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Did *amakudari* undermine the effectiveness of regulator monitoring in Japan? ☆

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Abstract

The principal–agent problem between the regulator, regulated banks, and taxpayers is critical to the viability of the financial system's safety net. There exists the danger that the regulator will collude with regulated banks to pursue their benefits at the expense of taxpayers, thereby reducing effectiveness of financial supervision. This paper proposes that the human relationship prevailing between the regulatory authorities and private banks referred to as "*amakudari*" is a form of collusion between the regulator and banks that endangers the safety net mechanism in Japan. Statistical analysis of data on regional banks shows that those banks accepting post-retirement officials from the Ministry of Finance have reduced capital adequacy levels and increased non-performing loans. Thus, the statistical result supports the hypothesis proposed in this paper.

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1. Introduction

Banking systems generally include a safety net such as deposit insurance, designed to protect bank depositors from damages caused by bank failures. The safety net is expected to realize an efficient equilibrium in the banking system by preventing bank-runs (Diamond and Dybvig, 1983), but can also reduce the incentives of depositors and other investors to monitor and discipline banks in ways that restrict their risk-taking. Thus, as Black et al. (1978) argue, the public delegates the task of supervising bank management to the financial regulators. Ideally these regulators would maintain the safety net so as to impose the lowest social costs. Regulators do not automatically pursue this social obligation, however, because they tend to give priority to their own preference over the policy objectives assigned by taxpayers through legislation. If regulators fail to conscientiously pursue their designated policy goals, banks could aggressively extend their risk-taking activities, transfer this risk to taxpayers, and thereby undermine the viability of the safety net itself. Kane (1995) analyses how this aspect of the principal–agent problem between the regulator, banks, and tax-payers destabilizes financial systems covered by a safety net. [1]

The purpose of this paper is to analyze this principal–agent problem in the Japanese banking industry by examining the practice of *amakudari*. This Japanese term means "descent from heaven" and refers to practice of officials retiring from the government to accept new positions in the private sector. *Amakudari* is similar to the "revolving door" between government and private sector jobs seen in the United States, but in this paper *amakudari* refers specifically to when high-ranked officials from the Ministry of Finance (MOF) and the Bank of Japan (BOJ) take post-retirement jobs in one of the banks these institutions supervise. In this paper we assume that this type of *amakudari* is a form of collusion between regulators and those they are supposed to regulate within the framework of the principal–agent problem. Our informal analysis suggests that this collusion makes the Japanese safety net less viable. Our empirical analysis based on the data from more than 120 regional banks

[1] Kane (1995) warns us against carelessly assuming that regulators are fully trustworthy or automatically pursue the social role assigned to them. As he argues, "the faithful agent presumption focused economists' attention on evaluating pricing and regulatory structures rather than on analyzing the web of incentives facing the officials responsible for designing and enforcing these structures."

supports this theoretical argument. Specifically, our statistical analysis compares the performance of banks accepting *amakudari* officials with those that do not. The results show that *amakudari* from the MOF to banks has distorted regulators' incentives and undermined the soundness of bank management.

This paper is constructed as follows: in Section 2, we explain the principal–agent problem under the financial safety net within the context of the *amakudari* practice prevailing in the Japanese banking industry. After outlining the key features of the *amakudari* practice among regional banks in Section 3, we analyze empirically the relationship between *amakudari* and bank performance in Section 4. In Section 5, we summarize the arguments of this paper and discuss implications of the recent developments concerning restructuring the safety net in Japan.

2. *Amakudari* and the principal–agent problem in Japanese banking

As mentioned above, the safety net for the banking industry deprives financial and capital markets of incentives to rigorously monitor bank management. As a result, a safety net allows banks to take on excessive risk and transfer at least some of this risk to taxpayers. In order to prevent this excessive risk-taking by the bank, taxpayers generally delegate the task of supervising bank management to some regulatory agency. As Kane (1995) explains, however, principal–agent problems arise because of the relationships between these regulators, the regulated entities, and taxpayers. In this section we discuss the structure of the principal–agent problem in the Japanese financial system emerging from the practice of *amakudari* in the banking industry.

2.1. Collusion between regulators and banks through amakudari

It is theoretically obvious that a bank's shareholders benefit when a safety net facilitates more aggressive risk-taking by the bank. To limit this type of risk-taking by banks at the expense of taxpayers, regulators are responsible for monitoring banks, using means such as requiring banks to keep their capital/asset ratios at sufficiently high levels. When asymmetric information hinders taxpayers' abilities to precisely evaluate regulators' behavior, however, it is difficult for them to determine whether regulators collude with those they ostensibly regulate in pursuit of objectives quite different from those assigned by taxpayers.

Suppose that banks could increase returns by expanding their risk exposure. In this case, regulators might collude with banks in order to share in this payoff. This collusion might involve banks giving side payments to compensate regulators for the potential of expanded risk-taking to damage the reputation of the regulators as a credible monitor. Since pecuniary side payments are

unlawful, collusion would more likely take a less-obvious form. Here we regard the prevailing practice in the Japanese banking industry of *amakudari*: accepting ex-senior officials from the regulatory authorities (i.e., the MOF and the BOJ) on to banks' managerial boards as a method of side-payment. [2] *Amakudari* is a form of collusion in which banks provide regulators with job opportunities after retirement, and in turn, regulators indulge banks in expanding their business by increasing their leverage ratios. Since a higher leverage ratio implies a greater possibility of financial distress for the banks and larger transfers of risk from banks to the safety net, the collusion manifest in *amakudari* ultimately undermines the viability of the safety net.

At this point one must address Kane's (1995, p. 441) suggestion that "manager–stockholder conflict poses a counterincentive to pressures for deposit-institution risk-taking." That is, if managers dominate bank decision-making, the safety net would not necessarily motivate banks to expand risk-taking because it "exposes the manager's human capital to career damage that is hard to diversify" (ibid.). This argument is relevant here because conventional wisdom holds that Japanese corporations, including banks are organized and monitored in ways that bear little resemblance to the commonly assumed shareholder-oriented agency model of corporate management. [3] In addition, the practice of long-term employment in Japan makes human capital more specific so that career damage becomes a more serious issue.

Even if managers dominate decision-making, however, regulators can mitigate the threat greater bank risk poses to human resources for bank managers if they adopt a policy of forbearance towards those banks with which they collude. To the extent that this regulatory approach limits career damage, it also reduces the effectiveness of the counter-incentive mechanism identified by Kane (1995). More specifically, if bank managers can collude with regulators through *amakudari* to reduce the likelihood of a human capital crisis for managers, the practice of *amakudari* is likely to be associated with more aggressive risk-taking on the side of bank management than would otherwise be the case. [4]

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[2] Legally speaking, the BOJ is a special corporation. Thus, BOJ employees are not public servants. Nevertheless, the Bank of Japan Law stipulates that its employees be regarded as public servants. Accordingly, the BOJ controls its employees' choice of post retirement jobs by self-regulatory rules similar to those prescribed in the National Public Service Law.

[3] The practice of mutual shareholding among firms and financial institutions was believed to raise the cost of acquiring a controlling block of shares such that it virtually disabled the capital market for corporate control. See Prowse (1992, p. 1122) and Milhaupt (1996) for a concise overview of the ownership structure of Japanese companies.

[4] Banks whose managers perceive bankruptcy as too costly would have no incentive to collude with the regulator and would have no *amakudari* relationships with them. As will be explained in the next section, there are some banks that have no *amakudari* relationships, although the number is insignificant.

2.2. The possibility of disciplining the regulator

National legislators could prevent collusion between regulators and banks from undermining the effectiveness of the safety net if they could either precisely monitor the regulator or introduce incentives compatible with the policy objectives assigned to the regulatory agency. In reality, however, neither legislators nor taxpayers have access to all of the relevant information about regulators and their behavior. Moreover, if those with access to relatively greater information are limited in number, they too can be seduced into collusion. We cannot neglect the similar principal–agent problem between legislator and taxpayers.

We should note here that the Japanese people were not given incentives to monitor bank regulators until at least the beginning of the 1990s, and although deposit insurance was introduced in 1971, it remained nominal until 1992. The MOF dealt with the management problems of individual banks by forcing relatively sound banks (in most cases, large city banks) to merge with those at the brink of bankruptcy. On the surface this policy did not create any obvious burden for taxpayers. In addition, the legal framework supporting deposit insurance did not include any explicit role or procedures for injecting taxpayers' money into the scheme of bailing out unsound banks. [5] Thus, until quite recently the extent to which taxpayers shared the social costs of the safety net was obscured by regulatory practices. Because they were unaware of the actual costs of poorly managed banks, Japanese taxpayers were largely unattentive or indifferent towards monitoring bank regulators.

After the bursting of the "bubble" economy at the beginning of the 1990s, the growing amount of non-performing loans in the banking sector and the clumsiness of the MOF in dealing with distressed banks revealed the demerits of the existing safety net. The weakness of the safety net forced the Japanese government to prepare public funds amounting to ¥60 trillion as of March 1999 to deal with the bank crisis. [6] These developments forced the Japanese people to recognize the importance of monitoring the regulators' implementation of the safety net. As a result, in the late 1990s the safety net in

[5] The major banks utilized the accumulated rent to absorb the costs associated with rescuing distressed banks. The regulation of suppressing competition in the financial system, which conferred a handsome amount of rent on existing banks and financial institutions was an important support to the safety net (Horiuchi, 1999). Thus, end-users of financial services bore the operating costs of the safety net in Japan.

[6] In late 1998, an emergency policy package was passed to protect depositors and restore bank capital. The framework contemplates a massive injection of public money through the Deposit Insurance Corporation. Public funds amounting to ¥60 trillion were prepared by the government within the DIC, ¥7.8 trillion of which were injected into major banks' capital in March 1999.

Japan has been revised considerably. We will discuss these recent developments in Section 5.

2.3. Time-persistence of the amakudari relationships

The collusion between regulators and banks in Japan manifest in *amakudari* can be characterized as an implicit contract. Accordingly, enforcing this contract is important for both the regulatory agency and the bank. One way to ensure compliance is to make this relationship customary through repetition over time. [7] Threats or punishments also play a role. Regulators could punish a bank that refuses to provide side payments via *amakudari* posts with tighter prudential regulation, for example. On the other hand, a bank could threaten to sever the *amakudari* relationship if it is not satisfied with the regulatory policies or practices. In short, the long-term and repetitive nature of *amakudari* postings would effectively make the implicit contract enforceable (Tirole, 1986, Section 4.3). Thus, we derive the nature of continuance (time-persistence) in the *amakudari* relationships from our assumption of *amakudari* as a form of collusion between regulators and banks.

2.4. Productive amakudari relationship?

Some scholars argue based on a purely theoretical analysis that collusion between regulators and regulated firms is productive. Che (1995), for example, argues that the revolving door practice, the US equivalent of *amakudari*, is socially desirable if the qualification-enhancing effort necessary for regulatory officials is complemented by the monitoring effort based on expertise specific to the regulated industry. Unfortunately, Che (1995) presumes that officials in regulatory agencies develop qualities that are socially useful after being re-employed in the regulated firms. In other words, he ignores the conflict of interests between the regulated firms and their customers (depositors in the case of banking industry). Given the intensive conflict of interests between banks and depositors, Che's argument is not applicable to the banking industry. [8]

[7] In this context, we assume that the regulatory agency arranges post-retirement jobs for its officials as an on-going concern. If individual bureaucrats were to arrange their post-retirement jobs, it would be difficult to explain the nature of time-persistence in *amakudari*. Our assumption is realistic, as it is well-known in Japan that "the job is arranged by the Personnel Division of the MOF (or the BOJ), not by the individual concerned" (Aoki et al., 1994, pp. 32–33).

[8] Aoki et al. (1994) argue that the MOF succeeded in improving its monitoring capability by distributing *amakudari* jobs to individual bureaucrats according to their contribution to the social objective of the regulation. However, they simply assume that the MOF bureaucrats are faithful to the regulatory objectives delegated to them, ignoring the principal–agent problem investigated in this paper.

We are also skeptical about applicability to the case of Japanese banking of Che's assumption that regulators accumulate expertise specific to the regulated industry. High-ranking officials in the MOF tend to move quite frequently between various departments within a ministry responsible for not only financial affairs, but also taxation, budget, and other matters. These officials are trained as "generalists" not as banking or financial market "specialists". For this reason the MOF officials reportedly depended heavily on private banks and financial institutions to provide them with detailed information they need when determining important policies related to financial and capital markets. Because of this career pattern, most officials cannot acquire sufficient expertise in practical bank management to be of ready use for banks after retirement, even though they are undeniably knowledgeable about legal matters and specific regulations.

2.5. Refutable hypotheses

We derive the following two hypotheses from the argument in this section:

Hypothesis 1. The banks accepting *amakudari* officials from the regulatory authorities tend to be engaged in greater risk-taking than banks not practicing *amakudari*.

Hypothesis 2. The *amakudari* relationship between regulators and banks has the nature of time-persistency.

The following sections will examine whether these hypotheses are supported by statistical analyses.

3. The *amakudari* practice in the Japanese banking industry

Like many other business practices in Japan, *amakudari* is a post-World War II phenomenon. [9] The National Public Service Law (*Kokka Komuin Ho*) controls this practice. According to this law, government employees are not allowed to join a private company for two years after their retirement if they had a close connection with the company within the five years prior to retirement. Every public servant must obtain approval from the National Per-

[9] Okazaki (1993, p. 14) shows that the number of retired MOF officials taking jobs in private companies was only 11% of the total number of retirees during the period 1912–1935. This figure went up to 35% during the period 1956–1970.

Table 1
The number of *amakudari* officials and banks: from the MOF and the BOJ to the regional banks[a]

Fiscal year	The number of *amakudari* officials			The number of banks			
	From the MOF	From the BOJ	Total	MOF&BOJ	MOF	BOJ	NON
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	40	20	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

[a] Figures present the number of *amakudari* executive officials in the 125 regional banks existing as of March 1996. As for the classification of the sample banks, see Table 4.

sonnel Authority (*Jinji In*) if she or he wants to be employed by a private company before the end of the two-year "cooling period". [10]

Following this rule, both the MOF and the BOJ send a number of their post-retirement officials to the managerial board of private banks and deposit-taking financial institutions once their cooling period is up. As is well known, the distribution of retired officials tends to be concentrated in small and medium sized banks. While many regional banks and most small financial institutions have accepted officials for a long time, large city banks have been relatively uninvolved in *amakudari* practices. [11] Table 1 shows the number of executive officials who "descended" from the MOF or the BOJ to regional banks' managerial boards. The sample consists of 125 regional banks existing as of March 1996. According to this table, nearly 200 former high-ranking

[10] For a concise explanation of *amakudari* practice, see Blumenthal (1985).

[11] As of 1985, there were no officials from the monetary authorities on the managerial board of eight city banks, Dai-ichi Kangyo, Mitsui, Mitsubishi, Fuji, Sumitomo, Sanwa, Daiwa, and Saitama. See also Rixtel (1994). We exclude major banks such as the city banks from our sample partly because, as has been explained, they have been substantially independent from the *amakudari* practice, and partly because their multi-dimensional business significantly differentiates them from the regional banks, which concentrate on retail business. If we included the major banks in our sample, the data would lose statistically desirable homogeneity.

bureaucrats occupied important positions in private banks' executive boards. [12]

3.1. Classification of sampled banks according to the amakudari status

We classify the 125 regional banks in our sample into four categories reflecting their *amakudari* experience (their *amakudari* status). The first group (category MOF&BOJ) includes the banks that accept *amakudari* officers from both the MOF and the BOJ. The second group (category MOF) consists of the banks accepting officers from only the MOF. The third group (category BOJ) is made up of the banks accepting *amakudari* from only the BOJ, and finally, the fourth one (category NON) consists of the banks that do not accept *amakudari* officers at all. The right-hand side of Table 1 presents the distribution of banks according to this classification. The table suggests that the *amakudari* officers from the MOF (i.e., categories MOF&BOJ and MOF) constitute a core of the regional banks' managerial board. Although some banks (category NON) have remained independent from the *amakudari* system, the number of those banks is at most one-fifth of the total number.

We calculated the probability of a bank's transition from one category to another over a year during the sample period from 1977 to 1991. Table 2(A) presents the averages of the transition probability. In this table, figures in the diagonal are overwhelmingly greater than the off-diagonal figures, suggesting that most banks tended to stay in a specific category (*amakudari* status) for a long time. In Table 2(B), we calculated the same transition probability comparing the *amakudari* status of 1991 with that of 1977. Table 2(B) shows that the figures in the diagonal are still significantly higher than the off-diagonal figures. Although the time span is much longer in Table 2(B) than in Table 2(A), the probability of transition from one status to another is much smaller than that estimated from the probability of annual transition presented in Table 2(A). This time-persistence of the *amakudari* relationship is consistent with the prediction of Hypothesis 2 in Section 2.5.

3.2. Performances of banks accepting amakudari officials

Table 3 compares some measures of performance based on 5-year averages depending on the *amakudari* status at the beginning of each period. For example, Panel A subdivides the sample banks into the four groups MOF&BOJ, MOF, BOJ and NON according to the *amakudari* status as of 1980, and shows

[12] For example, as of June 1990, the sampled banks employed 200 *amakudari* officials from the monetary authorities on their managerial boards. One-third (67) of those retired officials held key posts (i.e., chairman, vice-chairman, presidents, and vice-presidents) on the managerial boards of those banks.

Table 2
Probability of: (A) annual transition from category $K(t)$ to $J(t+1)$ (average from 1977 to 1991; K, J = MOF&BOJ, MOF, BOJ, and NON); (B) transition from category K(1980) to J(1991)

$K(t)$	$J(t+1)$			
	MOF&BOJ	MOF	BOJ	NON
(A) *Probability of annual transition from catergory* $K(t)$ *to* $J(t+1)$				
MOF&BOJ	0.930	0.031	0.030	0.000
MOF	0.032	0.939	0.009	0.020
BOJ	0.086	0.004	0.890	0.020
NON	0.000	0.059	0.031	0.910
K(1980)	J(1989)			
	MOF&BOJ	MOF	BOJ	NON
(B) *Probability of transition from category* K(1980) *to* J(1991)				
MOF&BOJ	0.718	0.128	0.154	0.000
MOF	0.167	0.667	0.048	0.119
BOJ	0.250	0.000	0.688	0.063
NON	0.000	0.150	0.100	0.750

Table 3
Amakudari and performance of regional banks[a]

	MOF&BOJ	MOF	BOJ	NON
Panel A: *Period 1980–1984*				
EQT	2.648***	2.739***	3.484	3.575
GAS	8.736	7.908	7.953	7.984
PRO	8.001	8.096	8.456	7.604
Panel B: *Period 1985–1989*				
EQT	2.849***	3.008***	3.390	3.411
GAS	10.945	9.927	10.526	9.815
PRO	8.913	9.087	8.641	8.610
BAD	4.145***	4.145***	2.205	2.200
Panel C: *Period 1990–1994*				
EQT	3.427***	3.698**	3.696*	4.046
GAS	1.985	2.570	2.359	2.405
PRO	4.054	4.148	4.809	4.950
BAD	4.225***	3.843**	2.761	2.159

[a] The asterisks ***, **, and * indicate the figures are different from the those of "NON" significantly at 1%, 2.5%, and 5%, respectively. Panels A and B exclude Daiko Bank because of its abnormal performance during the 1980s. Panel C excludes Kumamoto Family Bank because of its merger with regional financial institutions at the beginning of the 1990s.

the average performance for each group in terms of their capital/asset ratio (EQT), the annual growth rate of total assets (GAS), and the current profits per total assets (PRO) during the first half of the 1980s (1980–1984) of respective groups. Panels B and C are those measures for the latter half of the

1980s (1985–1989) and the first half of the 1990s (1990–1994), respectively. We add the average ratio of non-performing loans per total loans (BAD) as of March 1996 for the respective groups to Table 3(B) and C.

We are particularly interested in both the capital/asset ratio EQT and the bad loan ratio BAD, because they are thought to indicate the level of risk-taking by banks. A lower EQT implies more aggressive risk-taking by banks and more implicit subsidies associated with a deposit insurance system (e.g., Keely, 1990). We interpret the higher BAD in March 1996 as indicating one consequence of the risks banks took during the latter half of the 1980s and the first half of the 1990s. [13] Of course, we must be mindful of the ambiguities in the official figures of non-performing loans. Ex-post examinations by regulators revealed that some failed banks manipulated earlier accounting figures related to non-performing loans in order to conceal their true managerial situations. We should also note that the government has modified the definition of non-performing loans a few times since March 1996 to make the figures more comprehensive. BADs as of March 1996 are narrower than the current official figures, which are defined according to standards similar to those used in the US. Thus, it may be doubtful whether absolute values of BAD present the true situation of unsoundness for individual banks. However, we think the relative magnitude of BAD shows the relative degree of unsoundness for individual banks. The relative soundness does matter to the following analysis. [14]

Although there are no significant differences regarding GAS and PRO across bank categories, in all of the three Panels A, B, and C the capital/asset ratio (EQT) is significantly lower for both MOF&BOJ and MOF than for NON. For example, during the first half of the 1980s, the capital/asset ratio (EQT) for the MOF&BOJ banks, which accepted *amakudari* officials from both the MOF and BOJ as of 1980 was on average 0.927% lower than that of category NON banks. The differences are statistically significant at the 1% level. Panel B shows that the two groups accepting *amakudari* officials from the MOF (i.e., MOF&BOJ and MOF) as of 1985 had a bad loan ratio (4.145) almost twice as high as those totally free from *amakudari* practices (i.e., NON).

[13] If possible, we would have calculated the non-performing loan ratios of the respective banks as of 1990 as a proxy for the risks banks took during the latter half of the 1980s. Unfortunately, comprehensive figures concerning non-performing loans were officially published for the first time in March 1996. It is unlikely that this constraint creates any serious distortion because there is no evidence to suggest that the relative magnitudes of non-performing loans for individual banks changed substantially during the first half of the 1990s.

[14] There existed five regional banks whose non-performing loan ratios (BAD) were higher than 10% as of March 1996. All of those banks went bankrupt by the first half of 1999. Moreover, there were twelve regional banks whose BADs were higher than 7% as of March 1996. Of those banks, only two survived through the first half of 1999. Thus, BAD can be regarded as a meaningful measure of the relative unsoundness of individual banks.

These differences are statistically significant at the 1% level. In contrast, the average level of BAD for the BOJ group is not significantly different from that of the NON group. The same is true of Panel C where the sampled banks are classified according to their *amakudari* status as of 1990. These results with respect to EQT and BAD suggest that the *amakudari* practice induces banks to undertake higher levels of risk. This is consistent with Hypothesis 1 explained in the previous section. [15]

4. Empirical tests of the *amakudari* practice

The descriptive statistics in Table 3 seems to support Hypothesis 1; that the *amakudari* practice leads to more unsound banking. This section shows that this result is supported by more sophisticated econometric methods. First, we test whether or not the *amakudari* relationship is detrimental to bank performance, and in particular the soundness of banks, using a dynamic panel data model. Second, we test Hypothesis 2 regarding the time-persistence of an *amakudari* relationship using the limited dependent variable method. We are interested in how *amakudari* status in the past determines the current status of an individual bank. Third, we examine the influence of *amakudari* relationships on the non-performing loan ratio of banks using cross-sectional analyses. In these analyses we focus on *amakudari* from the MOF (i.e., whether the bank belonged to category MOF&BOJ or MOF) because the observations in the previous section suggested that *amakudari* from the MOF significantly affects bank performances, whereas *amakudari* from the BOJ seems insignificant.

4.1. The effect of amakudari on the capital/asset ratio

To begin with we investigate how *amakudari* affects bank risk as embodied in the capital/asset ratio. We estimate the following regression equation where n is the number of observations:

$$\begin{aligned} \mathrm{EQT}_i(t) = {} & b_0 + b_1 \mathrm{AM}_i(t-1) + b_2 \mathrm{EQT}_i(t-1) + b_3 \mathrm{GAS}_i(t-1) \\ & + b_4 \mathrm{PRO}_i(t-1) + u_i(t) \quad \text{for } i = 1, \ldots, n. \end{aligned} \tag{1}$$

[15] Except for EQT in panel C of Table 3, there is no significant difference between the performance of BOJ banks (i.e., the banks accepting *amakudari* officials from only the BOJ) and NON banks for any sample period. Since the BOJ does not play a significant role in prudential regulation, this result suggests that the *amakudari* from the agencies without significant regulatory power does not influence bank performance. This is not surprising at all given our informal model of the *amakudari* practice.

The dependent variable $\mathrm{EQT}_i(t)$ is the current capital/asset ratio of bank i at time t. $\mathrm{AM}_i(t-1)$ is a dummy variable taking one if the bank i belongs to either the MOF&BOJ or MOF category of *amakudari* status in the previous period $t-1$ and taking zero if otherwise. The set of independent variables also contains three variables from the previous period: the capital/asset ratio $\mathrm{EQT}_i(t-1)$, the growth rate of total asset $\mathrm{GAS}_i(t-1)$, and the profit rate $\mathrm{PRO}_i(t-1)$. Although not explicitly presented, dummy variables for respective years from 1979 to 1991 are also included. [16] A residual term $u_i(t)$ is assumed to follow the one-way error component model; i.e.,

$$u_i(t) = \mu_i + v_i(t), \tag{2}$$

where μ_i and $v_i(t)$ follow IID(0, σ_μ^2) and IID(0, σ_v^2), respectively and are independent from each other. Eq. (1) is a dynamic panel data (DPD) model that contains a lagged dependent variable in a set of independent variables. We can make use of Arellano–Bond GMM estimator to obtain consistent estimators for our DPD model. [17]

[16] The choice of time period 1978–1991 was determined by the availability of adequate data on the practice of *amakudari* by individual banks.

[17] We need to execute the first difference transformation to Eq. (5) to obtain Arellano–Bond GMM estimators. The necessary condition for OLS estimation, $\mathrm{Cov}(\mathrm{EQT}_i(t-1),\ u_i(t)) = 0$, does not hold in (5) because of the inclusion of a lagged dependent variable. From (1), we obtain the following equation:

$$\begin{aligned}\mathrm{EQT}_i(t) - \mathrm{EQT}_i(t-1) = {} & b_1(\mathrm{AM}_i(t-1) - \mathrm{AM}_i(t-2)) + b_2(\mathrm{EQT}_i(t-1) - \mathrm{EQT}_i(t-2)) \\ & + b_3(\mathrm{GAS}_i(t-1) - \mathrm{GAS}_i(t-2)) + b_4(\mathrm{PRO}_i(t-1) - \mathrm{PRO}_i(t-2)) \\ & + v_i(t) - v_i(t-1).\end{aligned}$$

Since the covariance matrix of $(v_i(t)-v_i(t-1))$ is heteroscedastic, estimation of this equation using the OLS method would lead to biased and inconsistent results. To overcome this difficulty, we follow Arellano and Bond (1991) and estimate the above equation by the generalized least squares method making use of the instrumental variables matrix W consisting of predetermined variables in each period. This estimator is the Arellano–Bond one-step estimator, which is consistent. However, this one-step estimator is not a minimum distance estimator according to the moments method. By making use of the optimal weight matrix computed from the residuals of the one-step estimator, we obtain the Arellano–Bond two-step GMM estimator. The GMM estimator is given by the following form :

$$\begin{pmatrix}\hat{\delta}\\ \hat{\beta}\end{pmatrix} = \left([\Delta y_{-1}\Delta x]' W \hat{V}_{\mathrm{N}}^{-1} W' [\Delta y_{-1}\Delta x]\right)^{-1} \left([\Delta y_{-1}\Delta x]' W \hat{V}_{\mathrm{N}}^{-1} W' \Delta y\right),$$

where

$$\Delta y(t) = \mathrm{EQT}_i(t) - \mathrm{EQT}_i(t-1),$$

$$\Delta x(t) = [\mathrm{AM}_i(t) - \mathrm{AM}_i(t-1),\ \mathrm{GAS}_i(t) - \mathrm{GAS}_i(t-1),\ \mathrm{PRO}_i(t) - \mathrm{PRO}_i(t-1)],$$

and V_{N} is the covariance matrix of the orthogonality condition computed from the one-step estimator residuals.

Table 4
The effect of *amakudari* on the capital/asset ratio of the Japanese regional banks: the results of GMM estimation, dependent variable: $EQT_i(t)$, sample period: 1979–1991 (123 banks)[a]

Independent variables	Estimates (t-statistics)
$EQT_i(t-1)$	0.549 (8.421)***
$GAS_i(t-1)$	0.004 (10.861)***
$PRO_i(t-1)$	−0.010 (3.455)***
$AM_i(t-1)$	−0.002 (1.828)*
Sargan test	0.006
Arellano–Bond LM test	0.083
No. of observations	1476

[a] The Sargan test statistics follow a χ^2 distribution with 1460 degree of freedom. The Arellano–Bond LM test statistics follow the standard normal distribution.

Table 4 reports the results of the two step GMM estimate. According to this table, the *amakudari* dummy variable in the previous year $AM_i(t-1)$ exerts significantly negative influence on the current capital/asset ratio ($EQT_i(t)$). The current capital/asset ratio is positively influenced by both the previous captal/asset ratio ($EQT_i(t-1)$) and the asset growth $GAS_i(t-1)$, and negatively influenced by the previous profit rate ($PRO_i(t-1)$). The test statistics of Sargan–Hansen over-identification are not significant so that we cannot reject the null hypothesis that our model is correctly specified. Furthermore, the null hypothesis that there is no serial correlation with two-year lags, which is the presumption for the Arellano–Bond estimation is not rejected by the M2 test. Thus, the estimated result in Table 4 is statistically robust. The hypothesis that *amakudari* from the MOF undermines the soundness of bank management in terms of capital/asset ratio (EQT) is not rejected by the DPD model. [18]

4.2. What determines the amakudari status of individual banks?

Our analysis in Section 2 stresses the time-persistence of the *amakudari* relationship between a regulator and a private bank. In other words, past *amakudari* status is predicted to have a positive effect on current status. To address this issue, we estimate the following three types of a limited dependent variable model:

[18] Since there exists significant continuity in the *amakudari* relationship (see Table 3), it is not necessary to analyze the influence of *amakudari* using an annual base such as with a DPD model. Estimations of the cross-sectional regression equation based on five-year averages of performance variables yielded similar results: a negative effect of *amakudari* on bank soundness.

Table 5
The determinants of *amakudari* acceptance: The results of probit/logit estimations. Dependent variable: $AM_i(t)$, sample period: 1979–1991 (123 banks)[a]

	Probit	Logit	Logit with fixed effect
Independent variables			
Const.	−0.591 (−2.09)**	−0.709 (−1.22)	
$EQT_i(t-1)$	−28.513 (−3.54)***	−5.339 (−3.72)***	−2.679 (−0.88)
$GAS_i(t-1)$	0.864 (0.77)	2.292 (0.91)	0.436 (0.15)
$PRO_i(t-1)$	−0.492 (−0.53)	−1.230 (−0.61)	−2.676 (−0.97)
$AM_i(t-1)$	3.318 (27.79)***	5.996 (23.18)***	2.574 (9.17)***
Marginal effect			
Const.	−0.180	−0.109	
$EQT_i(t)$	−8.660	−9.148	
$GAS_i(t)$	0.262	0.353	
$PRO_i(t)$	−0.150	−0.190	
$AM_I(t)$	1.008	0.924	
Other statistics			
Log−L	−259.3	−258.9	−125.6
Log−$L(0)$	−1014.3	−1014.3	−178.0
LRI	0.744	0.745	0.295
LR test	1510.0***	1510.7***	
Hausman test			1231.3***

[a] Figures in parentheses are t statistics. *, **, and *** indicate that the test statistics are significant at 10%, 5%, and 1% level, respectively.

(a) Probit model $\Pr[AM_i(t)=1] = \Phi(\alpha + \beta' X_i(t-1))$,
(b) Logit model $\Pr[AM_i(t)=1] = \Lambda(\alpha + \beta' X_i(t-1))$,
(c) Logit model with fixed effects $\Pr[AM_i(t)=1] = \Lambda(\alpha_i + \beta' X_i(t-1))$,

where Φ is the distribution function of the standard normal distribution, and Λ is the logistic distribution function of $\Lambda(z) = \exp(z)/[1+\exp(z)]$. Models (a) and (b) are standard probit and logit model, respectively, whereas model (c) is the conditional logit model with a fixed effect following Chamberlain (1980). [19]

The dependent variable in our estimation is the dummy variable regarding the *amakudari* status of individual banks. The vector of independent variables $X_i(t-1)$ contains three performance variables, $EQT_i(t-1)$, $GAS_i(t-1)$, $PRO_i(t-1)$, as well as *amakudari* status $AM_i(t-1)$ in the previous period. We make use of the maximum likelihood method to estimate the above three equations. The results are presented in Table 5. According to this table, for all

[19] Estimation of a probit model with random effects, a possible alternative to the logit model with fixed effects, did not yield reasonable results.

three models, the *amakudari* status in the previous year significantly explains the current *amakudari* status, suggesting the time-persistence of the relationship. On the other hand, the equity/asset ratio in the previous year is significantly negative for both models (a) and (b) while it is insignificant for model (c).

We tested the null hypothesis that all the coefficients are zero for both models (a) and (b) by making use of the likelihood ratio test. The ratios were found very significant for these two models. We also exercised the Hausman test on model (c) to test the null hypothesis that the estimators of the model (b) are inconsistent. This test rejected this null hypothesis. It suggests that the model (b) is preferable to (c).

These probit and logit estimations show that there existed strong time-persistence in the *amakudari* relationship between the MOF and private banks. This is consistent with Hypothesis 2 in Section 2. Model (b) shows that the equity/asset ratio in the previous year influenced the *amakudari* status of an individual bank in the sense that a lower equity ratio was likely to induce banks to accept *amakudari* officials. However, model (c) in Table 5 suggests that the causality from the equity ratio to the *amakudari* status was not robust.

4.3. The effect of the amakudari practice on the bad loan ratio

Both Table 3(B) and (C) suggest that *amakudari* from the MOF increased the bad loan ratio BAD for banks accepting these *amakudari* officials. We check this result with a more sophisticated statistical method. We test whether or not *amakudari* in the mid-1980s affected the relationship between the bad loan ratio as of March 1996 and bank performance during the latter half of the 1980s.

The estimated (unrestricted) regression equations are specified as follows:

$$\mathrm{Log}(\mathrm{BAD}_i) = b_{0A} + b_{2A}\mathrm{EQT}_i + b_{3A}\mathrm{GAS}_i + b_{4A}\mathrm{PRO}_i + u_{iA}, \tag{3.A}$$

$$\mathrm{Log}(\mathrm{BAD}_i) = b_{0N} + b_{2N}\mathrm{EQT}_i + b_{3N}\mathrm{GAS}_i + \mathrm{b}_{4N}\mathrm{PRO}_i + u_{iN}, \tag{3.N}$$

where the dependent variable is the logarithm of the bad loan ratio as of March 1996. [20] The independent variables are averages of the performance variables during the latter half of the 1980s (1985–1989). Eqs. (3.A) and (3.N) are for the banks accepting and not accepting *amakudari* from the MOF, respectively.

[20] Since the distribution of individual banks' bad loan ratios has a skewed shape, we take the logarithm of the bad loan ratios ($\mathrm{Log}(\mathrm{BAD}_i)$) as the dependent variable.

Table 6
The effect of *amakudari* on the bad loan ratio: The estimated results of cross-sectional regression equations. Dependent variable: $\text{Log}(\text{BAD}_i)$[a]

Independent variables	Eq. (3.A)	Eq. (3.N)
Const.	1.518 (3.001)***	0.214 (0.503)
$\text{EQT}_I(t-1)$	−30.072 (3.062)***	2.848 (0.180)
$\text{GAS}_I(t-1)$	5.706 (3.20)***	1.791 (0.753)
$\text{PRO}_I(t-1)$	−0.086 (0.089)	0.329 (0.175)
Means of dependent variable	1.139	0.672
Adjusted R^2	0.173	−0.047
Standard error of regression	0.691	0.470

Null hypotheses	Result (test statistics)	Distribution (degree of freedom)
$\sigma_A^2 = \sigma_N^2$	Accepted (0.463)	$F(36, 79)$
$b_{iA} = b_{iN}$ (for all i)	Rejected (3.363)**	$F(4,115)$
$b_{0A} = b_{0N}$	Rejected (2.734)***	$t(118)$
$b_{2A} = b_{2N}$	Rejected (2.211)**	$t(118)$
$b_{3A} = b_{3N}$	Rejected (2.834)***	$t(118)$
$b_{4A} = b_{4N}$	Rejected (2.242)**	$t(118)$

[a] Figures in parentheses are t or F statistics. *, **, and *** indicate that the test statistics are significant at the 10%, 5%, and 1% level, respectively. Subscripts A and N denote accepting and not accepting of *amakudari*. The first figure in parentheses for the F distribution is the degree of freedom of the numerator and the second is that of the denominator.

The estimated results are summarized in Table 6. The adjusted R^2 is disappointingly low for each of these two equations. In addition, none of the independent variables are significant for Eq. (3.N). However, Table 6 suggests that the banks accepting *amakudari* from the MOF tend to have higher bad loan ratio than the other banks do. First, the constant term is higher for (3.A) than for (3.N). Second, the estimated coefficient for EQT is significantly negative for (3.A) while insignificant for (3.N). Thus, a higher capital/asset ratio (EQT) would have been effective in reducing the amount of non-performing loans for the banks accepting *amakudari*. Third, the growth of total assets (GAS) has a significantly positive coefficient for the banks accepting *amakudari* but is insignificant for the other banks. This implies that the banks accepting *amakudari* from the MOF had higher non-performing loan ratios because they expanded their scale more aggressively.

The lower section of Table 6 presents the formal test of equality of coefficients between (3.A) and (3.N). The preliminary test of equality of variances between these two equations is accepted because the F-value is very low (0.463). The null hypothesis that all the coefficients including the constant term are equal for these equations is rejected by the F-test at a 5% significance level. The null hypothesis that only the constant term is equal for the equations is

also rejected at a 1% significance level. Similarly, equality cannot be discerned between (3.A) and (3.N) for the other three independent variables (EQT, GAS, and PRO). Thus, sophisticated statistical methods support the hypothesis that the *amakudari* practice increases risk-taking by banks, measured in terms of their non-performing loans.

5. Concluding remarks

Theory concerning the principal–agent problem identifies the existence of conflicts of interest between taxpayers, regulators and the regulated industry. In particular, regulators and those they regulate can collude with each other to increase their own benefits at the taxpayers' expense. This paper applies this theory to the practice of *amakudari* in the Japanese banking industry. We propose the hypothesis that the *amakudari* relationship between the MOF and banks is implicit collusion to enable banks to expand risk-taking activities. If this hypothesis is true, *amakudari* undermines the supervisory capacity necessary to assure viability of the safety net. Our statistical analysis based on the data of more than 120 regional banks supports this hypothesis. Thus, we answer "yes" to the question raised in the title of this paper.

The bank crisis since the mid-1990s has revealed the malfunction of the traditional safety net in Japan. The government had to inject the public funds amounting to ¥9.8 trillion into large banks to help them to re-capitalize from March 1998 to March 1999. This development has destroyed the credibility of the MOF, which was responsible for supervising bank management, and has forced taxpayers to recognize the principal–agent problem associated with the banking system's safety net. Legislators rather than the MOF officials who used to dominate the decision-making regarding Japan's financial affairs have taken the initiative in designing emergency policies to deal with the bank crisis. The increased influence of legislators in financial matters symbolizes a change in the framework of the principal–agent problem in the Japanese safety net.

In June 1998, a new financial supervisory agency (FSA) was established. The FSA specializes in supervising the management of banks and other financial institutions taking over some of the MOF's previous responsibilities. This independent agency is better suited to accumulate information concerning the financial sector than was the MOF with its wide range of responsibilities. The FSA has reportedly established a more arm's-length relationships with individual banks, which will help to mitigate the principal–agent problem in the Japanese safety net.

It should also be pointed out that the amendment of the Bank Law in 1996 introduced prompt corrective action (PCA) rules, which have been in effect

since April 1998. These PCA rules will make the regulator's implementation of the safety net more transparent, and prevent the notorious "forbearance policy" of postponing the clear disposition of *de facto* failed banks.

Many people expect that under the independent supervisory agency (FSA) the PCA rules will be effective in mitigating the principal–agent problem in the safety net. However, these developments will not yield a definite solution to the problem because they do not directly tackle the issue of how to locate agents who have direct incentives to produce information about the soundness of individual banks in the safety net framework. In this regard, the Japanese government's commitment to reduce the safety net is important. At present not only the insured deposits but almost all bank liabilities are protected from bank failures by the government. The Japanese government adopted this policy explicitly in late 1997 in order to calm down the public's anxiety in the face of an increasing number of bank failures. However, the Japanese government has committed itself to narrowing the scope of the safety net in April 2001. This is an important sign of structural change in the safety net and will alleviate some of the associated principal–agent problems.

Thus, the recent developments are changing the structure of the principal–agent problem in the safety net we discussed in this paper. Nevertheless, it is still unclear how best to combine the regulator's capacity and the market's capacity to monitor and discipline bank management so as to regain stability of the banking industry.

Appendix A. Cross-section analyses of *amakudari* influence

In Section 4, we investigated how the *amakudari* influenced the soundness of banks in terms of capital/asset ratios based on a dynamic panel data model. However, because of the conspicuous time-persistence of the *amakudari* relationship, a simpler approach using cross-sectional analysis may be equally appropriate. In this appendix, we estimate cross-sectional regression equations using five-year averages of the performance variables. Specifically, we estimate the following regression for the two groups of the sampled banks: the group of those who accepted *amakudari* from the MOF at the beginning of the period (4.A), and the group of the other banks (4.N).

$$\mathrm{EQT}_i = a_{0\mathrm{A}} + a_{2\mathrm{A}}\mathrm{EQT}_i(-1) + a_{3\mathrm{A}}\mathrm{GAS}_i(-1) + a_{4\mathrm{A}}\mathrm{PRO}_i(-1) + u_{i\mathrm{A}}, \tag{4.A}$$

$$\mathrm{EQT}_i = a_{0\mathrm{N}} + a_{2\mathrm{N}}\mathrm{EQT}_i(-1) + a_{3\mathrm{N}}\mathrm{GAS}_i(-1) + a_{4\mathrm{N}}\mathrm{PRO}_i(-1) + u_{i\mathrm{A}}, \tag{4.N}$$

Table 7
The effect of *amakudari* on the capital/asset ratio: The estimated results of cross-sectional regression equations, dependent variable EQT[a]

Sample period 1980–1984	*Eq. (4.A)*	*Eq. (4.N)*
Constant term	0.832 (0.763)	−0.883 (1.528)
EQT(−1)	0.556 (2.276)**	0.868 (16.383)***
GAS(−1)	−0.011 (0.605)	0.001 (0.062)
PRO(−1)	0.026 (0.971)	0.095 (2.894)***
Mean of dependent variable	2.696	3.527
Adjusted R^2-squared	0.561	0.925
Standard error of regression	0.382	0.203
Number of observations	88	36
Null hypothesis	*Result (test statistics)*	*Distribution (Degree of freedom)*
$\sigma_A^2 = \sigma_N^2$	Accept (0.283)	$F(32,84)$
$a_{iA} = a_{iN}$ for all i	Reject (7.519)***	$F(4,116)$
$a_{2A} = a_{2N}$	Reject (3.625)*	$F(1,116)$

Sample period 1985–1989	*Eq. (4.A)*	*Eq. (4.N)*
Constant term	−0.101 (0.288)	−0.522 (0.357)
EQT (−1)	0.629 (6.761)***	1.186 (4.817)***
GAS (−1)	0.017 (0.639)	−0.270 (2.324)**
PRO (−1)	0.154 (4.858)***	0.277 (2.259)**
Mean of dependent variable	2.981	3.577
Adjusted R^2	0.485	0.352
Standard error of regression	0.488	1.163
Number of observations	83	41
Null hypothesis	*Result*	*Distribution*
$\sigma_A^2 = \sigma_N^2$	Reject (5.671)***	$F(37,79)$
$a_{iA} = a_{iN}$ for all i	Reject (8.328)*	$\chi^2(4)$
$a_{2A} = a_{2N}$	Reject (4.478)**	$\chi^2(1)$
$a_{4A} = a_{4N}$	Accept (0.947)	$\chi^2(1)$

Sample period 1990–1994	*Eq. (4.A)*	*Eq. (4.N)*
Constant term	2.105 (6.731)***	−0.883 (1.528)
EQT (−1)	0.319 (3.750)***	0.868 (16.383)***
GAS (−1)	0.047 (2.702)***	0.001 (0.062)
PRO (−1)	0.006 (0.935)	0.095 (2.894)***
Mean of dependent variable	3.569	3.879
Adjusted R^2	0.238	0.263
Standard error of regression	0.518	0.665
Number of observations	82	42
Null hypothesis	*Result*	*Distribution*
$\sigma_A^2 = \sigma_N^2$	Reject (1.650)**	$F(38,78)$
$a_{iA} = a_{iN}$ for all i	Accept (2.795)	$\chi^2(4)$

[a] Figures in parentheses are the absolute value of t-statistics. *, **, and *** indicate that the coefficients are significant at the 10%, 5%, and 1% level, respectively.

where EQT_i is the five-year average of the capital/asset ratio of the ith bank, and $EQT_i(1)$, $GAS_i(1)$, and $PRO_i(1)$ are averages of the respective performance variables in the previous five-year period. The five-year periods are from 1980 to 1984, from 1985 to 1989, and from 1990 to 1994. Hypothesis 1 in Section 2 predicts that at least one coefficient including the constant term is smaller in the regression for the banks accepting *amakudari* than in the regression for the other banks.

The Chow test for structural differences requires equality of variance for the two regressions. To test this, we execute the preliminary test of the null hypothesis of equality of variances. Table 7 consists of three parts, each of which shows the test results for each of the three sample periods. The first row of each part shows the result of the test of equality of variances. For the sample period 1980–1984, the null hypothesis cannot be rejected even at the 90% significance level so that we can test the hypotheses on the equality of coefficients using the usual F-test. However, for the sample periods 1985–1989 and 1990–1994, the null hypothesis is rejected at the 1% and 5% significance levels, respectively, so that we must test the hypotheses on the equality of coefficients using the Wald test. In each panel, next to the preliminary test, we test the null hypothesis that all the coefficients (including the constant term) are equal. The hypothesis is rejected in the periods 1980–1984 and 1985–1989 while it is accepted in the period 1990–1994. For the 1980–1984 period, the equality test of the coefficient of $EQT(t-1)$ is rejected at the 10% significance level. The difference in the two coefficients of $EQT(t-1)$ is $0.312(0.556 - 0.868)$. Thus, at least for the period 1980–1984, *amakudari* reduces the capital/asset ratio (increases the *ex ante* risk taken by banks). For the sample period 1985–1989, the equality test based on the Wald criterion is rejected for $EQT(t-1)$ and accepted for $PRO(t-1)$. The difference in the two coefficients of $EQT(t-1)$ is $0.557(= 0.629 - 1.186)$. Thus, the estimation results for both periods 1980–1984 and 1985–1989 support Hypothesis 1 in Section 2.

However, the result for the period 1990–1994 provides us with a picture different from the results for former periods. We cannot discern significant differences regarding the capital/asset ratio between the *amakudari* regime and non-*amakudari* regime as reported in Table 7. It is also different from what the statistics in Panel C of Table 3 show. We interpret this result as follows: Since the late 1980s, when the Basel capital adequacy rule was introduced, the MOF has been forced to strengthen prudential regulation. In addition, as the bad loan problem has become increasingly serious, the MOF belatedly recognized the importance of monitoring bank management. The bottom section in Table 7 shows that this policy change has been effective in mitigating the negative influences of *amakudari* relationship on the soundness of bank management.

Appendix B. *Amakudari* from the BOJ

As is shown in Table 3, *amakudari* from the BOJ seems to have no significant effect on bank performance. In this appendix, we confirm this by estimating a regression equation. Although it is considered best to estimate the regression equation distinguishing each category of *amakudari* (MOF&BOJ, MOF, BOJ, and NON), they are correlated so closely that we cannot obtain meaningful results from that method. For this reason, we select the banks that belong to the BOJ and NON categories to estimate the following regression equation:

$$\mathrm{EQT}_i(t) = a + bX_i(t-1) + \mathrm{BOJ}_i(t) + e_i, \tag{5}$$

$$\mathrm{Log}(\mathrm{BAD}_i) = a + bX_i(t-1) + \mathrm{BOJ}_i(t) + e_i, \tag{6}$$

where $\mathrm{BOJ}_i(t)$ is a dummy variable set to 1 if bank i accepts *amakudari* from BOJ and set to 0 if it does not, and $X_i(t-1)$ is a vector consisting of three performance variables in the previous period. The estimated results are reported in Table 8. This table shows that the estimated coefficient for the dummy variable BOJ(t) is not significant in any period except for 1990–1994. It is significantly negative in the third column as in the descriptive statistics.

Table 8
The effect of *amakudari* from BOJ on the capital/asset ratio and the bad loan ratio: estimation results of regression equations[a]

Sample period	1980–1984	1985–1989	1990–1994	1990–1994
Dependent variable	EQT(t)	EQT(t)	EQT(t)	Log(BAD)
Independent variables				
Constant	−0.869 (1.38)	−0.472 (0.52)	1.965 (1.44)	1.083 (2.14)**
EQT($t-1$)	0.867 (15.40)***	1.193 (3.34)***	0.274 (0.86)	0.021 (0.17)
GAS($t-1$)	−0.000 (0.02)	−0.287 (1.10)	0.094 (1.66)	0.028 (0.55)
PRO($t-1$)	0.095 (2.98)***	0.262 (1.66)	0.019 (0.33)	−0.118 (1.80)*
BOJ(t)	0.012 (0.14)	0.363 (0.79)	−0.394 (1.85)*	0.180 (1.16)
Mean of dependent variable	3.527	3.577	3.879	0.741
Adjusted R^2	0.923	0.351	0.316	0.012
Standard error of regression	0.206	1.164	0.641	0.512
Number of observations	36	41	42	42

[a] Figures in parentheses are absolute value of t-statistics. *, **, and *** indicate that the coefficients are significant at the 10%, 5%, and 1% level, respectively.

Apart from this period, *amakudari* from the BOJ did not influence bank risk as measured in terms of either the capital/asset ratio EQT(t) or the bad loan ratio LOG(BAD).

This result suggests that the BOJ was not as important as the MOF in terms of prudential regulation. Why then do some banks accept *amakudari* officials from the BOJ? The BOJ can provide benefits to private banks through its loans supplied at the rediscount rate, which is usually substantially lower than the inter-bank money market rates. ''Window guidance'', the ceiling the BOJ formerly imposed on the growth rate of loans supplied by each bank, might also be an important reason why banks accepted *amakudari* from the BOJ. Accordingly, the specific ways in which monetary control is pursued may influence the BOJ's bargaining with respect to banks in the placement of its retirees. This topic, however, is beyond the scope of this paper.

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