so forth. Thus, the larger is X, the more the board meets the shareholders' expectations. Each director receives $\frac{\varphi}{n}$ as a payment, and the CEO who is serving at this last stage obtains a private benefit of $b > 0$, which can be interpreted as retirement allowances, bonus, reputations, and so on.

3.2 The Players' Problems

3.2.1 The Initial CEO's Problem

The initial CEO has no active role other than negotiating with the board about the wage and the new board composition. The initial CEO's payoff is $w+b$. Wage w is surely paid right after the negotiation, but the private benefit b is only obtained if he serves to the fourth stage. In other words, if the initial CEO is fired prior to the last stage, he leaves without obtaining b, and his successor CEO obtains b in place of him.

[23] For simplicity I use the term fired, but as long as he is no longer the manager nor a director serving on the board, he may remain in the company in the model.

3.2.2 The Board's Problem

The board's problem is to maximize the profit of the firm, less the disutility of monitoring and the wage it must pay to the CEO. I assume the utility of the board is

$$\Omega_{Board} = \sum_{i}^{n} \pi_i - \overline{k}_l \cdot d(\zeta), \tag{1}$$

where, $\overline{k}_l$, $l = 0, 1$ is the average of the measure of the whole board's cost of monitoring.[24] [25] The initial composition of the board whose measure of monitoring cost denoted $\overline{k}_0$ remains the same until it is endogenously changed to $\overline{k}_1$ through the negotiation. The disutility of monitoring is expressed as $d(\cdot)$ and is strictly increasing, strictly convex, twice continuously differentiable function. I assume interior solutions. That is, $d'(\zeta) \to 0$ as $\zeta \to 0$, and $d'(\zeta) \to \infty$ as $\zeta \to 1$, where $\zeta \in [0, 1]$. The utility function for each director is expressed as π_i, and it is equal to

$$\pi_i = \frac{1}{n} \left[\widetilde{\varphi} - w \right]. \tag{2}$$

3.3 Assumptions for Deriving the Expected Payoffs of the Board

The relations between the profit of the firm X_j, $j \in \{H, L\}$, where $X_H > X_L$, and the ability of the CEO a_i, $i \in \{H, L\}$ are assumed as follows. I assume that a_H stands for high ability, and a_L stands for low ability. For simplicity, I assume $X_L = 0$, but the general case where $X_H > X_L \neq 0$ is described in detail in the Appendix.[26] I denote by $P^i \equiv \Pr\{X_H | a_i\}$, a probability the CEO produces X_H conditional on his high ability a_i. I assume

$$P^H > P^L. \tag{3}$$

Then, the expected profit of the firm conditional on the ability of the CEO is expressed as $E(X|a_i) = P^i X_H$. I denote $A = \rho P^H X_H$, an expected payoff of the board when the CEO has

[24] Each director i has his own measure of monitoring cost k_i, which represents director's independency from the CEO, how experienced he is, how much information he can obtain, and etc. When the board is composed of n directors with different k_i, the board measure of monitoring cost is denoted as the average of all directors' k_is. When there is a change of a director, eventually the board measure of monitoring cost changes. The smaller the k_{ι}, the less costly it is for the board to monitor the CEO.

[25] I basically treat that being independent or internal does not itself bring difference to k_i. However, I later consider the case in which the internal directors are long-term employee and life-time guaranteed, and argue that in this case, k_i of independent and internal directors differ in Proposition 5 where I compare the U.S. and the traditional Japanese model.

[26] This is to show that I can assume $X_L = 0$ without loss of generality.

high ability, and denote by $B = \rho P^L X_H$, an expected payoff of the board when the CEO has low ability.

At the second stage, the new board chooses monitoring level ζ. If the board does not succeed in monitoring (which occurs with probability $1-\zeta$), then the initial CEO's ability would not be updated and hence the expected profit of the board is expressed as $\varphi_I \equiv \gamma A + (1-\gamma)B$, where γ is the prior probability of the initial CEO's ability being H and is higher than $\frac{1}{2}$.

If the board succeeds in monitoring (with probability ζ), it observes signal $y \in \{y_H, y_L\}$. I denote by $\mu_j \equiv \Pr(a_H | y = y_j)$, the posterior probability that the CEO has ability a_H conditional on the observation of y by Bayes' rule. I assume $\mu_L < \frac{1}{2}$, and $\mu_H > \gamma > \frac{1}{2}$. The expected profit of the board at this point is expressed as $\mu_j A + (1-\mu_j)B$ which I denote by $\varphi_j \equiv E(X|y = y_j)$. I denote by Z for the probability of the board observing y_H for an initial CEO whose prior is γ, and denote by $(1-Z)$ for the probability of observing y_L for the same initial CEO. The expected profit of the board conditional on an entirely new CEO is denoted $\varphi_{N,}$ where $\varphi_N \equiv \frac{1}{2}(A+B)$. This is because any new CEO successor candidate is believed to have priors of $\frac{1}{2}$ for both being H and L.

From above assumptions, $\varphi_H > \varphi_I > \varphi_N > \varphi_L$ is derived. See Table 1. In the first stage, the priors about the initial CEO's talent is γ. When the board keeps this CEO to the fourth stage without any monitoring (or fails to monitor), it would bring the board the expected payoff of φ_I. When the board monitors and observes y_H with probability ζZ, the posterior belief about the CEO's ability is updated and hence the expected payoff of the board becomes φ_H. In this case, the board retains the CEO. When the board observes y_L with probability $\zeta(1-Z)$, the initial CEO is fired because the expected profit of the board conditional on his ability becomes φ_L, which is lower than φ_N (the expected profit of the board conditional on the new CEO). Therefore, if the board observes y_H, it retains the initial CEO but if it observes y_L, it fires the initial CEO and hires a new CEO.

Table 1

	Signal y^H	Signal y^L	No Signal
Probability	ζZ	$\zeta(1-Z)$	$1-\zeta$
Pr (a_H)	μ^H	$\frac{1}{2}$	γ
Expected payoff of the board	φ_H	φ_N	φ_I

Next, I describe some off-the-path of equilibrium assumptions for the case where the nego-

tiation breaks down in the first stage. As described in section 3.1, if there is no negotiation the initial board alone decides the wage and the new board composition. I denote by η_j the posterior probability that the newly hired CEO has ability H conditional on the observation of signal j after the initial board monitors. The expected profit at this point is expressed as $\varphi_{N\,j} \equiv \eta_j A + (1-\eta_j)B$, where $j = H, L$. I assume $\frac{1}{2} < \eta_H < \mu_H$. I denote by Q the probability of the board observing y_H for a new CEO whose prior ability is $\frac{1}{2}$ for both H and L, and therefore $(1-Q)$ is the probability of the board observing y_L for the same CEO. I assume

$$Z \geq Q \tag{4}$$

4 The U.S. System

4.1 The Expected Value of the Board

The utility for the U.S. board at stage two is expressed as

$$\Omega_U = \zeta_U[Z \cdot \varphi_H + (1-Z)\varphi_N] + (1-\zeta_U)\varphi_I - \overline{k}_1 \cdot d(\zeta_U) - w_U. \tag{5}$$

The first term of the above expression is the expected payoff after successful monitoring: with probability ζ_U, the board succeeds in monitoring and then with probability Z, the board observes a good signal y_H and retains the initial CEO who would bring φ_H to the board, and with probability $(1-Z)$, the board observes a bad signal y_L and replaces the initial CEO and hires a new CEO who would bring φ_N to the board. The second term is the payoff after the board failed to monitor the CEO with probability $(1-\zeta_U)$. In this case the initial CEO is retained without being monitored, so the board will receive φ_I. The third term is the cost of monitoring, and the fourth term is the wage it must pay to the CEO. The utility Ω_U is concave in ζ_U. The board chooses the monitoring level so as to maximize Ω_U. Thus, the first-order condition with respect to ζ_U is

$$\frac{\partial \Omega_U}{\partial \zeta_U} = Z \cdot \varphi_H + (1-Z)\varphi_N - \varphi_I - \overline{k}_1 \cdot d'(\zeta_U) = 0. \tag{6}$$

The above expression is sufficient as well as necessary. Define $\zeta_U^*\left(\overline{k}_1\right)$ to be the solution to (6). Furthermore, by differentiating (6) with respect to $\overline{k}_1$, I have $-\overline{k}_1 \cdot d''(\zeta_U^*(\overline{k}_1)) \cdot \zeta_U^{*\prime}(\overline{k}_1) - d'(\zeta_U^*(\overline{k}_1)) = 0$, and hence $\zeta_U^{*\prime}(\overline{k}_1) = -\frac{-d'(\zeta_U^*(\overline{k}_1))}{-\overline{k}_1 \cdot d''(\zeta_U^*(\overline{k}_1))} < 0$. As a result, there is inverse relationship

between the level of monitoring ζ and the new board measure of monitoring cost $\overline{k}_1$, which establishes:

Proposition 1 *If the new board consists of directors who incur less monitoring cost, the intensity to which it monitors the CEO increases under the U.S. system.*

Proposition 1 implies that when the initial board decides the new board composition in the first stage, it can be regarded as if they are deciding the monitoring level of the new board.

4.2 Nash Bargaining

When they enter into negotiation, the board brings;

$$\begin{aligned} &\zeta_U^*\left(\overline{k}_1\right)\cdot\left[Z\varphi_H+(1-Z)\varphi_N\right]+\left(1-\zeta_U^*\left(\overline{k}_1\right)\right)\varphi_I \\ &-\overline{k}_0\cdot d(\zeta_U^*\left(\overline{k}_1\right))-w_U-\theta_0^U. \end{aligned} \tag{7}$$

Recall that, Nash bargaining stage is at stage one, so the players are the initial CEO and the initial board whose measure of monitoring cost is $\overline{k}_0$. After the bargaining, the board member is changed due to the exchange of directors, and this new board's measure of monitoring cost is expressed as $\overline{k}_1$. In other words, the board that decides the new board composition and the board that later monitors the CEO is different. This is the reason why the third term is expressed as $\overline{k}_0\cdot d(\zeta_U^*\left(\overline{k}_1\right))$. The fifth term, $\theta_{0,}^U$ is the reservation utility, and is the expected payoff if it hires a replacement CEO.[27]

On the other hand, the initial CEO brings;

$$\left[\zeta_U^*\left(\overline{k}_1\right)\cdot Z+\left(1-\zeta_U^*\left(\overline{k}_1\right)\right)\right]b+w_U, \tag{8}$$

where the outside opportunity of the initial CEO is assumed to be 0. The threat point is in the interior of the feasible set so they enter into negotiation.[28] The board and the CEO choose the optimum $\overline{k}_1^*$ and w_U^* to maximize the following Nash product;

$$\begin{aligned} V_U \;=\; &\left\{\left[\zeta_U^*\left(\overline{k}_1\right)\cdot Z+\left(1-\zeta_U^*\left(\overline{k}_1\right)\right)\right]b+w_U\right\} \\ &\times\left\{\zeta_U^*\left(\overline{k}_1\right)\cdot\left[Z\cdot\varphi_H+(1-Z)\cdot\varphi_N\right]+\left(1-\zeta_U^*\left(\overline{k}_1\right)\right)\varphi_I\right. \\ &\left.-\overline{k}_0\cdot d(\zeta_U^*\left(\overline{k}_1\right))-w_U-\theta_0^U\right\}. \end{aligned} \tag{9}$$

[27] See the Appendix for the threat point of the U.S. board, θ_0^u.

[28] The proof is in the Appendix.

I define the solution for $Max\ V_U$ as $\overline{k}_1^*$ and w_U^*. Then the monitoring level is denoted as $\zeta_U^*(\overline{k}_1^*)$, and establishes[29]:

Proposition 2 *The equilibrium level of monitoring for the U.S. system is expressed as*

$$d'\left(\zeta_U^*(\overline{k}_1^*)\right) = \frac{1}{\overline{k}_0}\left[Z\varphi_H + (1-Z)\varphi_N - \varphi_I - (1-Z)b\right]. \tag{10}$$

The implication of this proposition is that the level of monitoring ζ_U is negatively related to the private benefit b under the U.S. governance system. That is, the higher is the private benefit of the CEO, the less the board monitors under the U.S. system. Since I assume no existing director on the U.S. board is a CEO succession candidate, if the initial CEO is fired, a new CEO is hired from outside of the incumbent board. This implies the private benefit b will be given to a new CEO with probability $(1-Z)$, leaving the expected loss of b to the initial players. This is the "leak." The higher is b, the higher is the amount of "leak" to the new CEO. To avoid this "leak," the board decreases the monitoring level to increase the probability that the initial CEO is kept. Hence, when b becomes high, the board acts in a way to reduce the monitoring level under the U.S. system.[30] This finding is consistent with the fact even before the establishment of Sarbanes-Oxley acts, the CEOs were elected from outside the incumbent board members, but still could not prevent management abuses.[31] This is because the private benefit of CEOs are extremely high in the U.S. [32] Therefore, if a company wishes to raise monitoring levels under the U.S. system, what needs to be done is to reduce the amount of private benefit of the CEO, rather than simply increasing the absolute number or the ratio of independent directors on the board.

[29] The proof is in the Appendix.
[30] See the graph for the U.S. system in Figure two.
[31] See Gordon [2006].
[32] See Kahan [2000], for example.

5 The Traditional Japanese System

5.1 The Expected Value of the Board

The utility of the traditional Japanese board at stage two is expressed as

$$\begin{aligned}\Omega_J &= \zeta_J \left[Z \cdot \varphi_H + (1-Z)\left(\frac{n-1}{n} \cdot \varphi_N + b\right)\right] \\ &\quad +(1-\zeta_J)\varphi_I - \overline{k}_1 \cdot d(\zeta_J) - w_J,\end{aligned} \tag{11}$$

where (11) is as (5) except the first term. The first term, $\zeta_J \left[Z \cdot \varphi_H + (1-Z)\left(\frac{n-1}{n} \cdot \varphi_N + b\right)\right]$ is the expected payoff when the monitoring succeeds. Specifically, a good signal y_H is observed with probability Z, and then the board obtains φ_H. When a bad signal y_L is observed with probability $(1-Z)$, then the initial CEO is fired; that is, one of the board members becomes a new CEO and receives b, and the remaining $n-1$ directors receive $\frac{\varphi_N}{n}$. Thus, the payoff to the board is $\left(\frac{n-1}{n} \cdot \varphi_N + b\right)$. Recall that the number of the CEO and the directors are always maintained at $n+1$: in the traditional Japanese system, the law states that CEO must be the chairman of the board, and hence if they dismiss the incumbent CEO, one of the directors usually becomes the new CEO and the new chairman of the board. To maintain the total number at $n+1$, usually they hire a new director by promoting an employee to the board of directors.

The optimum level of monitoring is derived by the first-order condition with respect to ζ_J;

$$\begin{aligned}\frac{\partial \Omega_J}{\partial \zeta_J} &= Z \cdot \varphi_H + (1-Z)\left(\frac{n-1}{n}\varphi_N + b\right) \\ &\quad -\varphi_I - \overline{k}_1 \cdot d'(\zeta_J) \\ &= 0.\end{aligned} \tag{12}$$

The above expression is sufficient as well as necessary. Define $\zeta_J^*(\overline{k}_1)$ to be the solution to (12). Furthermore, similar to the U.S. case, it can be shown that $\overline{k}_1$ and ζ have inverse relationship by differentiating (12) with respect to $\overline{k}_1$. This leads to:

Proposition 3 ***(Analogous to Proposition 1)*** *If the new board consists of directors who incur less monitoring cost, the intensity to which it monitors the CEO increases under the traditional Japanese system.*

Similar to Proposition 1, Proposition 3 implies that when the initial board decides the new board composition in the first stage, it can be regarded as if they are deciding the monitoring level of the new board.

5.2 Nash Bargaining

Just like the U.S. system, the initial board and the initial CEO enter into negotiation.[33] The board brings;

$$\begin{aligned} &\zeta_J^*(\overline{k}_1) \cdot \left[Z \cdot \varphi_H + (1-Z) \left(\frac{n-1}{n} \cdot \varphi_N + b \right) \right] \\ &+ \left(1 - \zeta_J^*(\overline{k}_1) \right) \varphi_I - \overline{k}_0 \cdot d(\zeta_J^*(\overline{k}_1)) - w_J - \theta_0^J, \end{aligned} \tag{13}$$

where (13) is as (7). The reservation utility of the Japanese board is expressed as θ_0^J, and this is the expected payoff if the board would hire a replacement CEO.[34]

On the other hand, the CEO brings;

$$\left[\zeta_J^*(\overline{k}_1) \cdot Z + \left(1 - \zeta_J^*(\overline{k}_1) \right) \right] b + w_J, \tag{14}$$

where the outside opportunity is assumed to be 0.[35] The threat point is in the interior of the feasible set so they enter into negotiation.[36] The CEO and the board choose $\overline{k}_1^*$ and w_J^* to

[33] Unlike the U.S. system, where executives decide their own wages by themselves, in Japan, the law states that they must be decided in general meetings or must be stated in corporate statutes. [Corporate Law, art. 361.] However, usually shareholders only ratify the slate put forward by the board of directors, and hence it is quite natural for a board and a CEO to negotiate in advance.

[34] See the Appendix for the threat point of the traditional Japanese board, θ_0^J.

[35] In Japanese practice, when a CEO resigns without causing serious damage while on duty, he is often given an alternative post in the company. Under the current law, he may become one of the inside directors and remain on the board, or he may be given a post out of the board, such as an advisor.

See the Supreme Court decision of 20 Dec, 1966, 20-10, *min-syu,* 2160.

In such cases, the reservation utility of the incumbent CEO is not 0. When the CEO remains on the board, his reservation utility becomes that of the directors, but when he becomes an advisor, he receives some fixed amount. To discuss the former case, another model is required, but it is more natural in practice that once a CEO has resigned, he either leaves the company or is given a post out of the board (e.g. an advisor). Therefore, it is innocuous to assume that the reservation utility for the CEO is 0 for simplicity.

[36] The proof is in the Appendix.

maximize

$$\begin{aligned} V_J &= \left\{ \left[\zeta^*_J(\overline{k}_1) \cdot Z + \left(1 - \zeta^*_J(\overline{k}_1)\right) \right] b + w_J \right\} \times \\ & \left\{ \zeta^*_J(\overline{k}_1) \cdot \left[Z \cdot \varphi_H + (1-Z) \left(\frac{n-1}{n} \cdot \varphi_N + b \right) \right] \right. \\ & \left. + \left(1 - \zeta^*_J(\overline{k}_1)\right) \varphi_I - \overline{k}_0 \cdot d(\zeta^*_J(\overline{k}_1)) - w_J - \theta^J_0 \right\}. \end{aligned} \tag{15}$$

I define $\overline{k}^*_1$ and w^*_J to be the solution to $Max\ V_J$. Then the monitoring level is denoted as $\zeta^*_J(\overline{k}^*_1)$, and establishes[37]:

Proposition 4 *The equilibrium level of monitoring for the traditional Japanese system is expressed as*

$$d'(\zeta^*_J(\overline{k}^*_1)) = \frac{1}{\overline{k}_0} \left[Z\varphi_H + (1-Z)\,\varphi_N - \varphi_I - (1-Z)\frac{1}{n}\varphi_N \right]. \tag{16}$$

The implication of this proposition is that the number of directors and the monitoring level are positively related. That is, the smaller the size of the board, the less the board monitors under the traditional Japanese system. Under the traditional Japanese system where the board and the CEO are related to each other, the CEO succession candidate is limited to the directors. Then, when the initial CEO is fired, one of the directors surely becomes the next CEO and one of the long term employees is promoted to a directorship. This implies, with probability of $(1-Z)$, a share of $\frac{\varphi_N}{n}$ from the whole board payoff φ_N , will be paid to the new director giving the same amount of "leak" to the initial directors. Thus, when n is small, "leak" becomes large, and hence the board acts to decrease the monitoring level to increase the probability that the initial CEO is kept.[38]

This proves that as a system, the traditional Japanese system does function in terms of monitoring. Traditionally, Japanese companies tend to have larger boards than U.S. companies, but because of the other problems caused by having large boards, some companies are run inefficiently. Many lawyers, policy makers, and medias have simply attributed the cause of inefficiency to the lack of independent directors, but I emphasize that this is not always true.

Proposition 4 suggests that if companies wish to raise monitoring levels, the size of the board n must be maintained or be increased in order not to increase "leak" under the traditional

[37] The proof is in the Appendix.

[38] See the graph for Japanese system in Figure two.

Japanese system. Although increasing the number of the directors surely induces the Japanese board to produce strong monitoring in the model, in practice it incurs some costs that are not discussed in the model. For example, it could slow down the decision-making of the board, and it could render each director's conduct obscure. More importantly, although increase of n reduces the "leak" each player bears, it *may* reduce the amount each director receives as well. However, since the increase in monitoring levels surely raises the corporate value X, the amount each director receives *may* not decrease as compared to the case where n is small if the marginal increase in X is larger enough. The problem that may arise if it does reduce the amount of pay each director receives is that they will try to increase their payments in a different way. Say, directors might raise the fraction of the share the board receives from the corporate profit X. That is, in my model, the board might raise ρ, which would leave the amount of $(1-\rho)X$ small, and may decrease the amount shareholders receive. Given all these arguments, in practice, the cost of increasing n is not trivial and it may not be easy to increase the number of directors. Increasing the number of directors may incur some other problems, such as free rider problem as well.

Furthermore, the Proposition 4 gives an insight into the recent legislation in Japan. As discussed in the background section of this paper, in 2002 the Japanese Commercial Codes were amended to give some companies a choice of governance structure of the traditional Japanese system or the new Japanese system referred to as "Companies with Committees." The new system encourages companies to have smaller boards with independent directors. However, not only those companies that chose to adopt the new system, but also the companies who chose to stick with the traditional system are reducing the number of directors as well. They are decreasing the number of directors but instead have created a special post of "corporate officers," who do not legally serve on the board but do receive a certain amount of share of profits of the firm, just as other directors do.[39] This implies the recent practice in Japanese firms to reduce the number of directors may render internal oversights weak.[40] Compensating those who are deprived of a director's post with a new post as "corporate officers" does not induce the board to produce stronger monitoring. This is because the total amount of "leak" remains the same (that is, a payment of $\frac{1}{n}\varphi_N$ to a new director remains the same), but the

[39] "Corporate officers" referred to as *Shikkou-yakuin* are neither director nor CEO. Their primary job is said to be executing the decisions made by the board of directors. Interested readers are referred to Sarra and Nakahigashi [2002] and Morimoto [2003].

[40] The proof is in the Appendix.

amount of "leak" for each player bears becomes larger. Therefore, the level of monitoring may become worse. Although simply increasing the number of directors incurs some trade-offs argued in the above paragraph, it can be said that reducing the directors and creating a post of "corporate officers" has no such trade-off and is not a sensible policy.

Lastly, there is a way to completely eliminate "leak" under the traditional Japanese system. Those companies that wish to do so should not fill the vacancy caused on the board by promoting an employee to a directorship. To be more specific, the vacancy is derived from a promotion of one of the initial directors to be the new CEO after the initial CEO was fired. This means that, even if the initial CEO were deprived of his title as CEO, if he could serve on the board as one of the inside director to fill in the vacancy, this would entirely eliminate the "leak." As mentioned earlier, in Japanese practice, retired CEOs usually remain in the company anyway. They may be given a special title, such as advisor, but not belong to management or the board. Since a retired CEO is not forbidden to serve on the board, it would be much more efficient if he were given a post as one of the internal directors rather than an advisor, so that vacancy created to the board would not be filled with non-initial members. However, it must be noted that although this would eliminate "leak," it may deprive the incentives of employees to work hard. It has often been said that Japanese workers are hard working and loyal to the company because they could be the one to become the CEO in the future. I do not go into detail, but it must be stressed that this trade-off is not trivial in Japanese corporate governance system.

Next, I compare the level of monitoring between the U.S. system and the traditional Japanese system which leads to the following proposition:

Proposition 5 *1. Suppose $b < \frac{1}{n}\varphi_N$, that is the private benefit b is sufficiently low, or the size of the board n is sufficiently small. Then for all levels of monitoring cost $\overline{k}_1$, the board of the U.S. system monitors the incumbent CEO more intensely than the board of the traditional Japanese system; $\zeta_U^*\left(\overline{k}_1\right) > \zeta_J^*\left(\overline{k}_1\right)$. Suppose next $b > \frac{1}{n}\varphi_N$, then for all levels of measure of monitoring cost $\overline{k}_1$, the opposite is true; $\zeta_J^*\left(\overline{k}_1\right) > \zeta_U^*\left(\overline{k}_1\right)$.*

2. Moreover, the monitoring cost $\overline{k}_1$ differs between the two systems. When $b < \frac{\varphi_N}{n}$, it is less costly for the board of the U.S. system to monitor versus the board of the traditional Japanese system; $\overline{k}_1^{*U} < \overline{k}_1^{*J}$. When $b > \frac{1}{n}\varphi_N$, the board of the U.S. system incurs more cost in monitoring as compared to the board of the traditional Japanese system; $\overline{k}_1^{*U} > \overline{k}_1^{*J}$

3. Thus, when $b < \frac{\varphi_N}{n}$ holds, the U.S. system produces far more intensive monitoring than the traditional Japanese system; $\zeta_U^*\left(\overline{k}_1^{*U}\right) > \zeta_J^*\left(\overline{k}_1^{*J}\right)$ holds. When $b > \frac{\varphi_N}{n}$ holds, the

traditional Japanese system produces far more intensive monitoring than the U.S. system; $\zeta_J^*\left(\overline{k}_1^{*J}\right) > \zeta_U^*\left(\overline{k}_1^{*U}\right)$ *holds.*

Proof. 1:

Recall $d'(\zeta) > 0$. Then, by comparing (10) and (16) , the greater the right-hand side, the greater is the level of monitoring. Holding fixed $\overline{k}_1$ of both the U.S. and the traditional Japanese system at the same level, it is obvious that $\zeta_U^*\left(\overline{k}_1\right) > \zeta_J^*\left(\overline{k}_1\right)$ holds when b is smaller than $\frac{\varphi_N}{n}$, and $\zeta_U^*\left(\overline{k}_1\right) < \zeta_J^*\left(\overline{k}_1\right)$ holds when b is larger than $\frac{\varphi_N}{n}$.

2:

$\overline{k}_1$ may be the same level in both systems, but usually they are different. In the U.S. system, from (6) and (10), $\overline{k}_1$ is calculated as

$$\overline{k}_1^U = \overline{k}_0\left\{1 + \frac{(1-Z)b}{Z\cdot\varphi_H + (1-Z)\cdot\varphi_N - \varphi_I - (1-Z)b}\right\}. \tag{17}$$

In the traditional Japanese system, from (12) and (16), $\overline{k}_1$ is calculated as

$$\overline{k}_1^J = \overline{k}_0\left\{1 + \frac{(1-Z)b}{Z\cdot\varphi_H + (1-Z)\cdot\varphi_N - \varphi_I - (1-Z)\frac{\varphi_N}{n}}\right\}. \tag{18}$$

Then, when $b > \frac{\varphi_N}{n}$, (17) is larger than (18), and when $b < \frac{\varphi_N}{n}$, the opposite is true.

3:

Hence, when $b > \frac{\varphi_N}{n}$ holds, from (10), (16), (17), and (18), the traditional Japanese system produces far more intensive monitoring than the U.S. system. When $b < \frac{\varphi_N}{n}$ holds, the U.S. system produces far more intensive monitoring than the traditional Japanese system. ■

Proposition 5 has two important implications. First, despite the recent amendments in the laws in both countries to separate boards from management, the board consists entirely of internal directors may produce stronger monitoring than the board that consists entirely of independent directors. Propositions 2 and 4 prove that monitoring levels are affected by "leak" in each system and therefore a comparison of monitoring levels is done by comparing two "leaks" as shown in Proposition 5. Although the magnitude of each "leak" is given exogenously by parameters, the type of "leak" is determined by whom they have for CEO succession candidates in both corporate governance systems. That is, if the board is related to the CEO, as in the traditional Japanese system, "leak" is derived as a result of appointing a new director chosen from employee, who fill the vacancy caused by one of the initial directors promoted to a new

CEO, but if the board is separate from the CEO as in the U.S. system "leak" is derived as a result of hiring a new CEO from outside of the board. Hence, if a company wishes to strengthen the board monitoring, it should decrease the number of independent directors when $b > \frac{\varphi_N}{n}$ holds, and increase the number of independent directors when $b < \frac{\varphi_N}{n}$ holds.

Second, Proposition 5 explains one of the reasons why some Japanese companies monitor less even when they have large board consists entirely of internal directors. It is clear from Propositions 2, 4, and 5, that as a system, the traditional Japanese system functions as well as the U.S. system. However, the difference lies in the parameter $\overline{k}_0$, which is the measure of monitoring costs for the initial board, and is exogenously given and treated as equal in both the U.S. and the traditional Japanese models. In practice, they are not the same. When $\overline{k}_0$ is the same in both systems, the right-hand sides of (17) and (18) are compared with only two parameters; b and $\frac{\varphi_N}{n}$. However, if $\overline{k}_0$ is different between the systems, the right-hand sides of both equations are not that simply compared. Specifically, $\overline{k}_0$ is likely to be much larger in Japan. One of the reasons is that strong personal relations have been created between the CEO and the board in Japanese firms where the board traditionally consists of long term employees. This has a psychological effect on the Japanese directors and in the model it can be interpreted as higher $\overline{k}_0$ as compared to that of the U.S. Given these facts, I show how the difference in $\overline{k}_0$ affects the monitoring levels. I first focus on the case where $b > \frac{\varphi_N}{n}$. From Proposition 5, if $\overline{k}_0$ is fixed at the same level, (17) $>$ (18) holds, which suggests it is more costly for the board of the U.S. system to monitor the CEO. However, if $\overline{k}_0$ of the traditional system is larger than that of the U.S. system, this inequality may reverse. That is, even if (16) $>$ (10) holds, the Japanese system may yield weak monitoring. Next, I focus on the case where $b < \frac{\varphi_N}{n}$. In this case, it is obvious that if $\overline{k}_0$ in the traditional system is large, what is provided in Proposition 5 is even more stressed. This is why it is perceived by many that the boards of the Japanese system produce relatively weak monitoring.

6 Conclusion

In this paper, I compare two corporate governance systems for monitoring the CEO; a system in which the board consists entirely of independent directors and a system where the board consists of no independent directors. In the former system, I assume all the directors on the board are independent directors and none of them are allowed to become CEO, and hence the CEO is always recruited from outside the board. In the latter system, in addition to the as-

sumption that independent directors are nonexistent on the board, which is common in Japanese practice, the law states that the CEO must be elected from the board of directors, and hence in the model the channel to become CEO is only through the board of directors. Conventional wisdom on monitoring is that the board that has a majority of independent directors produces more monitoring than the board without any independent directors because of the separation of management and the monitoring device. If this is true, the U.S. type of boards would always monitor the CEO with more effective scrutiny than the traditional Japanese type of boards. However, in this paper I show that this is not necessarily true. I assume that independent directors and internal directors incur the same cost in monitoring, but show that the existence of independent directors affects the candidate for CEO: whether to appoint a new CEO from inside of the board or outside of the board. This difference affects the type of "leak," which is the key variable in determining monitoring levels. Therefore one system is not always superior to the other, or in other words, separation of management and the board is not the only way to ensure strong monitoring.

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22. The Supreme Court decision of May. 22, 1973, vol.27, *min-shu*, no.5 at 655.
23. The Supreme Court decision of Dec. 20, 1966, vol.20, *min-shu*, no.10 at 2160.

Appendix

The threat point of the U.S. board

The threat point of the U.S. board, θ_0^U, is expressed as:

$$\theta_0^U = \zeta_{0_U}^*[Q \cdot \varphi_{NH} + (1-Q)\,\varphi_N] + (1-\zeta_{0_U}^*)\varphi_N - w_0^U - \overline{k}_0 \cdot d(\zeta_{0_U}^*), \tag{19}$$

where $\zeta_{0_U}^*$ is the optimum level of monitoring chosen by the board when its measure of monitoring cost is $\overline{k}_1^\circ$, and hence $\zeta_{0_U}^*$ is a function of $\overline{k}_1^\circ$. The first term $\zeta_{0_U}^*[Q \cdot \varphi_{NH} + (1-Q)\,\varphi_N]$ is the expected payoff when the board succeeds in monitoring: with probability Q, the new CEO is retained and the profit that is stochastic to his ability is φ_{NH}, but with probability $(1-Q)$, the new CEO is fired and another new CEO is hired, and hence the profit that is determined stochastically to his ability would be φ_N. The second term $(1-\zeta_{0_U}^*)\varphi_N$ is the payoff when the board fails to monitor, thus the new CEO is retained to the end without being monitored and hence the profit is $\varphi_{N.}$ The wage w_0^U equals $-\left[\zeta_{0_U}^* \cdot Q + \left(1-\zeta_{0_U}^*\right)\right] b$, because the initial board alone decides the wage and the new board composition subject to at least guaranteeing the reservation utility of the newly hired CEO who has no bargaining power. [41] The last term, $\overline{k}_0 \cdot d(\zeta_{0_U}^*)$ is the cost of monitoring.

q.e.d.

Proof of participation constraint for the negotiation in the U.S. system

The addition of the threat points for the board and the CEO is

$$\begin{aligned} T_U(\zeta) &= \zeta\,[Q \cdot \varphi_{NH} + (1-Q)\,\varphi_N] + (1-\zeta)\,\varphi_N \\ &\quad -\overline{k}_0 \cdot d(\zeta) + [\zeta Q + (1-\zeta)]\,b. \end{aligned} \tag{20}$$

[41] This is because there are many CEO candidates with the same priors. Hence it can be normalized at 0.

The addition of (5) and (8) is

$$\begin{aligned} G_U(\zeta) &= \zeta[Z \cdot \varphi_H + (1-Z) \cdot \varphi_N] + (1-\zeta)\varphi_I \\ &\quad -\overline{k}_0 \cdot d(\zeta) + [\zeta Z + (1-\zeta)]\, b. \end{aligned} \tag{21}$$

From (4), it is clear that (20)< (21) if ζ is the same. Hence, if we denote by ζ_0^* the level of monitoring that maximizes (20), and substitute this into both (20) and (21). Then, $T_U(\zeta_0^*) < G_U(\zeta_0^*)$ holds. Next, it is obvious that the point that maximizes $G_U(\zeta)$ is larger than or equal to $G_U(\zeta_0^*)$. That is, first denote the monitoring level that maximizes (21) as ζ_U^*, and then $G_U(\zeta_0^*) < G_U(\zeta_U^*)$. Therefore, the feasible set is in the interior of the addition of the players' utilities.

q.e.d.

Proof of Proposition 2: (10)

The first-order condition maximizing V_U with respect to $\overline{k}_1$ yields

$$\begin{aligned} & (Z-1)\, b \times \Big\{ \zeta_U^*\left(\overline{k}_1\right) \cdot [Z \cdot \varphi_H + (1-Z) \cdot \varphi_N] \\ & + \left(1 - \zeta_U^*\left(\overline{k}_1\right)\right) \varphi_I - \overline{k}_0 \cdot d(\zeta_U^*\left(\overline{k}_1\right)) - w_U - \theta_0^U \Big\} \\ & + \Big\{ \left[\zeta_U^*\left(\overline{k}_1\right) \cdot Z + \left(1 - \zeta_U^*\left(\overline{k}_1\right)\right)\right] b + w_U \Big\} \\ & \times \Big\{ Z \cdot \varphi_H + (1-Z) \cdot \varphi_N - \varphi_I - \overline{k}_0 \cdot d'(\zeta_U^*\left(\overline{k}_1\right)) \Big\} \\ = \; & 0. \end{aligned} \tag{22}$$

The first-order condition maximizing V_U with respect to w_U yields

$$\begin{aligned} & \Big\{ \zeta_U^*\left(\overline{k}_1\right) \cdot [Z \cdot \varphi_H + (1-Z) \cdot \varphi_N] - \left(1 - \zeta_U^*\left(\overline{k}_1\right)\right) \varphi_I - \overline{k}_0 \cdot d(\zeta_U^*\left(\overline{k}_1\right)) \\ & - w_U - \theta_0^U \Big\} - \Big\{ \left[\zeta_U^*\left(\overline{k}_1\right) \cdot Z + \left(1 - \zeta_U^*\left(\overline{k}_1\right)\right)\right] b + w_U \Big\} \\ = \; & 0. \end{aligned} \tag{23}$$

Solving for w_U yields

$$w_U = \frac{1}{2}\Big\{\zeta_U^*\left(\overline{k}_1\right)\cdot\left[Z\cdot\varphi_H+(1-Z)\cdot\varphi_N\right]+\left(1-\zeta_U^*\left(\overline{k}_1\right)\right)\varphi_I \tag{24}$$
$$-\overline{k}_0\cdot d(\zeta_U^*\left(\overline{k}_1\right))-\theta_0^U-\left[\zeta_U^*\left(\overline{k}_1\right)\cdot Z+\left(1-\zeta_U^*\left(\overline{k}_1\right)\right)\right]b\Big\}.$$

Substitute (24) into (22). Solving this for $d'\left(\zeta_U^*\left(\overline{k}_1^*\right)\right)$ yields the equilibrium level of monitoring as expressed in (*10*):

$$d'\left(\zeta_U^*\left(\overline{k}_1^*\right)\right)=\frac{1}{\overline{k}_0}\left\{Z\varphi_H+(1-Z)\varphi_N-\varphi_I-(1-Z)b\right\}.$$

q.e.d.

The threat point of the traditional Japanese board

The threat point of the traditional Japanese board, θ_0^J, is expressed as

$$\theta_0^J = \zeta_{0_J}^*\cdot Q\left[(n-1)\frac{\varphi_{NH}}{n}+b\right]+\zeta_{0_J}^*\cdot(1-Q)\left[\frac{(n-1)^2}{n^2}\varphi_N+\frac{n-1}{n}b\right] \tag{25}$$
$$+(1-\zeta_{0_J}^*)\left[(n-1)\frac{\varphi_N}{n}+b\right]-w_0^J-\overline{k}_0\cdot d(\zeta_J^*),$$

where $\zeta_{0_J}^*$ is the optimum level of monitoring chosen by the board when its measure of monitoring cost is $\overline{k}_1^\circ$, and hence $\zeta_{0_J}^*$ is a function of $\overline{k}_1^\circ$. The first term $\zeta_{0_J}^*\cdot Q\left[(n-1)\frac{\varphi_{NH}}{n}+b\right]$ is the expected payoff to the initial board members when the monitoring succeeds and a good signal is observed, and the third term $(1-\zeta_{0_J}^*)\left[(n-1)\frac{\varphi_N}{n}+b\right]$ is the expected payoff when there is no monitoring at all. In both terms, the initial CEO leaves his post after the breakdown of negotiation, and at that point one of the directors is promoted to be the new CEO. However, when the board either observes a good signal (the first term), or does not monitor in the later stages (the third term), there will be no more changes of players after that. Thus, one of them surely receives b, and the remaining $n-1$ directors receive $\frac{\varphi_{NH}}{n}$ or $\frac{\varphi_N}{n}$ each. The second term is the expected payoff when monitoring succeeds but observes a bad signal. Here, one of the initial directors is already promoted to a CEO, and the remaining $n-1$ directors are on the board with one new director promoted from among the employees. Then, if the new director becomes a CEO with probability of $\frac{1}{n}$, the remaining initial directors receive $(n-1)\frac{\varphi_N}{n}$, but if one of the remaining initial directors becomes a CEO with probability $\frac{n-1}{n}$, one of them surely

receives b, but the remaining $n-2$ will receive $\frac{\varphi_N}{n}$. Therefore, the expected payoff is expressed as $\frac{1}{n}\left[(n-1)\frac{\varphi_N}{n}\right]+\frac{n-1}{n}\left[b+(n-2)\frac{\varphi_N}{n}\right]=\left[\frac{(n-1)^2}{n^2}\varphi_N+\frac{n-1}{n}b\right]$. The fourth term is the wage $w^J_{0,}$ and this equals $-\left[\zeta^*_{0_J}\cdot Q+\left(1-\zeta^*_{0_J}\right)\right]b$, because the initial board alone decides both the wage and the new board composition as to maximize its expected payoff subject to at least assuring the reservation utility of the newly hired CEO, who has no bargaining power. [42] The last term is the cost of monitoring.

q.e.d.

Proof of participation constraint for the negotiation in the traditional Japanese system

The addition of the threat points for the board and the CEO is

$$T_J(\zeta)=\zeta\cdot Q\left[(n-1)\frac{\varphi_{NH}}{n}+b\right]+\zeta\cdot(1-Q)\left[\frac{(n-2)^2}{n^2}\varphi_N+\frac{n-1}{n}b\right] \tag{26}$$
$$+(1-\zeta)\left[(n-1)\frac{\varphi_N}{n}+b\right]-\overline{k}_0\cdot d(\zeta)+[\zeta\cdot Q+(1-\zeta)]b.$$

The addition of (11) and (14) yields

$$G_J(\zeta)=[\zeta\cdot Z+(1-\zeta)]\,b+ \tag{27}$$
$$\zeta\left[Z\cdot\varphi_H+(1-Z)\left(\frac{n-1}{n}\cdot\varphi_N+b\right)\right]$$
$$+(1-\zeta)\varphi_I-\overline{k}_0\cdot d(\zeta).$$

From (4), (26) $<$ (27) if ζ is the same. (First organize all the terms that have b into one term, and then compare them between (26) and (27). The comparison of the remaining terms are clear.) Hence, if we denote the level of monitoring ζ that maximizes (26) to be ζ^*_0 and substitute this into both (26) and (27), then $T_J(\zeta^*_0)<G_J(\zeta^*_0)$ holds. Similar to the U.S. case, it is obvious that the point that maximizes $G_J(\zeta)$ is larger than or equal to $G_J(\zeta^*_0)$. Therefore, the feasible set is in the interior of the addition of the players' utilities.

q.e.d.

[42] As in the U.S. system, this is because there are many CEO candidates with the same priors. Hence it can be normalized at 0.

Proof of Proposition 4: (16)

The first-order condition maximizing V_J with respect to $\overline{k}_1$ yields,

$$\begin{aligned} & (Z-1)b \cdot \Bigg\{ \zeta_J^* \left(\overline{k}_1\right) \cdot \left[Z\varphi_H + (1-Z)\left[\frac{(n-1)}{n}\varphi_N + b\right]\right] \\ & + \left(1-\zeta_J^* \left(\overline{k}_1\right)\right)\varphi_I - \overline{k}_0 \cdot d(\zeta_J^* \left(\overline{k}_1\right)) - w_J - \theta_0^J \Bigg\} \\ & + \Bigg\{ \left[\zeta_J^*(\overline{k}_1) \cdot Z + \left(1-\zeta_J^*(\overline{k}_1)\right)\right] b + w_J \Bigg\} \\ & \times \Bigg\{ Z\varphi_H + (1-Z)\left[\frac{(n-1)}{n}\varphi_N + b\right] - \varphi_I - \overline{k}_0 \cdot d'(\zeta_J^* \left(\overline{k}_1\right)) \Bigg\} \\ = \; & 0. \end{aligned} \tag{28}$$

The first-order condition maximizing V_J with respect to w_J yields,

$$\begin{aligned} & \Bigg\{ \zeta_J^* \left(\overline{k}_1\right) \cdot \left[Z\varphi_H + (1-Z)\left(\frac{n-1}{n} \cdot \varphi_N + b\right)\right] \\ & + \left(1-\zeta_J^* \left(\overline{k}_1\right)\right)\varphi_I - \overline{k}_0 \cdot d(\zeta_J^* \left(\overline{k}_1\right)) - w_J - \theta_0^J \Bigg\} \\ & - \Bigg\{ \left[\zeta_J^* \left(\overline{k}_1\right) \cdot Z + \left(1-\zeta_J^* \left(\overline{k}_1\right)\right)\right] b + w_J \Bigg\} \\ = \; & 0. \end{aligned} \tag{29}$$

Solving for w_J yields,

$$\begin{aligned} w_J \;=\; & \frac{1}{2}\Bigg\{ -\theta_0^J - Zb \cdot \zeta_J^* \left(\overline{k}_1\right) - \overline{k_0} \cdot d' \left(\zeta_J^* \left(\overline{k}_1\right)\right) - b\left(1-\zeta_J^* \left(\overline{k}_1\right)\right) \\ & + \zeta_J^* \left(\overline{k}_1\right)\left[Z\varphi_H + (1-Z)\left(\frac{n-1}{n} \cdot \varphi_N + b\right)\right] + \varphi_I \left(1-\zeta_J^* \left(\overline{k}_1\right)\right) \Bigg\}. \end{aligned} \tag{30}$$

Substitute (30) into (28), then solving for $d'\left(\zeta_J^* \left(\overline{k}_1\right)\right)$ yields the equilibrium monitoring level as expressed in (*16*):

$$d'\left(\zeta_J^* \left(\overline{k}_1^*\right)\right) = \frac{1}{\overline{k_0}}\left\{ Z \cdot \varphi_H + (1-Z)\left(\frac{n-1}{n}\varphi_N + b\right) - \varphi_I - (1-Z)b \right\}.$$

q.e.d.

Proof of "Corporate officers" may render internal oversights weak.

For simplicity, I assume that the number of directors are reduced to one-half. By reducing the number of board would reduce the profit of the firm, but do not reduce the amount of payment which will be paid to the new director. In other words, "leak" of $\frac{1}{n}\varphi_N$ remains unchanged. I rewrite (16) as $d'(\zeta^*_J(\overline{k}^*_1)) = \frac{1}{\overline{k}_0}[Z\varphi_H + (1-Z)\,\varphi_N - \varphi_I] - \frac{1}{\overline{k}_0}(1-Z)\frac{1}{n}\varphi_N$. The first-term of the right-hand side decreases because φ_H, φ_N, φ_I all become one-half, but the second term of the right-hand side, which indicates "leak" remains the same.

q.e.d.

The general case for deriving $\varphi_H > \varphi_I > \varphi_N > \varphi_L$ in Section 3.3

Below I show the general case in which $X_H > X_L \neq 0$.

I denote the prior ability of the initial CEO as $\gamma^i, i \in \{H, L\}$, where $\gamma^H > \gamma^L$. On the other hand, the prior ability of any new CEO candidate is $\frac{1}{2}$ for both being H and L. The profit of the firm is denoted $X_j,\ \ j \in \{H, L\}$, where $X_H > X_L$. Then the conditional probability of outcome dependent on the ability of the CEO, $a_i, i \in \{H, L\}$ is expressed as $P^i_j \equiv \Pr\{X_j|a_i\}$. I assume that a_H stands for high ability and a_L stands for low ability. For example, P^H_L is the probability that the CEO produces X_L conditional on his high ability a_H. See Table A.

Table A

	a^H	a^L
X_H	P^H_H	P^L_H
X_L	P^H_L	P^L_L

I assume $P^H_H > P^L_H$, and hence, $P^L_L > P^H_L$ holds. Given these assumptions, the CEO is expected to bring the payoff of $\overline{X}^H \equiv P^H_H X_H + P^H_L X_L$ when the CEO's ability is high, and $\overline{X}^L \equiv P^L_H X_H + P^L_L X_L$ when the CEO's ability is low, to the company. In either case, the board receives a share of ρ from this amount. That is, the board expected payoff is expressed as $\rho\overline{X}^H \equiv A > B \equiv \rho\overline{X}^L$. Thus, the expected payoff of the board when the initial CEO serves to the end is expressed as

$$\varphi_I \equiv \rho\left[\gamma^H\left(P^H_H X_H + P^H_L X_L\right) + \gamma^L\left(P^L_H X_H + P^L_L X_L\right)\right] \equiv \gamma^H A + \gamma^L B.$$

On the other hand, if a new CEO is hired and serves to the end, the board's expected payoff is expressed as

$$\varphi_N \equiv \rho\left[\frac{1}{2}\left(P^H_H X_H + P^H_L X_L\right) + \frac{1}{2}\left(P^L_H X_H + P^L_L X_L\right)\right] \equiv \frac{1}{2}(A+B).$$

Below, I show that when the board monitors, the above mentioned expected payoffs change due to updates of CEO's ability. See Table B.

Table B

	a^H	a^L
y_H	R_H^H	R_H^L
y_L	R_L^H	R_L^L

I denote the signal the board observes as $y \in \{y_H, y_L\}$, and the conditional probability of payoff dependent on the ability of the CEO is expressed as $R_j^i = \Pr\{y_j|a_i\}$. This is given exogenously, but notice that it does not appear in my model since it is only used to derive the posterior ability of the CEO by Bayes' rule. When the board monitors and observes y_H, then it believes that the CEO is likely to have high ability with probability of $\frac{\gamma^H R_H^H}{\gamma^H R_H^H + \gamma^L R_H^L}$, which can be denoted μ_H^H. It is assumed that $\mu_H^H > \gamma^H > \frac{1}{2}$, ($\mu_H^L = 1 - \mu_H^H < \frac{1}{2}$.), to imply that the monitoring raises the expected outcome of the firm if the initial CEO is believed to be likely to be H. Likewise, $\mu_L^H \equiv \frac{\gamma^H R_L^H}{\gamma^H R_L^H + \gamma^L R_L^L}$, and this is assumed to be $\mu_L^H < \frac{1}{2}$, ($\mu_L^L > \frac{1}{2}$). Given these assumptions, the board's expected payoff would be expressed as

$$\varphi_H \equiv \left[\mu_H^H \rho \left(P_H^H X_H + P_L^H X_L\right) + \mu_H^L \rho \left(P_H^L X_H + P_L^L X_L\right)\right] \equiv \mu_H^H A + \mu_H^L B,$$

if the board observes y_H with probability Z, and,

$$\varphi_L \equiv \left[\mu_L^H \rho \left(P_H^H X_H + P_L^H X_L\right) + \mu_L^L \rho \left(P_H^L X_H + P_L^L X_L\right)\right] \equiv \mu_L^H A + \mu_L^L B,$$

if the board observes y_L with probability $(1 - Z)$.

From above arguments, $\varphi_H > \varphi_I > \varphi_N > \varphi_L$ can be derived even when I assume $X_L = 0$ for simplicity.

q.e.d.

FIGURE 1

Timeline

stage 1	stage 2	stage 3	stage 4
Initial board $(\bar{k}_0)$ and initial CEO do Nash bargainig over $(\bar{k}_1, w)$.	New board $(\bar{k}_1)$ chooses monitoring intensity (ζ). It observes signal $y \in \{y_H, y_L\}$ with probability ζ, and observes no signal with probability $(1-\zeta)$.	New board $(\bar{k}_1)$ decides to retain/fire initial CEO.	The payoffs are realized.
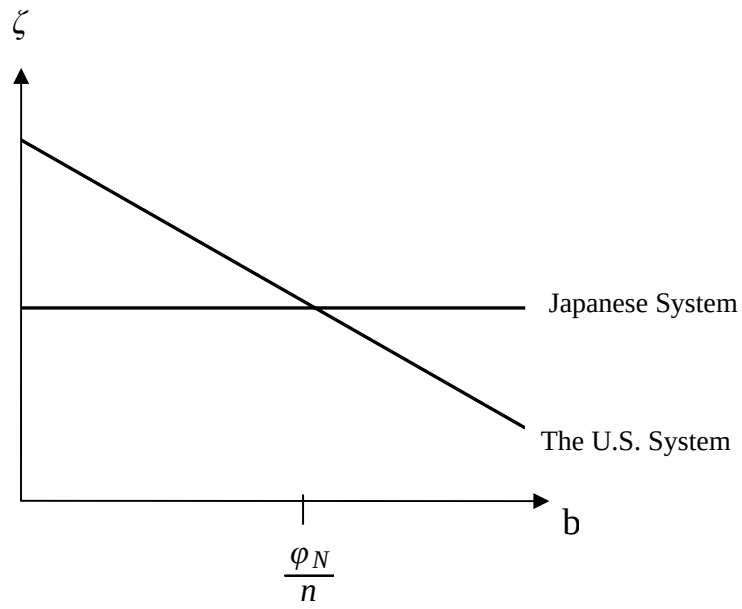
FIGURE 2