94-F-32

Effectiveness of Institutional Monitoring
in the Japanese Corporate Governance

by

Akiyoshi Horiuchi and Hyon-Gak Shin
(University of Tokyo)

September 1994

Effectiveness of Institutional Monitoring in the Japanese Corporate Governance

July 1994

Akiyoshi Horiuchi and Hyon-Gak Shin
(University of Tokyo)

Abstract

Japanese firms are regarded as been under "institutional monitoring" in the sense that main banks and other financial institutions ward off capital market pressure such as hostile takeovers and in turn closely monitor corporate managers to ensure management efficiency. It is the conventional view that this "institutional monitoring" has been effective in Japanese corporate governance. This paper casts doubt on such a conventional view. The surge in convertible bond issues in the late 1980s is explained by assuming imperfect corporate management. Under this assumption, the relaxation of eligibility requirements for convertible bond issues since the mid 1980s has expanded the opportunities for incumbent managers to increase their perquisite expenditures. Thus, the surge of convertible bond issues symbolizes a current weak point of the Japanese corporate governance; this weak point was a major factor which lad to bad corporate performance in the early 1990s. The empirical test based on the panel analysis of more than five hundred firms supports the hypothesis of imperfect corporate governance.

1: Introduction

According to the terminology used by Baums(1993), Japanese corporate management has been independent of "market monitoring." Major companies have had close long-term relationships with specific major banks called "main banks." The main bank has been not only the largest lender, but also quite often one of the biggest shareholders of borrower firms.[1] Major companies and large financial institutions (main banks) have been involved in the system of cross-shareholding, and have warded off pressures from capital market for each other. Hostile takeovers, which are quite common in the US and UK capital markets, have been rarely observed in Japan because cross-shareholding has effectively prevented them. Counterparts of the cross-shareholding have not been so much interested in pecuniary returns from stock-holding as they are in maintaining business relations with their counterparts in the system. Therefore, the decline in stock prices have not directly influenced current management.[2]

This characteristic of the Japanese corporate governance seem to have given a wide scope of discretion to incumbent managers. But this does not necessarily mean that corporate managers are not disciplined for efficient management in Japan. Rather it may mean that the main bank and other financial institutions have appropriately monitored managers behavior and given them sufficient pressures to force efficient management. Sometimes, particularly when borrower firms are in financial distress, the main bank intensively intervenes in the process of restructuring corporate management by sending officials to the distressed firms. In this sense, Japanese managers have been disciplined not by the capital market, but by the institution. Following Baums(1993), "institutional monitoring" has been dominant there.

1

There are many studies which show that institutional monitoring in Japan has been effective in promoting efficient corporate management. In particular, Hoshi, Kashyap, and Scharfstein(1990a), (1990b), and (1990c) show that the main bank relationship has contributed to significantly reducing the agency costs facing borrower firms.

Prowse(1990) proposes that the major banks, which are not only major lenders but also major shareholders, can discipline incumbent managers of borrower firms. His empirical study based on cross section date of 1984 shows that monitoring by banks through shareholding is effective in preventing the agency problems associated with asymmetric information between firms and fund-suppliers.

Morck and Nakamura(1992) examine the influence of bank intervention in financially distressed firms upon performance of those firms. According to their empirical analysis, intervention by banks significantly improved firm performance during the period from 1981 to 1987. They conclude that the main bank relationship plays a similar role of monitoring corporate managers as that of takeovers in the US capital market.

By statistically examining relationships between the total factor productivity (TFP) of individual firms and financial variables such as ownership structure from 1976 to 1989, Lichtenberg and Pushner(1992) conclude that shareholdings by financial institutions increase the firms' TFP. Their result also supports the hypothesis that, in Japanese corporate governance, institutional monitoring is an efficient substitute for market monitoring.[3]

Thus, the conventional view emphasizing efficiency of institutional monitoring has worked efficiently in Japanese corporate governance seems to be prevailing among scholars. This conventional view, however, does not explicitly

consider negative aspects of the institutional monitoring. One such negative aspect is that incumbent managers and current employees tend to delay necessary structural changes in their firms. For example, as theoretically explained by Boot(1992), corporate managers tend to hang on to inefficient investments once they have decided to proceed with them. Current employees tend to refuse fundamental restructuring because it might threaten the specific capital value they have accumulated in the present managerial and productive framework of their firms. The threat of hostile takeovers would eliminate such actions by insiders which hinder fundamental restructuring.

The purpose of this paper is to examine the efficiency of institutional monitoring in Japan. We take up the case of the surge in convertible bond issues in the late 1980s. The active issuance of convertible bonds by Japan's major companies can be interpreted as symbolizing incumbent managers' abuse of discretionary powers, which tended to lead to a worsening of firms' performance. If institutional monitoring were truly effective in disciplining incumbent managers, intensively monitored firms would have not so strong incentives to issue large amount of convertibles as the other firms or, even if they did issue convertibles, their profit rates would not have deteriorated so much as the other firms experienced. Based on the panel analysis of more than five hundred large firms, we attempt to discover the influence of institutional monitoring on convertible bond issuing activities of individual firms. According to our estimation results, we do not observe significant influence of institutional monitoring. Thus, we conclude that institutional monitoring does not permit an optimum state of affairs with regard to Japanese corporate governance.

The structure of this paper is as follows. Section II briefly explains the structural changes in corporate finance since the late 1970s, and the process of

liberalization in the corporate bond markets in Japan. In section III we provided the standard theory of convertible bond issues and argue that the theory is not applicable to the case of Japan. Then, we introduce a very simple model to explain the recent surge in convertible bond issues. This model assumes the existence of an imperfect monitoring in corporate governance. According to our model, the relaxation of eligibility requirements for convertible issues and imperfect mechanisms of corporate governance jointly explain the aggressive issues of convertibles by major Japanese firms in the late 1980s, and the consequent profits losses after 1990. In section IV, we statistically investigate the relevancy of the model discussed in section III based on a sample of major firms. Our investigation supports the hypothesis of imperfect governance in Japanese financial system. Finally, section V is a summary of this paper.

II: Structural Changes in Japanese Corporate Finance

This section makes a rough overview of structural changes in Japanese corporate finance. In particular, we discuss the relationship between the relaxation of regulations imposed by the Bond Issue Arrangement Committee and the other organization on corporate bond markets and the "securitization" of corporate finance proceeding during the 1980s.

II.1 Eligibility requirements and the collateral principle

Since the early 1940s, Japanese corporate finance was dominated by the indirect finance centered on bank-lending. But as Chart 1 indicate, its structure has undergone remarkable changes since the late 1970s. The most conspicuous changes the "securitization" in the major companies' financing. The major firms steadily decreased their reliance on bank borrowing, and since the mid 1980s, increased the amount of their bond issues. The average proportion of borrowing to total amount of funds raised by them both internally and externally was more than 35 percent from 1960 to 1975. However, during the period from 1976 to 1991, the average proportion of borrowing dropped to less than 10 percent.

In contrast to borrowing, the relative importance of bond-financing increased remarkably from the late 1970s to the end of the 1980s. For example, the proportion of bond-financing to total amount of funds raised by major firms was just 5 percent in 1974, but in 1989 it had risen to nearly 20 percent. In particular, we can see from Chart 2 that the rapid increase in corporate bond issues in the latter half of the 1980s was due to the surge in both convertible and warrant bonds. It is hardly an exaggeration to say that the securitization of the

Japanese corporate finance in the latter half of the 1980s was mainly based on equity-related bonds such as convertibles.

This securitization of corporate finance, particularly the drastic increase in the importance of convertible issues in the late 1980s, was surely promoted by the liberalization in the Japanese corporate bond markets. Japan's corporate bond markets were previously strictly regulated by the Bond Issue Arrangement Committee (BIAC), a semi-public organization consisting of the largest private banks, represented by the Industrial Bank of Japan (IBJ), and bond underwriting securities companies.[4] Actually, the markets of equity-related bonds have been managed and regulated not by the BIAC, but by the organization consisting of only underwriting securities companies. But both this organization and the BIAC were closely monitored by the Ministry of Finance (MOF), and therefore, the system of managing convertible bond issues was been quite similar to that of the BIAC.

One of the most important roles of both the BIAC and the organization for convertibles issues was to determine the eligibility requirements for corporate bond issues. These organizations effectively controlled credit allocation through corporate bond markets based on the eligibility requirements. The eligibility requirements for issuing firms were composed of minimum values of net wealth, dividends per share, profit rates (both per share and as a ratio to total capital), and equity capital ratio. Table 1 illustrates an example of the eligibility requirements for collateralized convertible bond issues as of May 1985. The firm that could not satisfy these requirements was not permitted to issue bonds at all. These organizations also strongly promoted the principle of collateral, which required bond-issuing firms to submit sufficient amounts of collateral, usually in the form of real estate or equipment.[5] Therefore, much stricter

requirements were imposed on bond issues without collateral. This principle used to be so stringent that only a limited number of excellent firms possessing sufficient amounts of collateral were permitted to issue any bonds. Especially, the eligibility requirements and the collateral principle worked to crowd out small and medium size firms from corporate bond markets, as such firms did not possess sufficiently large net wealth. This regulation may have been effective in stabilizing Japan's bond market. However, it hinder the development of the corporate bond market, and in turn contributed to strengthening the system of indirect finance based on the banking sector.

II.2 Pressures from abroad

The domestic corporate bond markets have been gradually liberalized since the early 1980s mainly due to pressure from abroad. In the early 1980s, reliance by Japanese firms on offshore financing began to rise sharply primarily through large-scale corporate bond issues in the Euromarkets. In 1979, the amount of straight and convertible bonds which Japanese firms issued in the domestic market totalled over ¥1.6 trillion, more than double that of offshore issues; but by 1985, total Japanese corporate bond issues offshore had risen by ¥3.3 trillion, over 25 percent more than the total for all domestic Japanese corporate issues. Total Euromarket issues, with terms dictated by markets rather than by bureaucratic fiat, supplied over half of all Japanese corporate bond financing and one-third of total corporate finance, despite the apparent low cost of capital to domestic issuers within Japan (Chart 3). As Takeda and Turner(1992: pp.77-78) point out, bond issuance fees were significantly higher in the domestic market than in Euromarkets mainly because of intense intervention in the domestic bond issue process.

The higher bond issuance fees compelled Japanese firms to issue bonds abroad in the 1980s, and the de facto buyers of the bonds were mostly Japanese investors, thereby giving rise to a "hollowing" of the domestic corporate bond markets. The Ministry of Finance have tried to prevent this hollowing by restricting Japanese investors' purchase of the Eurobonds issued by Japanese firms. Specifically, they are forbidden to buy those corporate bonds in less than three months since the bonds are issued. But this restriction seems to have been ineffective because underwriting securities companies in Europe could circumvent it by selling the Eurobonds issued by Japanese firms to Japanese investors by subscription. This subscription system has helped the underwriters minimize the costs of mediation between Japanese firms and investors in the Eurobond markets.

Offshore financing by Japanese corporations exerted pressure to relax issuing restrictions, especially those on collateral requirements (which incidentally did not exist in many of the Euromarkets where Japanese firms were active). Banks had long opposed any relaxation of collateral requirements within the domestic bond market, as the stringent rules had allowed them to reap considerable fee income. The existence of these fees caused the total bond issuance cost in the domestic market to be significantly higher than in Euromarkets. Japanese banks began to reassess this situation during the mid 1980s, as the rush offshore caused a cut back in their share of corporate financial business.[6]

II.3 Noncollateralized corporate bond issues

The MOF took important steps toward market orientation in the regulation of corporate bond issue, which made the control-minded policies of the BIAC more difficult. As we saw earlier, collateral had in principle been required for all

Japanese corporate bond issues between 1933 and the early 1970s. In December 1972, under the MOF's guidance, underwriting securities companies and trustee banks determined the rules for the so-called "noncollateralized convertibles," and according to this new rule Mitsubishi Trading Company issued noncollateralized convertibles in 1973 for the first time in Japan. In reality, this rule of 1972 did not imply an introduction of full-scale "noncollateralization" into convertible bond issue because issuing firms were still required to hold specific assets as a sort of securities.

In March 1979 Sears Roebuck became Japan's first noncollateralized convertible bond issuer, followed the next month by Matsushita Corporation and twenty-one other firms during 1979-1984. In this time, they were truly noncollateralized. Although in the early 1980s the eligibility requirements for noncollateralized convertible issues were so strict as to permit only a few firms of recognized credibility to issue them, the requirements were steadily relaxed during the latter half of the 1980s as explained in Table 2. As a result, the number of the firms eligible for noncollateralized convertibles greatly increased. This liberalization surely contributed to the remarkable increase in the volume of convertibles issued in the domestic market during the latter half of the 1980s. As Chart 4 indicates, the rapid increase in convertible bond issues during the period in the domestic market was primarily due to the surge in noncollateralized convertibles.[7]

Thus, securitization in corporate finance appears to have been a natural consequence of financial liberalization. In other words, this surge of convertible bond issues appears to be a phenomenon representing an efficiency-improving impact of financial liberalization. Surely, the financial liberalization have widen the scope of options in financing methods for Japanese firms. However, it is not

easy to account for the surge in convertible issues by the standard theory of corporate finance in which the convertible bond is assumed to be essential in reducing the agency costs due to the asymmetric information between fund-raising firms and investors. The relevancy of the standard theory seems doubtful in Japan because the restrictive eligibility requirements for convertible bonds allowed only well-established firms to get access to this instrument. In contrast to large-scale companies, small-scale enterprises were in effect excluded form the convertible bond market even in the late 1980s. The amount of convertibles issued by the firms listed in the over-the-counter market, which are typical of small-scale businesses, was ¥84.5 billion from 1977 to 1989, just less than 0.3 percent of the total amount of convertibles issued in the domestic market during the same period.

Therefore, the firms which could issue convertible bonds could be regarded as free from agency costs due to asymmetric information. Moreover, it is noteworthy that the surge of convertible issues seemed to be accompanied with excessive investment expenditure by the Japanese corporate sector in the late 1980s, and lead to a serious depression beginning in 1990. With hindsight, it is doubtful whether those active issues of convertibles were an efficiency-improving consequence of financial liberalization. We discuss this point more fully in the next section.

III: Convertible bond issues and the structure of corporate governance

In this section we will propose a hypothesis to explain the surge of convertible bonds in the late 1980s. This hypothesis is related both to a particular characteristic of liberalization in the corporate bond market and to the mechanism of corporate governance in Japan. As has been explained in the previous section, an important characteristic of liberalization of the Japanese bond markets was that major well-established companies were favorably treated. For those firms' managers, convertible bond issue was not a mean of overcoming the agency problem due to asymmetric information but a means of increasing their perquisite expenditure. This is an integral aspect of the hypothesis advocated in this paper.

III.1 The standard theory of convertible bond issue

Why do we need convertible bonds? The standard theory of corporate finance provides two reasons for convertible bond issue. In either case imperfect information plays an essential role. First, firms' managers or shareholders would issue convertible bonds to signal their incentives to avoid risky projects that may entail large losses for their creditors under the rule of limited liability. Issuing convertible bonds implies that, even if a risky project goes well to realize extraordinary returns, current shareholders must yield most of the returns to investors who hold convertibles. Thus, convertible bonds are regarded effective in mitigating the agency problem existing between shareholders and creditors (debt holders). This problem is emphasized by Jensen and Meckling(1976).[8]

Secondly, according to Stein(1992), some firms, particularly medium-quality ones, have incentives to issue convertible bonds to obtain different funding

conditions from low-quality firms. High-quality firms with good prospects of returns are able to issue straight bonds or borrow from banks without endangering default risk. On the other hand, low-quality firms with poor prospects of returns would be forced to issue stocks instead of straight bonds because the latter incurs serious default risk. As Stein(1992) shows, medium-quality firms with not so bad prospects may be able to differentiate themselves from low-quality firms by issuing convertible bonds in the capital market.

In either of these cases, convertible bonds are instrumental for firms who suffer from the agency problem caused by asymmetric information. Therefore, these theories predict that the firms that are newly established or have not yet achieved excellent performance should be more active in issuing convertible bonds than well-established firms.[9] According to Brealey and Myers(1991), "convertibles tend to be issued by the smaller and more speculative firms."(p.549)

III.2 Another hypothesis

It is doubtful whether the standard theories of convertible bonds are applicable to Japan's case during the latter half of the 1980s. Although the eligibility requirements for convertible bonds became less and less restrictive during the 1980s, only relatively large-scale firms were allowed to issue convertibles. Overwhelmingly important issuers of convertibles were major companies who were previously established in the Japanese economy. For them, the agency problem due to asymmetric information emphasized by the standard theories seems to be irrelevant.

It may be said that outside investors overrated stock prices of industrial firms during the late 1980s. If managers and current shareholders understood the

overvaluation of their stock prices in the capital market, they would have been induced to issue shares and convertible bonds to outsiders exploiting the excess profits due to the asymmetric information. In short, current shareholders would reduce their equity positions as much as possible in this case. Can this hypothesis of asymmetric information between insiders and outsiders be relevant to Japan's capital markets in the latter half of the 1980? In reality, the current shareholders did not seem to reduce their equity positions. In particular, in the late 1980s, the Japanese firms did not reduce the share of the internal funds in the total amount of fund-raising.[10] It would be irrational for the current shareholders to increase the amount of retained profits when outsiders overrate their stock value because it means missing a chance to take excess profits by issuing convertibles and stocks to less-informed outside investors. Thus, the relatively high importance of the internal funds in Japanese corporate finance in the late 1980s weakens the hypothesis of asymmetric information between the current shareholders and outside investors.

Why, then, were big Japanese companies so eager to issue convertible bonds in the late 1980? Managers of those firms reportedly explained themselves that convertibles were preferable to bank loans and the other fund-raising means because convertibles could be issued at extremely low coupon rates when investors had strong bullish expectations about the firms' stock prices.[11] Yet this explanation is not convincing from the viewpoint of shareholders of those firms, because low coupon rates on convertibles imply a high probability that they will be forced to yield part of valuable portions of their firms to outside investors at low prices in the future. Extraordinarily bullish expectations similar to those observed in the stock market during the latter half of the 1980s should

not necessarily induce firms to issue convertibles if they pursue profit maximization for their shareholders.

If managers are not sufficiently constrained by the principle of maximizing shareholders' profits, however, incentives may exist for them to issue convertible bonds and reduce bank borrowing. In particular, bullish expectations of stock prices may more strongly induce corporate managers to issue more convertibles than otherwise. We explain this by introducing a primitive two-period model, where there is no asymmetric information between insiders and outside investors considered, for example, by Jensen and Meckling(1976) and Stein(1992). Therefore, if they are perfectly disciplined to maximize current shareholders' profits, the incumbent managers have no particular reason to prefer convertibles issue to borrowing from banks.

Furthermore, the managers are assumed to be constrained by an extremely high penalty of bankruptcy. In other words, it is assumed that they want to avoid cases of default at any expense because the bankruptcy incurs huge amounts of not only pecuniary but also psychological costs to them. We also assume that this extremely high bankruptcy cost for managers is common knowledge in the capital market. This assumption of bankruptcy cost constraints on managers is plausible in the case of Japan's well-established companies. The managers of those companies have accumulated intangible assets embodied in themselves whose value will be totally lost should their firms go bankrupt.

The firm is assumed to have an investment opportunity whose net present value is positive. The amount of funds required to be raised externally to proceed with this investment opportunity is given at I. When this investment is carried out, the value of the firm will in the next period be X_H at probability P, and X_L ($X_H > X_L$) at probability (1 - P). We assume that manager of the firm

14

could enjoy perquisite or a "pet" investment represented by Z in addition to the normal investment I. The managers raise $I + Z$ either by borrowing from banks or issuing convertible bonds.[12] For simplicity, we assume all agents are risk-neutral, and the equilibrium interest rate is zero.

Let us assume that the firm borrows B from banks and issues convertible bonds the face value of which is F with the conversion ratio θ at the first period. The convertible bonds will be converted into $100 \cdot \theta$ percent of the firm's shares in the second period when its stock value turns out to be X_H. But when the stock value is X_L in the second period, they will not be converted into shares so the managers will have to repay F to bond-holders. The bankruptcy cost constraint assumed above requires that $B + F$ is not larger than X_L; i.e.,

$$B + F \leq X_L. \tag{1}$$

Figure 1 presents the time structure and distribution of return among stake-holders in our model. The present value of the convertible bond is determined as follows:

$$P\theta(X_H - B) + (1 - P)F.$$

The sum of this present value and bank borrowing B is the total amount of funds raised by the firm in the first period, and by definition the total is equal to $I + Z$. Thus,

$$I + Z = P\theta(X_H - B) + (1 - P)F + B \tag{2}$$

On the other hand, the present value of the firm's stock V is given by the following equation:

$$V = P(1 - \theta)(X_H - B) + (1 - P)(X_L - F - B)$$
$$= PX_H + (1 - P)X_L - I - Z$$
$$= V_0 - Z, \tag{3}$$

15

where V_0 is the firm's share value when managers do not carry out perquisite expenditure at all. Because we assume an efficient capital market here, managers' expenditure on perquisite Z precisely leads to a decline in the firm's stock value V regardless which method of financing the firm chooses. This is one variation of Modigliani-Miller Theorem.

When the firm chooses borrowing from a bank, the maximum amount of the fund will be given by X_L because of the assumption of bankruptcy costs. Thus,

$$I + Z \leq X_L. \tag{4}$$

On the other hand, if the firm could issue convertible bonds to raise the funds $I + Z$, the maximum amount of ($I + Z$) is given by the following condition.

$$I + Z \leq P\theta X_H + (1 - P)X_L$$
$$= X_L + P(\theta X_H - X_L) \tag{5}$$

Thus, if $\theta X_H > X_L$, the maximum of ($I + Z$) can be larger than X_L when the firm issues convertibles. If the firm is allowed to freely change the conversion ratio θ, it can increase the maximum amount of perquisite expenditure Z by offering higher ratio θ to investors. But the present rule of issuing convertibles prevents managers from manipulating θ in Japan. Under the present institutional framework, we can assume this conversion ratio to be exogenously given.[13]

By comparing (4) and (5), we can see that the managers can increase the amount of perquisite expenditure Z by issuing convertibles when $\theta X_H > X_L$. An increase in Z will lead to capital loss of the firm's current shareholders. Therefore, if shareholders are able to instill sufficient discipline upon managers so as to maintain profit-maximization as their only goal, there is no particular incentive for managers to issue convertibles. If incumbent managers are to some extent free from the discipline of maximizing shareholders' profits, however, they have incentives to increase the expenditure Z by issuing convertibles at the

expense of present shareholders. In this primitive model, investors' bullish expectations are presented by either higher value of P or X_H. Thus, equation (5) shows when investors have more bullish expectations of the firm's value just like during the late 1980s, the managers' incentives for issuing convertibles become stronger, other things being constant.[14]

Our model assumes imperfect corporate governance in Japan in the sense that the corporate managers have latitude more or less to direct firms' resources to satisfy their own (and probably employees') preferences for perquisite expenditure. Based on this assumption, we can explain the surge in convertibles issue during the latter half of the 1980s. The liberalization of convertible bond market started in the early 1980s weakened severity of bankruptcy constraints for corporate managers and thereby increased their perquisite expenditure. The sharp rise in stock prices during the second half of the 1980s produced optimistic expectations of future stock prices which helped managers expand the latitude of perquisite as equation (5) suggests. In contrast with this, since 1990, when pessimistic expectations have prevailed in the stock market, Japanese firms lost their enthusiasm for issuing convertibles. The amount of convertible bond issue has substantially decreased since 1990 as Chart 2 shows.

III.4 Evidence supporting the hypothesis

We can derive two propositions from our hypothesis of imperfect corporate governance. The first proposition is that the active issue of convertibles by a firm tends to increase its perquisite expenditure, thereby deteriorating the firms' performance from their shareholders' viewpoint. The second is that the more optimistic the stock market is, the more strongly stimulated managers to issue

convertibles to increase perquisite expenditure. In the following, we consider statistical evidence as to whether these propositions are true.

The most straightforward statistical test of the first proposition would be to examine responses of individual firms' stock prices to issue of convertible bonds. As our model shows, the stock price would go down immediately after a firm issues convertibles or more precisely when a firm announces its decision to issue convertibles, assuming that the stock market is efficient. This test would be too costly, however, because it requires detailed data of stock prices of individual firms. Moreover, we feel doubtful the assumption that the stock market in Japan is efficient. If the stock market is not efficient, we could not get clear-cut conclusions from this straightforward method.

Thus, we choose a second-best method here. Specifically, based on the panel data from mid 1980s to the early 1990s, we test whether the firms that issued convertible bonds systematically experienced deterioration of their profit rates after issuing of convertibles compared with peer-firms in the same industries. The sample is 509 Japanese firms. They are major firms and until the late 1980s they had been eligible for issuing convertibles without collateral. In other words, they had been given the widest range of options in their fund-raising until the late 1980s. The dependent variable (PRG(t)) is the profit rate of each firm compared with the average profit rate of peer-firms belonging to the same industry. Independent variables are the lagged profit rate compared with the industrial average (PRG(t-1)), and the amount of convertibles issued each year divided by the total asset with suitable lags (CB(t-i); i = 1, ..., 4). The sample period is the seven years from 1985 to 1991. The result of panel data estimation is summarized in Table 3. The result clearly shows that an increase in convertible issues significantly decreased the profit rate of issuing firms with two or three

18

years lag. This suggests that managers of major companies tend to issue convertibles in order to pursue their own objectives other than profit-maximization on behalf of current shareholders.

The second proposition derived from our model is that an increase in expected stock prices will induce incumbent managers to issue convertibles because it mitigates the constraint of bankruptcy for them. We examine whether this prediction was true during the late 1980s. We choose the amount of convertibles issued each year divided by the total asset as a dependent variable (CB(t)). Independent variables are lagged variables CB(t-1), CB(t-2), lagged stock prices ST(t-1), ST(t-2), and lagged profit rates PR(t-1) and PR(t-2). We introduce lagged variables CB(t-1), and CB(t-2) because rules concerning convertibles issue in Japan have greatly influenced the pattern of issuing behavior of individual firms.[15] The lagged stock prices are introduced on the assumption that the lagged stock prices essentially determined investor expectations of the stock prices. We are particularly interested in statistical significance of these lagged stock prices in the following investigation. We choose the Tobit model to test the proposition, because frequency with which the dependent variable CB(t) takes zero is rather high — nearly 80 percent of dependent variable are zero. The estimated result is summarized in Table 4.

The result shows that a higher level of stock prices induced the firms to issue a larger amount convertible bonds in the following year. since we may suppose that an increase in stock prices positively influences the market expectations of the stock prices, the result suggests that the higher level of expected prices stimulated convertibles issue during the late 1980s. The result in Table 4, thus, supports our hypothesis that the bullish expectations in the stock market stimulated by actual rises in stock prices will induce corporate managers to issue

19

convertible bonds. This suggests that the corporate governance has been inefficient in Japan from the viewpoint of shareholders.

IV: Effectiveness of Institutional Monitoring Mechansims

In the previous section we argued that the surge in convertible bond issues in the late 1980s can be explained by imperfect corporate governance in Japan. Tentative statistical tests support our argument. Imperfect corporate governance may be due to a lack of Anglo-American disciplinary mechanisms in capital markets such as hostile takeovers. However, as has already been explained in section I, we should pay enough attention to the conventional view that Japanese managers are controlled by an institutional monitoring mechansim. Japanese institutional monitoring has been supposed to discipline Japanese managers through the main bank relationship and the mutual shareholding among corporations. In this section, we extend the empirical investigation somewhat to test the validity of the convetional view concerning the efficiency of institutional monitoring in Japan.

IV.1 Classification of the sample firms

In order to statistically test the relevancy of this conventional view, we classify the sample firms into two groups: (i) the firms which appear to be strongly monityored and disciplined by the institutions (called as "the firms under institutional monitoring" in the following) ; and (ii) other firms (called "the other firms"). Unfortunately, there is no well-established definition

concerning the institutional monitoring. So, the following five criteria are used to classify the sample firms into these two groups:

(A) The stability of main bank relationship: We classify firms which had the same main banks both in 1980 and in 1985 as "the firms under institutional monitoring." Other firms are grouped as "the other firms." According to this classification, we identify 263 firms under institutional monitoring.

(B) The proportion of shareholding by financial institutions: Firms which had more than 30 percent of their shares held by financial institutions during the period from 1980 to 1985 are grouped as "the firms under institutional monitoring." Others are grouped as "the other firms." According to this classification, the number of the firms under institutional monitoring is 262.

(C) The reliance on borrowing from banks: Firms whose long-term borrowing were on average more than 2.5 percent of total assets during 1980-1984 are grouped as "the firms under institutional monitoring." We find 188 firms are under the institutional monitoring based on this classification. Others are classifid as "the other firms."

(D) The importaance of borrowing from the main bank: Firms whose borrowing from main banks were on average more than 12.0 percent of total borrowing during 1980-1984 are classified as "the firms under institutional monitoring." The number of firms belonging to this group is 237. Others are grouped as "the other firms."

(E) The importance of the main bank shareholding: Firms whoise main banks held more than 2.44 percent on average of the firms shares during the period 1980-1984 are grouped as " the firms under institutional monitoring," and others are classified as "the other firms." The number of firms belonging to the former group is 232.

IV.2 Empirical test of the conventional view

We estimate the same equations summarized in Table 3 and 4 for each of the two groups of sample firms classified following the above five criteria. If "institutional monitoring" is effective in Japan's corporate governance, an increase in convertible issue should not lead to a relative decline in profit rates in the case of "the firms under institutional monitoring," because the main bank or institutional investors can prevent incumbent managers from increasing perquisite expenditure. Similarly, "the firm under institutional monitoring" should not be less active in issuing convertible bonds and should not respond to optimistric expectations in the stock market if institutional monitoring is effective.

Table 5(A) to 5(E) show the profit rates estimated for both "the firms under institutional monitoring" and "the other firms" in the same form as Table 3. The results suggest that there is no significant difference between the former group and latter in any classification. An increase in the amount of convertible bond issue is equally likely to decrease the profit rates of issuing firms in either case with a lag of few years. We cannot observe that the negative influence of convertible bond issues on profit rates is less significant inthe case of "the firms under institutional monitoring" than in the case of "the other firms."

We also test whether there is a significant difference between "the firms under institutional monitorinmg" and "the other firms" in their convertible bond issues in response to stock price increases by estimating the same Tobit model explained in Table 4. The estimation results are summarized in Table 6(A) to 6(E).

Each of these tables presents the average values of CB(t) over the period from 1985 to 1991 for both groups of sampled firms. Those values show that

there was no significant difference between "the firms under institutional monitoring" and "the other firms." Thus, "the firms under institional monitoring" do not appear to be less active in issuing convertibles than "the other firms" in any classification. This seems to contradict the conventional view concerning effectiveness of institutional monitoring.

Furthermore, according to these results, "the firms under institutional monitoring" defined in terms of main bank stability (Table 6(A)) and in terms of dependency on bank borrwoing (Table 6(C)) responded to stock price increases more strongly than the other firms. These results throw doubt upon the relevancy of the conventional view.

On the other hand, "the firms under institutional monitoring" defined both interms of financial institutions' shareholding (Table 6(B)) and in terms of main banks' shareholding (Table 6(E)) seem to have been less responsive to stock prices increases than "the other firms." These suggest that shareholding by main banks and other financial institutions may have been effectyive in preventing aggressive issuing of convertible bonds. But we should be note that the negative impact of the convertible bons issues was not mitigated in cases of those firms as shown in Table 5(B) and Table 5(E). Therefore, our empirical tests do not support on the whole the hypothesis that institutional monitoring was effective in preventing incumbent managers' perquisite expenditure associated with convertible bond issues.

IV: Concluding Remarks

It is a widely prevailing conventional view that Japanese firms are so rigidly monitored by institutional factors such as main bank rekationships and cross-shareholding with major financial institutions that managers' perquisite expenditure is effectively prevented despite the absence of market mechanisms which would discipline corprate managers like hostile takeovers. The cross-shareholding among major corporations including major banks has protected incumbent managers from capital market pressures, thereby promoting managers' decision-making with long-term perspectives. At the same time, the main bank relationship between banks and borrower firms is regarded as an excellent tool of disciplining managers to pursue efficient management.

If this conventional view were ture of the latter half of 1980s, the firms with relatively stable main bank relationships, or those intensively held by financial institutions, would have refrained from issuing convertible bonds or, even if they did issue the bonds, they would not have utilized the funds inefficiently at the expense of shareholders' profits. However, the empirical tests in section IV do not support this conventional view.

We need a full-scale investigation into the reason for rather disappointing performance of institutional monitoring in Japanese corporate governance.[16] The investigation would require another paper. Here, we present a tentative, but rather plausible scenario in the following. As the conventional view claims (and many empirical analyses seem to have supported), until the mid-1980 the main bank relationships between major companies and large banks, as well as the system of cross-shareholding based on close relationships between borrower firms and banks, effectively protected incumbent managers and the system of

long-term employment form various pressures from capital markets on the one hand, and monitored corporate management rigorously enough to prevent wastful perquisite expenditures by managers on the other. This mechanism of "institutional monitoring" worked very well during Japan's high growth period when its corporate sector was not confronted with necessity of fundamental restructuring.

Since the early 1980s, however, the Japanese economy experienced rather drastic changes in industrial structure. In particular, the rapid appreciation of Japanese yen forced the manufacturing sectors to restructure their production system in domestic economy. Unfortunately, a system of "institutional monitoring" tends to delay the necessary structural changes in most industrial sectors because the system tends to protect the vested interests of current managers and employees who would like to avoid drastic structural changes. "Institutional monitoring" may have allowed corporate managers to buy time by preserving the current employment and managerial systems as long as possible. The expansion of equipment capacitioes and financial investment called "zai-tech" in Japanese, partly supported by the issuing convertible bonds in the late 1980s, can be regarded as a failure of "institutional monitoring" in Japanese corporate governance. Obviously, the Japanese financial system is confronted with the problem how to restructure corporate governance mechanisms appropriate to its more securitiozed corporate finance than before.

Footnotes

1) Regarding the functions of main banks, see Horiuchi, Packer and Fukuda(1988) and Aoki, Patrick and Sheard(1993).

2) Horiuchi(1993) provides an overview of the relationship between corporate governance and the structure of capital markets represented by the cross-shareholding in Japan.

3) Horiuchi and Okazaki(1994) also obtain statistical results supporting the hypothesis that the main bank relationship decreased agency costs for major companies in the electrical appliance industry during the period of 1977-1988.

4) See Calder(1993: 165-168 and 217-218) who exxplains the role of the Bond Issue Arrangment Committee in detail.

5) The principle of collateral persisted until 1979 when Sears Roebuck Tokyo issued uncollateralized bonds. Collateral requirements urged by the powerful private banks after the panic of 1927 thus played a crucial role in destroying the Japanese corporate bond market; by the late 1930s corporations issued virtually no bonds at all.

6) The hollowing of domestic corporate bond markets does not seem to have been mitigated in spite of the liberalization in domestic markets. According to Chart 3, the relative importance of corporate bonds issued by Japanese firms abroad has increased since 1990. The MOF reportedly introduced the regulation of forbidding underwriting securities companies subscription sale of Eurobonds issued by Japanese firms to domestic investors in March 1993 in order to stop the hollowing phenomenon.

7) In January 1985 TDK undertook the first unsecured straight bond issue in the Domestic market since 1932; by February 1987 more than 350 other firms

had also been authorized to do so. In 1985 MOF's Securities Exchange Council proposed the eventual abolition of the collateral rule, a change facilitating the flow of capital toward consumer- and service-oriented firms at the expense of by-now capital-rich heavy industry.

8) See also, for example, Brennan and Kraus(1987) and Titman and Wessels(1988).

9) Hitachi issued U.S. dollar-denominated convertible bonds in September 1962. At that time Hitachi could not choose a straight bond because the company was not well known among U.S. investors. This case can be clearly understood from the viewpoint of the standard theory.

10) The importance of internal funds (i.e., depreciation and retained profits) was very low in the high growth period in Japan. The proportion of internal funds in the total amount of funds raise by major companies was 30.2 percent and 42.4 percent respectively in the 1960s and 70s. However, internal funds have relatively increased since the early 1970s. From 1980 to 1984, the average proportion of internal funds was 56.4 percent. From 1985 to 1989, the proportion did not significantly decreased, remaining at 53.6 percent (Chart 1).

11) For example, it was widely known that many Japanese firms could issue convertible bonds in Switzerland at zero coupon rates in 1989.

12) In practice, it is difficult to identify the perquisite expenditure by incumbent managers. but, for example, we may regard various investment expenditure in order to preserve and/or increase job opportunities for present employees as the typical perquisite expenditure. Many Japanese firms engaged in financial investment called "zai-tech" during the late 1980s. Those financial activities may also be the perquisite because they were associated with undue increase in the risk from the viewpoint of shareholders.

13) The ratio θ is equal to the face value F of the convertible bond divided by the conversion price. In Japan the conversion price is determined at $(1+\gamma)$(the standardized stock price)(the number of stock), where γ is institutionally determined by self-regulation among securities companies. The standardized stock price of an issuing firm is determined as an average of the firm's stock price over several days immediately before the issuing date. Thus, the conversion ratio θ given by the following formula can be regarded as a constant.

$$\theta = F/[(1+\gamma)(\text{the standardized stock price})(\text{the number of stock})]$$

14) The higher value of XL will also lead to the higher stock price. In this case, we can see from (4) and (5) that not only convertible issue but also bank borrowing will be stimulated.

15) Since 1973, the self-regulatory rule determined by the group of underwriting securities companies has restricted the length of intervals when issuing convertibles so that the firms are in effect required to take an interval of at least one year to reissue convertibles.

16) Aoki(1994) provides an interesting hypothesis concerning the relationship between a decline in rents Japanese banks have enjoyed and decreases in their incentives to monitor borrower firms in the framework of the so-called "main bank system."

References:

Aoki, Masahiko, 1994, Monitoring characteristics of the main bank system: An analytical and developmental view, EDI Working Paper 94-5 Economic Development Institute of the World Bank.

Aoki, Masahiko, Hugh Patrick, and Paul Sheard, 1994, The Japanese main bank system: An introductory overview, in Aoki, Masahiko and Hugh Patrick (eds.), *The Japanese Main Bank System: Its Relevancy for Developing and Transforming Economies*, Oxford University Press, forthcoming.

Baums, Theodor, 1993, Takeovers versus institutions in corporate governance in Germanuy, in D.D. Prentice and P.R.J. Holland (eds.), *Contemporary Issues in Corporate Governance*, Clarendon Press, 155-186.

Boot, Arnoud W., 1992, Why hang on to losers?: Divestitutes and takeovers, *Journal of Finance* 47, 1401-1423.

Brealey, Richard A., and Stewart C. Myers, 1991, *Principles of Corporate Finance*, 4th edition, McGraw Hill, Inc.

Brennan, M. and A. Kraus, 1987, Efficient financing under Asymmetric information, *Journal of Finance* 42, 1225-1243.

Calder, Kent E., 1993, *Strategic Capitalism: Private Business and Public Purpose in Japanese Industrial Finance*, Princeton University Press.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein, 1990a, Corporate structure, liquidity and investment: evidence from Japanese panel data, *Quarterly Journal of Economics* 106, 33-60.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein, 1990b, The role of banks in reducing the costs of financial distress in Japan, *Journal of Financial Economics* 27, 67-88.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein, 1990c, Bank monitoring and investment: Evidence from the changing structure of Japanese corporate banking relationships, in R. Glenn Hubbard (ed.), *Information, Investment and Capital Markets*, University of Chicago Press, 105-126.

Horiuchi, Akiyoshi, Frank Packer, and Shi-ichi Fukuda, 1988, What role has the main bank played in Japan?, *Journal of Japanese and International*

Economics 2, 159-180.

Horiuchi, Akiyoshi, 1993, Functions of the Japanese capital market, *Japanese Economic Studies*, Spring, 66-95.

Jensen, Michael, 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323-329.

Jensen, Michael, and William Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 302-360.

Lichtenberg, Frank R., and George M. Pushner, 1992, Ownership structure and corporate performance in Japan, National Bureau of Economic Research Working Paper No.4092.

Myers, Stewart, and Nicholas Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Morck, Randall, and Masao Nakamura, 1992, Banks and corporate control in Japan, mimeograph, Faculty of Business, University of Alberta.

Prowse, Stephen D, 1990, Institutional investment patterns and corporate financial behavior in the U.S. and Japan, *Journal of Financial Economics* 27, 43-66.

Stein, Jeremy C., 1992, Convertible bonds as backdoor equity financing, *Journal of Financial Economics* 32, 3-21.

Takeda, Masahiko, and Philip Turner, 1992, *The Liberalization of Japan's Financial Markets: Some Major Themes*, BIS Economic Paper No.34.

Titmman, Sheridan, and Roberto Wessels, 1988, The determinants of capital structure choice, *Journal of Finance* 43(1), 1-19.

**Table 1: An example of eligibility requirements for convertible bonds
(As of May 1985)**

(A) The book value of net wealth must be more than ¥10.0 billion.

(B) The amount of dividend must be no less than ¥5.0 per share.

(C) The after-tax profit per share must be either no less than ¥7.0 or the current profit must be positive immediately before the year and the after-tax profit per share must be expected to be no less than ¥7.00 in the coming year.

(D) The value of net wealth must be more than 1.2 times as much as equity capital.

(E) The equity capital ratio must be more than 15 percent.

(F) The profit rate per total capital must be more than 4 percent.

(Note) The firm have to satisfy (A), (B), (C), and more than one among (D) to (F) before being permitted to issue convertible bonds with collateral. The eligibility requirements for issuing convertible bonds without collateral were much stricter than these. For example, the firms with less than ¥33.0 billion net wealth were not permitted to issue convertibles without collateral at all as of 1985.

(Source) Nomura Research Institute.

Table 2: The Process of liberalizing the noncollateralized convertibles.
Changes in the eligibility requirement of minimum value of
the net wealth and the number of eligible firms.

Data	The minimum value of net wealth	Changes in the number of eligible firms		
March 1979[1]	¥150 billion			2
January 1983	¥110 billion	11	⇒	25
April 1984	¥55 billion	26	⇒	97
July 1985	¥33 billion	111	⇒	175
February 1987	¥20 billion[2]	180	⇒	330[4]
November 1988	¥20 billion[3]	130	⇒	500[4]

(Notes) (1) The eligibility requirements for noncollateralized convertible bonds
were first determined in March 1979.
(2) The rating criterion was introduced. The firm A or higher rated
became eligible irrespective of the minimum net wealth value and
other requirements. The firms with rating BBB or higher were
eligible if their net wealth were no less than ¥55.0 billion.
(3) The firms with rating BBB became eligible if their net wealth were
no less than ¥33.0 billion.
(4) They are presented in round numbers.
(Source) The MOF, *Annual Report of Securities Bureau.*

Table 3: Profit rates and convertible bond issue, 1985-1991.
Panel data estimation (random effects method)

	Dependent variable: PRG(t)
PRG(t-1)	0.60100 (50.19)
CB(t)	- 0.00379 (- 0.49)
CB(t-1)	- 0.01362 (- 1.81)
CB(t-2)	- 0.03833 (- 4.79)
CB(t-3)	- 0.03616 (- 4.16)
CB(t-4)	- 0.01777 (- 1.86)
Const.	0.00725 (11.17)
Mean of dependent variable	0.00821
Sum of squared residuals	1.55409
Std. error of regression	0.02258
Adjusted R-squared	0.3126

(Notes) PRG(t): the operating profit rate (per total asset) of each firm minus
the average profit rate of the industry.
CB(t): the amount of convertible bonds issued by each firm divided
by the total asset.
Figures in parentheses indicate t-value.
(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 4: Stock prices and convertible bond issue, 1985-1991
Tobit estimation

Dependent variable: CB(t)

Const.	-0.1 9034 (-15.73)
CB(t-1)	-0.16596 (- 2.11)
CB(t-2)	0.32382 (4.20)
ST(t-1)	0.02374 (3.35)
ST(t-2)	0.00170 (0.26)
PR(t-1)	0.96481 (5.83)
PR(t-2)	-0.48500 (- 2.05)

Log of likelihood function	-735.923
Percent of positive observations	0.20236

(Notes) ST(t): stock price at the end of year t, standardized by setting stock
prices at 1991 year end 100.0.

PR(t): profit rate per total asset in year t.

Figures in parentheses present t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 5(A): Profit rates and convertible bond issue, 1985-1991
Panel data estimation (random effects method)
Stability of main banks

	Dependent variable: PRG(t)	
	Firms under institutional monitoring (No. of firms = 263)	The other firms (No. of firms = 246)
PRG(t-1)	0.57700 (32.07)	0.60555 (35.25)
CB(t)	0.01344 (1.26)	- 0.01756 (-1.49)
CB(t-1)	- 0.00681 (- 0.66)	- 0.02019 (-1.79)
CB(t-2)	- 0.03508 (- 3.16)	- 0.03946 (-3.33)
CB(t-3)	- 0.03940 (- 3.17)	- 0.03474 (-2.75)
CB(t-4)	- 0.00817 (- 0.60)	- 0.02556 (-1.85)
Const.	0.00401 (4.94)	0.01056 (9.85)
Sum of squared residuals	0.66775	0.85392
Std. error of regression	0.02061	0.02488
Adjusted R-squared	0.25196	0.34036

(Notes) PRG(t): the operating profit rate (per total asset) of each firm minus
the average profit rate of the industry.

CB(t): the amount of convertible bonds issued by each firm divided
by the total asset.

Figures in parentheses indicate t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 5(B): Profit rates and convertible bond issue, 1985-1991
Panel data estimation (random effects method)
Financial institutions' shareholding

	Dependent variable: PRG(t)	
	Firms under institutional monitoring (No. of firms = 262)	The other firms (No. of firms = 247)
PRG(t-1)	0.60649 (34.73)	0.59020 (34.96)
CB(t)	- 0.00406 (-0.40)	- 0.00241 (-0.20)
CB(t-1)	- 0.00647 (- 0.66)	- 0.01969 (-1.72)
CB(t-2)	- 0.03966 (- 3.88)	- 0.03661 (-2.95)
CB(t-3)	- 0.01755 (- 1.61)	- 0.05454 (-3.97)
CB(t-4)	- 0.00372 (- 0.32)	- 0.03113 (-2.02)
Const.	0.00481 (5.89)	0.00968 (9.57)
Sum of squared residuals	0.64822	0.90016
Std. error of regression	0.02035	0.02470
Adjusted R-squared	0.28697	0.31683

(Notes) PRG(t): the operating profit rate (per total asset) of each firm minus
the average profit rate of the industry.

CB(t): the amount of convertible bonds issued by each firm divided
by the total asset.

Figures in parentheses indicate t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 5(C): Profit rates and convertible bond issue, 1985-1991
Panel data estimation (random effects method)
Total borrowing

| | Dependent variable: PRG(t) | |
	Firms under institutional monitoring (No. of firms = 188)	The other firms (No. of firms = 321)
PRG(t-1)	0.58612 (31.08)	0.60432 (39.15)
CB(t)	0.00326 (0.27)	- 0.00665 (-0.66)
CB(t-1)	- 0.02650 (- 2.24)	- 0.00646 (-0.67)
CB(t-2)	- 0.03213 (- 2.49)	- 0.04116 (-4.05)
CB(t-3)	- 0.01623 (- 1.13)	- 0.04527 (-4.14)
CB(t-4)	- 0.03027 (- 1.86)	- 0.01373 (-1.16)
Const.	0.00425 (4.75)	0.00897 (10.17)
Sum of squared residuals	0.46765	1.08019
Std. error of regression	0.02042	0.02372
Adjusted R-squared	0.32348	0.30487

(Notes) PRG(t): the operating profit rate (per total asset) of each firm minus the average profit rate of the industry.

CB(t): the amount of convertible bonds issued by each firm divided by the total asset.

Figures in parentheses indicate t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 5(D): Profit rates and convertible bond issue, 1985-1991
Panel data estimation (random effects method)
Main bank borrowing

| | Dependent variable: PRG(t) | |
	Firms under institutional monitoring (No. of firms = 237)	The other firms (No. of firms = 272)
PRG(t-1)	0.59415 (31.39)	0.59626 (37.55)
CB(t)	0.00828 (0.75)	- 0.01336 (-1.21)
CB(t-1)	- 0.01106 (- 1.03)	- 0.01520 (-1.44)
CB(t-2)	- 0.03297 (- 2.87)	- 0.04158 (-3.73)
CB(t-3)	- 0.03893 (- 3.04)	- 0.03600 (-3.03)
CB(t-4)	- 0.00338 (- 0.24)	- 0.02897 (-2.21)
Const.	0.00435 (4.93)	0.00977 (10.37)
Sum of squared residuals	0.60173	0.94471
Std. error of regression	0.02061	0.02410
Adjusted R-squared	0.26396	0.33128

(Notes) PRG(t): the operating profit rate (per total asset) of each firm minus the average profit rate of the industry.

CB(t): the amount of convertible bonds issued by each firm divided by the total asset.

Figures in parentheses indicate t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 5(E): Profit rates and convertible bond issue, 1985-1991
Panel data estimation (random effects method)
Main banks' shareholding

	Dependent variable: PRG(t)	
	Firms under institutional monitoring (No. of firms = 233)	The other firms (No. of firms = 276)
PRG(t-1)	0.60636 (31.54)	0.58750 (36.87)
CB(t)	0.00699 (0.63)	- 0.01071 (-0.98)
CB(t-1)	- 0.01242 (- 1.16)	- 0.01362 (-1.30)
CB(t-2)	- 0.03983 (- 3.51)	- 0.03725 (-3.33)
CB(t-3)	- 0.02922 (- 3.04)	- 0.04095 (-3.38)
CB(t-4)	- 0.01177 (- 0.88)	- 0.02180 (-1.63)
Const.	0.00408 (4.95)	0.00998 (10.23)
Sum of squared residuals	0.55206	0.99135
Std. error of regression	0.01996	0.02451
Adjusted R-squared	0.27365	0.31330

(Notes) PRG(t): the operating profit rate (per total asset) of each firm minus the average profit rate of the industry.

CB(t): the amount of convertible bonds issued by each firm divided by the total asset.

Figures in parentheses indicate t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 6(A): Stock prices and convertible bond issue, 1985-1991
Tobit estimation
Stability of main bank

	Dependent variable: CB(t)	
	Firms under institutional monitoring (No. of firms = 263)	The other firms (No. of firms = 246)
Const.	-0.16519 (-11.62)	-0.24276 (-10.88)
CB(t-1)	-0.19426 (- 2.00)	-0.17585 (-1.33)
CB(t-2)	0.19468 (1.99)	0.46873 (3.88)
ST(t-1)	0.02616 (3.14)	0.02393 (1.95)
ST(t-2)	-0.00146 (- 0.18)	0.00439 (0.41)
PR(t-1)	1.34569 (6.40)	0.63597 (2.33)
PR(t-2)	-0.60673 (- 2.96)	-0.20317 (-0.78)
Mean of depend. variable CB(t)	0.01997	0.01993
Log of likelihood function	-309.116	-399.255
Percent of positive observations	0.22868	0.17422

(Notes) ST(t): stock price at the end of year t, standardized by setting stock prices at 1991 year end 100.0.

PR(t): profit rate per total asset in year t.

Figures in parentheses present t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 6(B): Stock prices and convertible bond issue, 1985-1991
Tobit estimation
Financial institutions' shareholding

	Dependent variable: CB(t)	
	Firms under institutional monitoring (No. of firms = 262)	The other firms (No. of firms = 247)
Const.	-0.16125 (-10.62)	-0.25005 (-11.49)
CB(t-1)	-0.19131 (- 2.02)	-0.16503 (-1.22)
CB(t-2)	0.28665 (3.21)	0.33973 (2.58)
ST(t-1)	0.01719 (1.78)	0.03369 (3.04)
ST(t-2)	0.00592 (0.63)	-0.00100 (-0.10)
PR(t-1)	1.16276 (5.25)	0.87219 (3.33)
PR(t-2)	-0.50210 (- 2.32)	-0.39424 (-1.58)
Mean of depend. variable CB(t)	0.02052	0.01935
Log of likelihood function	-318.077	-394.563
Percent of positive observations	0.23228	0.17062

(Notes) ST(t): stock price at the end of year t, standardized by setting stock
prices at 1991 year end 100.0.
PR(t): profit rate per total asset in year t.
Figures in parentheses present t-value.
(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 6(C): Stock prices and convertible bond issue, 1985-1991
Tobit estimation
Total borrowing

	Dependent variable: CB(t)	
	Firms under institutional monitoring (No. of firms = 188)	The other firms (No. of firms = 321)
Const.	-0.18139 (-10.44)	-0.20474 (-12.05)
CB(t-1)	-0.13748 (- 1.26)	-0.20532 (-1.85)
CB(t-2)	0.38234 (3.49)	0.29324 (2.84)
ST(t-1)	0.02383 (2.41)	0.02658 (2.66)
ST(t-2)	0.01867 (2.18)	-0.01123 (-1.19)
PR(t-1)	1.12468 (4.59)	0.87185 (3.88)
PR(t-2)	-0.60786 (- 2.57)	-0.35331 (-1.63)
Mean of depend. variable CB(t)	0.02087	0.01941
Log of likelihood function	-213.407	-501.286
Percent of positive observations	0.23556	0.18291

(Notes) ST(t): stock price at the end of year t, standardized by setting stock
        prices at 1991 year end 100.0.
     PR(t): profit rate per total asset in year t.
     Figures in parentheses present t-value.
(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 6(D): Stock prices and convertible bond issue, 1985-1991
Tobit estimation
Main bank borrowing

| | Dependent variable: CB(t) | |
	Firms under institutional monitoring (No. of firms = 237)	The other firms (No. of firms = 272)
Const.	-0.17130 (-10.63)	-0.22082 (-11.80)
CB(t-1)	-0.26495 (- 2.35)	-0.10497 (-0.95)
CB(t-2)	0.18700 (1.70)	0.43332 (4.16)
ST(t-1)	0.02341 (2.43)	0.02906 (2.79)
ST(t-2)	-0.00762 (- 0.81)	0.00843 (0.93)
PR(t-1)	1.34690 (5.71)	0.72859 (3.10)
PR(t-2)	-0.48228 (- 2.57)	-0.41593 (-1.87)
Mean of depend. variable CB(t)	0.01983	0.01989
Log of likelihood function	-308.415	-410.627
Percent of positive observations	0.21519	0.19013

(Notes) ST(t): stock price at the end of year t, standardized by setting stock prices at 1991 year end 100.0.
PR(t): profit rate per total asset in year t.
Figures in parentheses present t-value.
(Source) *NIKKEI NEEDS.TS.COMPANY*

Table 6(E): Stock prices and convertible bond issue, 1985-1991
Tobit estimation
Main banks' shareholding

	Dependent variable: CB(t)	
	Firms under institutional monitoring (No. of firms = 233)	The other firms (No. of firms = 276)
Const.	-0.15403 (-10.58)	-0.25503 (-11.87)
CB(t-1)	-0.21415 (- 2.13)	-0.15203 (-1.22)
CB(t-2)	0.21237 (2.16)	0.43781 (3.75)
ST(t-1)	0.01269 (1.44)	0.03952 (3.44)
ST(t-2)	0.00830 (0.97)	-0.00464 (- 0.46)
PR(t-1)	1.36486 (5.94)	0.78107 (3.12)
PR(t-2)	-0.56066 (- 2.49)	-0.32639 (-1.37)
Mean of depend. variable CB(t)	0.02012	0.01972
Log of likelihood function	-254.691	-443.021
Percent of positive observations	0.23769	0.17236

(Notes) ST(t): stock price at the end of year t, standardized by setting stock prices at 1991 year end 100.0.

PR(t): profit rate per total asset in year t.

Figures in parentheses present t-value.

(Source) *NIKKEI NEEDS.TS.COMPANY*

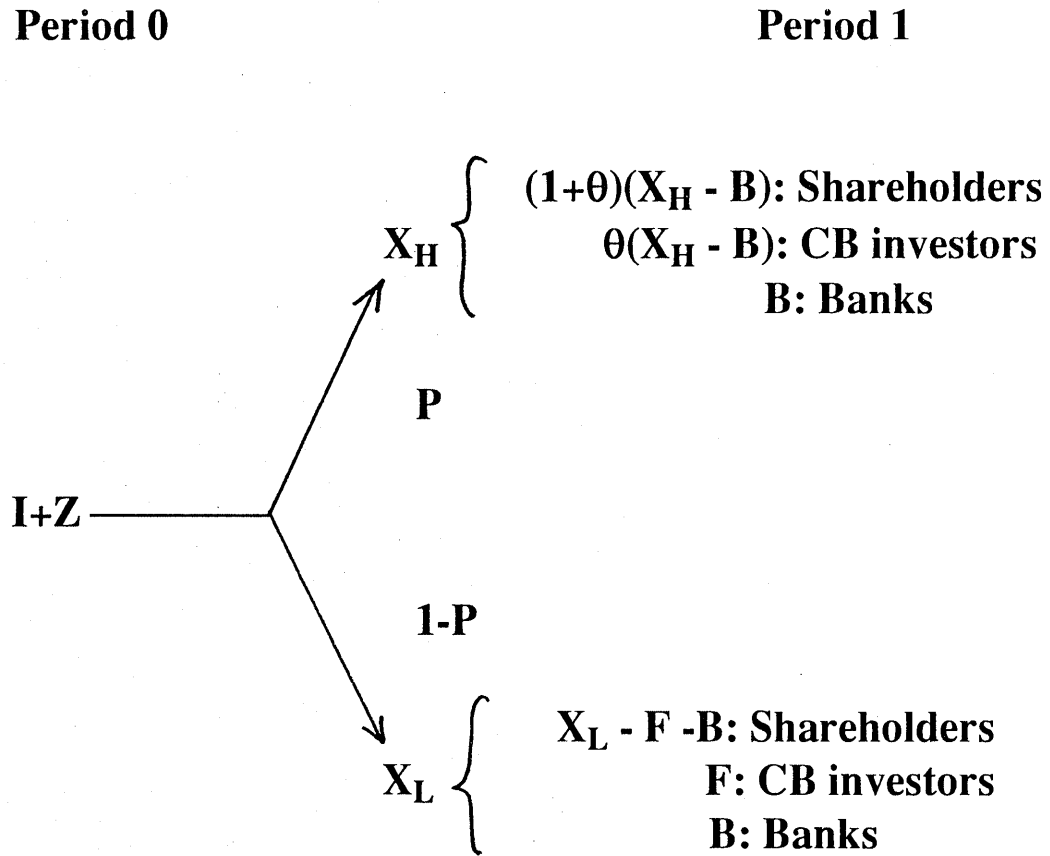# Figure 1: A simple model of the firm's fund-raising

Period 0   **Period 1**

$$(1+\theta)(X_H - B): \text{Shareholders}$$
$$\theta(X_H - B): \text{CB investors}$$
$$B: \text{Banks}$$

X_H

P

$I+Z$

$1-P$

$$X_L - F - B: \text{Shareholders}$$
$$F: \text{CB investors}$$
$$B: \text{Banks}$$

X_L

Chart 1: Compositions of fund-raising by "major firms" (All industries, %)
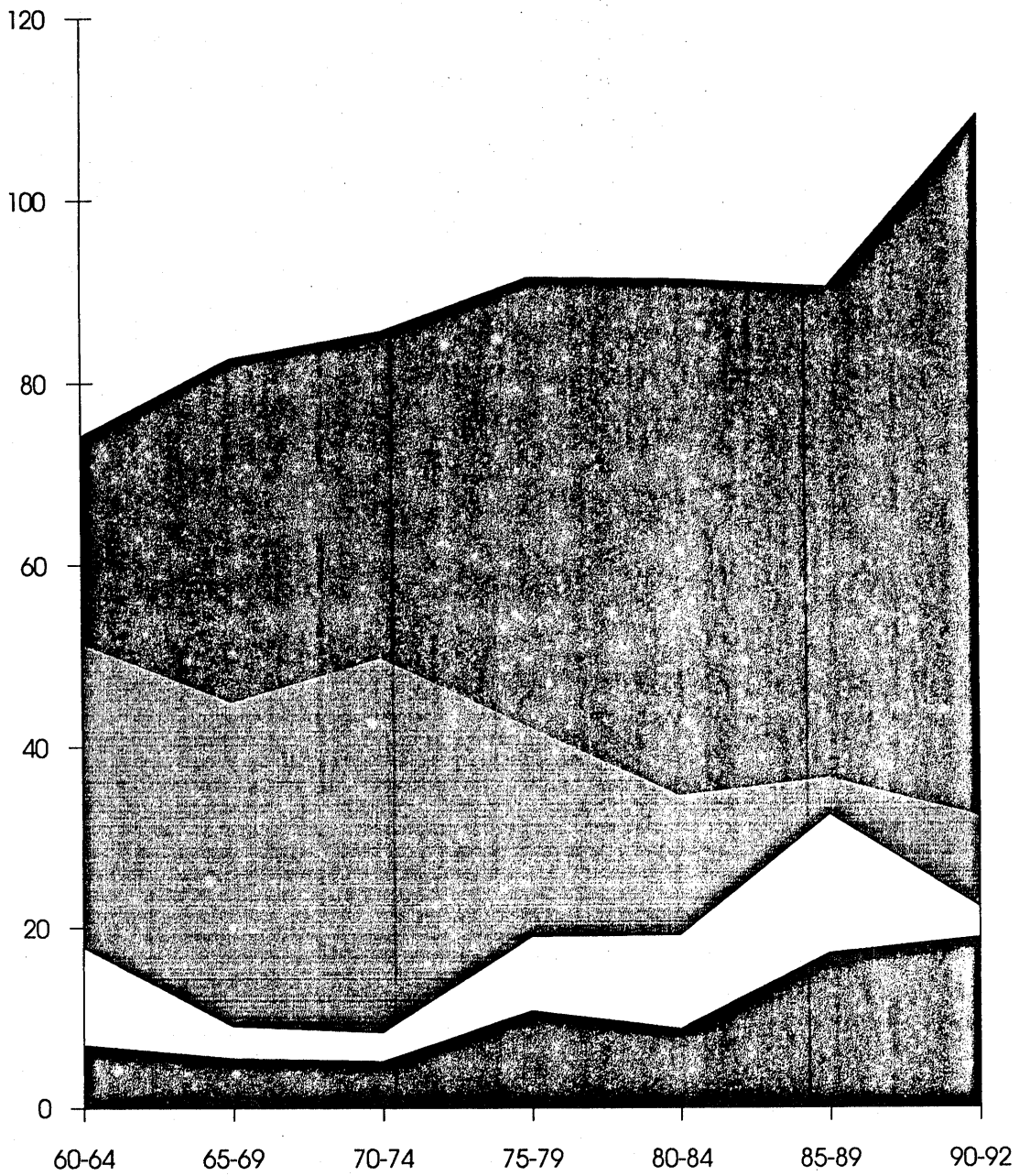
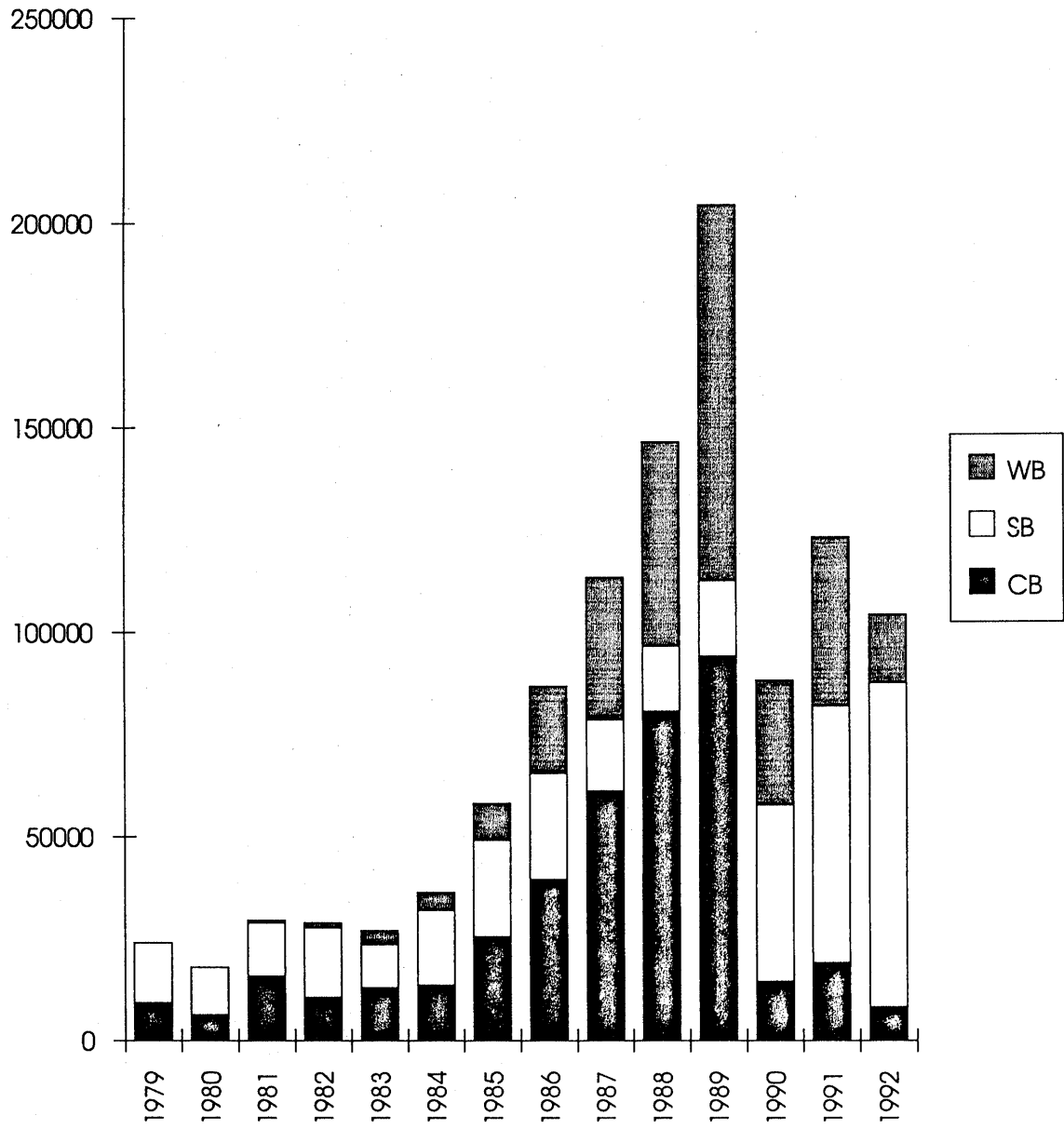**Chart 2: Corporate bonds issued by Japanese firms (100 million yens)**

Chart 3; Hollowing of the domestic corporate bond market

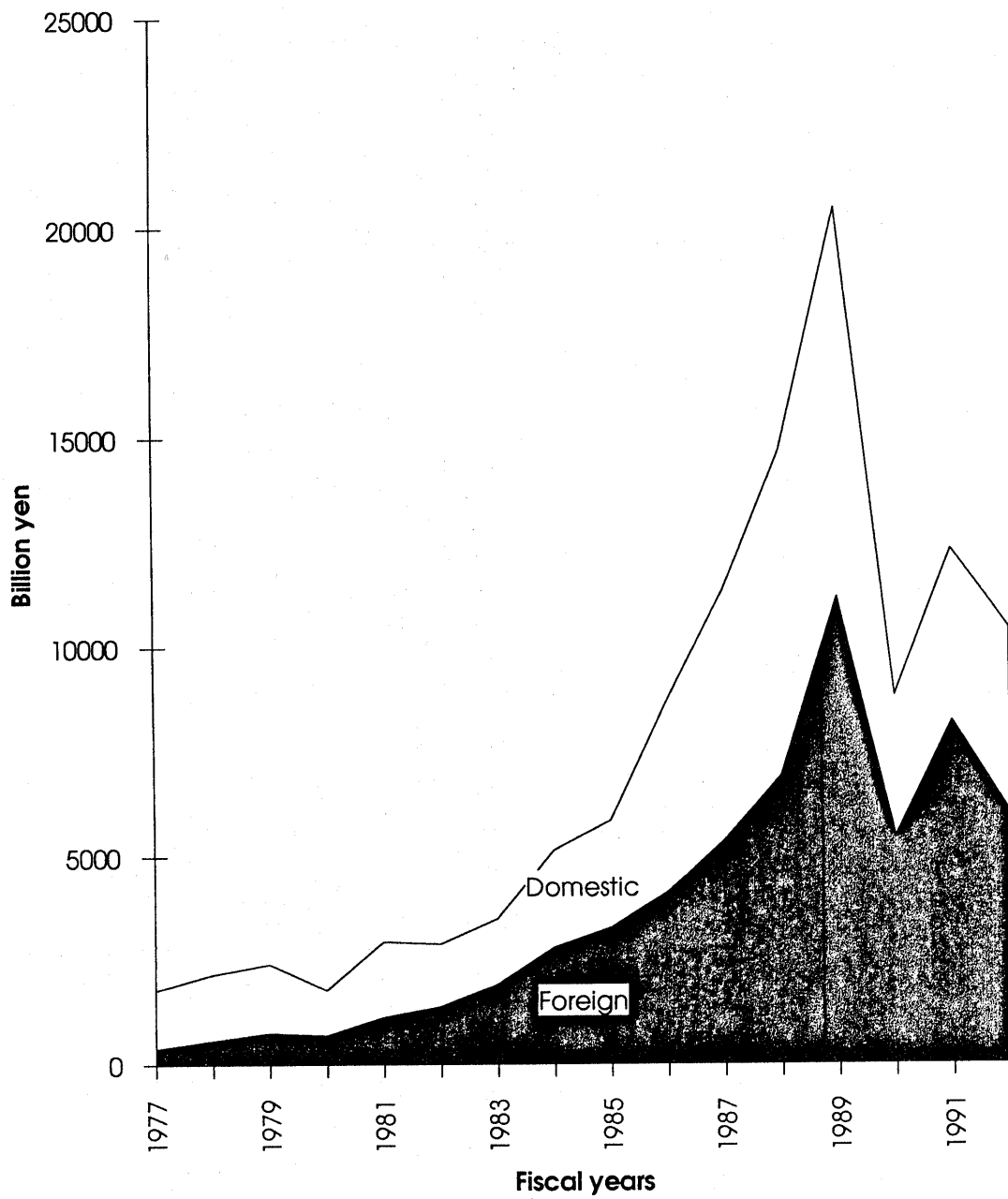Billion yen

Domestic

Foreign

Fiscal years

Chart 4: Convertible bonds issued by Japanese firms in the domestic market (billion yens)

Legend:
- Noncollateral
- With reservation
- Collateral