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The Shareholding Structure of Japanese Banks and Their Real Estate Lending in the 1980s

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Abstract: This paper studies the effects of the bank shareholding structure on real estate lending by Japanese banks in the 1980s. It shows that the shareholders did not passively leave all the monitoring of bank managers to regulatory agents. The real estate lending of the regional banks decreased as the total shares held by the large shareholders increased. However, the opposite was true for the national banks that led a financial *keiretsu*. Their real estate lending increased in the shares held by the members of the bank's *keiretsu*. The cross shareholding and other business ties between these banks and their same-keiretsu shareholders protected the bank managers from the discipline of other shareholders.

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From 1983 to 1989, the share of real estate loans in the median Japanese regional bank's loan portfolio increased by 50%. For the median national bank, it doubled. This big increase prepared the ground for the non-performing loan problem of Japanese banks in the 1990s after the real estate prices collapsed in 1991. 18 national banks disclosed more than 20 trillion yen[1] of non-performing loans for fiscal 1997. This problem also led to bank bankruptcies in the 1990s, including the first post-war bankruptcy of a city bank.

What led the Japanese banks to lend to the real estate sector as much as they did? In particular, what role did the corporate governance of Japanese banks play in the increased real estate lending of Japanese banks in the 1980s? Did shareholder influences lead them to take risks by lending to the real estate sector, as U.S. thrifts did in the 1980s?[2] Or, did the lack of shareholder discipline allow the bank managers to take risks in an environment with deteriorated investment opportunities, as was the case with U.S. commercial banks in the late 1980s?[3] Or, did the shareholders leave all the monitoring of bank managers to the regulatory agents and take a passive role? This paper addresses these questions and aims to shed light on the role of bank corporate governance in the big increase of the real estate values in the 1980s in Japan.

While there are many studies on the corporate governance in Japan, most of them have focused on manufacturing companies.[4] This is not without a reason: Banking is heavily regulated in Japan; furthermore, the central role of banks that these studies have demonstrated in the corporate governance of Japanese companies has been considered especially strong in the case of manufacturing companies. However, these studies have left an important gap: how are the bank

[1] About $130 billion at the time.
[2] See Esty (1997) and the references therein.
[3] See Gorton and Rosen (1995).
[4] See e.g., Kaplan (1994), Kaplan and Minton (1994), Kang and Shivdasani (1995, 1997).

managers disciplined? To the best of my knowledge, this paper is the first to study the shareholder discipline –or the lack thereof-- on the lending behavior of Japanese banks.

In comparative financial studies, the role of Japanese banks in the governance of large companies is often considered one of the main differences between the Japanese financial system, sometimes referred to as 'bank-centered', and the American financial system, sometimes referred to as 'market-based'.[5] However, the effects of the Japanese corporate governance system on the governance of banks themselves have not been explored. In fact, these effects may be substantial because the shareholders of a bank also have other business ties with the bank. They are likely to be borrowers from the bank and the bank itself may be their shareholders. These ties are especially strong in financial groups called (financial) *keiretsu* in Japan. With these additional business ties, it is not immediate that these shareholders will have the incentive or the ability to discipline the bank managers as much as they would without such ties.

The governance of banks in a 'bank-centered' financial system as in Japan becomes even more important when the banks face increasing competition in the credit markets through deregulation and integration of financial systems. It is not clear, however, how the bank managers in a 'bank-centered' financial system can be prevented from pursuing their own interests at the expense of shareholders when their lending opportunities decline under increased competition. This paper aims to provide insights on these issues by studying a period when the competition the banks faced in Japan increased substantially.

One of the closely related papers to the subject of this paper is by Gorton and Rosen (1995) who develop a theory of managerial entrenchment in which the insider ownership by bank managers allows them to take more risks than is optimal for outside shareholders in an

environment of deteriorated lending opportunities. They also provide empirical evidence on the role of this managerial entrenchment in risk taking by American banks in the late 1980s. Their theory has important implications for Japan in the 1980s as well, even though the differences between the additional business ties between the banks and their shareholders in Japan, and the insider ownership in the U.S. must be taken into account, as discussed in the next section.

Another set of relevant studies is about the risk-taking incentives of the shareholders to take advantage of the fixed-price deposit insurance or the limited liability. These risk-taking incentives have been demonstrated to be especially important for U.S. thrifts in the 1980s after their balance sheet deteriorated in the late 1970s, see, e.g., Esty (1997). Saunders et al. (1990) provide evidence for U.S. banks in general in 1979-1982. Horiuchi and Shimizu (1998a) find that the decreased capital of Japanese banks after the large decline in the stock market in 1990 led the banks to take risks.

With Japanese banks in crisis in the 1990s, the corporate governance of Japanese banks has attracted more attention, see Hanazaki and Horiuchi (1998) for a survey. Horiuchi and Shimizu (1998b) find that the banks that offered employment to retired bank regulators enjoyed less strict monitoring by the regulatory agents. Tachibanaki and Okamura (1998) study the role of shareholders on the productivity and profitability of large banks.

This paper is organized as follows. The first section reviews the theoretical background and discusses the assumptions and implications in the Japanese context. Section 2 gives institutional details in Japanese banking, presents the data used and provides sample statistics. Section 3 discusses the econometric methodology. Section 4 provides regression analysis. The

[5] See Allen and Gale (1998) for a recent study of comparative financial systems.

robustness of the results and the alternative explanations are discussed in section 5. Section 6 concludes.

I. Theoretical Background

In this section, I will first give general theoretical arguments about risk taking in banking. However, these arguments are often presented within the U.S. institutional structure. While the main ideas may be valid across the countries, appropriate consideration must be given to the institutional differences between Japan and the U.S. before the implications of these theories can be tested in the Japanese context. The second part of this section discusses these differences and their implications.

One possible source of risk taking behavior in banking is the moral hazard created by the fixed-cost deposit insurance and low capital values (e.g., Merton (1977), Keeley (1990)). When banks have low capital values, they have incentives to take advantage of the fixed-cost deposit insurance by increasing the risk they undertake. Since they have only low capital and the deposit insurance does not depend on their activities, they have little to lose if the risk they undertake does not pay off; however, they stand to gain substantially, if it does.

While the logic of this moral hazard argument is relatively straightforward, it assumes that the shareholders make the lending decisions in banks. When the bank managers instead make the loan decisions and disciplining the managers is costly, this agency problem must be taken into account. If the firm-specific investment made by the managers make them more risk averse than the shareholders, the managers take less risk than the level preferred by the shareholders. In this case, the smaller the costs of disciplining the managers are, the more risk

the managers take. Indeed, Saunders et al. (1990) find that stockholder controlled U.S. banks took higher risks than other banks in 1979-1982. Similarly, Esty (1997) finds that US thrifts that were organized as joint stock companies took more risks in the 1980s than those organized as mutual thrifts.

However, Gorton and Rosen (1995) argue that conservative behavior may not be sufficient for the managers to maintain their job and associated perks when the investment opportunities have deteriorated. Accordingly, they provide a theory of corporate governance in banking by focusing on the case when the investment opportunities in banking have declined.

In the theory of Gorton and Rosen (1995), the type of bank managers is not observed by the shareholders and firing managers is costly. Bad managers undertake risky projects, hoping that a good result would allow them to pretend to be good managers and keep their jobs. Bank managers also own shares of their banks. This insider ownership has two partially off-setting effects: (i) it increases the firing cost of managers for outside shareholders; and (ii) it helps align the incentives of the bank managers with those of outside shareholders. The magnitude of the insider ownership determines the dominant effect. It is shown that the risk taking may first increase with the shares held by the managers leading to a managerial entrenchment. The risk taking then decreases as the incentives of managers align with those of shareholders at the high level of managerial ownership. Although the model is cast using several types of managers, the model also applies to the case of overcapacity in banking in which different banks have different investment opportunities. Finally, Gorton and Rosen (1995) provide empirical evidence that, as their theory predicts, the managerial entrenchment through insider ownership played a more important role in risk taking by U.S. commercial banks in the 1980s than the moral hazard problem did.

In the Japanese setting, the owner-manager model does not represent the banking industry.[6] Hence, the corporate governance problems must be taken into account. However, there is no *a priori* reason to expect that shareholder pressure led the managers to take risks or restrained them from taking risks. In fact, as discussed below, the shareholders may not even have had any effect. Accordingly, the discussion below is not specific to a certain hypothesis.

The Japanese banking industry was healthy in the 1980s, unlike the U.S. thrifts in the late 1970s when the thrifts were hit by rising interest costs on their deposits while their main assets, mortgage loans, carried a fixed rate. However, Japanese banking also seems to have experienced a deterioration of investment opportunities in the 1980s after the capital market deregulation of the late 1970s and the early 1980s. Deregulation allowed the corporate borrowers to use bond markets, causing a decrease in the lending opportunities of banks and a decline in the bank returns.[7] Although the deregulation directly affected the large borrowers and the large, national banks, smaller regional banks were also affected indirectly because the large banks increased their lending to small and medium size borrowers, who had relied heavily on smaller banks before.[8]

However, the effects of insider ownership that Gorton and Rosen (1995) study must be interpreted carefully in the case of Japan because managers typically hold very few shares in Japan. Furthermore, the shareholding of the outsiders is often part of a wider business relationship between the bank and these shareholders. These business ties are especially

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[6] None of the banks can be said to be owner-managed in our sample, which covers *all* the continuously listed banks in the sample period; no manager is among the top 5 shareholders and the fifth largest shareholder often has less than 3% of the shares outstanding.

[7] See e.g. Hoshi et al (1993), Horiuchi (1995).

[8] See Horiuchi (1994). Dinç (1998) provides a relationship banking theory that explains why the banks, faced with competition from bond markets, decrease their credit standards in offering relationship lending even if their old

important in the case of national banks. For example, a life insurance company's share in the life insurance coverage the bank purchases for its own employees is often a function of the shares it has in the bank.[9] When the bank's shareholder is a joint stock company (unlike most Japanese life insurance companies), the bank itself is often a major shareholder of its own shareholders, especially as far as the large, national banks are concerned. Furthermore, if the bank is a nucleus bank in a financial keiretsu[10] and its shareholders are also members of the same keiretsu, the bank is also likely to be an indirect shareholder of its own shareholders through other cross shareholdings within the keiretsu.[11] Finally, a lending relationship between the bank and its shareholder is also very likely even if its importance may have declined through the sample period

While these additional business ties between the bank and its shareholders may increase the cost of the disciplining of bank managers by the shareholders, their effect is likely to be different from the effects of insider ownership studied by Gorton and Rosen (1995). In particular, increasing such ties is not likely to have a strong effect on aligning the bank managers' incentives with those of outside shareholders.[12] Consequently, relative to the insider ownership,

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customers still prefer to obtain relationship banking loans and relationship banking with them is still profitable for the banks.

[9] See Komiya (1994).

[10] There are two types of industrial groups in Japan and both are called keiretsu. Roughly, the *financial keiretsu* is a group of companies from diverse industries with a city bank among the nucleus companies, e.g. Mitsubishi, Mitsui, Sumitomo; the *production keiretsu* is a vertically integrated group of companies in one or few related industries, e.g. Toyoto, Matsushita. Unless otherwise noted all the references to keiretsu in this paper are for the financial keiretsu. However, determining the keiretsu affiliation of a given shareholder, if such an affiliation exists, is not a trivial task; see the discussion in the next section.

[11] It has been shown that the cross shareholdings in a financial keiretsu do not prevent the disciplining of managers of manufacturing companies, see Kaplan and Minton (1994), Kang and Shivdasani (1995, 1997). However, the city bank of the keiretsu often plays the leading role in disciplining these managers so it is not immediate that the insights from the governance of manufacturing companies will also apply to banks. The role of cross shareholdings on disciplining the *bank* managers on the other hand has not been studied. Instead, it is often assumed that the regulatory agents provide the necessary discipline, which I discuss later.

[12] Gorton and Rosen (1995) find that the effect of insider ownership in aligning the bank managers' and outside shareholders' incentives starts dominating the managerial entrenchment effect when the inside shareholding reaches about 30-40%. In Japan, the bank ownership of companies, including its own shareholders, was limited to 10% until 1987, and to 5% thereafter. Finally, although big national banks may be large customers for life insurance

the additional business ties between the large, national banks and its own shareholders in Japan are likely to increase the parameter range in which the bad managers – or the banks with bad investment opportunities—make risky loans. On the other hand, such ties decrease the shareholder influence in inducing the managers to take risks if the managers are more risk averse than the shareholders.

The discussion above does not consider any effects of bank regulation. However, banking has been heavily regulated in Japan. In fact, the regulatory agents, mainly the Japanese Ministry of Finance, were often assumed to be the main disciplinary force for the bank managers. To the extent that their monitoring was adequate –or was perceived to be adequate—from the shareholder perspective, the shareholding structure of banks may not play any role in bank lending in Japan.

To summarize, there are three hypotheses:

Hypothesis A. *The managers are more risk averse than the shareholders.* The real estate lending by the bank increases in the shares held by the large shareholders but decreases (or does not increase as much) in the shares held by the shareholders with other business ties with the bank.

Hypothesis B. *The managers are less risk averse than the shareholders.* The real estate lending by the bank decreases in the shares held by the large shareholders but increases (or does not decrease as much) in the shares held by the shareholders with other business ties with the bank.

Hypothesis C. *Regulators are the only monitors.* The real estate lending by the bank is not related to the shares held by the large shareholders.

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companies, the business these banks can offer is still small relative to the size of most Japanese life insurance companies.

There is no *a priori* reason to choose one hypothesis over another. Hence, the question of what role, if any, the shareholding structure played in the real estate lending of Japanese banks in the 1980s can be answered only through an empirical analysis, which this paper aims to provide in the following sections.

II. Institutional Background and Data

A. Overview

The sample covers fiscal years (April to March for all the banks) 1983 through 1989 (inclusive) and includes all the 80 banks that were listed continuously in the Tokyo Stock Exchange and did not take part in an acquisition or merger during this period. The latter requirement is not very stringent however, for Sumitomo Bank is the only excluded bank.[13] The data include both national (city, long term credit, and trust banks) and regional (both tier 1 and 2) banks. All the balance sheet data are obtained from Nikkei Electronic Economic Data System (NEEDS) and include the trust operations of the trust banks. The balance sheet data start in 1980 to allow a lag structure in the estimation (see the next section).

There are several reasons to focus on the 1983-89 period. First, the lending opportunities of Japanese banks deteriorated in this period. The deregulation of the capital markets in Japan was mostly completed by 1983. The deregulation allowed many borrowers to access the credit markets directly whereas they had to rely on the banks previously.[14] Not only did the bank lending opportunities decrease after the deregulation, but the return margins from their loans also

[13] Sumitomo Bank acquired Heiwa Sogo Bank in 1986. All the qualitative results are robust to the inclusion of Sumitomo Bank in the sample.

declined. Second, this period contains the years during which real estate values and share prices appreciated dramatically in Japan and that the Japanese banks increased their real estate lending substantially. Third, share prices collapsed and the increase in real estate prices virtually stopped in 1990, followed by a dramatic decline in the real estate prices starting in 1991. With these changes, the loan portfolios of Japanese banks in the 1990s are likely to reflect heavily their loan exposure to real estate at the end of 1989, which makes a structural change in bank lending behavior in the 1990s very likely. Fourth, the recent (continuing) disclosure of non-performing loans indicates that the balance sheet data for Japanese banks in the 1990s are not reliable. Finally, the cost of data entry for the bank shareholding data prevented me from extending the data set back from 1983.

12 *city banks*[15] in the sample are large commercial banks with a national branch network that is especially extensive in large cities. They primarily lend to large companies and, through their large shareholdings, play an important role in the corporate governance of large companies in Japan. The sample includes all 3 *long term credit banks*.[16] These banks operate under a 1952 act that aims to facilitate the provision of long term finance to companies, in particular, large manufacturing companies. They face strict regulatory restrictions in accepting deposits and raise funds mainly by issuing debentures. The 6 *trust banks*[17] in the sample make loans as part of both their banking and trust operations. They primarily lend to large borrowers. There are 59 *regional*

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[14] See, e.g., Hoshi et al. (1993), Horiuchi (1996).

[15] The sample includes *all* the city banks (except Sumitomo Bank); they are Mitsubishi, Mitsui (now Sakura after its merger with Taiyo Kobe Bank), Fuji, Sanwa, Dai-chi Kangyo, Tokai, Daiwa, Kyowa (now Asahi after its merger with Saitama Bank), Taiyo Kobe, Saitama, Hokkaido Takushoku (now bankrupt), and Bank of Tokyo. Bank of Tokyo is officially chartered as a 'specialized foreign exchange bank' (the only such bank) under a 1954 act; however, through regulatory changes over the years all the major regulatory differences between Bank of Tokyo and other city banks had disappeared by the 1980s. For this and other institutional details, see Suzuki (1987).

[16] They are Industrial Bank of Japan (IBJ), Long Term Credit Bank of Japan (LTCB), and Nippon Credit Bank (NCB).

[17] They are Mitsubishi Trust, Mitsui Trust, Sumitomo Trust, Yasuda Trust, Toyo Trust, and Nippon Trust. Chuo Trust, while established before my sample period, was not listed in the Tokyo Stock Exchange until 1989.

banks in the sample, including both 1st and 2nd tier banks[18]. Each of these banks operates in one or a few neighboring prefectures with a focus on lending to small and medium size companies.

B. Assets and Loans

Table 2.1 presents sample statistics on bank assets and their loans to the real estate sector. Panel A shows that there is a large size difference among regional and national banks. The median national bank had assets about 13 times as large as the median regional bank in 1983. All types of banks registered large increases in their assets from 1983 to 1987 but this increase was not uniform across different types of banks. The median city and long term banks were about 50% larger in 1987. For the median trust bank this increase was more than 100% while the median regional bank grew by only about 30%.

Panel B presents the ratio of outstanding real estate loans to the total outstanding loans for each type of banks for odd-numbered years between 1983 and 1989. Perhaps the first thing to notice in panel B is the large increase in the share of loans to the real estate sector in the banks' overall loan portfolio. 6% of the median bank's total loans was to the real estate sector in 1983; the same ratio was 10% in 1989. However, the increase was not uniform across different types of banks. The outstanding loans to the real estate sector were about 6% of the total loans in 1983 for both median national and median regional banks. However, that ratio increased to 14% for the median national bank compared to 9% for the median regional bank.

Much of this increase in the ratio of real estate loans to total loans for the median national bank is due to the increase in lending by the city banks and long term credit banks. The real

[18] Second tier regional banks used to be called *sogo* banks. While they have different historical roots from the first tier regional banks, no major differences in their operations remained by the 1980s and their charters were officially

estate loans were 6% of the total loans for the median city bank in 1983 but it increased to 11% by 1989. The increase for three long term credit banks was even more dramatic. Only one long term credit bank (Nippon Credit Bank) had outstanding real estate loans in 1983. All had outstanding real estate loans in 1989 with a 14% ratio for the median bank. While the median trust bank had more real estate loans than the median city or long term credit banks throughout the sample period, the increase was less pronounced: From about 12% to 16%.

Panel C presents the ratio of outstanding real estate loans to the total assets for each type of bank for the odd-numbered years between 1983 and 1989. Both cross sectional and time series comparisons of this ratio are similar to those of real estate loans to total loans. However, the increases are less pronounced. One exception with respect to the statistics presented in panel B is that the ratio of real estate loans to total assets for the median trust bank is actually lower in 1989 than in 1983. This reflects an even larger increase in the total assets of the trust banks than in their total loans.

C. Data: Shareholding

The data about the identity of and the shares held by the top 5 shareholders for each bank in the sample are obtained from Japan Company Handbook by Toyo Keizai. Due to the data entry requirements, only the shareholding data for the odd-numbered years are collected; the simple average of the previous year and the following year is used for even years.

Table 2.2 presents the sample statistics for the shareholding structure of each type of bank for 1983 and 1987. Both median national and regional banks have about 17% of their shares held by their top 5 shareholders in 1983. This ratio increases slightly for regional banks

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converted into that of a regional bank in 1989.

and decreases slightly for national banks by 1987. Among national banks, the median long term credit bank has about 11% of its shares held by the top 5 shareholders in both years while the median city and trust banks are comparable to the median national bank.

However, the composition of large shareholders shows differences across bank types. Life insurance companies are the major shareholders for national banks but other banks, mostly national banks, are the major shareholders for regional banks. Life insurance companies and banks own about 50% of the shares held by all the top 5 shareholders in national and regional banks, respectively. Life Insurance companies are also important shareholders of regional banks while the shareholding by banks in national banks is mostly limited to the shares held by the city bank of a financial keiretsu in the trust bank of the same keiretsu.

For regional banks, employees' stock holdings are among the top 5 shareholders of about 2/3 of banks. These are owned by all the employees not just by the top management. However, they are not as important as the banks and life insurance companies and, by 1987, only about 1/3 of regional banks had their employees' stock holding plans among their top 5 shareholders. This decrease is about the only major change in the shareholding of banks from 1983 to 1987.

Out of the 21 national banks in the sample, 5 city banks and 5 trust banks belong to one of the 6 large financial keiretsu.[19] Table 2.3 presents the shares held by the members of the same keiretsu for these banks in 1983 and 1987. However, determining the keiretsu affiliations of the shareholders is not a trivial task. For example, having one of the 6 city banks as a main bank

[19] Mitsubishi Bank and Mitsubishi Trust (Mitsubishi group); Mitsui (now Sakura) Bank and Mitsui Trust (Mitsui group); Sumitomo Trust (Sumitomo group); Fuji Bank and Yasuda Trust (Fuyo group); Dai-ichi Kangyo Bank (Dai-ichi Kangyo group); Sanwa Bank and Toyo Trust (Sanwa group). Tokai Bank and Industrial Bank of Japan (IBJ) are also considered to have their own keiretsu. However, their keiretsu are significantly smaller than the other six and have weaker ties between the members. In fact, none of the top 5 shareholders of these banks is a member of their keiretsu with a strong inclination to the keiretsu (see below for the classification of keiretsu ties).

does not necessarily imply a membership in that bank's keiretsu. Similarly, representation in the keiretsu presidential council does not necessarily imply membership. Perhaps the best example is Toyota Motors, which is among the top 5 shareholders for Mitsui, Sanwa and Tokai banks in most of the years during the sample period. These banks are also among the largest shareholders of Toyota. Furthermore, Toyota is also represented in the presidential councils of these banks' keiretsu. However, Toyota is not considered a member of any financial keiretsu.[20] To distinguish between these cases, I use the classification in the handbook by Dodwell (1986).

Furthermore, the strength of ties between a keiretsu member and other keiretsu companies is not uniform. To capture these differences, Dodwell (1986) classifies the keiretsu members in four groups: (i) nucleus companies; and companies with (ii) strong, (iii) moderate, and (iv) weak inclination towards the group. The main measure used for the last 3 groups is the ratio of the shares owned by keiretsu members that are among the top 10 shareholders to the total shares owned by all the top 10 shareholders. Those companies with 50% or more of its shares owned by group members are classified as showing strong inclination, between 30% and 49% as moderate, and less than 30% as weak.[21]

Table 2.3 shows that, on average, companies that are members of a given city bank's keiretsu hold slightly less than half of the total shares held by the top 5 shareholders of that city bank. About 2/3 of these shares held by nucleus companies of that keiretsu. The importance of keiretsu shareholders is much larger for keiretsu trust banks. Keiretsu members hold about 70% of all the shares held by the top 5, most of them by nucleus companies. Finally, the shareholding structure does not change very much from 1983 to 1987 for either type of bank.

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[20] Toyota, however, has its own *production* keiretsu (see footnote 10). Other such examples include Nippon Steel, Toshiba, and Matsushita.

[21] Other criteria considered include (i) bank borrowing from the keiretsu banks; (ii) exchange of managers and directors with other members; (iii) historical ties (see Dodwell (1986) p. 34).

However, it should be emphasized that the business ties between the national banks and their shareholders are not exclusive to keiretsu ties. There is very often some cross shareholding between a national bank and its top shareholders and, in the case of life insurance companies as shareholders, some buyer-seller relationship. These ties are only expected to be stronger between the members of the same keiretsu.

III. Econometric Methodology

The econometric analysis below aims to uncover the effects of block shareholding and the identity of the shareholders on the real estate lending of Japanese banks. To isolate these effects from the other determinants of bank loan portfolio, the analysis below controls for bank characteristics such as size, location and bank type. Unfortunately, not all bank characteristics are as easily observable. In particular, the credit screening ability of bank managers and credit officers, an important determinant of a loan portfolio's riskiness, is unobserved by outsiders. However, this unobserved ability not only affects the overall riskiness of a loan portfolio but may also change the observed properties of a loan portfolio. For example, it might be optimal for a highly able bank to lend to riskier sectors like real estate; yet, the overall loan portfolio of that bank need not be riskier than the portfolio of a less able bank with less exposure to the real estate sector. Using the proportion of loans to the real estate sector as a measure of the bank's loan portfolio risk would be misleading in this case.

To control for these unobserved factors that are unlikely to change substantially over a short period of time, I use a panel data set that covers (fiscal) years 1983 to 1989. Although the statistical method used requires the unobserved credit screening ability of a bank to remain

constant throughout the sample period, this is not likely to be a stringent requirement given the relatively short sample period and the long-term employment practices of Japanese banks.

Even with observable fixed characteristics of banks, panel data allow statistical analysis that would not be otherwise possible. For example, the analysis below will show that the shareholders that belong to the same keiretsu as the bank behave differently from the shareholders that do not. However, using a dummy variable for keiretsu membership would ignore the differences among different groups. Using separate dummies for each keiretsu in a cross sectional analysis would diminish the explanatory power of shares held by the members of the same keiretsu because each group has only one or, at most, two 'nucleus' banks, with a trust bank as the second bank.

Although a panel data set has great advantages over a set with cross sectional data only, it also introduces new issues into the econometric analysis. Many bank loans have maturity longer than one year, my sampling frequency. Since it is costly for a bank to liquidate a loan before its maturity, a bank is likely to wait until the maturity before any change in its lending strategy is implemented in a specific loan. The importance of relationship lending in Japan further increases this inertia. This inertia suggests the use of lagged bank loan portfolio characteristics as explanatory variables when the dependent variable is also a characteristic of the bank loan portfolio such as the ratio of loans to the real estate sector to the bank's total assets:

(1)

$$y_{it} = \gamma_1 y_{it-1} + \gamma_2 y_{it-2} + \gamma_3 y_{it-3} + \quad \beta' \boldsymbol{x}_{it} + \alpha_i + \lambda_t + v_{it},\ i = 1,...,n;\ t = 4,...,T$$

where y_{it} is the dependent variable, $\boldsymbol{x}_{it}$ is the vector of explanatory variables, γ and β are corresponding coefficients to be estimated, α_i is the fixed effect coefficient for each bank, λ_t is

the time dummy, and v_{it} is the error term with $E[v_{it}] = 0, \forall i,t$ and $E[v_{it}v_{js}] = 0, \forall i \neq j, t \neq s$. This formulation sets $t = 1$ for 1981.[22] After a differencing that eliminates the fixed effects, the model becomes

(2)

$$\Delta y_{it} = \gamma_1 \Delta y_{it-1} + \gamma_2 \Delta y_{it-2} + \gamma_3 \Delta y_{it-3} + \quad \beta' \Delta x_{it} + \lambda_t - \lambda_{t-1} + \Delta v_{it}, \; t = 5,...,T$$

where $\Delta y_{it} = y_{it} - y_{it-1}$, $\Delta x_{it} = x_{it} - x_{it-1}$, and $\Delta v_{it} = v_{it} - v_{it-1}$. This differencing also controls for any additive deterministic trend.

However, notice that Δv_{it} exhibits first-order serial correlation by definition even if v_{it} is not serially correlated. Since (2) includes lagged dependent variables as explanatory variables, this correlation can lead to inconsistent coefficient estimates. A common way of dealing with this problem is to use instrumental variables that are correlated with the lagged dependent variables but not with the error term. Hence, the estimation procedure can be summarized as follows:

(i) Find valid instruments and determine the moment functions they imply;

(ii) Choose a weighting matrix for these moment functions and estimate the coefficients by the Generalized Method of Moments (GMM) of Hansen (1982);

(iii) Verify the validity of the instruments.

Ideally, it is preferable to use a set of instruments that are uncorrelated with all the past, present and future error terms. However, finding such a set of instruments without sacrificing much efficiency in the estimation is not a trivial task in this context. Instead, I use the past values of the dependent variable as instruments, which are valid only if there is no serial correlation in

[22] Although I do not have shareholding data (part of explanatory variables x) before 1983, the balance sheet data, including loan portfolio characteristics, are available for previous years.

the error terms, i.e., if $E[v_{it}v_{is}]=0, \forall i,t \neq s$. I, then, verify that there is indeed no serial correlation. Hence, the instrument set for year t is given by (after dropping the subscript i)

$$z_t \equiv (1, y_1, y_2, ..., y_{t-2}, \Delta x_t) \tag{3}$$

The implied moment functions are given by

$$\Delta v_t' \mathbf{z_t} = \mathbf{0} \tag{4}$$

Notice that only a subset of all the implied moments is used. While this reduces the efficiency of the estimation, the small number of the banks in the sample does not allow using all the implied moment conditions while maintaining heteroscedasticity-robustness at the same time. Since heteroscedasticity cannot be overruled in a sample as diverse as this, I opted not to use all the moment conditions.

The coefficients in (2) are estimated using the moment conditions (4) in a GMM framework. An important issue in GMM estimation is the determination of the weight matrix for the moment conditions. In a dynamic model with panel data with a similar sample size, Arellano and Bond (1991) find a downward bias in the coefficient standard errors from a two-step GMM estimation that uses a consistent estimate for the covariance matrix of the moment conditions. They suggest, instead, the use of a one-step method which uses a matrix with 2s in the diagonal, -1s in the immediately adjacent diagonals and zeros everywhere else in the calculation of the weight matrix. Consequently, the resulting weighting matrix is a consistent estimate of the covariance matrix of the moment conditions only with homoscedastic errors.[23] One disadvantage of this one-step method is that the usual chi-square tests of overidentification based on the J-statistic of Hansen (1982) require a consistent estimator of the covariance matrix in the GMM

[23] The errors must also have no autocorrelation for this matrix to be a consistent estimate. However, the lack of autocorrelation has to be satisfied for the validity of the instruments in any case, so this is not a binding requirement.

estimation. Since heteroscedasticity cannot be overruled in a diverse sample such as mine, these tests are not valid in a one-step procedure.

Finally, I test for the presence of autocorrelation in the estimation residuals to verify the validity of past values of the dependent variable as instruments. Since the errors in (2) would show a first-order autocorrelation even if the errors in (1) are not correlated, I test for the second-order autocorrelation instead.[24]

IV. Regression Analysis

Table 4.1 presents the results of preliminary regressions where the dependent variable is the total loans to the real estate sector normalized by the total assets of the bank. In addition to the lagged dependent variables and a size variable, the regressions also include either the total shares held by the top 5 shareholders or total shares held by each type of the top 5 major shareholders. Both size and shareholding data is as of the end of year t-1. In the first regression, the coefficient of the total shares held by the top 5 shareholders is negative but not significant. While this seems consistent with the view that the shareholders left all the monitoring to the regulatory agents (hypothesis C), allowing regional banks and the national banks to have different coefficient for the shareholder variable reveals important differences. The real estate lending of regional banks decreased in the total shares held by the top 5 shareholders while that of national banks increased. This suggests that the effects of the shareholding structure should be

[24] Notice that not only a first-order but also a second or third order autocorrelation in the error term of (1) would lead to a second-order autocorrelation in the error term of (2). Hence, a second-order test covers all these cases. There is neither any *a priori* reason to suspect an autocorrelation of order higher than 3 in this sample if no autocorrelation of a lower order exists, nor an efficient way to check for a higher order autocorrelation in time series as short as this.

examined separately for different types of banks. Indeed, no group of shareholders seems to have any effect when all the banks are studied together.

While it is necessary to study the shareholder effect separately for national and regional banks, the number of national banks, 21, is not large enough for heteroscedasticity-robust estimation due to the large number of instruments and the related orthogonality conditions used in the GMM estimation of (4). Consequently, both national and regional banks are included in the regressions and only the coefficients of shareholder related variables are assumed to differ across the bank types. The coefficients of other explanatory variables, namely, the lagged dependent variables, size variables and time dummies, are assumed to be same across bank types.[25]

Table 4.2 presents regression results about the effects of different shareholder types on the lending behavior of regional banks. The total shares by each type of shareholder are interacted by a regional bank dummy so they capture only the shareholder effect on the lending by regional banks. Since the national banks are left in the sample as explained above, the total shares of the top 5 shareholders interacted by a national bank dummy are also included in the regression to improve the fit.

The results indicate that, in general, the more shares were held by any type of shareholder, the less the regional banks lent to the real estate sector. However, no single group has a significant effect at the 10% level. On the other hand, when total shares held by the top 5

[25] As a robustness check, I ran regressions in which one of the lagged dependent variables or the size variable was allowed to have a different coefficient for national banks. None of the national-bank coefficients was significantly different from its counterpart for regional banks when the coefficient of the total shares held by the top 5 shareholders was also allowed to be different across bank types. I also ran all the regressions reported in the text using only regional banks whose number is sufficient for heteroscedasticity-robust estimation. The results were qualitatively the same as those reported for regional banks in the main text.

shareholders are included, its coefficient is negative while the effect of any single group remains insignificant. This suggests that shareholders had, in general, a roughly homogeneous restraining effect on the managers of regional banks.

The evidence about the regional banks is consistent with hypothesis B, namely, the restraining effect of the shareholders on the bank managers. However, it is not consistent with hypothesis A, namely, the shareholders encouraged the bank managers to take risks, or with the hypothesis C, namely, the shareholders were passive.

Unlike the regional banks, the preliminary regressions above suggest that the national banks lent *more* to the real estate sector, the more shares were held by the top 5 shareholders. Table 4.3 presents the effects of different types of shareholders on the national banks. The coefficient of the total shares held by the top 5 shareholders of the national banks is positive but not always significant at the conventional levels. One reason may be that dividing the shareholders based on their business is not adequate because of the cross shareholdings in a keiretsu. Indeed, if the keiretsu ties play a more important role in determining shareholder incentives, their effects are not likely to be captured by dividing the shareholders across their business lines because many different lines of business are represented in a keiretsu.

Table 4.4 presents the regression results on the effects of keiretsu ties. Shareholders of a bank that belongs to one of the six keiretsu is divided based on their membership in the bank's keiretsu. While shareholding in the bank is not likely to be the only tie between the bank and its shareholders, the additional ties are likely to be stronger and the bank is likely to have greater bargaining power with the same-keiretsu shareholders, as discussed in section 1. Indeed, these two groups have a very different effect on bank lending. A keiretsu bank's lending to the real

estate sector increased in the shares held by the members of the bank's keiretsu. This effect is significant at the 1% level both for all the shareholders that are members of the same keiretsu and for the shareholders that are nucleus companies of the keiretsu. On the other hand, the coefficient for the shares held by non-member shareholders is negative albeit not significant.

The additional regression results in table 4.4 further indicate that the same-keiretsu shareholders are responsible for the positive correlation between the total shares held by the top 5 shareholders and the real estate lending of national banks. When the total shares of the top 5 shareholders included, the coefficients for same-keiretsu shareholders remain positive and significant. However, the coefficient of the total shares is no longer significant. These regressions indicate that the coefficient of the shares held by the same-keiretsu shareholders is statistically greater than that of the shares held by other shareholders.

The effects of the same-keiretsu shareholders that are among the top 5 are economically very significant. One standard deviation increase in the shares held by these shareholders increases the ratio of real estate loans to total assets by 1.4 percentage point for a city bank. This is a very significant effect given that the median city bank's exposure in 1987 was only 3.9%. The increase for a trust banks was 1.5 percentage point, which is also very significant given that the median trust bank's exposure was 3.7% in 1987 and only 3% in 1989.

It may seem that the results about the national banks favor the shareholder risk taking hypothesis (hypothesis A). However, hypothesis A implies a *weaker* risk taking effect by the keiretsu members than by unaffiliated shareholders, not a stronger effect as shown above. That is, if hypothesis A were true the coefficient of the shares held by the same-keiretsu shareholders would be *smaller* than that of the shares held by others, not greater

Since the coefficient for the shares held by those that are not members of the bank's keiretsu is not significant, it may also seem that the bank shareholders took a passive stand and left disciplining the bank managers completely to the regulatory agents (hypothesis C). However, if this hypothesis were true, the same-keiretsu shareholders would not have an increasing effect on the real estate lending of the keiretsu banks.

Instead, the results are consistent with the risk-taking manager hypothesis (hypothesis B). Both with regional and national banks, the shareholders, in general, had a restraining effect on bank real estate lending. However, the additional business ties between the banks and their shareholders weaken the incentives of the shareholders to discipline the banks. In fact, when these additional ties are sufficiently strong, as between the keiretsu banks and their same-keiretsu shareholders, these ties provide protection to the bank managers from the discipline of the shareholders with weaker or no additional business ties.

Finally, although the shareholding structure of banks seems to have played an important role in Japanese bank lending to the real estate sector in the 1980s, the analysis also suggests that this was only part of the reason that Japanese banks increased their real estate lending. The time dummy for the 1985-89 period is positive and significant in all the regressions. This suggests that there were also other reasons for the increased bank lending to the real estate sector; the shareholding structure of the banks is likely to have amplified their effects.

V. Robustness and Alternative Explanations

A. Keiretsu effect

Since there are only 6 keiretsu, it is conceivable that the results might be driven by one influential keiretsu. Of course, if this influence is constant over the sample period, it will be picked by the fixed effects, so this influence must not be constant through the sample period and must affect the shareholding structure of the banks. To test the robustness of my results to the possibility of an influential keiretsu in the sample, I repeated all the regressions in table 4.4 6 times; each time the banks in one of the keiretsu are excluded from the keiretsu banks. All the qualitative results in table 4.4 remained robust. I also separated life insurance companies from the other shareholders and repeated the regressions in Table 4.4. The effects documented in the table exist for both life insurance companies and the other shareholders. Finally, I also allowed different coefficients for the total shares held by the top 5 shareholders of the non-keiretsu national banks and keiretsu national banks. The qualitative results remained robust.

B. Nonlinear Effects of Shareholding

Gorton and Rosen (1995) find a nonlinear relationship between insider shareholding and bank risk taking. The real estate lending of banks first increases in the insider shareholding as it gives the managers protection from the discipline of the outsiders, then decreases as the incentives of the managers align with those of the outside shareholders. The analysis in the previous section demonstrates the protection provided to the managers of the keiretsu banks by

the same-keiretsu shareholders. However, as discussed in section 1, the shares held by the same-keiretsu shareholders are unlikely to help align the incentives of the managers with those of the outside shareholders at higher levels of shareholding. Hence, the case for a nonlinear relationship between same-keiretsu shareholding and the real estate lending by keiretsu banks is weaker.

Nevertheless, I repeated the regressions in table 4.4 by including the square or cube of the shares held by the same-keiretsu shareholders in addition to the usual linear term. The square term of the shares held by all the same-keiretsu shareholders has indeed a negative and significant coefficient in addition to the positive and significant linear term.[26] It is, of course, difficult to conclude from this result whether a nonlinear relationship indeed exists or the nonlinear terms merely account for influential observations in as small a sample as mine.[27] To test the robustness of the significant nonlinear terms, I repeated the regressions by focusing on 5 keiretsu at a time as in the previous subsection. I found that when the banks of the Fuyo group are excluded, the nonlinear relationship disappears. Furthermore, when the banks of the Mitsubishi, Sumitomo, or Sanwa group are excluded the nonlinear and linear terms reverse their sign but remain significant. I conclude that any nonlinear relationship detected is more likely to be the result of influential observations in this small sample even though the linear relationship found in the previous section is robust to such observations.[28]

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[26] No nonlinear relationship is detected however when only the shares held by nucleus companies are considered.

[27] For comparison, the sample of Gorton and Rosen (1995) includes 292 banks (out of 458) with more than 5% insider shareholding. There are only 10 keiretsu banks out of 80 banks in my sample.

[28] In fact, when I looked for a nonlinear relationship after excluding the life insurance companies from the same-keiretsu shareholders, the nonlinear relationship again disappeared. The shareholding by the same-keiretsu life insurance companies shows little time-series variation in the sample but has several large exceptions. Finally, another reason why I fail to detect any robust nonlinear relationship might be that Gorton and Rosen (1995) find that the insider shares squared become dominant to the linear term around 40% of insider ownership. However, the largest total same-keiretsu shareholding among the top 5 shareholders is 18.6%.

C. National banks as shareholders

National banks, in particular, keiretsu city banks, are among the largest shareholders of regional banks. Consequently, they might have used their shareholder powers to capture some lending opportunities from the regional banks for themselves. This might be the reason for the negative correlation between the shareholding and the real estate lending of the regional banks. However, if such an action by the shareholding national banks was indeed the source of the negative relationship, there would be no relationship between the shares held by other shareholders and the regional bank lending. But, the opposite is true. When the total shares held by all the top 5 shareholders is controlled for in addition to the shares held by the banks, it is the total shares held by all the top 5 shareholders that has a significant and negative effect on the real estate lending of regional banks. Instead, the effects of national banks as large shareholders of regional banks seem to be parallel to the effects of other shareholders.

On the other hand, it might seem contradictory for the national banks to have a restraining effect on the regional banks as large shareholders while they increase their own real estate lending substantially. However, the national banks as the shareholders of regional banks do not share the perks or the job security that the risk taking by the regional banks might provide in an environment of decreased lending opportunities. If the risks taken by the regional bank managers pay off, these benefits are largely captured by the regional bank managers not by the shareholding national banks.[29]

[29] If anything, the national banks have additional incentives to restrain the regional banks from risk taking because the Japanese Ministry of Finance, the main regulatory agent for the financial sector, is known to pressure large banks to absorb smaller banks that are in financial trouble instead of letting them fail.

VI. Conclusion

This paper studies the effects of bank shareholding structure on the real estate lending of Japanese banks in the 1980s. It shows that the shareholders restrained the managers of the regional banks. The real estate lending of regional banks decreased as the total shares held by the top 5 shareholders increased. However, the real estate lending of the national banks that lead a keiretsu increased in the shares held by the members of the bank's keiretsu. The additional business ties between the banks and these shareholders, such as cross shareholding, bank borrowing, insurance purchases by the bank, not only weakened the incentives of these shareholders to discipline the bank managers but also provided protection to the bank managers from the discipline of the other shareholders.

The results are consistent with the hypothesis that the bank managers took risks by lending to the real estate sector to protect their perks and jobs, and that the shareholders tried to restrain their risk taking. The results reject the hypothesis that the shareholders pressured the bank managers to take risks to take advantage of the deposit insurance or limited liability. The results also reject the hypothesis that bank shareholders took a passive stand by leaving all the monitoring to regulatory agents. In particular, it is shown that the shareholders knew at that time that the regulatory monitoring against risk taking was not adequate from their perspective. However, this, of course, does not imply that the shareholders of banks did not take into account the implicit rescue guarantee of the government known as the 'convoy system'. Further research should clarify the effects of this implicit government guarantee.

While the effects of shareholders identified in this paper are economically very significant, the results also suggest that the lack of shareholder discipline or the managerial

entrenchment in keiretsu banks is only a partial explanation for increased bank lending to the real estate sector in the 1980s in Japan. Further research is necessary to identify other causes of this increase.

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Table 2.1. Total Assets and Real Estate Lending of the Japanese banks

N gives the number of banks in each category, L>0 gives the number of banks with outstanding real estate loans.

Panel A. Total Assets (in trillion yen)

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	5.34	15.89	1.59	17.40	14.69	13.45
	s.d.	7.20	6.57	1.07	7.32	4.66	5.72
	Median	1.52	16.02	1.24	16.91	15.76	15.81
	N	80	21	59	12	3	6
1987	Mean	8.90	27.37	2.33	27.54	23.26	29.07
	s.d.	12.73	12.10	1.71	12.98	9.26	12.93
	Median	2.33	26.77	1.64	26.33	22.69	33.86
	N	80	21	59	12	3	6

Table 2.1. cont.

Panel B. The ratio of real estate loans to the total loans made by Japanese banks

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	7.0%	8.2%	6.6%	6.1%	5.8%	13.7%
	s.d.	3.6%	5.3%	2.7%	2.1%	10.1%	3.5%
	Median	6.1%	6.2%	6.0%	5.9%	0.0%	12.2%
	L>0	78	19	59	12	1	6
	N	80	21	59	12	3	6
1985	Mean	8.4%	10.4%	7.6%	7.7%	10.0%	16.1%
	s.d.	4.6%	5.5%	4.0%	2.2%	9.8%	4.1%
	Median	7.3%	8.5%	6.7%	7.8%	10.2%	14.9%
	L>0	79	20	59	12	2	6
	N	80	21	59	12	3	6
1987	Mean	10.1%	13.2%	9.0%	10.6%	12.1%	18.8%
	s.d.	5.0%	6.2%	4.0%	2.5%	11.9%	5.3%
	Median	9.0%	12.3%	8.1%	10.2%	12.7%	17.2%
	L>0	79	20	59	12	2	6
	N	80	21	59	12	3	6
1989	Mean	11.3%	14.3%	10.3%	12.2%	15.7%	18.0%
	s.d.	5.0%	5.1%	4.5%	3.2%	7.7%	5.5%
	Median	10.2%	14.0%	9.3%	10.8%	14.0%	16.1%
	L>0	80	21	59	12	3	6
	N	80	21	59	12	3	6

Table 2.1. cont.

Panel C. The ratio of real estate loans to the total assets held by Japanese banks

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	3.95%	3.37%	4.15%	2.63%	3.17%	4.95%
	s.d.	1.94%	2.51%	1.68%	1.01%	5.49%	2.57%
	Median	3.54%	2.85%	3.70%	2.53%	0.00%	4.02%
	L>0	78	19	59	12	1	6
	N	80	21	59	12	3	6
1985	Mean	4.49%	4.08%	4.64%	3.30%	5.31%	5.02%
	s.d.	2.37%	2.40%	2.36%	1.10%	5.33%	2.38%
	Median	3.87%	3.56%	3.99%	3.35%	5.26%	4.13%
	L>0	79	20	59	12	2	6
	N	80	21	59	12	3	6
1987	Mean	5.07%	4.66%	5.22%	4.18%	6.52%	4.69%
	s.d.	2.55%	2.68%	2.51%	1.39%	6.39%	2.35%
	Median	4.26%	3.84%	4.33%	3.91%	6.80%	3.74%
	L>0	79	20	59	12	2	6
	N	80	21	59	12	3	6
1989	Mean	5.35%	4.46%	5.67%	4.14%	7.39%	3.63%
	s.d.	2.71%	2.32%	2.79%	1.59%	4.20%	1.61%
	Median	4.42%	3.63%	5.12%	3.69%	6.69%	3.00%
	L>0	80	21	59	12	3	6
	N	80	21	59	12	3	6

Table 2.2. Shareholding in Japanese banks, by shareholder type

N gives the number of banks in each category, SH>0 gives the number of banks with at least one shareholder of the given type among its top 5 shareholders.

Panel A. Total Shares held by top 5 shareholders (%)

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	18.6	17.2	19.1	17.5	13.0	18.6
	s.d.	6.2	3.8	6.8	3.0	3.4	4.5
	Median	17.2	16.9	17.4	16.9	11.3	18.4
	N	80	21	59	12	3	6
1987	Mean	17.7	16.4	18.2	17.2	13.1	16.4
	s.d.	4.9	3.1	5.3	3.0	3.0	2.5
	Median	17.0	16.3	17.9	16.8	11.6	16.4
	N	80	21	59	12	3	6

Panel B. Total shares held by banks that are among the top 5 shareholders (%)

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	7.5	2.4	9.3	0.6	3.6	5.5
	s.d.	7.6	3.7	7.9	1.3	3.1	5.3
	Median	4.7	0.0	7.9	0.0	4.8	3.4
	SH>0	60	9	51	2	2	5
	N	80	21	59	12	3	6
1987	Mean	7.6	2.2	9.6	0.6	3.9	4.5
	s.d.	7.0	2.8	7.0	1.4	3.4	2.8
	Median	5.5	0.0	9.0	0.0	5.7	3.3
	SH>0	64	10	54	2	2	6
	N	80	21	59	12	3	6

Table 2.2. cont.

Panel C. Total shares held by life insurance companies that are among the top 5 shareholders (%)

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	5.2	9.4	3.7	12.4	7.2	4.7
	s.d.	4.9	5.1	3.9	4.3	4.2	1.8
	Median	3.9	10.0	2.8	13.2	6.1	4.4
	SH>0	60	21	39	12	3	6
	N	80	21	59	12	3	6
1987	Mean	5.5	9.3	4.2	12.5	7.3	4.1
	s.d.	5.0	5.3	4.2	4.2	4.4	2.4
	Median	4.6	9.5	3.1	13.2	5.9	4.3
	SH>0	61	20	41	12	3	5
	N	80	21	59	12	3	6

Panel D. Total shares held by the bank employees' stock holdings that are among the top 5 shareholders (%)

		All Banks	National Banks	Regional Banks	City Banks	Long-Term Credit Banks	Trust Banks
1983	Mean	1.7	0.2	2.2	0.4	0.0	0.0
	s.d.	2.0	0.7	2.0	0.9	0.0	0.0
	Median	0.0	0.0	2.4	0.0	0.0	0.0
	SH>0	39	2	37	2	0	0
	N	80	21	59	12	3	6
1987	Mean	0.8	0.0	1.0	0.0	0.0	0.0
	s.d.	1.4	0.0	1.5	0.0	0.0	0.0
	Median	0.0	0.0	0.0	0.0	0.0	0.0
	SH>0	23	0	23	0	0	0
	N	80	21	59	12	3	6

Table 2.3. Shareholding in banks by the same (financial) keiretsu members

Keiretsu shareholders of a bank are the shareholders that are members of the same keiretsu with the bank. Only the shareholders with 'moderate' or stronger ties are included. The Keiretsu affiliation, if any, of a shareholder as well as the strength of its ties to the keiretsu is from Dodwell (1986). N gives the number of banks that have a (financial) keiretsu and SH>0 gives the number of banks that have at least one shareholder of the given type among their top 5 shareholders.

Panel A. City Banks (%)

		Total Shares by top 5	Same keiretsu shareholders		Other Shareholders
			All	'Nucleus' members only	
1983	Mean	18.0	7.8	5.4	10.2
	s.d.	2.5	3.8	5.9	3.1
	Median	16.5	7.5	5.1	8.6
	SH>0	5	5	3	5
	N	5	5	5	5
1987	Mean	17.3	7.9	5.4	9.4
	s.d.	3.0	3.5	5.7	3.7
	Median	16.3	7.8	5.3	8.4
	SH>0	5	5	3	5
	N	5	5	5	5

Panel B. Trust Banks (%)

		Total Shares by top 5	Same keiretsu shareholders		Other Shareholders
			All	'Nucleus' members only	
1983	Mean	17.8	13.1	12.6	4.7
	s.d.	4.4	5.3	5.7	6.1
	Median	18.1	12.5	12.5	2.8
	SH>0	5	5	5	4
	N	5	5	5	5
1987	Mean	15.9	11.6	11.1	4.3
	s.d.	2.4	4.1	4.8	4.7
	Median	15.8	9.7	9.7	3.9
	SH>0	5	5	5	4
	N	5	5	5	5

Table 4.1. Effects of large shareholders on the real estate lending by banks

The dependent variable is RE (t), the total loans to the real estate sector divided by the bank's total assets, both as of the end of year t. Regressions include fixed effects dummies and estimated by one-step GMM after the fixed effects dummies are eliminated by differencing. The sample period for the dependent variable excluding the lags is 1984 to 1989. Log (TA) is the logarithm of total assets (book) at year t-1. Top 5 is the total shares held by top 5 shareholders. Specific shareholders give the total shares held at the end of year t-1 by the shareholders that are of that type and among the top 5 shareholders. NATIONAL and REGIONAL are dummy variables that take the value one for national and regional banks, respectively. YR85-89 is a time dummy that takes value one for years 1985 through 1989. Yearly dummies are also included (1984 and 1985 are omitted). Z is a test-statistic for the hypothesis of the lack of second order correlation; its distribution is standard normal. Heteroscedasticity-robust standard errors are in paranthesis. *, **, *** denote the coefficients that are different from zero at (double-sided) significance levels 10%, 5%, and 1% respectively.

RE (t-1)	0.7318***	0.6159***	0.7493***	0.7474***	0.6657***
	(0.1518)	(0.1105)	(0.1724)	(0.1685)	(0.1086)
RE (t-2)	-0.0774	-0.0532	-0.0819	-0.0822	-0.0686
	(0.0524)	(0.0428)	(0.0535)	(0.0541)	(0.0465)
RE (t-3)	-0.0789	-0.1046	-0.0823	-0.0824	-0.0847
	(0.0823)	(0.0884)	(0.0836)	(0.0842)	(0.0925)
log (TA)	-0.0074	-0.0019	-0.0071	-0.0076	-0.0075
	(0.0102)	(0.0099)	(0.0110)	(0.0107)	(0.0106)
Top5	-0.0418				
	(0.0348)				
Top5* NATIONAL		0.2828**			
		(0.1341)			
Top5* REGIONAL		-0.0902**			
		(0.0440)			
Specific Shareholders:					
Banks			-0.0088		
			(0.0333)		
Life Insurance Cos.				-0.0272	
				(0.0422)	
Employees' Stock Plan					-0.0683
					(0.0855)
YR85-89	0.0037**	0.0034**	0.0037*	0.0038**	0.0037**
	(0.0018)	(0.0017)	(0.0019)	(0.0019)	(0.0019)
No. of Observations	80	80	80	80	80
Z	0.502	0.319	0.530	0.526	0.572

Table 4.2. Effects of large shareholders on the real estate lending by regional banks

The dependent variable is RE (t), the total loans to the real estate sector divided by the bank's total assets, both as of the end of year t. Regressions include fixed effects dummies and estimated by one-step GMM after the fixed effects dummies are eliminated by differencing. The sample period for the dependent variable excluding the lags is 1984 to 1989. Log (TA) is the logarithm of total assets (book) at year t-1. Top 5 is the total shares held by top 5 shareholders. Specific shareholders give the total shares held at the end of year t-1 by the shareholders that are of that type and among the top 5 shareholders. NATIONAL and REGIONAL are dummy variables that take the value one for national and regional banks, respectively. YR85-89 is a time dummy that takes value one for years 1985 through 1989. Yearly dummies are also included (1984 and 1985 are omitted). Z is a test-statistic for the hypothesis of the lack of second order correlation; its distribution is standard normal. Heteroscedasticity-robust standard errors are in paranthesis. *, **, *** denote the coefficients that are different from zero at (double-sided) significance levels 10%, 5%, and 1% respectively.

RE (t-1)	0.6588***	0.6695***	0.6176***	0.5851***	0.5883***	0.5593***
	(0.1356)	(0.1270)	(0.0973)	(0.1088)	(0.1120)	(0.0793)
RE (t-2)	-0.0641	-0.0638	-0.0548	-0.0495	-0.0507	-0.0490
	(0.0450)	(0.0452)	(0.0439)	(0.0427)	(0.0426)	(0.0416)
RE (t-3)	-0.1055	-0.1020	-0.1046	-0.1071	-0.1113	-0.1131
	(0.0891)	(0.0892)	(0.0944)	(0.0959)	(0.0935)	(0.0946)
log (TA)	-0.0023	-0.0029	-0.0030	-0.0030	-0.0033	-0.0035
	(0.0103)	(0.0102)	(0.0108)	(0.0102)	(0.0101)	(0.0102)
Top5 * NATIONAL	0.2979**	0.2915**	0.2765**	0.2805**	0.2879**	0.2869**
	(0.1421)	(0.1394)	(0.1310)	(0.1334)	(0.1353)	(0.1320)
Top5 * REGIONAL				-0.1216*	-0.1026**	-0.1136**
				(0.0708)	(0.0488)	(0.0470)
Specific Shareholders:						
Banks * REGIONAL	-0.0356			0.0353		
	(0.0358)			(0.0578)		
Life Insurance Cos. *REGIONAL		-0.0621			-0.0520	
		(0.0409)			(0.0391)	

Employees' Stock Plan			-0.0606			0.0047
*REGIONAL			(0.0845)			(0.0812)
YR85-89	0.0035**	0.0036**	0.0036*	0.0035**	0.0036**	0.0036**
	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0017)	(0.0017)
No. of Observations	80	80	80	80	80	80
Z	0.423	0.392	0.441	0.283	0.290	0.328

Table 4.3. Effects of large shareholders on the real estate lending by national banks

The dependent variable is RE (t), the total loans to the real estate sector divided by the bank's total assets, both as of the end of year t. Regressions include fixed effects dummies and estimated by one-step GMM after the fixed effects dummies are eliminated by differencing. The sample period for the dependent variable excluding the lags is 1984 to 1989. Log (TA) is the logarithm of total assets (book) at year t-1. Top 5 is the total shares held by top 5 shareholders. Specific shareholders give the total shares held at the end of year t-1 by the shareholders that are of that type and among the top 5 shareholders. NATIONAL and REGIONAL are dummy variables that take the value one for national and regional banks, respectively. YR85-89 is a time dummy that takes value one for years 1985 through 1989. Yearly dummies are also included (1984 and 1985 are omitted). Z is a test-statistic for the hypothesis of the lack of second order correlation; its distribution is standard normal. Heteroscedasticity-robust standard errors are in paranthesis. *, **, *** denote the coefficients that are different from zero at (double-sided) significance levels 10%, 5%, and 1% respectively.

RE (t-1)	0.6412***	0.6175***	0.6109***	0.5991***
	(0.1246)	(0.1122)	(0.1062)	(0.1090)
RE (t-2)	-0.0542	-0.0465	-0.0490	-0.0453
	(0.0435)	(0.0436)	(0.0441)	(0.0434)
RE (t-3)	-0.1036	-0.1114	-0.1028	-0.1073
	(0.0871)	(0.0862)	(0.0899)	(0.0897)
log (TA)	-0.0019	-0.0002	0.0001	0.0007
	(0.0096)	(0.0099)	(0.0106)	(0.0095)
Top5 * NATIONAL			0.3281	0.2487*
			(0.2143)	(0.1275)
Top5 * REGIONAL	-0.0854**	-0.0879**	-0.0897**	-0.0927**
	(0.0426)	(0.0427)	(0.0426)	(0.0441)
Specific Shareholders:				
Banks * NATIONAL	-0.0427		-0.0725	
	(0.1439)		(0.2394)	
Life Insurance Cos. * NATIONAL		0.1940		0.2172
		(0.2124)		(0.2083)
YR85-89	0.0034*	0.0033*	0.0032*	0.0032*
	(0.0017)	(0.0017)	(0.0018)	(0.0017)
No. of Observations	80	80	80	80
Z	0.284	0.224	0.316	0.291

Table 4.4. Effects of keiretsu shareholders on the real estate lending by national banks that are nucleus banks in their keiretsu

The dependent variable is RE (t), the total loans to the real estate sector divided by the bank's total assets, both as of the end of year t. Regressions include fixed effects dummies and estimated by one-step GMM after the fixed effects dummies are eliminated by differencing. The sample period for the dependent variable excluding the lags is 1984 to 1989. Log (TA) is the logarithm of total assets (book) at year t-1. Top 5 is the total shares held by top 5 shareholders. Same-keiretsu shareholders give the total shares held by the top 5 shareholders that are members of the same keiretsu with the bank. Keiretsu affiliation, if any, of a shareholder as well as whether the keiretsu member is considered a 'nucleus' company of the keiretsu are from Dodwell (1986). NATIONAL and REGIONAL are dummy variables that take the value one for national and regional banks, respectively. YR85-89 is a time dummy that takes value one for years 1985 through 1989. Yearly dummies are also included (1984 and 1985 are omitted). Z is a test-statistic for the hypothesis of the lack of second order correlation; its distribution is standard normal. Heteroscedasticity-robust standard errors are in paranthesis. *, **, *** denote the coefficients that are different from zero at (double-sided) significance levels 10%, 5%, and 1% respectively.

RE (t-1)	0.6222***	0.6080***	0.6892***	0.5831***	0.5680***	0.5838***
	(0.1211)	(0.1150)	(0.1315)	(0.1064)	(0.0991)	(0.0996)
RE (t-2)	-0.0536	-0.0493	-0.0719	-0.0466	-0.0422	-0.0470
	(0.0449)	(0.0452)	(0.0496)	(0.0436)	(0.0444)	(0.0436)
RE (t-3)	-0.1138	-0.1163	-0.0889	-0.1188	-0.1208	-0.1102
	(0.0861)	(0.0871)	(0.0829)	(0.0890)	(0.0900)	(0.0903)
log (TA)	-0.0012	0.0002	-0.0087	0.0004	0.0023	-0.0004
	(0.0105)	(0.0106)	(0.0095)	(0.0103)	(0.0108)	(0.0096)
Top5 * NATIONAL				0.1528	0.1593	0.3762***
				(0.1669)	(0.1181)	(0.1201)
Top5 * REGIONAL	-0.0882**	-0.0891**	-0.0909**	-0.0928**	-0.0933**	-0.0962**
	(0.0433)	(0.0431)	(0.0456)	(0.0446)	(0.0441)	(0.0453)
Same-keiretsu shareholders:						
Nucleus companies only	0.3974***			0.3177*		
	(0.1523)			(0.1665)		

All		0.4642***			0.3688**	
		(0.1767)			(0.1640)	
Non-affiliated shareholders			-0.0869			-0.3029***
			(0.0982)			(0.1018)
YR85-89	0.0032*	0.0031*	0.0037**	0.0032*	0.0030*	0.0032*
	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0016)
No. of Observations	80	80	80	80	80	80
Z	0.485	0.546	0.442	0.421	0.424	0.424