Corporate Finance and Human Resource Management

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ABSTRACT

Corporate governance can be defined to be an institution that constrains relations between corporate managers and various stakeholders, including shareholders, creditors, workers, suppliers, and customers. Under this broad definition, corporate governance is a system of various sub-systems that are complementary to one another. This paper focuses on two sub-systems of the Japanese corporate governance: one on corporate finance and another on human resource management. After briefly documenting the characteristics of the Japanese corporate governance in these two sub-systems, the paper discusses how each sub-system has been going through substantial changes in recent years. Examining the data for 58 listed companies, we find preliminary evidence on the complementarity between the two sub-systems. The firms that have non-traditional ownership structure (especially high foreign ownership) seem to have more non-traditional human resource management practices.

1. Introduction

In the narrowest definition, corporate governance is "the ways in which the suppliers of finance to corporations assure themselves of getting a return on their investment" (Shleifer and Vishny, 1997, p.737). Most studies on corporate governance in economics have traditionally used this narrow definition when they examined the corporate governance of individual companies or the systems of corporate governance in different countries. Some recent research, however, started to stress the importance of understanding corporate governance more broadly as an institutional arrangement that involves not only managers and financiers but also other stakeholders such as workers, suppliers, and others. For example, Tirole (2001, p.4) defines corporate governance as "design of institutions that induce or force management to internalize the welfare of stakeholders." Similarly Aoki (2001, p.281) defines corporate governance as "a set of self-enforceable rules (formal or informal) that regulates the contingent action choices of the stakeholders (investors, workers, and managers)."

When one takes these broader views of corporate governance, it becomes clear that a system of corporate governance consists of various sub-systems. For example, corporate governance certainly includes institution that governs the relation between managers and financiers (including both shareholders and creditors). In addition, corporate governance also includes the system of human resource management, which controls the relation between management and labor. Other institutions that regulate the relation between managers and other stakeholders, such as customers, suppliers, and sometimes local community in general, are also parts of corporate governance.

As Aoki (2001) points out, the various aspects of corporate governance are not combined randomly. Corporate governance is a system in the sense that these various sub-systems are

integrated to reinforce each other. For example, financial arrangement that heavily relies on the market for corporate control in disciplining the managers may work better with human resource management that puts less emphasis on firm specific skills and on the job training than an alternative that stresses firm specific skills that are acquired on the job.

This paper examines such link between the financial aspect and the human resource management aspect of corporate governance. There is an increasing body of literature that considers the linkages between the sub-systems of (broadly defined) corporate governance. Many studies look at cross-country correlations of various aspects of the corporate governance. For example, Jackson (2004) find close correlation between the corporate finance and labor management practices at country level.

Some studies examine the linkage by comparing different firms within a country. For Japan, for example, Ahmadjian and Robinson (2001) find that the firms with high foreign ownership and low bank ownership are more likely to downsize their workforce. Also using the firm level data from Japan, Abe (2002) finds that the firms with close main bank ties adjust their employment only slowly. We follow a similar approach and study the linkage by looking at data from individual Japanese corporations. Japanese firms used to have a well known system of corporate governance with seemingly complementary sub-systems. Recently, some corporations started to show substantial deviations from the traditional characteristics in the corporate finance and in human resource management. We study if the recent changes in both aspects of corporate governance are related. We examine if the firms that have non-traditional corporate financing also tend to have non-traditional employment practices.

The rest of the paper is organized as follows. The next section briefly describes the stylized characteristics of the Japanese corporate governance to set the background. We

especially focus on the complementarity that seems to exist between the financial arrangement and human resource management. Sections 3 and 4 discuss the recent changes that some Japanese corporations started to show in the corporate finance aspect and the human resource management aspect respectively of the corporate governance. Section 5 reports the results of empirical investigation. Section 6 concludes by pointing out the agenda for future research on the link between corporate finance and human resource management.

2. Japanese corporate governance

Many researchers have pointed out that the corporate governance of Japanese firms fits the stakeholder view of the corporate governance very well. Shareholders seem to play rather a limited role in monitoring and disciplining corporate management. Corporations seem to be operated in the interests of many types of stakeholders, including employees and customers.

The "Japanese" corporate governance is characterized by long-term relationship between the corporation and its many stakeholders.[1] A Japanese corporation has a long-term relationship with a bank, which is typically the largest lender, holds substantial amount of shares, and sometimes sends its (former) employees as board members of the corporation. In addition to this main bank relationship, the corporation also typically has a long-term relationship with other shareholders, who are most likely other corporations, and the corporation often holds shares of those corporations through "cross-shareholding" arrangement.

There exists a long-term relationship between the corporation and its employees as well. In the practice of "lifetime employment," regular employees are expected to continue working for the same company until the mandatory retirement age. The "seniority wage" that increases as

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[1] Surveys of Japanese corporate governance include Aoki (2001, chapter 13), Fukao (1995), Hoshi (1998), and Kojima (1997).

long as a worker works for the same country gives a strong incentive for workers to stay. In return, the corporation provides various trainings for the workers to improve their skills. The corporation does not have to worry about losing the skilled workers to other companies. The workers do not mind acquiring skills that are only useful in the current company. Thus, the lifetime employment system encourages the development of human resource management that stresses the importance of firm-specific skills.

Long-term relationships are also observed between a Japanese firm and other types of stakeholders, such as customers and suppliers. Long-term relationship between a manufacturer and its core suppliers, most prominently observed in auto industry, is a canonical example.

The various aspects of Japanese corporate governance are related and reinforce each other. In this sense, the Japanese corporate governance is considered to form a system of mutually complementary elements. For example, dependence on concentrated bank loans (rather than diffusedly held bonds or stocks) makes it easier for financially distressed firms to renegotiate its obligations. This reduces the chance of (premature) corporate failures and protects other long-term commitment, such as lifetime employment.

3. Changes in the Japanese Corporate Governance

The Japanese corporate governance that we briefly described in the last section started to change in various ways around the late 1970s. This section reviews major changes in the two aspects that this paper focuses on: corporate finance and human resource management.

Deregulation in corporate financing that started in the late 1970s allowed many large Japanese firms to use capital markets (rather than banks) for their financing.[2] Many corporations increased the bond issues (included convertibles and warrants) in domestic as well as foreign

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[2] For more detailed discussions, see, for example, Hoshi and Kashyap (2001), Chapter 7.

markets, and reduced their dependence on bank loans, a hallmark of the Japanese corporate financing.

Cross-shareholding, another characteristic of the Japanese corporate governance, also started to change. The change started later than the decline in the bank dependence. The magnitude of the change, however, has been equally dramatic. Kuroki (2003) develops a measure of cross-shareholding by first calculating the proportion of shares in a company held by the other companies whose shares are also held by the company and then taking the average for all listed firms in the Tokyo Stock Exchange. According to this measure, the cross-shareholding declined from 18% in the early 1990s to less than 8% by March 2003.

As the Japanese corporations and banks shed the shares that they traditionally held in each other, foreign investors gradually increased the ownership in the Tokyo Stock Exchange.[3] This is another notable change in Japanese corporate governance. The share of foreign ownership in the Tokyo Stock Exchange increased from about 4% in the early 1990s to more than 18% in 2002.

The human resource management aspect of the corporate governance also started to show some remarkable changes after the 1990s. The changes have been observed in many areas of the human resource management practices, including employment practice, workers training, and promotion system.

The lifetime employment that characterizes the Japanese human resource management seems to have started to change in the 1990s. Some observers even claim that the lifetime employment system no longer exists. (see Ono(2000) and Takahashi(2001)) Although it is too soon to declare the death of lifetime employment system, there are some evidence that suggests the popularity of the practice is indeed declining. Table 1 shows the response to a couple of

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[3] See Ahmadjian (2004) in this volume for more details of this process.

questions posed in a 1998 survey by the Japan Institute of Labor (*Survey on Human Resource Management and Job Consciousness under Structural Adjustment*). When corporations are asked about the typical tenure of employees, about 80% of them answered that employees typically work at the same company till the retirement age and that some continues to work or are reemployed for a certain period thereafter. This tendency does not seem to depend on the type of jobs (management, specialist, clerical, or blue-collar). When the same corporations are asked about what they expect to happen in the future, only 60% of them answered that the tendency to work till the retirement age and possibly beyond will continue. 20% to 30% of respondents believe that it will become more likely for the workers to be sent to work for other related companies or voluntarily quit before the retirement age. The expected change is clearest for management and white-collar jobs. Thus, many corporations are expecting that it will become increasingly difficult to preserve the lifetime employment system.

In addition to changes in the lifetime employment practice, the practice in recruiting new workers also seems to be changing. Japanese corporations have traditionally given a preference to new (university) graduates when they hire new workers. However, the practice seems to be changing. Figure 1 shows the proportion of companies implementing mid-career hiring for each year from 1994 to 2002. Despite the worsening recession and increasing unemployment rate after 1998, the ratio of companies conducting mid-career hiring has been increasing. This suggests that mid-career hiring, which was not a usual practice for Japanese corporations, is becoming more standard.

The practice in termination of employment is also going through a change. Figure 2 shows the percentage of companies implementing employment adjustment. The figure also plots the proportion of companies that adjusted the labor force through dismissal or early retirement.

Employment adjustment has previously been characterized by firms first implementing restrictions on overtime, then suspending the hiring of part-time workers and new graduates if necessary, and finally, only when unavoidable, encouraging early retirement and/or imposing outright dismissal. It is clear from Figure 2, however, that employment adjustment by means of voluntary retirement and dismissal has been increasing after 1998.

The increase in the adjustments of labor force through dismissal or early retirement is consistent with the finding on the increase in the speed of employment adjustment estimated from the aggregate data. Table 2 reports the result of such a study. The table shows that the estimated speed of adjustment in the 1990s is greater than in the 1980s. Abe (2001) examines the relation between corporate governance structure and the speed of employment adjustment, and finds that the speed of adjustment is higher for the firms with smaller shareholding by financial institutions. Thus, Abe's result suggests that the changes in employment practice may be related to the changes in corporate financing that we discussed in the last section.

The education and training of workers have also been changing. Table 3 reports results from a survey conducted by the Sanwa Research Institute (2000). In 2000, 46.2% of the firms had education and training programs for all regular white-collar workers, and 51.6% of them provided such programs for selected workers only. When asked the plans for the future, only 26.6 % answered that they will provide training programs for all regular white-collar workers while 71.3% of them plan to restrict the programs only for selected workers. The methods of training are also changing. In 2000, 80.8% of the firms trained workers primarily through on-the-job training (OJT). The proportion of the firms that plan to provide training primarily through OJT in the future drops to 72.3%. On the other hand, the proportion of the firms that primarily use off-the-job training (OffJT) is expected to increase from current 14.1% to 22.5%.

Finally, the content of education is also expected to change. In 2000, 33.6% of firms allowed the workers to choose the content of their training. The proportion is expected to increase to 42.8%. In summary, many firms are planning to change their training programs to be more individualized, primarily based on off-the-job training, and given only to selected workers.

Changes are observed in the system of promotion, too. The Japanese system of promotion has been traditionally characterized by "delayed promotion" and the "seniority wages." The delayed promotion was considered useful to keep the workers motivated (for career concerns) for a long time. The seniority wages discouraged the workers from leaving companies after short tenures and hence reinforced the lifetime employment.

Both delayed promotion and seniority wages started to change in many corporations. For example, Sanwa Research Institute (2000) reports that 39.5% of the respondent firms had brought forward the period when workers are put on different career tracks, suggesting a change in the delayed promotion. 61.6% are planning to move the period (yet) earlier in the near future. The use of seniority wages is also declining. In determining wages, many companies are starting to consider the factors other than seniority, which include workers' ability, performance and achievements. As shown in Table 4, firms that took into account the performance and achievements of management level employees in wage determination rose from 55.1% in 1998 to 64.2% in 2000. The firms that reflected the ability of management level staff to execute their tasks in their salaries increased from 69.9% to 79.7%. The trend is not limited to management personnel but more widely spread.

Another evidence of weakening seniority wages can be found in Table 5. The table shows that individual performance is reflected in wage levels in 65% of firms for management personnel and 66.1% for non-management jobs. Among these, 41.3% (39.5%) of firms have

increased wage differentials over the past 5 years for management (non-management). In the

next 3 years, 51.2% of them plan to increase the wage differentials among management

personnel and 49.2% plan to do so for non-management employees. Sanwa Research Institute

(2000) survey also obtains a similar result. In 2000, 42.3% of the firms that responded to the

survey had increased wage differentials, while 65.2% intended to do so (again) in the future.

4. Complementarity: A Simple Model

The last section described the changes in both financing and human resource

management practices of Japanese corporations. Are those two changes related? Because

corporate finance and human resource management are two important aspects of corporate

governance, it is likely that these changes are related. As one element of a system of corporate

governance changes drastically, other elements may also be transformed to be consistent with the

new system. This section presents a simple model by Hoshi (2002) that implies such a

complementarity between corporate financing and human resource management. We use this

model to motivate the empirical analysis in the next section.

The model augments the simplest version of the model in Tirole (2001), which focuses

on potential agency problem between a financier and a manager, by adding potential moral

hazard of workers. Thus, the model describes the corporate governance as an institution that has

two distinct aspects (corporate financing and human resource management) that deal with two

moral hazard problems (one by the managers and the other by the workers).

First, we start by modeling the financial aspect. Following Tirole (2001), consider an

entrepreneur/manager who can choose between two types of projects. Both types require the

initial investment of I and yield R ($>I$) if successful. If the project fails, the return is zero. The

projects differ, however, in the probabilities of success. Let p_H (p_L) be the probabilities that

the "good" ("bad") project succeeds. We assume $p_H > p_L$. Thus, the "good" project has a

greater expected return. The "bad" project is assumed to bring private (non-monetary) benefits

of B to the manager. The manager is endowed with her own fund of A ($<I$). Since the own fund

is not enough to cover the necessary investment, the manager must raise I-A from an investor.

The investor's required rate of return is assumed to be zero. The choice of project is private

information of the manger, which creates a potential moral hazard problem.

We assume the "good" project has a positive net expected value but the "bad" project has

a negative net expected value, in the sense $p_H R - I > 0$ and $p_L R - I + B < 0$. It is easy to see

that the investor rewards the manager only when the project succeeds so that the manager's

incentive to take the "good" project is maximized. Let w_m be the manager's income (or

equivalently net revenue minus the debt payment) when the project succeeds. The manager

decides to choose the "good" project if and only if:

(1)　　$(p_H - p_L)w_m \geq B$

In words, the higher income that can be expected from taking the "good" project must be large

enough to compensate for the lost private benefits. The equation (1) implies that the manager

must receive no less than $B/(p_H - p_L)$ when the project succeeds in order for him to choose the

"good" project. Thus, the maximum amount of income that the investor can expect is:

(2)　　$p_H \left(R - \dfrac{B}{p_H - p_L} \right).$

Tirole (2001) calls this the manager's "pledgeable income." Since we assume zero required rate

of return, the manager can raise funds to finance the project if and only if the pledgeable income

exceeds the amount of funds that need to be raised (I-A), that is:

$$(3) \quad p_H \left(R - \frac{B}{p_H - p_L} \right) \geq I - A$$

Note that a project with positive net value ($p_H R - I > 0$) may not be financed if the private benefit of the bad project is large (large B) or if the manager's own fund is small (small A).

Bank monitoring can alleviate the problem of the moral hazard here. Following Tirole (2001) again, assume the bank can reduce the private benefit of the manager (when he chooses the bad project) from B to b ($<B$) by paying the monitoring cost of c_b. Thus, under the bank monitoring, the pledgeable income increases to $p_H[R - b/(p_H - p_L)]$. When this is greater than the amount of bank loan plus the monitoring cost, the bank loans fund to the manager, who invests in the good project. The condition is given by:

$$(4) \quad p_H \left(R - \frac{b}{p_H - p_L} \right) \geq I - A + c_b$$

Comparing (3) and (4), we see, for not too large c_b, the bank monitoring expands the set of good projects that will be financed.

Alternatively, takeover threat in the stock market may discipline the manager and make him choose the good project. First, suppose the manager finances the project by issuing shares (with control rights) to investors. The amount of shares held by the investors (*I-A*) is assumed to be large enough so that the investors collectively can control the firm. Following Tirole (2001) again, assume the stock market participants observe a signal after the manager chooses the project. The signal can be "good" or "bad", and the probability that a "good" signal is observed depends on the manager's choice of the project. Let q_H be the probability that the signal is "good" when the manager chooses the good project, and let q_L be the probability that a "bad"

signal is observed when the manager chooses the bad project. Assume $q_H > p_H$ and $q_L < p_L$.

In other words, the signal is assumed to be more informative than the result of project about the

manager's choice. Let v_G be the conditional probability that the project succeeds when a "good"

signal is observed, and v_B the conditional probability that the project succeeds when a "bad"

signal is observed.[4]

Suppose there are investors in the market who have the ability to increase the conditional

success probability of the project when the signal is "bad" from v_B to $v_B + \delta$.[5] We call these

investors "turnaround specialists." Since turnaround specialists can expect to earn more from the

projects with bad signals than the current owners, they are willing to buy out those projects/firms.

Assume the sales price of such a project to be $v_B R$.[6]

As Holmström (1979) showed, the optimal incentive pay can be contingent only on the

signal, not the result of the project. Letting w_s be the payment to the manager when a good

signal is observed, the manager chooses the good project if and only if:

$$(5) \quad (q_H - q_L)w_s \geq B$$

Thus, the amount of pledgeable income is given by:[7]

$$(6) \quad p_H R - q_H \frac{B}{q_H - q_L}$$

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[4] Obviously, $p_H = q_H v_G + (1 - q_H)v_B$ and $p_L = q_L v_G + (1 - q_L)v_B$.

[5] We do not model where this special skill comes from. The new owners may be able to benefit from renegotiating various implicit commitments with the workers and the suppliers as argued by Shleifer and Summers (1988).

[6] In general, the sales price will be somewhere between $v_B R$ and $(v_B + \delta)R$ depending on the bargaining powers of the current and new owners. Here the assumption is that the current owner does not have any bargaining power. Giving some bargaining power to the current owner does not change the results of the model substantially.

[7] With probability q_H, a good signal is observed. The manager receives $B/(q_H - q_L)$ and the shareholder expects to get $v_G R$. With probability $(1 - q_H)$, a bad signal is observed. The manager gets nothing, and the shareholder sells the project to a turnaround specialist at $v_B R$. Thus, the expected payoffs for the shareholder is given by $q_H v_G R - q_H [B/(q_H - q_L)] + (1 - q_H)v_B R = p_H R - q_H [B/(q_H - q_L)]$.

The manager can raise funds in the stock market and invests in the good project if:

$$(7) \quad p_H R - q_H \frac{B}{q_H - q_L} \geq I - A.$$

Let us now turn to the human resource management aspect of the model. We assume that the manager needs to hire one worker to complete a project. A good project needs a skilled worker. If an unskilled worker is assigned to a good project, the probability of success falls from p_H to p_M (we assume $p_H > p_M > p_L$). The worker's skill is not important for a bad project.

Workers can acquire the skill only by making efforts, which cost them E, which is non-monetary. A worker's skill and the efforts to acquire the skill are assumed to be private information, which create a potential moral hazard problem. We assume that it is socially desirable for a worker who is assigned to a good project to make an effort to acquire the skill, that is $p_H R - E > p_M R$.

We consider two alternative ways to alleviate this moral hazard problem. First, suppose a firm can pay e to train a worker to be skilled. Assume, in this case, the worker does not have to exert any efforts to acquire the skill.[8] We assume $e \leq E$, i.e., the training cost for the firm does not exceed the cost of individual efforts to acquire the skill. Let $w*$ be the market wage for an unskilled worker. The total cost for the firm to hire an unskilled worker and provide training is given by $w*+e$.

Alternatively, we assume the firm can try to find a skilled worker in the labor market, which provides a signal that is correlated with the skill of the worker. Let r_H be the probability that a good signal is observed when the worker has made efforts and acquired the skill. We assume that the probability of a good signal when the worker has not made the efforts is zero.

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[8] The result does not change if we assume that the worker's effort is reduced compared with the self-training case.

Thus, a firm can secure a skilled worker by hiring a worker with a good signal. Let w be the wage paid for such a skilled worker. Then, workers have incentive to invest in the skill if and only if:

$$(8) \quad r_H w - E \geq w*.$$

If we assume that the firm has all the bargaining power, the equilibrium wage for high skilled workers is given by:

$$(9) \quad w = \frac{w* + E}{r_H}$$

This model includes two alternative ways to alleviate the agency problem between the manager and the investor and two alternative ways to mitigate the agency problem between the worker and the manager. To deal with the agency problem between the manager and the investor, one can rely on bank monitoring or one can use the signal from the stock market. To deal with the agency problem between the manager and the worker, the manager can provide the in-house training to the (unskilled) worker or can go to the labor market with high enough wage to motivate the workers to invest in their own skills. Two sets of two alternative practices give us four combinations of these practices: (1) bank financing and in-house training, (2) stock market financing and in-house training, (3) bank financing and self-training (by the worker), and (4) stock market financing and self-training. In the rest of this section, we compare these four alternative arrangements of corporate governance, focusing on how successfully each arrangement can address the moral hazard problems.

Although the model includes two moral hazard problems, the one for the worker is completely solved by either of the mechanism. In equilibrium, the workers acquire the skills in either case. The difference is just the cost to achieve the efficient outcome. The cost difference influences the amount of the income that the manager can "pledge" to get financing, which

determines, together with the financial arrangement, the extent that the agency problem between the manager and the investor is reduced. Thus, the comparison between different corporate governance arrangements comes down to the comparison of the amount of pledgeable income in each case.

First, let us consider the combination of bank financing and in-house training. The manager hires an unskilled worker by paying w^* and spends e to make him skilled. This reduces the pledgeable income by w^*+e. Subtracting w^*+e from the left hand side of the inequality (4), we get:

$$(10) \quad p_H \left(R - \frac{b}{p_H - p_L} \right) - w^* - e - c_b \geq I - A$$

as the condition for the manager to choose the good project under bank monitoring.

Next, consider the combination of stock market financing and in-house training. A major difference from the bank monitoring case is that the firm is sold to a new investor when the stock market signal is not good. We assume that the worker is fired and receives nothing in this event. Then, the manager has to promise a higher wage *ex ante* to compensate for the possibility of firing. Since the worker will be employed after the training with probability q_H, the firm has to promise to pay $\frac{w^*}{q_H}$. Adding the cost for in-house training, the pledgeable income of the firm is reduced by:

$$(11) \quad \frac{w^*}{q_H} + e$$

Subtracting this from the left hand side of the inequality (7), the condition for the manager to choose the good project is given by:

$$(12) \quad p_H R - q_H \frac{B}{q_H - q_L} - \frac{w^*}{q_H} - e \geq I - A$$

The third combination is bank financing and self-training. Each worker invests the effort of E to acquire the skill, and gets a job if the labor market produces the good signal. The wage that the firm pays to the worker is given by (9). Subtracting this from the left hand side of (4), we get the following condition for the manager to choose the good project.

$$(13) \quad p_H \left(R - \frac{b}{p_H - p_L} \right) - \frac{w^* + E}{r_H} - c_b \geq I - A$$

Finally, let us consider the combination of stock market financing and self-training. We assume the stock market signal is observed before the labor market signal. Then, the firm gets to hire a worker and pays out the wage given by (9) only when it survives (with probability q_H). Thus, the condition for the manager to choose the good project is given by:

$$(14) \quad p_H R - q_H \frac{B}{q_H - q_L} - q_H \frac{w^* + E}{r_H} \geq I - A$$

Note that (10), (12), (13), and (14) have the same right hand side. Let T_{10}, T_{12}, T_{13}, and T_{14} denote the left hand side of (10), (12), (13), and (14) respectively. Each one of these can be considered as a measure of the extent that each combination reduces the agency problems. A larger T implies that the condition for the manager to choose the good project holds for a wider set of parameters. A simple calculation yields:

$$(15) \quad T_{10} - T_{12} = q_H \frac{B}{q_H - q_L} - p_H \frac{b}{p_H - p_L} - c_b + \frac{(1 - q_H) w^*}{q_H}$$

$$(16) \quad T_{13} - T_{14} = q_H \frac{B}{q_H - q_L} - p_H \frac{b}{p_H - p_L} - c_b - (1 - q_H) \frac{w^* + E}{r_H}$$

$$(17) \quad T_{10} - T_{13} = \frac{(1 - r_H) w^*}{r_H} + \frac{E}{r_H} - e$$

$$(18) \quad T_{12} - T_{14} = \frac{q_H(w^* + E)}{r_H} - e - \frac{w^*}{q_H}$$

The equation (15) compares the combination of bank financing and in-house training to the combination of stock market financing and in-house combination. If this is positive, the combination of bank financing and in-house training dominates the combination of stock market financing and in-house training in the sense that there exists a set of parameters where the good project is chosen under bank financing and in-house training but not chosen under stock market financing and in-house training. Similarly, the equation (16) compares the combination of bank financing and self-training to the combination of stock market financing and self-training.

The first three terms in each equation shows the difference between the cost of disciplining the manager through the stock market (higher pay for a manger with the good signal) and the cost of disciplining the manager through bank monitoring. The lower is the cost of bank monitoring (c_b), the higher is the reduction of private benefit achieved by bank monitoring (B-b), and the lower is the quality of the stock market signal (q_H / q_L), the more likely is the bank financing to dominate the stock market financing.

The last term of (15) shows the difference in the cost of in-house training under bank financing and under stock market financing. Under the stock market financing, workers demand higher wages to compensate for the possibility of being fired, which makes the wage payment higher compared with the bank financing case. Thus, the last term of (15) is positive. Similarly, the last term of (16) shows the difference in the cost of self-training under bank financing and under stock market financing. Since the firm does not have to hire a worker at all if the stock market signal turns out to be bad, the expected wage payment is smaller under stock market financing. Thus, the last term of (16) is negative.

Since the equations (15) and (16) have the same first three terms, (15) is always larger than (16). Thus, there exists a set of parameters that make (15) positive but (16) negative. In this case, bank monitoring dominates stock market financing if the workers acquire the skill through in-house training, but stock market financing dominates bank monitoring if the workers acquire the skill through self-training. In this sense, we find complemantarity between the corporate financing and the human resource management: bank financing is complementary to in-house training while stock market financing is complementary to self-training.

The equations (17) and (18) compare the two alternative labor practices by holding the financial arrangement constant. If (17) is positive, in-house training dominates self-training under bank monitoring. If (18) is positive, in-house training dominates under stock market financing. The higher is the cost advantage of in-house training (E-e) and the lower is the quality of the labor market signal (r_H), the more likely is in-house training to dominate self-training.

It is straightforward to show that (17) is always greater than (18).[9] Thus, there exists a set of parameters that makes (17) positive and (18) negative. For this set of parameters, in-house training dominates self-training under bank monitoring, but self-training dominates in-house training under stock market financing. Again we find the complementarity between the financial arrangement and human resource management in this sense.

In the next section, we examine the data for Japanese firms to see if we find the complementarity between the corporate financing and the human resource management practices suggested by this model. One approach would try to study how each combination of corporate governance practices influences the extent that the moral hazard problems are mitigated. With

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[9] $\dfrac{(1-r_H)w^*}{r_H} + \dfrac{E}{r_H} - e - \left(\dfrac{q_H(w^*+E)}{r_H} - e - \dfrac{w^*}{q_H} \right) = \dfrac{(1-q_H)(r_H + q_H)}{r_H q_H} w^* + \dfrac{(1-q_H)E}{r_H} > 0.$

this approach, if we found one particular labor practice (for example, in-house training) is more effective in reducing the moral hazard problem under a particular financial arrangement (for example, bank financing) than the others, we would say the particular labor practice and the particular financial arrangement are complementary. Even in our simple model, where the extent of the remaining agency problem is perfectly captured by the amount of pledgeable income, however, it is difficult to find an empirical proxy for the pleadeable income.

In this paper, we take an alternative approach that examines whether a particular human resource management practice is more likely to be adopted by the firms with a particular corporate financial structure. Our model shows that bank financing and in-house training, which are consistent with the traditional Japanese corporate governance, are complementary to each other. The model also shows that stock market financing and self-training are complementary to each other. If these complementary relations exist, it is likely to find that most firms adopt either the combination of bank financing and in-house training or the combination of stock market financing and self-training. Since the other combinations are not optimal, one would expect the firms with non-complementary combination would eventually change one practice to make it complementary to the other practice.

5. Empirical Analysis

We employ the three datasets for the examination. The data on human resource management practice come from the "Human Resource Management Systems Survey" ("Systems Survey" hereafter) conducted by the Institute of Labor Administration. This survey, which was most recently conducted in 1995, 1997, and 2001, asks a corporation to identify the presence or absence of each of approximately 180 human resource management practices. Firms

surveyed include listed companies, major non-listed companies with capital exceeding ¥500 million yen and more than 500 employees, and small- to medium-sized companies with capital exceeding ¥ 300 million yen and more than 100 employees. We examined only those firms that responded in both1995 and 2001 surveys. We chose and analyzed the responses to the questions that we believed most relevant to corporate governance and are available in both 1995 and 2001 surveys. Table 6 lists those practices.

Most financial data are taken from the *Corporate Financial Databank* compiled by the Development Bank of Japan. The database contains information on the financial statements that listed companies file with stock exchanges.

Finally, we use the *Directors Handbook* (*Yakuin Shikihō*, Tōyō Keizai Shinpō-sha), a quarterly publication of information regarding executive personnel of listed companies. Using the data, we calculate the dependence on outside directors (measured by dividing the number of directors sent by the financial institutions and related firms in total number of directors) for each company.

For 58 firms, we have been able to collect all the information that we use for our empirical analysis. The summary statistics for these 58 firms are reported in Table 6. Panel A of Table 6 lists the human resource management variables that we use in the analysis. A human resource management variable for each firm is a dummy variable that takes one when such a practice exists in the company and takes zero when such a practice is absent. For example, "annual salary system" takes one when the company uses annual salary system for some of its employees (typically in management positions) and zero otherwise. The first two columns of Panel A shows the sample means of the variables in the 1995 survey and the 2000 survey respectively. The sample mean shows how much proportion of the sample had a particular

human resource management practice. For example, the table shows 10.3% of the firms had annual salary system in 1995. The proportion increased to 30.7% in 2000.

The other (mostly financial) variables that we use for our analysis are listed in Panel B of Table 6. The table reports the sample means and standard deviations for the variables in 1995 and 2000. The ordinary profit is measured in million yen, and the number of employees is the raw number. All the other variables are measured in percentage term. The figures clearly suggest the declining importance of bank involvement in corporate governance of the firms in this sample. Although the bank debt to total debt to ratio did not decline, both the shareholding by financial institutions and the proportion of bankers on the board declined substantially from 1995 to 2000.

For these 58 firms, Table 7 compares the ownership structure of the firms that adopt a certain employment practice to that of the firms that do not adopt such practice. The table shows the comparison for 1995 and 2000. For example, the upper number in the cell [annual salary system, bank ownership:1995] shows the average proportion of shares, of the firms that had annual salary system in 1995, held by the financial institutions in 1995. The lower number in the cell shows the average proportion of shares, of the firms that did not have annual salary system as of 1995, held by the financial institutions in 1995.

We examine two measures of the ownership structure: the proportion of shares held by banks and the proportion of shares held by foreigners. The bank ownership is considered to be high for the firms that still maintain the traditional main bank relationship. Abe (2002) finds that these firms also tend to have slow speed of labor adjustment. We look at whether these firms also share the same tendency in other labor practices.

The foreign ownership is considered to be high for the firms that have substantially moved away from the traditional Japanese corporate financing. Ahmadjian (2004) indeed finds that the corporate governance at firms with high foreign ownership seems different from that at traditional Japanese firms. She finds that the firms with high foreign ownership tend to have higher levels of board independence, more disclosure, and exhibit other governance practices often associated with the "Anglo-American" standard. She also finds that the firms with high foreign ownership and low bank ownership are less reluctant to downsize when they are in distress.

The results in the table suggest several interesting differences in the ownership structure between the firms that have a certain employment practice and those that do not, and confirm our suspicion that the two recent changes in the human resource management may be (at least partially) related to the changes in the corporate financing. The first row compares the ownership structure of the firms that have adopted the annual salary system to those that have not. The annual salary system literally means that the salaries are determined at annual rate, not monthly or weekly, but in Japan the annual salary system means that the annual salary is determined by achievements and performance during the previous year. Thus, the annual salary system is a clear deviation from the traditional practice of seniority wages where the level of salary is heavily influenced by the age of the employee regardless of the performance. The table shows that the foreign ownership of the firms that have annual salary system tend to be a little bit higher in 2000, but the difference is not statistically significant.

Linking the amount of bonus to a measure of achievement (rather than the amount of regular salary) is another deviation from the traditional practice. The table shows that the firms

that link the bonuses to achievement tend to have high foreign ownership in 1995, but the difference is again insignificant.

The third row compares the firms that use irregular working hour system and those that do not. The advantage of introducing irregular working hours is that working hours can be kept flexible to match fluctuations in the intensity of business activity, or that, as in flextime, working hours can be left to the discretion of the employees. Either way, firms introduce irregular working hours to execute business more efficiently. In Japan, most firms with irregular working hours changes the working hours seasonally over a year, rather than introducing a flextime. Thus, the use of irregular working hours can be a deviation from the traditional pattern, but may just be a compromise move to increase the flexibility of working hours without moving all the way to flextime. The result in the table suggests that the firms that have irregular working hours tend to have marginally significantly higher bank ownership. They also tend to have high foreign ownership, but this result is not statistically significant. Thus, the firms with traditional ownership structure seem to use irregular working hours. This is consistent with the idea that the irregular working hour system is an attempt to introduce flexibility to the traditional labor management without drastically changing the traditional practice.

Length-of-service awards encourage employees to remain in a firm over a long time. Thus, the practice fits very well with the traditional Japanese human resource management that promotes long-term employment. Table 7 suggests that the firms that have length-of-services awards tend to have low foreign ownership, suggesting they are indeed more likely to have the traditional ownership structure. The result is statistically significant for 2000.

To maintain fairness of personnel evaluation by minimizing discrepancies in evaluation standards between evaluators, some corporations have systematic program to train the evaluators.

As the wages and promotion come to depend more on merits and performances, the importance of personnel evaluation increases and hence the importance of training evaluators. Table 7 shows that the firms that provide such training for evaluators tend to have higher bank ownership in 2000, suggesting that the firms with traditional ownership structure are more likely to adopt this practice. The difference is statistically significant at 10% level.

Company sponsored education program and education abroad program are important components of off-the-job training (OffJT). Japanese companies traditionally relied more heavily on on-the-job training (OJT), although some major companies had OffJT programs such as education abroad programs as well. The table shows that the firms that have these OffJT programs tend to have higher bank ownership. The difference is statistically significant for education abroad program in both 1995 and 2000. Interestingly, the firms that have high foreign ownership also tend to have these education programs. Another way to encourage OffJT is to provide financial assistance for self-training. Here we do not find any correlation with the ownership structure.

In traditional Japanese companies, it was rare to find female managers. In many companies, career tracks for female workers are different from their male counterpart. Women are expected to quit the firm when they get married, and training programs for them were often more limited than those for men. As some companies started to change their employment practices toward more merit-based ones, we have started to see the number of female managers to increase. The figures in Table 7 show that the firms that have female managers tend to have higher foreign ownership compared with those firms that do not have female managers. The result is statistically significant for 2000. In 2000, the firms with high bank ownership also seem to be more likely to have female managers.

The firms that had in-house venture system in 2000 seem to have higher bank ownership. The number of firms that had in-house venture system, however, was very small both in 1995 and 2000 (Table 6). Thus, the result may not be reliable.

Shukko is a system of inter-company employee transfer, which has been used by many Japanese companies. Under *shukko*, an employee is transferred (often temporarily) to work in a different company. *Shukko* is used, for example, in a group of related firms to move employees from a firm that is experiencing excess labor force to another firm in the group that is experiencing labor shortage. In many cases, *shukko* is an integral part of the employee training program, where an employee is temporarily sent to a different company to develop new skills. In some cases, *shukko* can be permanent in the sense the transferred employee is not expected to be called back to the original company. Permanent *shukko* is considered to be a method of employment adjustment more than anything. Many firms are reported to increase the use of permanent *shukko* to reduce the labor force without firing workers. An increased use of permanent *shukko* can be seen as an early stage of movement away from the lifetime employment. In many cases, however, a tacit agreement to preserve the transferee's employment (at the new company) often exists. In this sense, permanent *shukko* may be viewed as an attempt to maintain the lifetime employment system in the increasing volatile economy. Table 7 suggests that the firms that have permanent *shukko* had higher bank ownership than the others in 1995, but the difference is statistically insignificant in 2000.

In many Japanese companies, promotion to a higher job (from section chief to department manager, for example) is strictly separate from promotion to a higher rank (from rank 5 to rank 6, for example). Some companies use examinations to judge if an employee satisfies the standards for one or both types of promotion. The exams to advance to a higher rank are observed more

often in a traditional Japanese human resource management, where the pay scale is more closely associated with ranks rather than jobs. Thus, it is interesting to find that the firms that do not have such exams tend to have higher foreign ownership, although the difference is not statistically significant. The companies that use exams to advance to higher job grades, however, do not have higher foreign ownership. Instead they tend to have higher bank ownership.

Finally, the firms that have fast track system tend to have higher foreign ownership in both 1995 and 2000. Thus, the use of fast track system, which is relatively new to many Japanese firms, tends to be associated with high foreign ownership in 2000.

Comparison of means of ownership variables suggest that certain human resource management practice may be indeed associated with a certain ownership structure. If we believe that a substantial part of the recent changes in the labor practices of large Japanese firms has been motivated by the changes in the ownership structure, the result suggests complementarity between ownership structure and human resource management practices.

The results in Table 7, however, are limited for several reasons. First, the number of observations is very small, which limits the power of statistical analysis. Second, simple comparison of means fails to control for other firm characteristics that are related to both financial structure and human resource management of the firms.

We have tried to address the second issue at least partially by estimating Probit regressions that relate the various human resource management practices to the corporate financial variables with some other control variables, such as the size of the firm.

Table 8 reports four of the fifteen Probit models that we estimated for 2000 (each model regresses a human resource management variable listed in the Panel A of Table 6 on the seven variables in Panel B of Table 6). We only report the regressions which show statistically

significant relations between the human resource management practice and at least one of the ownership variables. For the other specifications, we failed to find any statistically significant relations between human resource management and ownership structure. The small number of observations seems to impose a serious limit.

The column (4) (to much the numbers with Table 7) shows the result of regressing the length-of-service award (takes 1 if the firm has length-of-service awards) on the financial variables. The estimation result suggests that a firm with high foreign ownership is less likely to have length-of-service awards. Thus, firms with high foreign ownership do not seem to encourage many years of services as traditionally Japanese companies do.

The next two columns (6 and 7) show the regression analysis for the company sponsored education programs (domestic and abroad). For the domestic program, a larger company (measured with the number of employees) is more likely to have one. After controlling for the size, the high foreign ownership still increases the probability that the firm has the company sponsored education program within Japan. The bank ownership, however, is not significant. For the education abroad program, both bank ownership and foreign ownership increase the probability that the firm as a program. These results confirm the pattern found in Table 7 holds even after controlling for additional factors.

The last column shows the regression result for the existence of female managers. As we found in Table 7, a firm with high foreign ownership is more likely to have female managers. A company with more concentrated ownership (measured by the proportion of shares held by the ten largest shareholders), which presumably mean that a company is closely held by other Japanese companies, is less likely to have any female managers.

6. Conclusion and Future Agenda

This paper has provided a brief overview on recent changes in two important aspects of the governance of Japanese corporations: financial arrangement and human resource management, and an examination of the complementarity between the two aspects. The availability of data on human resource management at individual firm level limits the scope and depth of our analysis, but the preliminary investigation seems to reveal a set of robust findings concerning the effects of foreign ownership. The companies that show high level of foreign ownership were more likely to have human resource management practices that deviate from the traditional Japanese practice. For example, those companies were less likely to have the awards for longtime employees.

The foreign ownership, however, cannot explain all the changes in the human resource management practices that took place in Japan in the late 1990s. For example, many companies adjusted their wage system to reflect merits and performances of employees. These changes, however, do not seem to be related to the changes in foreign ownership.

There are several shortcomings in the current analysis, which make our conclusion only tentative. First, the current analysis just examines the presence or absence of an employment management practice without asking more detailed questions about the ways the practice is implemented. This may cause a serious problem. For example, even when a firm introduces a bonus system based on performance, the difficulty of measuring performance may make it impossible for bonus levels to reflect the achievements of employees correctly.[10] It may be important to go beyond the mere presence or absence of employment management systems and examine the actual implementations.

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[10] For more on the relationships between measurement of performance, wage determination, and incentives, see Prendergast (1999), which discusses the incentive problem that arises in cases when it is difficult to objectively measure performance.

Second, the interpretations of the same practice can differ so widely between firms that it is hard to make sure that the practices of the same name indeed mean the same to two firms. For instance, a contract employee system in one firm may mean the system to recruit and secure workers with certain expertise. A system of the same name, however, may be used just to recruit low skill labor for routine works in another firm. Thus, our results can be qualified, taking into account the possibility that a practice of the same name may mean totally different things in two firms.

Finally, the small sample size is a serious constraint for this study. This is especially clear in unsatisfactory attempt to estimate Probit models of the choice of each human resource management practice. It may take a series of systematic survey to collect the data that would better illuminate the relation between corporate finance and human resource management. This important task is left for future research.

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Table 1. Retirement practice by job category (%)

	managers		specialists		clerical workers		blue-collar workers	
	current practice	expected in future	current practice	expected in future	current practice	expected in future	current practice	expected in future
No mandatory retirement	1.8	1.4	2	2	1.2	1.2	1.5	1.5
Mandatory retirement at a certain age but many re-employed after that	79	60.9	79.6	63.8	78	61.6	78.9	63.6
Mandatory retirement but many transferred to related companies before that	10.7	27.8	7.8	22.4	7.8	21.3	6.5	17.4
Many retires voluntarily before the mandatory retirement	2.7	2	1.7	4.6	2.6	6.3	4.7	8.9
Others	7.7	7.8	8	7.3	10.4	9.6	8.4	8.5

Source: Survey for HRM and sense of vocation under structural adjustment (Japan Institute of Labor, 1998)

Note: The question asks each firm to choose a statement that best fits the current retirement practice and one that fits the future expected retirement practice for each job category.

Table 2. Speed of employment adjustment

Period	Speed of Adjustment	Implied Number of Quarters for Full Adjustment
1977.II - 85.II	0.199	5
85.III - 91.I	0.197	5.1
91.II - 2001.IV	0.213	4.7

Source: *White Paper on Welfare and Labor* (Ministry of Health, Labor, and Welfare, 2002)

Table 3. Education and training of white-collar workers

	Current Policy		Future Policy	
	A	B	A	B
Training provided for: (A) all workers or (B) selected workers	46.2	51.6	26.6	71.3
Method of Training: (A) OJT or (B) Off-JT	80.8	14.1	76.3	22.5
Training content selected by (A) employees or (B) company	33.6	64.3	42.8	54.8

Source: "Investigation Report about IT Revolution effect on Labour"(Sanwa Research Institute,2000)

Note: Table shows % of firms in each category.

Table 4. Factors that determine the wages (multiple answers)

	survey year	Factor for wage determination			
		job or duty	job performance	achievement	age/length of service, educational background
administrative position	1988	70.1	69.6	55.1	72.6
	2000	72.8	79.7	64.2	73.9
Other than administrative position	1998	68.8	69.2	55.3	78.5
	2000	70.6	77.3	62.3	80.6

Source: "Survey on Working Condition" (Ministry of Health, Labor, and Welfare)

Table 5.   Proportion of firms that have changed or plan to change the wage system (%)

	reflect a individual's performance	last five years				next three years			
		changed the wage system	expanded wage range	reduced wage range	no change	plan to change the wage system	expand wage range	reduce wage range	no plan to change
administrative position	[65.0]	100.0	49.7	41.3	8.4	50.3	54.4	51.2	3.2
other than administrative	[66.1]	100.0	49.3	39.5	9.8	50.7	53.2	49.2	4.0

source: "Survey on Working Condition" (MHLW)

Note: A value in [   ] is % of firm whose wage system reflects on individual's performance.

Table 6. Summary Statistics

Panel A

	Mean	
	1995	2000
Annual salary system	0.103	0.307
Bonus linked to achievement	0.172	0.138
Irregular working hours system	0.741	0.810
Length-of-service awards	0.879	0.759
Training for evaluators	0.741	0.690
Company sponsored education program (domestic)	0.293	0.293
Education abroad program	0.259	0.328
Female managers	0.586	0.466
In-house venture system	0.052	0.052
Permanent *shukko*	0.466	0.448
Financial assistance for self training	0.638	0.638
Exam to advance to a higher rank	0.103	0.086
Exam to advance to a higher job grade	0.362	0.448
Fast tracking	0.052	0.103
Small loan program	0.741	0.569

Panel B

	Mean (Std. Dev.)	
	1995	2000
Proportion of shares held by financial institutions	0.374 (0.126)	0.328 (0.139)
Proportion of shares held by foreign entities	0.082 (0.085)	0.086 (0.103)
Proportion of shared held by the 10 largest shareholders	0.460 (0.120)	0.438 (0.110)
Ordinary profit (Ten Thousand Yen)	9,188,983 (25,100,000)	7,522,878 (17,300,000)
Numbers of employees	3,147 (5,922)	2,667 (5,413)
Proportion of (ex-)bankers in the board	7.7 (7.9)	7.2 (7.4)
Bank debt to total debt ratio	0.247 (0.193)	0.277 (0.209)

Table 7. Human resource management practices and ownership structure (average % of shareholding)

Practice	Adopted?	Bank ownership		Foreign ownership	
		1995	2000	1995	2000
(1) Annual salary system	Yes	0.3474	0.3368	0.0808	0.1082
	No	0.3774	0.3243	0.0819	0.0746
(2) Bonus linked to achievement	Yes	0.3651	0.3349	0.1031	0.0898
	No	0.3762	0.3274	0.0774	0.0850
(3) Irregular working hour system	Yes	0.3931*	0.3434*	0.0906	0.0908
	No	0.3204*	0.2645*	0.0567	0.0634
(4) Length-of-service awards	Yes	0.3801	0.3228	0.0787	0.0704**
	No	0.3323	0.3459	0.1042	0.1336**
(5) Training for evaluators	Yes	0.3843	0.3500*	0.0823	0.0599
	No	0.3457	0.2804*	0.0803	0.0972
(6) Company sponsored education program	Yes	0.3891	0.3820*	0.1038	0.1414***
	No	0.3682	0.3062*	0.0727	0.0625***
(7) Education abroad program	Yes	0.4436**	0.4063***	0.1267**	0.1421***
	No	0.3501**	0.2905***	0.0662**	0.0581***
(8) Female managers	Yes	0.3746	0.3695**	0.0959	0.1259***
	No	0.3738	0.2926**	0.0618	0.0506***
(9) In-house venture system	Yes	0.3697	0.5388***	0.1015	0.1685
	No	0.3745	0.3169***	0.0807	0.0811
(10) Permanent *shukko*	Yes	0.4060*	0.3460	0.0869	0.0871
	No	0.3467*	0.3141	0.0773	0.0845
(11) Financial assistance for self-training	Yes	0.3895	0.3320	0.0941	0.0842
	No	0.3474	0.3220	0.0601	0.0882
(12) Exam to advance to a higher rank	Yes	0.3309	0.2884	0.0522	0.0248
	No	0.3793	0.3322	0.0852	0.0914
(13) Exam to advance to a higher job grade	Yes	0.4139*	0.3433	0.0744	0.0769
	No	0.3518*	0.3163	0.0860	0.0928
(14) Fast tracking	Yes	0.4684	0.3351	0.0557	0.1677**
	No	0.3692	0.3276	0.0832	0.0762**

Note: *, **, and *** denote the difference in the means of the column variable between adopters and non-adopters is significant at 10%, 5%, and 1% level respectively.

Table 8. Probit estimation: 2000

	(4)		(6)		(7)		(8)	
	Length-of-service award		Company sponsored education program		Education abroad program		Female managers	
c_bank	-0.3944		0.6039		1.5574	***	0.1023	
	(0.4936)		(0.5425)		(0.5382)		(0.6621)	
c_foreign	-1.3199	**	1.2760	*	1.8133	**	1.7713	**
	(0.6095)		(0.7268)		(0.8275)		(0.8847)	
c_big shareholder	-0.6084		-0.1616		0.8117		-2.1471	**
	(0.6124)		(0.7679)		(0.7386)		(0.8742)	
ordinary profit/loss	0.0039		-0.0095		-0.0003		-0.0031	
	(0.0084)		(0.0071)		(0.0053)		(0.0124)	
employee	0.0015		0.0073	*	0.0015		0.0051	
	(0.0032)		(0.0044)		(0.0021)		(0.0051)	
exective ratio(from bank)	0.7338		0.0396		-1.5662		-0.9695	
	(0.9455)		(1.0306)		(1.2961)		(1.1220)	
borrowings ratio	-0.2182		0.1272		0.7140	*	0.0741	
	(0.2903)		(0.3481)		(0.3716)		(0.3961)	
Number of obs	58		58		58		58	
LR chi2(8)	9.16		13.81		21.98		19.49	
Prob > chi2	0.2415		0.0546		0.0026		0.0068	
Pseudo R2	0.1428		0.1968		0.2997		0.2432	
Log likelihood	-27.475814		-28.179003		-25.690336		-30.321653	

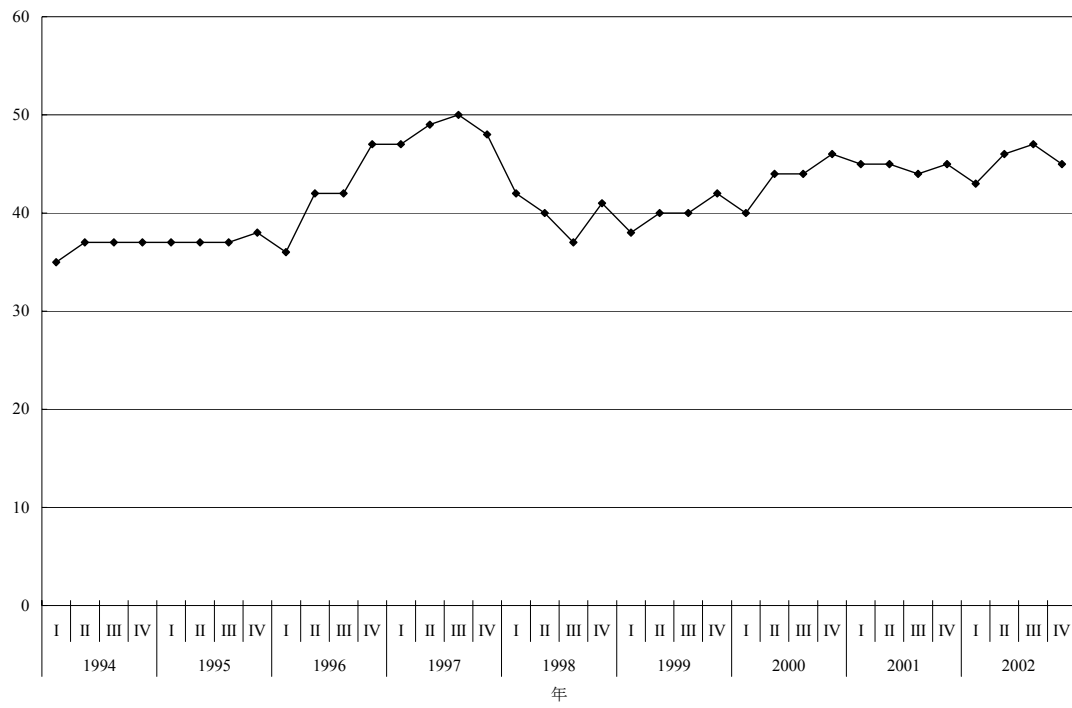**Figure 1. Proportion of firms that conducted mid-career hiring**

Figure 2. Proportion of firms that adjusted the labor force through dismissal or early retirement