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An Analysis of the Issue Who Monitors the Monitor: The Impact of *Amakudari* on Bank Performances

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Abstract

Banks are recognized as playing an important role of monitoring borrowers, thereby reducing the agency costs associated with informational asymmetry. However, there remains an issue "who could monitor the banks", because it is difficult for outsiders to monitor banks' management. In particular, the banks should be motivated to be prudent in their management under the comprehensive safety net. This paper investigates whether the human relationship between the regulatory authorities and private banks named as "*amakudari*" has been effective as a tool of prudential regulation in Japan. The *amakudari* is pervading in the sense that most private banks are accepting officials retired from the Ministry of Finance and/or the Bank of Japan in their top managerial and board positions. However, according to statistics in this paper, the *amakudari* tended to induce accepting banks to decrease their equity capital, and to extend their risk-taking. This paper concludes that the *amakudari* made the Japanese banking system fragile rather than being effective as a monitoring device of bank management.

I Introduction

Banks have been recognized as an important monitor who reduces the difficulty of asymmetric information between lenders and borrowers.[1] However, as Diamond(1984) emphasizes, the financial system must resolve an issue how banks are to be motivated to efficiently and/or prudently accomplish a role of the monitor.[2] This issue is not trivial because it is difficult for outsiders to observe banks' monitoring activities and to assess their efficiency and prudence. Thus, a financial system particularly centered on bank lending such as the Japanese one has to face the problem "who monitors the monitor (i.e., banks)." As Prowse(1995) points out, the ownership structure of banks is so diffused in Japan that no outside investors may have incentives to monitor bank management.

Sheard(1994) advocates the hypothesis that a reciprocal relationship among main banks in Japan effectively reduces the agency costs associated with this issue. Aoki(1994) suggests the possibility that the financial restraint conferring rent on private banks gives them an incentive to conduct prudent management. However, a simpler answer to this question may be that the regulatory authority would have been able to monitor banks' activities to force efficient behavior on the part of bank management. This paper takes up this problem by investigating influence of the human relationship between regulatory authorities and private banks through the so-called *amakudari* (or, "the flow of retired government officials from government to the private sector" (Calder(1993)) widely observed in Japan.[3]

The purpose of this paper is to investigate how the *amakudari* system has influenced prudence of private banks' management in Japan. This paper confine its argument to a specific issue of the prudential regulation, partly because of data availability and partly because this issue has become particularly

important in Japan since the early 1990s when the bad loan problem revealed fragility of the banking system. Thus, the scope of investigation is limited in this paper. However, it is closely related to a much broader issue of governance structure in the banking sector. The prudence of bank management can be regarded as an issue of managerial control in the banking industry. Depositors and other investors in bank debts would be cautious about adequacy of banks' equity capital unless they were protected from the damage associated with bank failure. In reality, the safety net operated by the monetary authorities has weakened the incentives of debt holders to monitor banks' management. Thus, in order to be viable, the safety net requires effective measures to discipline bank management in place of the market mechanism.[4] The monetary authorities must impose, for example, a regulation of capital adequacy on banks to prevent them from engaging in excessive risk-taking. In this context, the *amakudari* system might be important in making the prudential regulations more effective through the close human relationship between regulator and private banks.

This paper at first explains prudential regulations on Japanese banks in the postwar period in Section II. It is pointed out that the importance of prudential regulations was not seriously recognized by the Japanese authorities. Rather, competition-restricting regulations, which conferred a handsome amount of rent to private banks, seemed to induce private banks to refrain from excessive risk-taking.[5]

Section III investigates how the *amakudari* system has worked as a means of prudential regulation. A sample of private banks consisting of 125 regional banks are classified into a few categories in terms of their *amakudari* status, i.e., by the standard whether or not they accept *amakudari* officials from the regulatory authorities. Then, this paper compares banks' performances, such as equity capital ratios, profit rates, and bad loan ratios, of each category. The

simple comparison shows that the banks accepting *amakudari* officials from the Ministry of Finance (MOF) had, on average, a smaller amount of equity capital than the banks accepting no *amakudari* officials.

The negative correlation between the *amakudari* and the equity/capital ratio does not necessarily imply the causality from the *amakudari* to the smaller equity capital. Section Ⅳ examines causality between banks' *amakudari* status and their performances (particularly, equity capital ratio). After investigating the causality based on a simple "event study," we introduce the self-selection approach that explicitly considers the process of simultaneously determining the *amakudari* status and performances for individual banks. The statistical analysis does not reject the hypothesis that the *amakudari* from the MOF tends to decrease banks' equity capital.

Section V investigates how the *amakudari* influenced banks' risk-taking by utilizing the data of non-performing loans disclosed by Japanese banks at March 1996. Both the primitive methods and the sophisticated method of the self-selection approach show that the banks accepting *amakudari* officials from the MOF suffer from the bad loan problem more seriously than other banks do. Section Ⅵ summarizes the discussions in this paper.

In sum, the *amakudari* system in Japan neither strengthen equity capital in the banking sector nor motivate prudential management on the part of private banks. Although many scholars have argued that the human relationship between the private sector and bureaucracy has been an efficient mechanism to coordinating process of economic policy in postwar Japan (Aoki(1988), Okimoto(1988), Calder(1993), Teranishi(1996)), the investigation in this paper suggests that the validity of their argument is doubtful at least in the context of prudence in bank management.

II Prudential Regulations in Japan

The safety net with comprehensive risk sharing deprives depositors and other investors of incentives to carefully monitor individual banks' management. Under the safety net offered by the government, the financial markets do not pressure banks to strengthen their capital bases. Thus, the banking system will become fragile, unless, in place of the financial markets, the monetary authorities either impose effective prudential regulations such as a capital adequacy requirement and the prohibition of excessive concentration of loans to a single debtor, or directly discipline banks' management to prevent them from taking excessive risk.

Capital adequacy requirements, accompanied with rigorous monitoring by regulators, are a typical means of prudential regulation. During the period of economic reconstruction immediately after World War II, the MOF was seriously concerned about the prudence of bank management, because banks' equity capital per deposit had fallen sharply from 29.9 per cent in 1930 to only 5.6 per cent by 1953. With a view to strengthening banks' capital bases, the MOF started instructing banks to reduce current expenses to 78 per cent or less of current revenues in 1953. This administrative guidance continued until 1973.

In 1954, the MOF introduced the capital adequacy regulation, which required banks to increase broadly defined capital to more than 10 per cent of total deposits.[6] This could be regarded as a forerunner of the capital adequacy regulation introduced by the Bank for International Settlements (BIS) in 1987. However, some depository financial institutions were not covered by this capital adequacy regulation. For example, both the *sogo* banks and the *shinkin* banks had not been imposed capital adequacy requirement in the form of a minimum capital adequacy ratio until May 1986. Thus, they could have increased their

leverage ratio without limit had they wished to do so. Table 1 lists up several measures of prudential guidance implemented by the MOF as of 1974.

Thus, until the late 1980s, the capital adequacy regulation did not cover the whole range of depository financial institutions. Moreover, the regulation seemed to be ineffective. Figure 1 shows that, from 1960 to the mid 1970s, the average of the (broadly defined capital/deposits) ratio for the banking sector, which is comprised of city banks and regional banks, remained almost constant at 6 per cent, far below the MOF's requirement of 10 per cent. Furthermore, the average capital/deposit ratio dropped abruptly below 4 per cent during the 1980s. Therefore, the capital adequacy requirement was ineffective until the late 1980s. There are some casual observations showing that other tools of the prudential regulation was also ineffective (Horiuchi(1996)).

As Teranishi(1996) argues, the stability of the banking system was supported not by the prudential regulation, but by the competition-restricting regulations, which gave a handsome amount of rents to private banks. The existence of rents directly stabilized banks' performances, and indirectly gave banks an incentive to engage in prudent management as the economic theory implies.[7]

Ⅲ The *Amakudari* System in the Japanese Banking Industry

The previous section explains how the capital adequacy regulation was ineffective in the banking sector. However, the close human relationship between the monetary authorities (i.e., the MOF and the Bank of Japan (BOJ)) and private banks may have worked as a substitute for bank capital. Thus, we need to examine what roles the *amakudari* system has played in the context of prudential regulation in the Japanese banking industry. Before proceeding to

the examination, however, we make an overview of the structure of *amakudari*, and point out its characteristics.

Characteristics of the *amakudari*

Both the MOF and the BOJ quite often send their post-retirement officials to the managerial board of private banks through the so-called *amakudari* system. As is well known, the distribution of *amakudari* officials tends to be concentrated in small and medium size banks. While large city banks have traditionally been independent of the system, many regional banks and most of smaller banks such as *shinkin* and cooperative credit banks have accepted officials for long time.[8] Table 2 shows the number of executive officials who "descended" from the monetary authorities to the regional banks' managerial board. The sample consists of 125 regional banks existing as of March 1996.[9] According to this table, nearly 200 formerly high-ranking bureaucrats occupied important positions in private banks' executive board. Table 3 presents a detail of positions of *amakudari* officers as of June 1990. The structure of position distribution did not greatly change during the period from the late 1970s to the early 1990s.

We classify the sampled 125 regional banks into four categories according to their situation of accepting *amakudari* officers. The first group (Category Ⅰ) contains the banks which accept *amakudari* officers from both the MOF and the BOJ. The second one (Category Ⅱ) is consisting of the banks accepting officers only from the MOF. The third one (Category Ⅲ) is a group of the banks accepting *amakudari* only from the BOJ. Finally, the fourth one (Category Ⅳ) consists of the banks that do not accept *amakudari* officers at all. Table 4 presents the classification in a matrix form. The four columns on the right side of Table 2 shows the distribution of banks according to this classification. The

table suggests that the *amakudari* officers from the MOF (i.e., Categories I and II) constitute a core of the regional banks' managerial board. Although some banks (Category IV) have remained independent from the *amakudari* system, the number of those banks is at most one fifth of the total number. The *amakudari* system has been prevailing in the Japanese banking industry.

It should be noted that the sample banks' categories with respect to *amakudari* acceptance are mostly unchangeable. We calculate probability of banks' transition from one category to another over a year during the sample period from 1977 to 1989. Table 5 presents the averages of the transition probability. In this table, figures in the diagonal are overwhelmingly greater than off-diagonal figures, suggesting that most banks tended to stay in a specific category for long time. Thus, many Japanese banks have maintained a stable human relationship with the monetary authorities through the *amakudari* system.

Performances of the banks accepting *amakudari* officials

This section tries to determine how the *amakudari* has influenced banks' performances. First, in Table 6, we compare averages of capital/asset ratio (EQU), the current profits per equity capital (PRO), and the annual growth of total assets (GAS) for categories I , II, and III with those of category IV for the three sample periods from 1975 to 1979, from 1980 to 1984, and from 1985 to 1989. The leftest column presents the average value of respective performances for category IV banks, which accepted no officials from the regulatory authorities. The figures in the second to fourth columns are the differences of performances between respective categories and category IV. As will be explained below, Taiko Bank, a regional bank located in Niigata Prefecture, recorded abnormally bad performance because of managerial difficulty during the sample period. Table 6

deletes this bank from the sample.

The capital/asset ratio (EQU) is significantly lower for both categories I and II than for category IV for all the sample periods. For example, during the first half of the 1980s, the capital/asset ratio (EQU) for category I banks, which accepted *amakudari* officials from both the MOF and BOJ, was on average 0.696 per cent less than that of category IV banks. The differences are statistically significant at the 1 per cent level. As for profitability (PRO) and asset growth (GAS), we find no significant difference between the banks belonging to either category I or II and the banks of category IV, except for the case of PRO during the latter half of the 1980s. In conclusion, the banks of categories I and II had lower equity capital ratio than the banks of category IV did, despite insignificant differences in other performances such as profitability (PRO) and asset growth rates (GAS) between those banks. The performances of the banks belonging to category III (i.e., the banks accepting officials only from the BOJ) are almost similar to those of category IV banks for all the sample periods.

Analysis based on another classification

We try the same comparison of banks' performances depending on a classification different from the one explained in Table 4. The new classification emphasizes the importance of continuous relationship with the MOF through the *amakudari* system. The first group (denoted by "MOF") consists of the banks which continued accepting *amakudari* officials from the MOF throughout the sample period from 1977 to 1989. In other words, the "MOF" banks continuously belonged to either category I or II throughout the period from 1977 to 1989. The second group ("AMB") consists of the banks that sometimes accepted officers from the MOF, but did not other times. Thus, the "AMB" banks had some occasions to be in category I or II, but they belonged to category III or IV on

other occasions. The third group ("NONMOF") is constituted by the banks which accepted *amakudari* officials from the BOJ, but did not accept from the MOF at all during the sample period. The fourth group ("NONAMA") is constituted by the banks which accepted no *amakudari* officials at all throughout the sample period. The "NONAMA" banks consistently belonged to category Ⅳ. Table 7 explains the new classification. Table 8 shows performance comparisons between the NONAMA group and other groups by means of the same statistical method as Table 6. Table 8 conveys essentially the same messages as Table 6 does; i.e., the amakudari from the MOF is significantly correlated with lower bank capital. This correlation is more conspicuous in Table 8 than in Table 6. These results suggest that those banks that maintained close human relationship with the MOF through the amakudari system tended to have smaller capital bases than those accepting officers only from the BOJ and those accepting no officers.[10]

Did the book value of equity capital matter?

The banks accepting *amakudari* officials from the MOF tended to have lower equity capital. However, we must note that the equity capital this paper has examined so far is not defined in terms of economic value but book value. Lower equity capital in book value does not necessarily imply lower economic value of equity capital. Therefore, we need to ask whether book value of bank capital really has mattered.

The existence of unrealized (hidden) profits associated with shareholding is the most important cause of the discrepancy between the book value and economic value of equity capital because the book value of stocks held by banks has been substantially lower than their market value.[11] Thus, this paper examines whether the banks with smaller book value of equity capital compensated for this shortage by holding a larger amount of stocks with

unrealized profits.

Since the market value of each bank's shareholding was not disclosed in Japan until the end of the 1980s, this paper must resort to the assumption that a larger amount of the shareholding implies a larger amount of unrealized profit (or "hidden assets") associated with shareholding. Based on this assumption, if banks with a lower book value of equity capital hold a larger amount of stocks in their portfolios than other banks, a mere comparison of the book value of equity capital (such as that presented in Tables 6 and 8) would be misleading.

Both Tables 6 and 8 compare the average value of stocks per total assets (STK) held by each category of sampled banks. The "STK" rows in Table 6 show that the banks in categories I, II, and III did not hold significantly larger amount of stocks than those in category IV, i.e., those banks accepting no *amakudari* officials. We obtain the similar information from the "STK" rows in Table 8. Both the banks in the "MOF" group and in the "AMB" group did not have larger amounts of stocks per total assets compared with the banks in the "NONAMA" group, except for the case of the "AMB" banks during the latter half of the 1980s. Thus, taking the existence of unrealized profits associated with shareholding into account does not change the conclusion that the banks accepting *amakudari* officials, particularly from the MOF, had lower equity capital than those banks that did not accept *amakudari* officials at all.

IV Causality between Bad Performances and *Amakudari*

The statistics both in Table 6 and Table 8 show negative correlation between the *amakudari* from the MOF and banks' equity capital. However, we must be careful when deriving any implication about causality from these tables. Some may claim that the capital base of the banks accepting *amakudari* was relatively

low because the MOF staff had been sent to badly performing banks. Since weak performance tends to lead to a weak capital base for individual banks, Tables 6 and 8 may indicate that the relatively weak banks were eager to, or forced to accept *amakudari* officials from the MOF, rather than that the *amakudari* caused the lower equity capital.

Actually, there have been some cases in which the MOF dispatched officials to a bank's managerial board when the bank was in difficulty. Taiko Bank, located in Niigata Prefecture, was an example. The bank fell into managerial difficulty during the late 1970s because of aggressive involvement in the real estate development boom of the early 1970s, recording negative profits and negative equity capital (book value). The MOF sent an officer to Daiko to reorganize its management. Despite this endeavor, however, Taiko continued to record negative profits and negative book value of equity capital until the early 1980s. Regarding this case as abnormal, Tables 6 and 8 exclude Taiko from the sample.[12)]

A simple event study

During the sample period from 1977 to 1989, this paper found six cases in which a bank began to accept *amakudari* officials from either the MOF or BOJ for the first time; i.e., the cases of Chiba Kogyo in 1980, Miye in 1979, Shokusan in 1980, Setouchi in 1980, Saikyo in 1982, and Okinawa Kaiho in 1979. The banks other than these six banks accepted *amakudari* officials from the beginning of the sample period, or accepted no officials at all throughout the sample period.[13)] By comparing performances of each of these banks between immediately before and after accepting *amakudari*, this paper examines whether or not bad performances of bank management led to acceptance of *amakudari* officials by the banks.

Tables 9(A) and 9(B) summarize the results. Figures in these tables present the divergence of each bank's performance from the sample average excluding these six banks. The leftest column of Table 9 presents the sample average for each year. For each bank, the enclosed figure indicates the year when the bank started accepting *amakudari*. This paper is interested in whether the six banks' performances are significantly worse than the sample average immediately before accepting *amakudari*. The message from Table 9(A) is ambiguous. Chiba Kogyo, Miye, and Saikyo recorded negative performance (i.e., lower profit rates compared with the sample averages) during a few years immediately before starting *amakudari* acceptance. However, almost all of the divergences from the sample average are statistically insignificant. For other three banks (i.e., Shokusan, Setouchi, and Okinawa Kaiho), the profit rates are higher than the sample averages for a few years immediately before accepting *amakudari* and statistically significant at 1 per cent level in case of Okinawa Kaiho. Table 9(B) presents comparison of growth rates in total assets. The statistics in this table also suggest that, in the case of the six banks, the relatively low growth rates in total assets were not necessarily observed immediately before they started to accept *amakudari* officials. In sum, a sort of event study summarized in Table 9 does not confirm the hypothesis that banks' poor performances caused *amakudari* from the regulatory authorities.

The self-selection approach

In order to determine influence of the *amakudari* on banks' performances more precisely, we need a more sophisticated method of the self selection approach that explicitly considers simultaneous determination of both individual banks' performances and their *amakudari* status. We assume the following structural form of simultaneous equations among performance variables and an

amakudari dummy variable for a bank i:

$$EQU_i(t) = a_E + a_{EG} \cdot GAS_i(t) + a_{EP} \cdot PRO_i(t) + a_{EE} \cdot EQU_i(t-1) + a_E \cdot AM_i(t) + u_{Ei} \quad (1.1),$$

$$GAS_i(t) = a_G + a_{GE} \cdot EQU_i(t) + a_{GP} \cdot PRO_i(t) + a_{GG} \cdot GAS_i(t-1) + a_G \cdot AM_i(t) + u_{Gi} \quad (1.2),$$

$$PRO_i(t) = a_P + a_{PE} \cdot EQU_i(t) + a_{PG} \cdot GAS_i(t) + a_{PP} \cdot PRO_i(t-1) + a_P \cdot AM_i(t) + u_{Pi} \quad (1.3).$$

$AM_i(t)$ is a dummy variable for *amakudari* status of the bank i which takes value one if the bank was accepting *amakudari* officials from the MOF as of June 1985 (i.e., the bank was belonging to either category I or II according to the classification presented in Table 4), and zero if the bank was accepting no officials from the MOF as of 1985. Thus, in the following self-selection analysis, we concentrate our attention on the *amakudari* from the MOF, because the casual observations above have suggested that *amakudari* from the BOJ seems unimportant. The terms u_{Ji}(J = E, G, P) are disturbance in the respective equations. $EQU_i(t)$, $GAS_i(t)$, and $PRO_i(t)$ are the averages of capital/asset ratio, the annual growth rate in total assets, and current profit per equity capital of the bank i during the first half of the 1980s. The time period (t-1) of the variables indicates the latter half of the 1970s except for $AM_i(t-1)$ which is the dummy variable indicating the *amakudari* status of the bank i as of June 1980.

From equations (1), we obtain the reduced form as follows:

$$EQU_i(t) = c_E + b_{EE} \cdot EQU_i(t-1) + b_{EG} \cdot GAS_i(t-1) + b_{EP} \cdot PRO_i(t-1) + b_E \cdot AM_i(t) + v_{Ei} \quad (2.1),$$

$$GAS_i(t) = c_G + b_{GE} \cdot EQU_i(t-1) + b_{GG} \cdot GAS_i(t-1) + b_{GP} \cdot PRO_i(t-1) + b_G \cdot AM_i(t) + v_{Gi} \quad (2.2),$$

$$PRO_i(t) = c_P + b_{PE} \cdot EQU_i(t-1) + b_{PG} \cdot GAS_i(t-1) + b_{PP} \cdot PRO_i(t-1) + b_P \cdot AM_i(t) + v_{Pi} \quad (2.3).$$

For simplicity, equations (2) are presented in a matrix form;

$$Y_i(t) = C + \Pi \cdot Y_i(t-1) + B \cdot AM_i(t) + V_i \qquad (3),$$

where

$$C = [\, c_E, c_G, c_P \,]$$

$$Y_i(t) = [\, EQU_i(t), GAS_i(t), PRO_i(t) \,]$$

$$\Pi = \begin{bmatrix} b_{EE}, b_{EG}, b_{EP} \\ b_{GE}, b_{GG}, b_{GP} \\ b_{PE}, b_{PG}, b_{PP} \end{bmatrix}$$

$$B = [\, b_E, b_G, b_P \,]$$

$$V_i = [\, v_{Ei}, v_{Gi}, v_{Pi} \,] .$$

First of all, we estimate this reduced form by OLS method. Equation 1 (the leftest column) in Table 10 reports the results. According to the equations, the *amakudari* from the MOF ($AM_i(t)$) significantly reduces banks' capital asset ratio $EQU_i(t)$. This is precisely consistent with what the primitive methods have already shown in this paper. However, this result does not determine causality between $AM_i(t)$ and $EQU_i(t)$ or other bank performances as we have already discussed.

To take care of simultaneous determination of both $AM_i(t)$ and $EQU_i(t)$, we add the self-selection mechanism in the following form to the previous simultaneous equations (1).[14] The bank i derives potential satisfaction $W_i(t)$ (or pressure) of accepting *amakudari* officials from the MOF. The level of $W_i(t)$ is assumed to be determined by the following equation:

$$W_i(t) = d_i + d_E \cdot EQU_i(t-1) + d_G \cdot GAS_i(t-1) + d_P \cdot PRO_i(t-1) + d_A \cdot AM_i(t-1) + u_i \qquad (4)$$

or in an abbreviated form,

$$W_i(t) = d_i + D \cdot Y_i(t-1) + d_A \cdot AM_i(t-1) + u_i \qquad (4a)$$

where

$$D = [\, d_E, d_G, d_P \,].$$

The bank decides to accept (or to continue accepting) *amakudari* at time t if $W_i(t)$ is larger than zero. That is,

$$AM_i(t)=\begin{cases} 1 & \text{if } W_i(t)>0 \\ 0 & \text{otherwise.} \end{cases} \qquad (5)$$

In (4), $W_i(t)$ is an unobservable variable presenting the level of "benefit" or "pressures from the regulators" for bank i to accept *amakudari* officials from the MOF. The benefit is assumed to depend on $EQU_i(t-1)$, $PRO_i(t-1)$, $GAS_i(t-1)$, and $AM_i(t-1)$ which is the *amakudari* dummy at June 1980. The random variable u_i is assumed to follow the standard normal distribution. At the same time, we assume that the performances of the bank i are determined in a different way whether the bank accepts *amakudari* from the MOF ($AM_i(t)=1$) or not ($AM_i(t)=0$). Thus, we need to rewrite equation (3) as follows:

$$Y_i(t)= C_1+ \Pi_1 \cdot Y_i(t-1)+ V_{1i} \qquad \text{if } AM_i(t)=1 \qquad (6.1)$$

$$Y_i(t)= C_2+ \Pi_2 \cdot Y_i(t-1)+ V_{2i} \qquad \text{if } AM_i(t)=0 \qquad (6.2)$$

We need to statistically examine equations (4), (5) and (6) following the self-selection approach. Although the overall equation could be estimated by maximum likelihood estimation, it is quite cumbersome. In this paper, we follow the two step estimation method discussed by Maddala(1983). This method is to estimate the following equations:

$$AM_i(t)= \Phi\,(d_i+ D \cdot Y_i(t-1)+d_A \cdot AM_i(t-1))+u_i \qquad (7)$$

$$Y_i(t)= C_1+ \Pi_1 \cdot Y_i(t-1)- \sigma_{1u} \cdot \lambda_i+ \varepsilon_{1i} \qquad \text{if } AM_i(t)=1 \qquad (8.1)$$

$$Y_i(t)= C_2+ \Pi_2 \cdot Y_i(t-1)+ \sigma_{2u} \cdot \lambda_i+ \varepsilon_{2i} \qquad \text{if } AM_i(t)=0 \qquad (8.2)$$

where σ_{ju} (j=1, 2) is the covariance between the disturbance terms u_i in equation (4) and v_{ji} in equations (6.j) (j=1, 2). The term λ_i is an inverse Mills ratio, which is calculated based on the maximum likelihood estimators d_i^*, D^*,

and d_A^* from equation (7) as follows:

$$\lambda_i = \begin{cases} \phi(W_i(t)^*)/\Phi(W_i(t)^*) & \text{for } AM_i(t)=1 \\ \phi(W_i(t)^*)/\{1-\Phi(W_i(t))^*\} & \text{for } AM_i(t)=0 \end{cases} \quad (9)$$

where Φ is defined as the cumulative distribution function of standard normal and $W_i(t)^*=d_i^*+D^* Y_i(t-1)+d_A^* \cdot AM_i(t-1)$. This term must be added because of selectivity bias accompanied with the probit model that truncates the distribution of v_{ji} (j=1, 2). Both equations 2 and 3 in Tables 10 and 11 report the estimation results.

Did bad performances cause *amakudari*?: In probit estimation reported by Table 11, the coefficient of EQU(t–1) is negative, but insignificant. This denies that the banks with lower capital/asset ratio in the previous period were more likely to accept *amakudari* than other banks did. This is consistent with what we have observed by the primitive statistical methods. We also find that the *amakudari* dummy in the previous period AM(t–1) strongly induces banks to continue accepting *amakudari*, being consistent with what Table 5 of transition probability has suggested. The correct prediction ratio is 88.7 per cent, and the log of likelihood function is –42.112. The probit model, thus, rejects the view that the negative correlation between acceptance of *amakudari* and capital/asset ratio observed in Tables 6 or 8 reflects the causality from poor performances to the *amakudari* acceptance.

Did the *amakudari* decrease banks' equity capital?: According to the self–selection approach, the impact of the *amakudari* on bank capital ratios and other performances must be evaluated through the different equations (8.1) and (8.2) corresponding to the *amakudari* status. The estimation results are

summarized in equations 2 and 3 in Table 10. The capital/asset ratio EQU(t) is positively affected by EQU(t–1) and PRO(t–1) both for the cases of AM(t)=1 and AM(t)=0. However, it is noteworthy that the constant term is significantly negative for the case of AM(t)=1, but insignificant for the case of AM(t)=0. For the estimation of GAS(t), EQU(t–1) and PRO(t–1) have positive effect on GAS(t) for AM(t)=1, while PRO(t–1) is insignificant for AM(t)=0. For the estimation of PRO(t), PRO(t–1) is positively significant for both AM(t)=1 and AM(t)=0, whereas GAS(t–1) is significant only for AM(t)=0.

The inverse Mills ratio λ in equations 2 and 3 is insignificant for all the performances EQU(t), GAS(t), and PRO(t). This result implies that there are no significant selectivity bias from AM(t) to these variables. This also account for the fact that there are no essential differences between the estimation results of the simple OLS (equation 1) and those of the self–selection method (equations 2 and 3) in Table 10. No selectivity bias suggests that the *amakudari* status is not so changeable as to make the self–selection approach, which assumes endogenous determination of the *amakudari* status, irrelevant.

However, we should not derive from this the conclusion that the *amakudari* did not influence banks performances. The effect of dummy variable AM(t) on EQU(t), GAS(t), and PRO(t) in equation 1 of Table 10 appears in the difference of constant terms between equation 2 and 3. While the constant term is significantly negative for the regression EQU(t) in equation 2, it is insignificant in equation. This is consistent with the negative effect of AM(t) on EQU(t) in equation 1.15) Furthermore, we find the influence of *amakudari* in differences of coefficients for independent variables. The coefficient of EQU(t–1) is smaller in the case of AM(t)=1 than for the case of AM(t)=0 (i.e., 0.830 < 0.857). Similarly, the coefficient of PRO(t–1) is smaller for the case of AM(t)=1 than for the case of AM(t)=0 (i.e., 0.0274 < 0.0432). These results imply that, the other things being

equal, the *amakudari* induced accepting banks to decrease the capital/asset ratio EQU(t).

V *Amakudari* and Banks' Risk-taking

Economic theory predicts that lower equity capital induces banks to take more risk. However, if the *amakudari* system effectively worked to discipline the accepting banks' management, their lower equity capital would not necessarily imply increases in banks' risk-taking. This section investigates whether the *amakudari* system succeeded in suppressing banks' risk-taking, even though the system was ineffective in inducing banks to increase their equity capital. The scenario of our investigation is as follows. Most Japanese banks extended risk-taking behavior during the so-called "bubble period" of the late 1980s.[16] The consequence of their risk-taking is revealed by a large amount of non-performing loans that was disclosed for the first time in March 1996.[17] Table 11 presents the distribution of bad loan ratios (non-performing loans per total loans) for the 125 regional banks. Individual banks' bad loan ratios as of March 1996 are assumed to be explained by their performances and characteristics regarding the *amakudari* status until the mid 1980s.

The rows of BAD(MARCH 1996) in Tables 6 and 8 present comparison of the bad loan ratios for the banks accepting *amakudari* officials with that of the banks accepting no *amakudari* officials at all. In Table 6, the average of the bad loan ratio for category Ⅳ (i.e., banks accepting no *amakudari* officials as of 1985) is 2.200 per cent. On the other hand, the bad loan ratios for both categories I and II are 1.945 per centage points higher than that for category Ⅳ. The divergences are statistically significant at the 1 per cent level. According to Table 8, the average of bad loan ratio for the "NONAMA" banks, which did not

accept *amakudari* at all, was 2.309 per cent as of March 1996. The bad loan ratio for the "MOF" banks is, on average, 1.817 per centage points higher than that of the "NONAMA" banks. As for the "AMB" banks, the average of the bad loan ratio is also higher than that of the "NONAMA" banks although the difference between them is not so significant. These results suggest that the *amakudari* from the MOF was positively correlated with the bad loan ratios in the banking industry.

Explaining bad loan ratios in the banking sector

The primitive statistical methods explained above, particularly that in terms of categories I through IV, do not necessarily show the precise causality between the *amakudari* and the bad loan ratio because the *amakudari* status and other variables of bank performances are likely to be simultaneously determined as we have argued in the previous section.

Specifically, we add the following equations to explain bad loan ratio of an individual bank to the self-selection model comprised by equations (4) – (6) in the previous section:[18]

$$LOG(BAD_i)=\begin{cases} c_{B1}+B_1\cdot Y_i(t)+v_{B1i} & AM_i(t)=1 \\ c_{B2}+B_2\cdot Y_i(t)+v_{B2i} & AM_i(t)=0, \end{cases} \qquad (10)$$

where

$$B_j=[\,b_{BEj},\ b_{BGj},\ b_{BGj}\,].$$

To estimate these equations, we need to modify the above equations by adding the inverse Mills ratio.

$$LOG(BAD_i)=c_{B1}+B_1\cdot Y_i(t)-\sigma_{B1u}\cdot\lambda_i+e_{B1i} \quad AM_i(t)=1 \qquad (11.1)$$

$$LOG(BAD_i)=c_{B2}+B_2\cdot Y_i(t)-\sigma_{B2u}\cdot\lambda_i+e_{B2i} \quad AM_i(t)=0 \qquad (11.2)$$

where σ_{BJu} is the covariance between disturbance terms u_i and v_{Bj} (j=1, 2). We have already explained how to calculate the inverse Mills ratio. The estimation

results are reported in Table 13.

Equation 1 in Table 13 is a primitive OLS to explain $LOG(BAD_i)$ by bank performances such as $EQU_i(t)$ achieved during the first half of the 1980s in an ad hoc manner.[19] In this equation, the coefficient of capital/asset ratio $EQU_i(t)$ is significantly negative. As have already been explained, the *amakudari* from the MOF decreased capital per total assets of accepting banks. Thus, equation 1 suggests that the *amakudari* from the MOF worsened the bad loan problem that surfaced in the first half of the 1990s through decreasing bank capital.

However, we must take into account the problem of self-selection bias. We add the inverse Mills ratio to the primitive OLS equation 1 and estimate bad loan ratio equations by separating the case of banks accepting *amakudari* from the MOF ($AM_i(t)=1$) and the case of not accepting *amakudari* from the MOF ($AM_i(t)=0$). The results are summarized in both equations 2 and 3 in Table 13. They seem to support what we have observed in Tables 6 and 8. Comparing equations 2 (the case of $AM_i(t)=1$) and 3 (the case of $AM_i(t)=0$), the coefficient of $EQU_i(t)$ is negative in both of these equations, although it is not so significant in equation 3. Together with the result in the previous section that the *amakudari* decreases the capital/asset ratio, this implies that the *amakudari* from the MOF provoked risk-taking through weakened capital bases.

We are interested in whether the *amakudari* worked as a substitute for bank capital to discipline bank management. If it did, the banks accepting *amakudari* were so disciplined that the lower capital/asset ratio would induce them to extend risk-taking less significantly compared to the case of the banks accepting no *amakudari*. Thus, the substitutability hypothesis would expects that the absolute value of $EQU_i(t)$ coefficient is smaller for $AM(t)=1$ (equation 2) than for $AM(t)=0$ (equation 3). However, the estimated result in Table 13 is opposite to this; i.e., the absolute value of $EQU_i(t)$ coefficient is larger for

equation 2 than for equation 3 (0.5023>0.1754). The substitutability hypothesis is rejected by our statistical analysis.

It is also noteworthy that the constant term of equation 1 is larger than that of equation 3. In other words, other things being equal, the bad loan ratio of the banks accepting *amakudari* is larger than that of other banks. This suggests the existence of direct negative impact of *amakudari* on banks' risk-taking.[20]

A summary

Based on the statistics in Tables 6, 8, and Table 10, this paper makes the following conclusions. The *amakudari* system, particularly from the MOF, made it possible for accepting banks to reduce their equity capital. However, the system was powerless in disciplining banks' prudential management. The banks accepting officials from the MOF tended to reduce equity capital, and the lower equity capital induced those banks to more aggressively engage in risk-taking during the late 1980s with the consequence of a larger amount of bad loans for the banks accepting *amakudari* from the MOF than for other banks.

VI Concluding Remarks

This paper showed that there is significantly negative correlation between the *amakudari* (particularly, from the MOF) and banks' capital/asset ratio. Our investigations including the self-selection approach do not support the argument that this negative correlation was caused by the banks' degenerating performances. On the other hand, the analysis in this paper suggests that the lower equity capital ratio during the first half of the 1980s led private banks to extend their risk-taking behavior, with the consequence that they have been suffering from a larger amount of non-performing loans since the early 1990s

when the so-called "bubble" burst. Thus, the *amakudari* system did not appear to force private banks to engage in prudent management. Rather, it might make the Japanese banking sector fragile by decreasing bank capital. The results obtained in this paper implies that the *amakudari* system is not an effective answer to the issue "who monitors the monitor."

This paper examined the *amakudari* system from the perspective of prudence in bank management. However, it did not propose any specific hypotheses to explain why many banks have continued to accept officials from the monetary authorities in top managerial and board positions, and why the accepting banks have tended to hold lower capital/asset ratio than other banks have. Some people argue that the *amakudari* has worked as an incentive mechanism to discipline bureaucrats.[21] However, we need to investigate what is the incentive for private banks to collaborate with this disciplining mechanism for bureaucracy? The banks accepting *amakudari* might expect that they would receive more favorable treatment in case of their managerial distress than otherwise. If so, the financial market would be less motivated to monitor the soundness of those banks. The banks would not worry about adequacy of their equity capital. In consequence, the *amakudari* system would decrease bank capital.[22] However, this is just a conjecture which must be empirically tested in the future.

Teranishi(1996) emphasizes that the *amakudari* system has been an efficient means of coordinating fund allocation through private banks. However, we should note that some banks have been independent from this system. In particular, as has already been pointed out in this paper, the major city banks, which have constituted the core of the Japanese banking sector, have not accepted *amakudari* officials. If the Teranishi's hypothesis is true, why was the most important part of the banking sector allowed to be independent from the

coordinating system? The hypothesis must also explain why the banks deeply involved into the *amakudari* system showed poor performances compared to the banks independent from the system. At any rate, there is no well-founded hypotheses to explain the raison d'etre for the *amakudari* system in the Japanese financial system.

Endnotes

1) See, for example, Aoki(1994). Sharpe(1990) and Rajan(1992) provide theoretical models to explain monitoring by private banks. Their argument indicates the existence of cost associated with bank monitoring when a specific bank would monopolize information about their borrowers.

2) See also Aoki(1994).

3) There are some hypotheses to explain workings of the *amakudari* system in the banking industry. Calder(1989), for example, argues that the system is important for particularly small-scale or regional banks to obtain relevant information regarding administration operated by the monetary authorities. Aoki(1988) points out that the *amakudari* system in general has worked as a disciplinary means to bureaucrats by offering them post-retirement jobs. Teranishi(1996) goes so far as to say that the *amakudari* system has functioned as an informational channel of coordinating investment and adjusting distribution of interests among industries. Rixtel(1994) provides an useful overview of these hypotheses.

4) See Horiuchi(1996).

5) See Horiuchi(1996). Teranishi(1996) also emphasizes the importance of competition-restricting regulations as a stabilizer of the Japanese banking sector.

6) The broadly defined capital includes not only equity capital (book value), but also some reserve items.

7) See Herring and Vankudre(1987) and Klein and Leffler(1981).

8) As of 1985, there were no officials from the monetary authorities in the managerial board of eight city banks, Dai-ichi Kangyo, Mitsui, Mitsubishi, Fuji,

Sumitomo, Sanwa, Daiwa, and Saitama. See also Rixtel(1994).

9) The sample in this paper consists of the regional banks excluding other banks. In the context of *amakudari* system, the group of city banks is unimportant because of their independence from the system. On the other hand, smaller banks such as cooperative banks are important. However, because of limitation of data availability (particularly, bad loan data), we are forced to exclude them from our sample.

10) In contrast to the case of the MOF, the *amakudari* from the Bank of Japan did not seem to influence banks' capital base. This may suggest that the BOJ is not so influential as the MOF in the framework of banking administration.

11) See Horiuchi and Shimizu(1996).

12) Inclusion of the abnormal case of Taiko into the sample does not change the essence of statistical results presented in both Tables 6 and 8. Incidentally, long before the difficulty came to light, Taiko accepted *amakudari* officials from the MOF. Thus, it is not true that the managerial difficulty caused *amakudari* in case of Taiko

13) Saikyo started to accept an *amakudari* official from the BOJ in 1979. Other five banks started to accept *amakudari* officials from the MOF.

14) The model explained below is called the self-selection model or the switching regression with endogenous switching. See Maddala(1983) and Greene(1993).

15) As for the regression of PRO(t), the constant term is smaller for AM(t)=1 (equation 2) than for AM(t)=0 (equation 3), which is consistent with the negative effect of AM(t) on PRO(t) in equation 1. However, as for GAS(t), we find no differences in constant terms between equation 2 and 3.

16) See Marsh and Paul(1996), Ueda(1996), and Horiuchi and Shimizu(1996).

17) The Major 21 Banks (11 city banks, 7 trust banks and 3 long-term credit banks) and the regional banks began to disclose a part of non-performing loans

in March 1993. The disclosed non-performing loans were far from comprehensive. The comprehensive figures were for the first time disclosed in March 1996.

18) Since the distribution of individual banks' bad loan ratio has a skew shape as Table 12 suggests, we take logarithm of bad loan ratios ($LOG(BAD_i)$) as a dependent variable.

19) Taiko Bank is excluded from the sample because of abnormality of its performances.

20) The independent variable $EQU_i(t)$ is significant in equation 2, but not so significant in equation 3. On the other hand, $GAS_i(t)$ is significant in equation 3, while insignificant in equation 2. This suggests that the bad loans arose from different mechanisms in the respective groups of banks.

21) See Aoki(1988).

22) In this sense, the *amakudari* system might have been helpful in economizing bank capital. The hypothesis that the *amakudari* relationship has helped banks to increase their leverage ratio is analogous to the main bank hypothesis that the effective monitoring by the main bank of borrower firms reduces the agency costs associated with external financing. See Hoshi, Kashyap, and Scharfstein(1991), and Aoki, Patrick, and Sheard(1994).

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Table 1: Prudential Regulations as of 1974:
The MOF designated the following items as the desirable standards of the administrative guidance.

1. Loans/deposits ratio is to be not higher than 80 per cent.
2. (a) Liquid assets/deposits ratio is to be higher than 30 per cent.
   (b) For the banks that do not satisfy (a),
   increment of liquid asset/increment of total deposits ratio is to be higher than 30 per cent.
3. Ratio of current expenses (excluding tax) to current revenue is to be constantly decreased. (Until 1973, the MOF indicated the maximum level of 78 per cent for this ratio.)
4. Annual dividend per share is to be less than 12.5 per cent of the face value of the share.
5. Broadly defined capital/deposits ratio should be higher than 10 per cent.
6. The amount of loan to a borrower is to be less than
   (a) 20 per cent of the bank's equity capital for the city banks and regional banks;
   (b) 30 per cent of the bank's equity capital for the long-term credit banks and the trust banks;
   (c) 40 per cent of the bank's equity capital for the foreign exchange banks.

(Note) The MOF has altered prudential regulations to some extent. For example, as the Banking Law was substantially revised in 1982, ceilings on credit to a borrower was introduced by the Banking Law; the total amount of credit to a borrower should be less than 20 per cent of the bank's equity capital.
(Source)The Banking Bureau of the MOF(1974).

Table 2: The number of *amakudari* officials and banks:
From the MOF and the BOJ to the regional banks

Fiscal year	The number of *amakudari* officials			The number of banks			
	From the MOF	From the BOJ	Total	Category I	II	III	IV
1977	104	76	180	40	42	20	23
1978	100	76	176	38	42	23	22
1979	104	79	183	41	42	22	20
1980	115	80	195	42	48	19	16
1981	108	80	188	44	42	19	20
1982	112	80	192	46	41	17	21
1983	115	79	194	46	40	17	22
1984	122	79	201	45	42	18	20
1985	121	76	197	41	43	21	20
1986	121	75	196	41	44	21	20
1987	112	76	188	40	40	24	21
1988	114	85	199	45	39	21	20
1989	117	80	197	45	39	19	22
1990	120	80	200	40	43	20	22
1991	110	79	189	39	37	25	24
1992	108	76	184	42	37	22	24

(Note) Figures present the number of amakudari executive officers in the 125 regional banks existing at March 1996. As for the classification of the sample banks, see Table 4.

Table 3: Positions of *amakudari* officiers in the regional banks as of June 1990

Positions	The number of officials
Chairman (*Kaicho*)	27
Vice-chairman (*Fuku-kaicho*)	1
President (*Todori* or *Shacho*)	31
Vice-president (*Fuku-todori*)	8
Executive director (*Senmu*)	22
Managing director (*Jyomu*)	48
Directors (*Torishimari-yaku*)	40
Auditor (*Kansa-yaku*)	23
Total	200

Table 4: Classification of banks with respect to *amakudari* as of 1985

	From the MOF	From the BOJ	No. of banks
Category I	○	○	41
Category II	○	×	43
Category III	×	○	21
Category IV	×	×	20

(Notes) The banks in category I, II, and III are those accepting *amakudari* officials from both the MOF and the BOJ, those banks accepting only from the MOF and those banks accepting only from the BOF respectively at 1985. The banks in categoryIV do not accept any *amakudari* officials at all. This table includes Daiko.
(Source)Keizai Chosa Kyokai

Table 5: Probabilty of transition from category K(t) to J(t+1)
Average from 1977 to 1989 ; K, J=Ⅰ,Ⅱ,Ⅲ, and Ⅳ

t+1 year / t year		J(t+1)			
		Ⅰ	Ⅱ	Ⅲ	Ⅳ
K(t)	Ⅰ	0.931	0.031	0.037	0.000
	Ⅱ	0.036	0.937	0.008	0.020
	Ⅲ	0.091	0.004	0.884	0.021
	Ⅳ	0.000	0.049	0.016	0.934

Table 6: *Amakudari* and performances of regional banks

Categories	IV	I minus IV	II minus IV	III minus IV
The averages 1975 - 1979				
EQU	3.743	-0.656(2.960)**	-0.702(3.202)**	0.004(0.014)
PRO	21.561	0.070(0.050)	1.243(0.907)	-0.221(0.140)
GAS	12.880	0.319(0.585)	0.271(0.502)	0.529(0.850)
STK	0.763	0.029(0.239)	-0.173(1.465)	-0.049(0.362)
1980 - 1984				
EQU	3.368	-0.696(3.778)**	-0.591(3.243)**	-0.004(0.018)
PRO	18.196	0.207(0.183)	0.466(0.417)	0.919(0.712)
GAS	7.739	1.036(1.738)	0.106(0.180)	0.526(0.773)
STK	0.955	0.114(0.774)	-0.190(1.310)	0.165(0.098)
1985 -1989				
EQU	3.411	-0.460(2.414)**	-0.403(2.139)*	-0.021(0.097)
PRO	18.105	1.967(1.821)*	2.387(2.334)*	1.108(0.899)
GAS	9.815	1.130(1.308)	0.112(0.132)	0.711(0.721)
STK	1.408	0.304(1.723)*	-0.019(0.110)	0.074(0.367)
BAD(MARCH 1996)	2.200	1.945(2.421)**	1.945(2.449)**	0.005(0.005)

(Notes)EQU = the equity capital per total assets(%), PRO = the current profit per equity capital(%), GAS = the annual growth rate of total assets(%), STK = share holding per total assets(%). As for the definition of categories, see Table 4. Figures in parentheses are the absolute value of t-statistics. The asterisks ** and * respectively indicate significant more than 1 per cent and 5 per cent level.

Table 7: Another classification of banks:
In terms of long-term *amakudari* status

Categories	Definition
Category MOF (56)	The banks that continued to be in Categories I or II for all the years from 1977 to 89.
Category NONMOF (14)	The banks that accepted *amakudari* officials, but never from the MOF from 1977 to 89.
Category AMB (40)	The banks that sometimes accepted *amakudari* from the MOF, but sometimes severed the relationship with the MOF from 1977 to 89.
Category NONAMA (15)	The banks that did not accept *amakudari* at all from 1977 to 89.

(Note) Figures in parentheses are the number of banks belonging to respective categories.

Table 8: *Amakudari* and performances of regional banks

Categories	NONAMA	MOF minus NONAMA	AMB minus NONAMA	NONMOF minus NONAMA
The averages 1975 - 1979				
EQU	4.043	-0.982(4.652)**	-1.013(4.390)**	0.063(0.223)
PRO	20.929	0.951(0.677)	2.362(1.538)	-0.219(0.117)
GAS	12.478	0.501(0.856)	0.827(1.293)	1.505(1.929)*
STK	0.867	-0.198(1.607)	-0.176(1.308)	-0.162(0.989)
1980 - 1984				
EQU	3.621	-0.903(5.178)**	-0.897(4.700)**	0.062(0.266)
PRO	17.249	1.232(1.075)	2.042(1.629)	1.691(1.106)
GAS	8.022	0.279(0.449)	0.143(0.211)	-0.014(0.017)
STK	1.058	-0.167(1.090)	-0.087(0.517)	-0.219(1.072)
1985 -1989				
EQU	3.587	-0.643(3.923)**	-0.701(3.907)**	0.070(0.320)
PRO	17.914	2.777(2.373)*	1.829(1.429)	0.335(0.215)
GAS	10.324	0.173(0.194)	-0.376(0.386)	0.232(0.196)
STK	1.428	0.012(0.068)	0.390(2.016)*	-0.211(0.897)
BAD(MARCH 1996)	2.309	1.817(2.174)*	1.053(1.152)	-0.012(0.010)

(Notes)EQU = the equity capital per total assets(%), PRO = the current profit per equity capital(%), GAS = the annual growth rate of total assets(%), STK = share holding per total assets(%). As for the definition of categories, see Table 7. Figures in parentheses are the absolute value of t-statistics. The asterisks ** and * respectively indicate significant more than 1 per cent and 5 per cent level.

Table 9: Event study of changes in bank performances:
Before and after the start of accepting *amakudari*
(A) Profit rates per equity capital (PRO)

F.Y.	Average	Chiba Kogyo (1980)	Miye (1979)	Shoku-san (1980)	Seto-uchi (1980)	Saikyo (1982)	Okinawa Kaiho (1979)
1976	22.82	-4.05 (0.65)	-3.72 (0.59)	4.14 (0.66)	7.11 (1.13)	8.73 (1.39)	10.45* (1.66)
1977	20.20	-4.70 (0.87)	-1.44 (0.27)	1.25 (0.23)	6.47 (1.20)	-0.51 (0.09)	15.63** (2.90)
1978	23.00	-2.47 (0.43)	-3.09 (0.54)	6.59 (1.14)	8.36 (1.45)	-0.93 (0.16)	29.98** (5.19)
1979	15.49	0.29 (0.07)	1.53 (0.39)	3.96 (1.00)	8.29* (2.09)	-0.52 (0.13)	28.66** (7.22)
1980	15.61	0.92 (0.30)	5.64* (1.82)	-0.50 (0.16)	4.16 (1.34)	-0.04 (0.01)	14.46** (4.66)
1981	15.99	1.91 (0.42)	-0.73 (0.16)	2.97 (0.65)	2.17 (0.47)	-0.46 (0.10)	21.83** (4.74)
1982	20.77	0.85 (0.15)	0.02 (0.00)	4.64 (0.84)	2.30 (0.42)	0.19 (0.04)	21.33** (3.87)
1983	21.15	2.66 (0.51)	-1.32 (0.25)	-0.21 (0.04)	5.07 (0.97)	0.41 (0.08)	2.75 (0.53)
1984	18.50	0.46 (0.10)	0.60 (0.13)	-4.88 (1.07)	9.83* (2.16)	-2.03 (0.45)	14.82** (3.25)
1985	18.43	1.02 (0.20)	-0.21 (0.04)	-1.86 (0.37)	6.05 (1.20)	-1.08 (0.22)	1.69 (0.34)

(Note) Figures indicate the differences from the average of peers in respective years. Figures in parentheses are the absolute value of t-statistics.

Table 9: Event study of changes in bank performances:
Before and after the start of accepting *amakudari*(continued)
(B) Growth rates in total assets (GAS)

F.Y.	Average	Chiba Kogyo (1980)	Miye (1979)	Shoku-san (1980)	Seto-uchi (1980)	Saikyo (1982)	Okinawa Kaiho (1979)
1976	13.23	0.46 (0.10)	2.20 (0.48)	-2.07 (0.45)	-3.54 (0.77)	-1.99 (0.43)	3.28 (0.71)
1977	11.08	0.40 (0.08)	-0.45 (0.10)	4.45 (0.94)	1.84 (0.39)	9.76* (2.07)	2.78 (0.59)
1978	13.38	-0.67 (0.13)	0.05 (0.01)	-1.59 (0.31)	2.42 (0.47)	-9.84* (1.92)	2.13 (0.42)
1979	12.35	9.05* (2.02)	-0.26 (0.06)	-2.27 (0.51)	2.83 (0.63)	-3.03 (0.68)	1.23 (0.28)
1980	8.33	1.58 (0.50)	3.60 (1.12)	-2.21 (0.69)	3.78 (1.17)	1.40 (0.43)	-0.98 (0.31)
1981	9.59	3.49 (0.95)	1.23 (0.34)	-3.21 (0.87)	1.27 (0.35)	-2.79 (0.76)	13.84** (3.76)
1982	7.52	1.56 (0.41)	1.27 (0.33)	-1.64 (0.43)	-0.83 (0.22)	1.97 (0.51)	7.52* (1.97)
1983	7.84	1.67 (0.43)	2.40 (0.62)	-2.86 (0.74)	2.33 (0.60)	0.83 (0.21)	2.48 (0.64)
1984	7.45	-1.60 (0.10)	1.50 (0.13)	-2.63 (0.61)	5.39 (1.26)	-5.31 (1.24)	-2.55 (0.59)
1985	7.25	5.08 (1.47)	0.43 (0.12)	-1.90 (0.55)	4.17 (1.21)	0.06 (0.02)	-4.02 (1.16)

(Note) Figures indicate the differences from the average of peers in respective years. Figures in parentheses are the absolute value of t-statistics.

Table 10: Self-selection Model
Dependent variable: EQU(t)

	Equation 1 OLS	Equation 2 AM(t)=1	Equation 3 AM(t)=0
No. of observ.	124	83	41
Const.	-0.4785 (-2.623)***	-0.4899 (-2.393)**	-0.5683 (-1.260)
EQU(t-1)	0.8553 (34.506)***	0.8300 (25.632)***	0.8570 (17.206)***
GAS(t-1)	-0.0016 (-0.175)	0.0034 (0.302)	-0.0114 (-0.641)
PRO(t-1)	0.0308 (7.549)***	0.0274 (6.237)***	0.0432 (3.769)***
AM(t)	-0.0815 (-1.976)**		
λ		0.0665 (0.961)	-0.0961 (-0.969)
Log of likeli-hood function	26.3872	21.1470	8.2983
Mean of EQU(t)	2.9376	2.7261	3.3656
Adjusted R^2	0.9254	0.8890	0.9338
SIG		0.0358	0.0418

Dependent variable: GAS(t)

	Equation 1 OLS	Equation 2 AM(t)=1	Equation 3 AM(t)=0
No. of observ.	124	83	41
Const.	2.4370 (1.269)	3.1157 (1.261)	2.6229 (0.816)
EQU(t-1)	0.9059 (3.473)***	0.8735 (2.235)**	1.1190 (3.069)***
GAS(t-1)	-0.0278 (-0.292)	-0.0227 (-0.167)	-0.0246 (-0.195)
PRO(t-1)	0.1184 (2.754)***	0.1359 (2.562)**	0.0545 (0.660)
AM(t)	0.8107 (1.867)**		
λ		-0.8145 (-0.975)	0.6181 (0.909)
Log of likeli-hood function	-265.509	-185.511	-74.163
Mean of EQU(t)	8.1990	8.2934	8.0083
Adjusted R^2	0.0818	0.0565	0.1472
SIG		5.2136	2.2956

Table 10: Self-selection Model (continued)
Dependent variable: PRO(t)

	Equation 1 OLS	Equation 2 AM(t)=1	Equation 3 AM(t)=0
No. of observ.	124	83	41
Const.	7.8304 (2.745)***	3.5084 (1.009)	14.5209 (2.782)***
EQU(t-1)	-0.4840 (-1.249)	-0.3063 (-0.557)	-1.0267 (-1.730)**
GAS(t-1)	0.1989 (1.406)	0.4777 (2.498)**	-0.2732 (-1.333)
PRO(t-1)	0.4695 (7.352)***	0.4495 (6.023)***	0.5635 (4.201)***
AM(t)	-0.8891 (-1.378)		
λ		-1.2251 (-1.042)	-0.9926 (-0.903)
Log of likeli-hood function	-314.565	-213.599	-94.219
Mean of EQU(t)	18.5794	18.5364	18.6663
Adjusted R^2	0.4172	0.4407	0.4566
SIG		10.2874	6.0969

Table 11: Probit estimation of *amakudari* transition
Dependent variable: AM(t)

LOG OF LIKELIHOOD FUNCTION =	-42.1123
NUMBER OF OBSERVATIONS =	124
NUMBER OF POSITIVE OBSERVATIONS =	83
PERCENT POSITIVE OBSERVATIONS =	0.669355
SUM OF SQUARED RESIDUALS =	11.9333
R-SQUARED =	0.565177
PERCENT CORRECT PREDICTIONS =	0.887097

Parameter	Estimate	Standard Error	t-statistic
Const.	-2.6191	1.6807	-1.5583
EQU(t-1)	-0.0195	0.2303	-0.0846
GAS(t-1)	0.1303	0.0760	1.7138*
PRO(t-1)	-0.0139	0.0351	-0.3974
AM(t-1)	2.5464	0.3918	6.4988***

(Note) Standard Errors computed from analytic second derivatives.

Table 12: Distribution of regional banks according to bad loan ratios (per total loans %: As of March 1996)

Bad loan ratio (BAD: percent)	Category I	Category II	Category III	Category IV	Total
16.0≦BAD	1	0	0	0	1
12.0≦BAD<16.0	0	4	0	0	4
8.0≦BAD<12.0	3	1	0	0	4
6.0≦BAD< 8.0	2	4	1	0	7
5.0≦BAD< 6.0	3	2	0	1	6
4.0≦BAD< 5.0	7	6	0	1	14
3.0≦BAD< 4.0	7	6	0	2	15
2.0≦BAD< 3.0	9	5	9	5	28
1.0≦BAD< 2.0	9	10	11	9	39
0.0≦BAD< 1.0	0	5	0	2	9
Total (Average)	41 (4.137)	43 (4.145)	21 (2.205)	20 (2.200)	125 (3.505)

(Note) Figures in parentheses are the average value of bad loan ratios for respective categories.

Table 13: Factors accounting for banks' risk-taking

Dependent variable: LOG(BAD)

	Equation 1 OLS	Equation 2 AM(t)=1	Equation 3 AM(t)=0
No. of observ.	124	83	41
Const.	1.4829 (3.147)***	2.6818 (4.957)***	0.0754 (0.119)
EQU(t)	-0.2616 (-2.759)***	-0.5023 (-3.671)***	-0.1754 (-1.530)
GAS(t)	0.0386 (1.237)	0.0034 (0.086)	0.1403 (3.046)**
PRO(t)	-0.0126 (-0.745)	-0.0084 (-0.386)	0.0122 (0.543)
AM(t)	0.2878 (2.028)**		
λ		-0.1501 (-0.597)	-0.2877 (-1.132)
Log of likelihood function	-122.371	-87.904	-17.124
Mean of LOG(BAD)	0.9886	1.1432	0.6756
Adjusted R^2	0.1261	0.1067	0.2542
SIG		0.4902	0.1598

(Notes) Figures in parentheses are t-statistics.

** significant at 5 per cent level

*** significant at 1 per cent level

Figure 1: Equity Capital/Deposit Ratio
For Japanese Banks (%)