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## Measuring the Extent and Implications of Director Interlocking in the Pre-war Japanese Banking Industry

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# Measuring the Extent and Implications of Director Interlocking in the Pre-war Japanese Banking Industry

Tetsuji Okazaki and Kazuki Yokoyama

July 2002


Just before Japan's financial crisis of 1927, nearly 90 percent of ordinary banks were connected to non-banking companies through the interlocking of their directors and auditors. Moreover, such interlocking was more pervasive in the large-sized banks. In many cases, interlocking of directors and auditors resulted from the fact that the banks and non-banking companies were owned by the same large shareholders.

This finding is consistent with the accepted "organ bank" hypothesis which asserts that (i) banks were organically connected with industrial companies and so freely extended to them unsafe loans which went bad; and (ii) minority shareholders and depositors of such organ banks were therefore exploited by the core members of the corporate group, composed of the bank and industrial companies. The lessons from this important episode are particularly relevant to contemporary governance issues in Asian and other economies.




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**Measuring the Extent and Implications  
of Director Interlocking in the Pre-war  
Japanese Banking Industry**



**Tetsuji Okazaki and Kazuki Yokoyama**

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*Together with his collaborator Kazuki Yokoyama, Prof. Okazaki has recently completed a study on Governance and Performance of Banks in Pre-war Japan: Testing the 'Organ Bank' Hypothesis Quantitatively, (CIRJE Discussion Paper F-111, University of Tokyo, 2001).*

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## PREFACE

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The ADB Institute aims to explore the most appropriate development paradigms for Asia composed of well-balanced combinations of the roles of markets, institutions, and governments in the post-crisis period.

Under this broad research project on development paradigms, the ADB Institute Research Paper Series will contribute to disseminating works-in-progress as a building block of the project and will invite comments and questions.

I trust that this series will provoke constructive discussions among policymakers as well as researchers about where Asian economies should go from the last crisis and recovery.

Masaru Yoshitomi  
Dean  
ADB Institute

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# Measuring the Extent and Implications of Director Interlocking in the Pre-war Japanese Banking Industry<sup>†</sup>

Tetsuji Okazaki and Kazuki Yokoyama

## 1. Introduction

As a result of the Asian financial crisis of 1997, the issue of corporate governance has attracted the attention of researchers as well as policy authorities. Much of the literature on the Asian crisis focuses specifically on the exploitation of minority shareholders by core members of family-based companies (Claessens et al. (1998); Lang (2001)). We argue that family-based companies do not always exploit minority shareholders. Okazaki (1999) and Okazaki (2001) indicate that the companies affiliated to the major *zaibatsu* in pre-war Japan basically outperformed other companies in terms of ROE, using panel data of 1935 companies from 1922 to 1936. According to the book and paper, this was basically due to monitoring by the holding company through dispatching directors, checking financial records and so on. However, the existence of major *zaibatsu* such as Mitsui and Mitsubishi was only one aspect of the pre-war Japanese corporate system. In addition to the major *zaibatsu*, many small and medium-sized family-based corporate groups existed.

In relation to the non-*zaibatsu* business groups, it is widely accepted by economic historians that banks were organically connected with industrial companies. According to the accepted view, these “organ banks” (*kikan ginko*) freely loaned funds to affiliated companies, which turned out to be bad loans *ex post*. This problem of *organ banks* is considered to be the major cause of the Showa Financial Crisis of 1927, (Kato (1957); Yamazaki (2000); Teranishi (2000)).

If this accepted view, hereafter referred to as the organ bank hypothesis, is true, then the minority shareholders and depositors of the organ bank were exploited by the core members of the corporate group, composed of the bank and industrial companies. In this sense the Showa Financial Crisis of 1927 was a precursor of the Asian Financial Crisis of 1997. Investigating this organ bank hypothesis, which is the basic motivation of this paper, is important not only because it is relevant to contemporary governance issues in Asian economies, but also because it deals with the most fundamental hypothesis regarding pre-war Japanese financial history.

The concept of the “organ bank” was first emphasised by Kato (1957), who suggested that these banks were established in order to raise funds for the industrial

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<sup>†</sup> This paper is a revised version of Okazaki and Yokoyama (2001). Financial support from the Asian Development Bank Institute (ADBI) is gratefully acknowledged. Professor Teranishi and Professor Korenaga kindly provided us with the data set they constructed for the Ministry of Finance (1928), and gave approval for us to use it for this paper. In addition, we would like to thank Dr. Chhikara, Dr. Chua, Dr. Fujiki, Professor Fujiwara, Professor Fukagawa, Professor Ikeo, Professor Kasuya, Professor Miyamoto, Dr. Montgomery, Professor Nam, Dr. Okina, Professor Saito, Professor M. Sato, Professor Y. Sato, Mr. Shizume, Professor Suehiro, Professor Tanimoto, Professor Woo-Cumings, Professor Watanabe, Dr. Yoshitomi and other participants at the seminars at ADBI, the University of Tokyo, the Bank of Japan, and the Financial Services Agency, and the Meeting of the Socio-Economic History Society and the Meeting of the Japan Society of Monetary Economics, for their helpful comments and suggestions.

businesses of the bank founders. Therefore the organ bank was not managed for the profit of the bank itself, but rather for the corporate group to which it belonged. Consequently, the organ bank tended to give large numbers of long-term loans to the small number of industrial companies connected with the bank founders (Sugiyama (1976); Murakami (1983)).

As mentioned above, the organ bank relationship has been regarded as a major cause of the Showa Financial Crisis. For example, just after the crisis, the Bank of Japan (BOJ) explained in a research report that the fundamental cause of the bankruptcy of the banks was the weakness of industrial organizations and the banking system. The BOJ particularly cited the unsound practices of banks. Bank directors participated in other businesses, and used the bank as an instrument to finance these ventures. In addition, because loan policy was based on personal connections, they gave large numbers of loans to certain persons or companies even when they lacked reliable collateral (Bank of Japan (1933), p.984). Takahashi and Morigaki (1968), one of the best known books on the Showa Financial Crisis, identified the organ bank relationship as a major cause of the crisis.

After Kato's seminal work, research has progressed in two directions. The first involves case studies of the organ bank relationship. In the 1960s and 1970s the focus of this research was the function of the banks affiliated to the major *zaibatsu*. Kato (1957) argued that most banks in pre-war Japan, including those affiliated to the major *zaibatsu*, had the characteristics of organ banks. On the other hand, Shibagaki (1965) stressed that the *zaibatsu*-affiliated banks did not give substantial loans to the core companies in the same *zaibatsu* groups. Following the contributions of Imuta (1966) and Sugiyama (1976), a consensus has been reached that, apart from exceptional periods, the *zaibatsu*-affiliated banks were not organ banks in Kato's sense (Murakami (1983)). With regard to non-*zaibatsu* banks, Imuta (1976), Ishii (1999) and Yamazaki (2000) examined the cases of several typical organ banks, based on the research by the BOJ and original documents.

The second research direction involves statistical analyses of bank performance. Imuta (1976b) classified banks into several groups by scale and location, and compared the basic financial indices across the groups. He found that the financial conditions of medium-sized banks in urban areas were relatively bad. They were characterized by high loan-deposit ratios, high borrowing-deposit ratios and so on. Teranishi (1982) reported similar results, using a more comprehensive data set. Yabushita and Inoue (1993) analysed the influence of bank performance on bank closures in 1927. Through a probit analysis of bank closures, they found that low equity-deposit ratios, high loan-deposit ratios and low ROEs increased the probability of bank closure.

Based on the above brief survey, we attempt in this paper to integrate the two clusters of research following Kato (1957). We begin by objectively measuring the extent of the connections between banks and non-banking companies. As explained in detail later, we have compiled a comprehensive database of directors and auditors in 1926, just before the Showa Financial Crisis. From it, we identify the extent of interlocking of directors and auditors, meaning when one individual holds multiple director or auditor positions in banks and non-banking companies. This is the first attempt to quantitatively measure the extent of bank-firm connections in pre-war Japan.



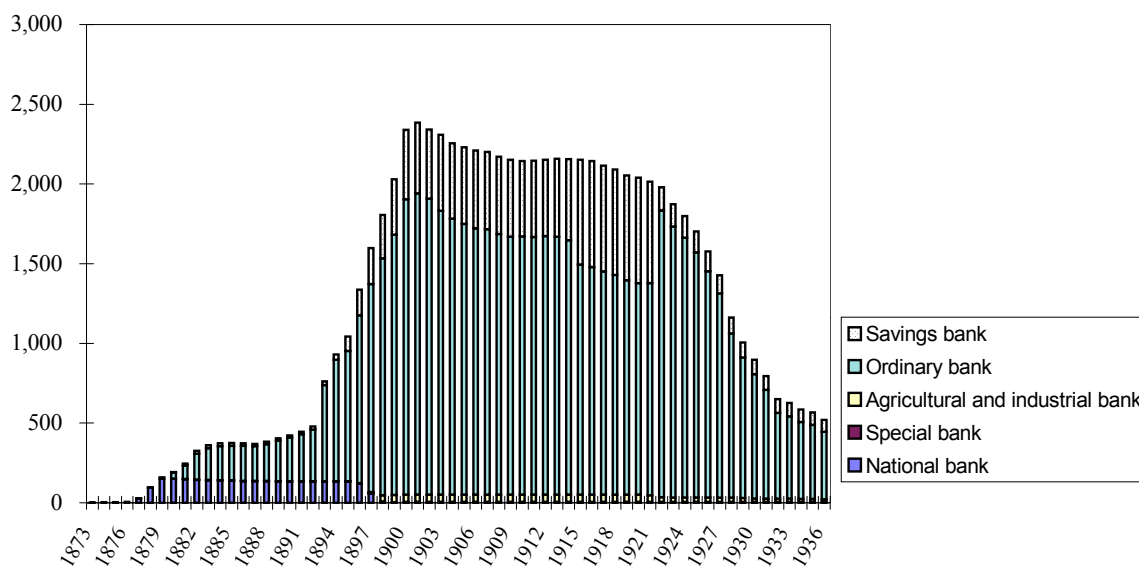
Next, using the data on interlocking, we examine the influence of the interlocking on bank performance, in order to test the organ bank hypothesis.

The paper is organized as follows. Section 2 briefly addresses the pre-war history of the Japanese banking industry. In section 3, we describe our database of directors and auditors as well as the findings derived from it. Section 4 is an econometric analysis of the influence of the interlocking of directors and auditors on bank performance. In section 5 we conclude the paper by discussing the implication of the paper to evolutionary dynamics of corporate governance and financial system in Japan.

## 2. A Brief History of the Pre-war Banking Industry

The modern history of the banking industry in Japan began in 1873 with the National Bank Act. The national banks were private banks that were granted the privilege to issue bank notes. After the revision of the Act in 1876, suspending the convertibility of national bank notes, the number of national banks rapidly increased to 153, the upper limit prescribed by the National Bank Act in 1879 (Figure 1). In 1882 the Bank of Japan (BOJ) was established as the central bank, resulting in a further revision of the National Bank Act that obliged national banks to become ordinary banks within twenty years of their establishment (Asakura (1988) pp.36-37; Teranishi (1982) pp.35-37).

**Figure 1. Number of Banks**



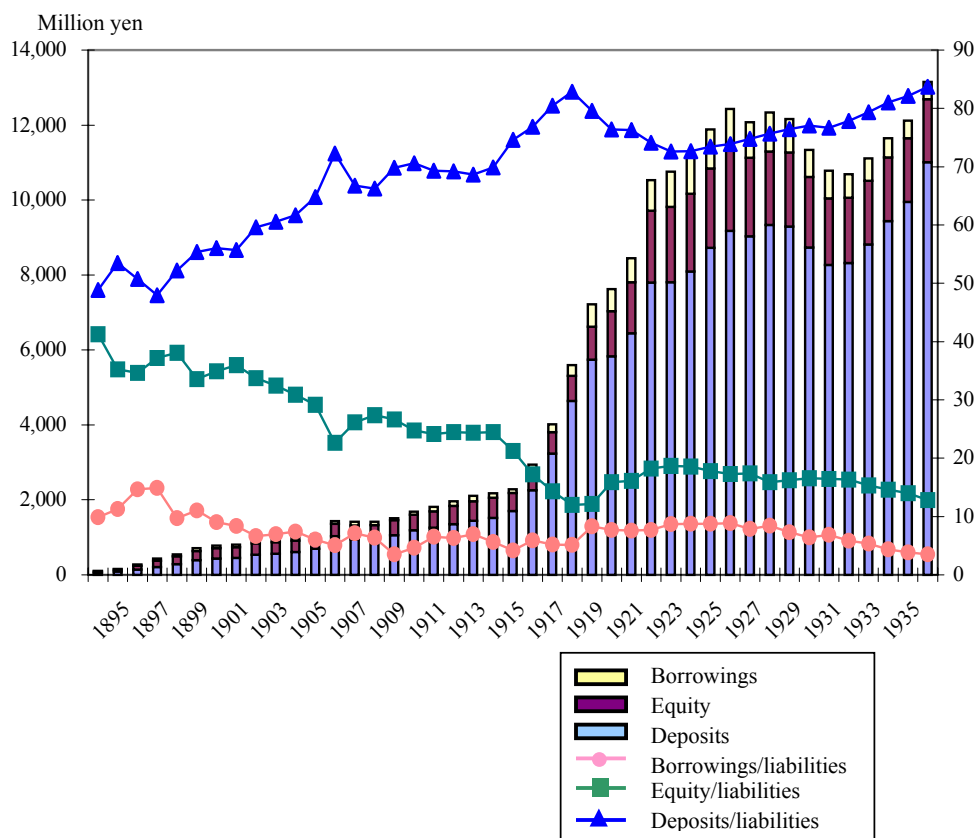
In 1893, the Bank Act was enacted to provide a legal framework for ordinary banks, and this brought about a rapid increase in the number of such banks (Figure 1). In 1901 the number of ordinary banks approached the peak of the pre-war period, which was in 1890. While deposits in ordinary banks grew rapidly, the ratio of deposits to banks' equity remained low until the early twentieth century (Figure 2). In fact, in 1901 equity accounted for 36% of the total liabilities of ordinary banks. In other words,

lending their own funds was still a substantial part of ordinary banks' activities in those days, and in this sense their nature was substantially different from that of modern banks based on deposits.

The ratio of deposits increased remarkably in the 1900s due to a change in the BOJ's policy. Until 1897, the BOJ gave loans freely to private banks. As a result, many ordinary banks depended heavily on its borrowings, and earned profits from the interest rate spread between borrowings from the BOJ and loans to private companies. In 1897 the BOJ began lending to non-banking companies and individuals in order to prevent the banks from earning profits from the interest rate spread (Bank of Japan (1983a) p.16). This policy change pushed ordinary banks to decrease their borrowings from the BOJ and to seriously seek deposits. At the same time, the number of ordinary banks began to decrease, with many falling into bankruptcy during the bank panics in 1901 and 1907.

In the 1910s, the First World War had a substantial influence on the banking industry as well as on the Japanese economy as a whole. In this period, deposits increased rapidly due to economic growth and an expansionary monetary policy. Consequently, the equity-liabilities ratios of the ordinary banks fell to less than 20% (Figure 2). In other words, the nature of the ordinary banks approached that of modern banks, based on deposits, at least in terms of the composition of liabilities.

**Figure 2. Composition of Bank Liabilities**



On the other hand, during the war boom, many ordinary banks loaned large amounts to companies that were expanding rapidly, especially heavy industries and the chemical industry. In many cases, those companies faced difficulties when the First World War ended and international competition was revived, which, in turn meant that the bank loans became bad credit. Because, as mentioned above, the equity-liabilities ratio of banks had decreased in the 1910s, the deterioration of their assets seriously damaged their financial conditions; this was the root cause of the instability of the financial market in the 1920s.

During the bank panic of 1920 many banks, especially small-sized ones, were closed down. In order to secure stability in the financial market, the government initiated a reform of the industrial organization of the banking industry in the early 1920s by imposing regulations upon entry, and promoting mergers (Goto (1991) p.19; Okazaki (2001)). However, the great earthquake in Tokyo in 1923 further destabilized the financial market. As a result of the earthquake and the ensuing fires, large numbers of the assets that were collateral for bank loans, or were expected to produce cash flows to repay the loans, were either destroyed or burnt down.

In 1926 the government decided to take fundamental measures to restructure the financial system, proposing two draft laws to dispose of the bad loans. However, the National Diet opposed these bills on the ground that they favoured capitalists connected to the government. In the Diet deliberations, the Minister of Finance made a notorious slip of the tongue concerning the closure of certain banks, triggering the financial crisis of 1927.

The Showa Financial Crisis was the largest in the financial history of Japan. Forty-five banks closed due to bank runs. They made up 2.91% of the total number of ordinary and savings banks, and accounted for 9.02% of total deposits. Among them was Jugo Bank, one of the top ten banks, which had transactions with the Imperial Family. Another casualty was Taiwan Bank, the special bank set up for developing Taiwan [sic], and which acted as its central bank. The magnitude of the financial crisis can be measured by the shift of deposits from banks to the postal bureau savings system. In 1927, while the total outstanding deposits of all banks decreased, postal deposits increased by 30.1% (Toyo Keizai Shinposha (1991) p.365, p.401).

In 1928, following the Crisis, the Bank Law was enacted, compelling ordinary banks to be joint-stock companies and to hold more than one million yen in capital.<sup>1</sup> Existing banks whose capital was under the lower limit—unqualified banks—were obliged to clear it within seven years. At the same time, ordinary banks were prohibited from conducting businesses other than those relating to banking. In addition, the executive directors and managers of ordinary banks were prohibited from engaging in other businesses. The restrictions on subsidiary businesses of banks and their executive directors and managers reflected the government's recognition that the organ bank relationship was the basic cause of the unsound financial system.

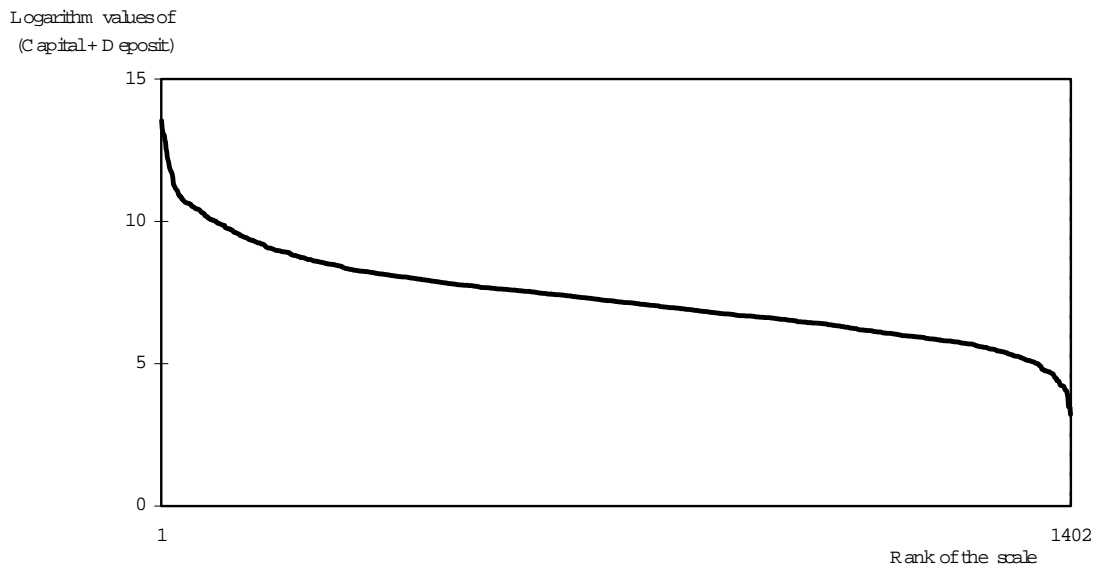
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<sup>1</sup> Bank capital was required to be two million yen in Tokyo and Osaka, and 500,000 yen in towns and villages with a population smaller than ten thousand.

### 3. Interlocking between Banks and Non-banking Companies

According to the Ministry of Finance (1928), there were 1,420 ordinary banks at the end of 1926. Financial data for 1,402 of these are available in the Ministry of Finance (1928). Figure 3 indicates the distribution of these banks in terms of [deposit + equity]. The vertical axis denotes the logarithm of [deposit + equity], and the horizontal axis the rank of banks in terms of [deposit + equity]. The Herfindahl index of deposit was 0.019, meaning that the market structure of the banking industry was highly competitive in pre-war Japan.<sup>2</sup>

**Figure 3. Scale Distribution of the Ordinary Banks**



In the following section we will measure the extent of bank-firm connections among those ordinary banks. We have approached this task by compiling a comprehensive database of the directors and auditors of banks and non-banking companies. The source of the data on the directors and auditors is Shogyo Koshinjo (1926) (*Zenkoku Shogaisha Yakuinroku*, 1926 issue). Shogyo Koshinjo, the first private credit bureau in Japan, published *Zenkoku Shogaisha Yakuinroku* every year from 1893 to 1944. *Zenkoku Shogaisha Yakuinroku* is remarkable, not only because it continued to be published for a long time, but also because it contains rich information on a wide range of companies (Yui and Asano (1989)). It covers a large number of banks, non-banking joint-stock companies, and non-banking partnerships. In addition, it provides

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<sup>2</sup> Okazaki (2001) confirms the existence of a competitive market structure in the banking industry, using data on entry and exit.

information on company names, year of establishment, capital, and names and addresses of the directors, auditors and major employees.

Several previous studies have extensively utilized *Zenkoku Shogaisha Yakuinroku*. Wada, Kobayakawa and Shiomi (1992a), (1992b), (1993), and Kobayakawa, Suzuki and Wada (1999a), (1999b), compiled databases of directors based on the 1898, 1907 and 1918 issues to identify the networks of directors and investors. Using the database of Kobayakawa, Suzuki and Wada (1999a), Miwa and Ramseyer (2000) analysed the monitoring function of the “prominent directors”, namely those who held posts as directors in multiple companies, focusing on the case of the cotton spinning industry in the late nineteenth century.

However, in this paper we focus on the interlocking connections of directors and auditors between banks and non-banking companies. In addition to identifying these connections, we examine the influence of this interlocking on bank performance. Since our primary motivation is to test the organ bank hypothesis, we have selected as our object year 1926, as it was just before the Showa Financial Crisis, which is supposed to have been caused by the organ bank relationship. For this purpose, we newly compiled a database of directors and the auditors, based on the 1926 issue of *Zenkoku Shogaisha Yakuinroku*.

There are data for 16,558 companies, including banks, in Shogyo Koshinjo (1926). Of these companies, 15,060 were located in the present territory of Japan and the remaining 1,498 were located in Karafuto (present-day Sakhalin), Taiwan (present-day Taipei, China), Korea, Manchuria and other areas. Out of the 15,060 companies in Japan’s present territory, 1,427 were banks, 11,578 were non-banking joint-stock companies, and 2,055 were non-banking partnerships. We can check the completeness of the coverage of Shogyo Kishinjo (1926) by comparing the above number of observations with the number of companies registered in the Ministry of Industry and Commerce (1928) (*Kaisha Tokeihyo*, 1926 issue). *Kaisha Tokeihyo* consists of corporate statistics edited by the Ministry of Industry and Commerce, based on a census survey.

According to the Ministry of Industry and Commerce (1928), there were 36,068 companies, including banks, in Japan at the end of 1926 (Table 1). 1,506 of them were banks, 16,251 non-banking joint-stock companies, and 18,311 non-banking partnerships. Therefore, the coverage ratio of Shogyo Koshinjo (1926) is 41.8% (15,060/36,068) in terms of the total number of companies. The coverage ratios for banks and non-banking joint-stock companies are as high as 94.8% and 71.2% respectively. On the other hand, the coverage ratio for non-banking partnership companies is only 11.2%. The low coverage ratio of non-banking partnership companies is a weakness of Shogyo Koshinjo (1926), especially for research on family-based companies. However, according to the Ministry of Industry and Commerce (1928), in terms of capital, the share of non-banking partnership companies was only 10.4% of the total, which may mitigate the weakness.

**Table 1. Coverage of Zenkoku Shogaisha Yakuinroku**

	Categories of the companies	Number of observations
A. Zenkoku Shogaisha Yakuinroku, 1926 issue	Total	15,060
	Banks	1,427
	Non-banking joint-stock companies	11,578
	Non-banking companies of the other form	2,055
B. Kaisha Tokeihyo, 1926 issue	Total	36,068
	Banks	1,506
	Non-banking joint-stock companies	16,251
	Non-banking companies of the other form	18,311
C. Coverage (A/B*100, %)	Total	41.8
	Banks	94.8
	Non-banking joint-stock companies	71.2
	Non-banking companies of the other form	11.2

Note: All the data are concerning companies in the present territory of Japan.

Adding up the common set of ordinary banks in Shogyo Koshinjo (1926) and the above-mentioned 1,402 banks in the Ministry of Finance data (1928), we have 1,199 samples. Table 2 shows the basic statistics of these samples. CAPDEP (=equity/deposit) and LOANDEP (=loan/deposit) indicate solvency. RESDEP (=reserve/deposit) is an index of liquidity as well as solvency. The maximum values of CAPDEP (188.56) and the excess kurtosis (433.6) suggest that there are outliers in the observations. We then excluded 9 of the 1,199 observations for which CAPDEP was over 9.4 (the average plus one S.E.) as outliers. The basic statistics of the remaining 1,190 samples are shown in Table 2.

To identify interlocking positions between banks and non-banking companies, we arranged the data of directors and auditors by person. For example, if a person who was a director of a certain bank was at the same time a director of a certain non-banking company, we identified that as one interlock. Meanwhile, if a person who was a director of a certain bank was at the same time a director of two non-banking companies, we identified that as two interlocks. In addition, to deal with the problem of different people with identical family and personal names, we utilized the information on addresses by prefecture.

**Table 2. Basic Statistics of the Bank Performance**

a. 1,402 samples

	CAPDEP	LOANDEP	RESDEP
N	1,402	1,402	1,402
Average	1.27	2.09	0.25
St.dev	9.13	10.13	4.08
Median	0.40	1.21	0.03
Max	188.56	310.45	141.07
Min	0.01	0.10	0.00
Skewness	18.1	23.5	31.0
Excess kurtosis	346.5	651.8	1035.3

b. 1,199 samples

	CAPDEP	LOANDEP	RESDEP
N	1,199	1,199	1,199
Average	1.12	2.04	0.14
St.dev	8.22	10.25	1.65
Median	0.41	1.21	0.03
Max	188.56	310.45	51.99
Min	0.02	0.10	0.00
Skewness	20.2	24.9	28.2
Excess kurtosis	433.6	706.1	844.5

c. 1,190 samples (excluding 9 outliers)

	CAPDEP	LOANDEP	RESDEP
N	1,190	1,190	1,190
Average	0.64	1.57	0.07
St.dev	0.84	3.03	0.12
Median	0.41	1.20	0.03
Max	8.49	83.80	1.86
Min	0.02	0.10	0.00
Skewness	4.9	21.0	5.4
Excess kurtosis	31.8	517.1	53.2

**Table 3. Interlocking of Directors and Auditors between Banks and Non-Banking Companies**

**a. All Directors and Auditors of 1,190 banks**

Positions in the non-banking companies	Number of banks with interlocking	Ratio to all observations	Number of cases of interlocking	Average per bank
Total	1,030	86.6	9,280	7.80
Top executives	549	46.1	1,322	1.11
Executive directors	185	15.5	249	0.21
Ordinary directors	930	78.2	5,150	4.33
Auditors	785	66.0	2,424	2.04

**b. Top Executives of 1,190 banks**

Positions in the non-banking companies	Number of banks with interlocking	Ratio to all observations	Number of cases of interlocking	Average per bank
Total	515	43.3	2,496	2.10
Top executives	202	17.0	318	0.27
Executive directors	28	2.4	33	0.03
Ordinary directors	377	31.7	862	0.72
Auditors	220	18.5	341	0.29

**c. Executive Directors of 1,190 banks**

Positions in the non-banking companies	Number of banks with interlocking	Ratio to all observations	Number of cases of interlocking	Average per bank
Total	253	21.3	722	0.61
Top executives	50	4.2	65	0.05
Executive directors	29	2.4	33	0.03
Ordinary directors	178	15.0	372	0.31
Auditors	136	11.4	224	0.19

**d. Ordinary Directors of 1,190 banks**

Positions in the non-banking companies	Number of banks with interlocking	Ratio to all observations	Number of cases of interlocking	Average per bank
Total	853	71.7	4,499	3.78
Top executives	346	29.1	636	0.53
Executive directors	89	7.5	109	0.09
Ordinary directors	730	61.4	2,601	2.19
Auditors	518	43.6	1,090	0.92

**e. Auditors of 1,190 banks**

Positions in the non-banking companies	Number of banks with interlocking	Ratio to all observations	Number of cases of interlocking	Average per bank
Total	673	56.6	1,562	1.31
Top executives	184	15.5	302	0.25
Executive directors	64	5.4	73	0.06
Ordinary directors	526	44.2	1,304	1.10
Auditors	406	34.1	759	0.64



Table 3-a summarizes the results. As many as 1,030 banks, or 86.6% of the total observations, had directors or auditors who held posts as directors or auditors in non-banking companies.<sup>3</sup> Further, the average number of interlocking positions per bank was 7.80. Table 3-a shows the data broken down by position in the non-banking companies. We classified the positions of directors and auditors into four categories, namely (1) top executives (president, chairman, etc), (2) executive directors, (3) ordinary directors, and (4) auditors.<sup>4</sup> For example, those banks in which at least one director or auditor had the post of top executive of a non-banking company numbered 549, or 46.1% of the total observations.

Tables 3-b, 3-c, 3-d, and 3-e show the data broken down by the position in the bank. In 43.3% of the observations, the top executives of the banks held positions as directors or auditors of non-banking companies, and the average number of interlocks of the banks' top executives was 2.11. Meanwhile, the percentage of banks in which at least one ordinary director had a position as director or auditor of a non-banking company was 71.7%, and the average number of interlocks of the banks' executive directors was 3.78. From these results, we can safely say that most of the ordinary banks were connected with non-banking companies through the interlocking of directors and auditors.

Table 4 is a breakdown of Table 3 by the scale of banks. We split our 1,190 observations into three groups in terms of paid in capital following Teranishi (1982). The first point to be stressed is that the interlocking of directors and auditors with non-banking companies was pervasive across the three groups. At the same time, in relative terms, interlocking with non-banking companies was more pervasive among the large-sized banks. The percentage of banks with interlocking positions, as well as the average number of interlocks, was largest in the large-sized banking group. The situation is the same when we break down the data by position in the non-banking companies. In any sub-category of the data, both the percentage of banks with interlocking positions and the average number of interlocks were largest in the large-sized group (Table 4-a). In addition, when we break down the data by position in the bank, the situation is almost the same (Table 4-b, 4-c, 4-d, 4-e).

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<sup>3</sup> If we use the data of Shibuya et al. (1983), the ratio is 58.8%. See the Appendix.

<sup>4</sup> Some companies did not have a president or a chairman. In this case, we identified the executive director as the top executive.

**Table 4. Interlocking of Directors and Auditors between Banks  
and Non-Banking Companies by Scale of Banks**

**a. All Directors and Auditors of 1,190 banks**

Positions in the non-banking companies	Classes by paid-in capital	Number of observations	Number of banks with interlocking	Ratio to all observations(%)	Average per bank
Total	Total	1,190	1,030	86.6	7.7
	-1,000 thousand yen	983	831	84.5	5.5
	1,000-10,000	190	182	95.8	16.5
	10,000-	17	17	100.0	34.6
Top executives	Total	1,190	549	46.1	1.1
	-1,000 thousand yen	983	382	38.9	0.8
	1,000-10,000	190	150	78.9	2.5
	10,000-	17	17	100.0	5.8
Executive directors	Total	1,190	185	15.5	0.2
	-1,000 thousand yen	983	117	11.9	0.1
	1,000-10,000	190	60	31.6	0.5
	10,000-	17	8	47.1	0.9
Ordinary directors	Total	1,190	930	78.2	4.3
	-1,000 thousand yen	983	732	74.5	3.2
	1,000-10,000	190	181	95.3	9.2
	10,000-	17	17	100.0	17.9
Auditors	Total	1,190	785	66.0	2.0
	-1,000 thousand yen	983	599	60.9	1.4
	1,000-10,000	190	169	88.9	4.4
	10,000-	17	17	100.0	10.0

**b. Top Executives of 1,190 banks**

Positions in the non-banking companies	Classes by paid-in capital	Number of observations	Number of banks with interlocking	Ratio to all observations(%)	Average per bank
Total	Total	1,190	515	43.3	1.3
	-1,000 thousand yen	983	380	38.7	1.0
	1,000-10,000	190	120	63.2	2.7
	10,000-	17	15	88.2	5.1
Top executives	Total	1,190	202	17.0	0.3
	-1,000 thousand yen	983	132	13.4	0.2
	1,000-10,000	190	59	31.1	0.6
	10,000-	17	11	64.7	1.2
Executive directors	Total	1,190	28	2.4	0.0
	-1,000 thousand yen	983	20	2.0	0.0
	1,000-10,000	190	6	3.2	0.0
	10,000-	17	2	11.8	0.1
Ordinary directors	Total	1,190	377	31.7	0.7
	-1,000 thousand yen	983	271	27.6	0.5
	1,000-10,000	190	94	49.5	1.5
	10,000-	17	12	70.6	2.4
Auditors	Total	1,190	407	34.2	0.3
	-1,000 thousand yen	983	335	34.1	0.2
	1,000-10,000	190	63	33.2	0.6
	10,000-	17	9	52.9	1.4

**c. Executive Directors of 1,190 banks**

Positions in the non-banking companies	Classes by paid-in capital	Number of observations	Number of banks with interlocking	Ratio to all observations(%)	Average per bank
Total	Total	1,190	253	21.3	0.6
	-1,000 thousand yen	983	157	16.0	0.4
	1,000-10,000	190	84	44.2	1.5
	10,000-	17	12	70.6	2.5
Top executives	Total	1,190	50	4.2	0.1
	-1,000 thousand yen	983	35	3.6	0.0
	1,000-10,000	190	14	7.4	0.1
	10,000-	17	1	5.9	0.1
Executive directors	Total	1,190	50	4.2	0.0
	-1,000 thousand yen	983	35	3.6	0.0
	1,000-10,000	190	14	7.4	0.1
	10,000-	17	1	5.9	0.0
Ordinary directors	Total	1,190	178	15.0	0.3
	-1,000 thousand yen	983	107	10.9	0.2
	1,000-10,000	190	62	32.6	0.8
	10,000-	17	9	52.9	1.4
Auditors	Total	1,190	136	11.4	0.2
	-1,000 thousand yen	983	73	7.4	0.1
	1,000-10,000	190	54	28.4	0.5
	10,000-	17	9	52.9	1.1

**d. Ordinary Directors of 1,190 banks**

Positions in the non-banking companies	Classes by paid-in capital	Number of observations	Number of banks with interlocking	Ratio to all observations(%)	Average per bank
Total	Total	1,190	853	71.7	3.7
	-1,000 thousand yen	983	671	68.3	2.7
	1,000-10,000	190	165	86.8	7.8
	10,000-	17	17	100.0	15.6
Top executives	Total	1,190	347	29.2	0.5
	-1,000 thousand yen	983	228	23.2	0.4
	1,000-10,000	190	105	55.3	1.2
	10,000-	17	14	82.4	2.9
Executive directors	Total	1,190	89	7.5	0.1
	-1,000 thousand yen	983	52	5.3	0.1
	1,000-10,000	190	33	17.4	0.2
	10,000-	17	4	23.5	0.4
Ordinary directors	Total	1,190	730	61.3	2.2
	-1,000 thousand yen	983	554	56.4	1.6
	1,000-10,000	190	159	83.7	4.5
	10,000-	17	17	100.0	8.5
Auditors	Total	1,190	518	43.5	0.9
	-1,000 thousand yen	983	376	38.3	0.7
	1,000-10,000	190	125	65.8	1.9
	10,000-	17	17	100.0	3.9

### e. Auditors of 1,190 banks

Positions in the non-banking companies	Classes by paid-in capital	Number of observations	Number of banks with interlocking	Ratio to all observations (%)	Average per bank
Total	Total	1,190	674	56.6	2.0
	-1,000 thousand yen	983	504	51.3	1.4
	1,000-10,000	190	153	80.5	4.3
	10,000-	17	17	100.0	11.4
Top executives	Total	1,190	184	15.5	0.3
	-1,000 thousand yen	983	100	10.2	0.2
	1,000-10,000	190	73	38.4	0.6
	10,000-	17	11	64.7	1.6
Executive directors	Total	1,190	64	5.4	0.1
	-1,000 thousand yen	983	39	4.0	0.0
	1,000-10,000	190	21	11.1	0.1
	10,000-	17	4	23.5	0.5
Ordinary directors	Total	1,190	526	44.2	1.1
	-1,000 thousand yen	983	378	38.5	0.8
	1,000-10,000	190	133	70.0	2.3
	10,000-	17	15	88.2	5.6
Auditors	Total	1,190	406	34.1	0.6
	-1,000 thousand yen	983	282	28.7	0.5
	1,000-10,000	190	113	59.5	1.3
	10,000-	17	11	64.7	3.7

The results derived from our database are striking indeed. Nearly 90% of the ordinary banks were connected to non-banking companies through the interlocking of directors and auditors. Moreover, the interlocking was more pervasive in the large-sized banks. These facts are consistent with the conjecture of Kato (1957) concerning the pervasiveness of the organ bank relationship. However, the interlocking itself does not mean that there was an organ bank relationship in the sense discussed in Section 1. It is necessary to examine in more detail the nature and influence of the interlocking shown in Tables 3 and 4.

For this purpose, we focus on the cases of the ten banks with the largest numbers of interlocks: Yokohama Koshin Bank (81), Bushu Bank (71), Mitsui Bank (70), Shimotsuke Chuo Bank (65), Joshu Bank (64), Mitsubishi Bank (64), Meiji Bank (64), Yasuda Bank (63), Yokkaichi Bank (54), and Enshu Bank (52).<sup>5</sup> Since it is difficult to check all the individual cases of interlocking positions, we concentrate on the interlocking of these banks' top executives.

The interlocking of these ten banks' top executives is listed in Table 5. As the fourth and fifth columns indicate, it is remarkable that eight of the ten banks' presidents were large shareholders in the banks. In this sense, the management of those banks was not separated from ownership. In addition, in many of the cases in which the bank presidents directed or audited non-banking companies, they were large shareholders of those companies. As in the banking industry, the management of those non-banking companies was not separated from ownership. In other words, in many cases the interlocking of directors and auditors was based on the fact that the banks and non-banking companies shared common large shareholders. This is consistent with the organ bank hypothesis.

At the same time, this implies that the nature of director interlocking between banks and non-banking companies in pre-war Japan was essentially different from that

<sup>5</sup> The numbers in parentheses denote the number of interlocks.

in the main bank relationship in post-war Japan.<sup>6</sup> In post-war Japan, the main bank, not its shareholders, dispatches directors to companies to monitor them. In addition, “contingent governance” is characteristic of corporate governance in the Japanese system under the main bank relationship. Contingent governance means that the governance of a company is contingent on its financial condition. When a company falls into financial distress, the main bank intervenes in management to restructure it by dispatching directors (Aoki, Sheard and Patrick (1994); Aoki (2001)). In this sense, under the post-war main bank system, the causality between financial condition and personal connections ran from the former to the latter. On the other hand, Table 5 suggests that this causality was not universal in pre-war Japan, as the interlocking of positions basically reflected the common ownership structure between the banks and non-banking companies.

This view can be supported by looking at several cases in Table 5 for which biographical information on the bank presidents is available. The president of Yokohama Koshin Bank, Tomitaro Hara, was the president of Hara Partnership, a major silk export company (Yokohama City ed. (1965) p.383). He held five positions as an ordinary director and three positions as an auditor in non-banking companies other than Hara Partnership. He not only fully owned Hara Partnership, but was also a large shareholder of the companies he directed or audited. He was the second largest shareholder of Yokohama Koshin Bank (Table 5). The bank was established in 1920 to facilitate the liquidation of Nanajushi Bank, which was closed during the financial crisis of that year. Nanajushi Bank was a typical organ bank, whose president was Sobei Mogi, the president of Mogi Partnership, another major silk export company. In the 1910s Mogi Partnership raised funds, mainly from Nanajushi Bank, to expand its business, and this resulted in the bankruptcies of both (Yokohama City ed. (1971) p.679). Yokohama Koshin Bank was financed by the major business people of Yokohama, including Tomitaro Hara, who became the first president of the bank.

The president of Bushu Bank, Heizaburo Okawa, had relationships with many companies (Table 5), but his central business was the paper and pulp industry. He established the paper company Karafuto Kogyo in 1914, and then in 1919 took over Fuji Seishi, Japan’s second largest paper company. Okawa became the president of Bushu Bank in 1920, after the previous president, a cousin of his, fell ill (Takegoshi (1936) p.303, p.323-327, p.369-370). At the same time, Okawa was the top shareholder of Bushu Bank (Table 5).

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<sup>6</sup> Since dispatched directors usually resign from the bank, interlocking of the pre-war Japan type does not occur in the post-war main banking system.

**Table 5. Interlocking and Investment of the Top Executives of the Selective Banks**

Name	Company Name	Position	Share of the stocks(%)	Ranking	Remarks
Tomitaro Hara	Yokohama Koshin Bank	President	9.8	2	
	Nihon Yusen	Ordinary director	-		
	Toyo Seitetsu	Auditor	-		
	Taisho Kaijo Kasai	Ordinary director	1.0	4	
	Yokohama Kasai Kaijo Hoken	Ordinary director	4.6	5	
	Yokohama Seimei Hoken	Auditor	-		
	Taisei	Ordinary director	n.a.		
	Hara Partnership	President			
	Minami Manshu Tetsudo	Auditor	0.5	4	
Heizaburo Okawa	Nikka Sanshi	Ordinary director	1.2	4	
	Bushu Bank	President	2.8	1	Okawa Partnership
	Nihon Feruto	Ordinary director	30.8	1	Fuji Seishi, Karafuto Kogyo
	Nihon Konkurito Kogyo	Ordinary director	1.0	9	
	Nihon Sakusan Seizo	Ordinary director	n.a.		
	Nichiei Sekken	Ordinary director	n.a.		
	Hojo Tanko	Ordinary director	n.a.		
	Hokkaido Dento	Ordinary director	36.0	1	Fuji Seishi, personal
	Tokai Kogyo	President	3.8	6	Okawa Partnership
	Toyo Kisen	Ordinary director	1.1	3	Okawa Partnership
	Tokyo Chika Tetsudo	Ordinary director	1.5	5	
	Tokyo Kanaami	Ordinary director	26.0	1	Fuji Seishi, Karafuto Kogyo
	Tokyowan Umetate	Executive director	5.4	4	Okawa Partnership
	Okawa Tanaka Jimusho	President	n.a.		
	Otaki Kozan	Ordinary director	n.a.		
	Oshima Seikojo	President	4.2	4	Okawa Partnership
	Dainihon Jidosha	Ordinary director	n.a.		
	Tsurumi Rinko Tetsudo	Ordinary director	5.0	7	
	Keihin Unga	Ordinary director	0.8	8	Okawa Partnership
	Fuji Seishi	President	5.9	2	Okawa Partnership
	Fujigawa Denryoku	Ordinary director	n.a.		
	Enkaishu Mokuzai	Ordinary director	n.a.		
	Asano Semento	Ordinary director	4.5	3	Okawa Partnership
	Kyodo Parupu	Ordinary director	n.a.		
	Kyodo Yoshi	Ordinary director	n.a.		
	Joto Denki Kido	President	3.4	4	Okawa Partnership
	Ninju Seimei	Ordinary director	-		
	Seibu Tetsudo	Ordinary director	2.2	3	Okawa Partnership
	Ishiwata Sureto	Auditor	1.0	8	
	Okawa Partnership	Representative partner			
	Osaka Hoteru	Ordinary director	2.5	4	Okawa Partnership
	Nakanoshima Seishi	Ordinary director	3.7	5	Okawa Partnership
	Teikoku Jinzo Hiryo	Ordinary director	-		
	Nihon Kokan	President	4.6	3	Okawa Partnership
	Shizuoka Denryoku	President	38.5	1	Personal, Okawa Partnership
	Shizuoka Denki Tetsudo	President	1.2	10	Okawa Partnership
	Kumamoto Denki	Ordinary director	6.1	3	Karafuto Kogyo, Okawa Partnership
	Kumamoto Denki Kido	President	23.0	1	Karafuto Kogyo, Okawa Partnership
	Kizan Tetsudo	President	n.a.		
	Kyushu Seishi	President	12.1	1	Okawa Partnership
Toho Tanko	Ordinary director	n.a.			
Karafuto Kogyo	President	7.2	1	Okawa Partnership	
Karafuto Tetsudo	Ordinary director	53.8	1	Fuji Seishi, personal	
Karafuto Kisen	President	32.5	1	Karafuto Kogyo, Okawa Partnership	
Karafuto Seishigenryo	Chairman	n.a.			
Chosen Tetsudo	Auditor	1.6	7	Okawa Partnership	
Chosen Denki Kogyo	Auditor	1.0	1	Okawa Partnership	
Oryokuko Seishi	Vice Chairman	28.8	2	Karafuto Kogyo, Okawa Partnership	
Genemon Mitsui	Mitsui Bank	President	0.3	10	
	Mitsui Bussan	Representative director	-		
	Mitsui Partnership	Executive partner			
Matsujito Ueno	Shimotsuke Chuo Bank	President	-		
	Higashino Tetsudo	Auditor	-		
	Utsunomiya Gas	President	2.9	9	
	Shimotsuke Seishi	Ordinary director	n.a.		
Sohei Ozawa	Joshu Bank	President	6.3	1	
	Daini Azumagawa Denryoku	Ordinary director	n.a.		
	Daiwa Insatsu	President	n.a.		
	Azumagawa Denryoku	Ordinary director	n.a.		
	Ozawa Shoten	Ordinary director	n.a.		
	Takasaki Soko	Ordinary director	n.a.		
	Marugami Ueno Unshoten	Representative director	n.a.		
	Joshu Kenshi Boseki	Ordinary director	1.9	8	
	Joshin Denki	Vice president	2.5	4	
	Shinei Un'yu	Ordinary director	n.a.		

Manzo Kushida	Mitsubishi Bank	Chairman	-		
	Nihon Musen Denshin	Ordinary director	-		
	Hodogaya Gorufu	Auditor	-		
	Tokyo Kaijo Kasai	Ordinary director	n.a.		
	Kokusai Tsushin	Ordinary director	7.5	1	
	Meiji Seimei	Ordinary director	-		
	Mitsubishi Kaijo Kasai Hoken	Ordinary director	n.a.		
	Mitsubishi Soko	Ordinary director	88.5	1	Mitsubishi Ginko
	Mitsubishi Zosen	Auditor	0.2	3	Mitsubishi Ginko, personal
	Mitsubishi Kogyo	Auditor	3.1	2	Mitsubishi Ginko
	Mitsubishi Shoji	Auditor	0.5	3	Mitsubishi Ginko, personal
	Mitsubishi Seitetsu	Auditor	0.2	3	Mitsubishi Ginko, personal
	TokyoKoshinjo	Chairman	•••		
	Shigehiko Ikoma	Meiji Bank	President	1.5	3
Bengi Unso		Ordinary director	n.a.		
Toyo Soko		Ordinary director	8.7	1	Meiji Ginko
Nagoya Hoteru		Ordinary director	n.a.		
Zenjiro Yasuda	Yasuda Bank	President	30.6	1	Yasuda Hozensha, personal
	Toyo Kasai Hoken	Advisor	22.8	2	Yasuda Hozensha
	Toykowan Umetate	Ordinary director	21.4	2	Yasuda Hozensha
	Asano Semento	Ordinary director	5.4	2	Yasuda Ginko
	Yasuda Hozensha	Representative partner			
	Yasuda Shintaku	President	16.7	1	
Kazue Kumazawa	Seiryu Ginko	Advisor	n.a.		
	Yokkaichi Bank	President	11.2	1	
	Hattori Seisakujo	Auditor	8.0	5	
	Nihon Iou	Ordinary director	n.a.		
	Nihon Feruto	Auditor	-		
	Hojo Tanko	Auditor	n.a.		
	Hokkaido Dento	Auditor	-		
	Tokai Kogyo	Auditor	3.2	7	
	Dainihon Jidosha	Ordinary director	n.a.		
	Daido Unso	Auditor	n.a.		
	Fuji Seishi	Ordinary director	1.2	9	
	Fujigawa Denryoku	Ordinary director	n.a.		
	Minamitaiheiyou Kogyo	Auditor	n.a.		
	Sumatakyo Suiryoku	Ordinary director	n.a.		
	Denki	Auditor	-		
	Daido Yoshiten	Auditor	-		
	Nihon Kokan	Auditor	2.3	6	
	Daitai Ringyo	President	28.3	1	
	Yokkaichi Tetsudo	Ordinary director	n.a.		
	Oigawa Tetsudo	Ordinary director	11.7	2	
Shizuoka Debryoku	Executive director	7.8	3		
Shizuoka Denkitetsudo	Executive director	25.4	1		
Kumamoto Denki Kido	Ordinary director	3.3	5		
Kyushu Seishi	Auditor	3.5	6		
Karafuto Kogyo	Auditor	1.7	8		
Karafuto Kisen	Ordinary director	2.8	6		
Yasutora Takabayashi	Enshu Bank	Executive director	2.6	3	
	Enshu Hoken Daiben	Ordinary director	n.a.		
	Enshu Denki Tetsudo	Auditor	-		
	Tenryu Mokuzai	Auditor	-		

Source: Our database (see the text); Tokyo Keizai Shinposha [1926]; Shareholder list of each company

#### 4. The Influence of the Governance Structure on Bank Performance

In this section we will qualitatively examine the influence of interlocking on bank performance. First, the relationship between interlocking and financial condition in 1926 can be checked by equation (1).

$$X = 1*INTERLOCK + 2*FORM + 3*URBAN \text{ const.} + \quad (1)$$

X denotes the variables indicating the bank's financial condition, namely CAPDEP, LOANDEP, RESDEP or ROA. The notations of the variables are the same as those in Section 3. INTERLOCK denotes the number of interlocks, namely, the number of positions as director and auditor of non-banking companies held by the directors and auditors of each bank. In addition, we use two control variables. FORM is a dummy variable, which equals 1 if the bank is a joint-stock company, and otherwise equals 0. URBAN is a dummy variable which equals 1 if the headquarters of the bank is located in an urban area, namely in Tokyo, Kanagawa, Aichi, Osaka, Kyoto or Hyogo prefectures. Otherwise it equals 0.

Equation (1) is estimated by OLS, except in the case of ROA. Since the profit data available from the Ministry of Finance (1928) was censored, the equations using ROA as a dependent variable are estimated using a tobit model. As reported in Table 6, the coefficients of INTERLOCK are negative and statistically significant in the equations with CAPDEP and ROA as dependent variables, implying that banks with interlocking were less profitable and had riskier financial structures.

It may be that poor financial condition itself lowered the valuation of the bank in the financial market. In fact, Yabushita and Inoue (1993) examined the relationship between bank's financial conditions and the probability of their closure during the financial crisis in 1927, and found that poor financial condition increased the probability of closure. Based on Yabushita and Inoue (1993), we estimated the following equations (equations (2) (5)).

$$CLS = \Pi \gamma_1 * INTERLOCK + \gamma_2 * FORM + \gamma_3 * URBAN \text{ const.} + \varepsilon \quad (2)$$

$$RUN = \Pi \gamma_4 * INTERLOCK + \gamma_5 * FORM + \gamma_6 * URBAN \text{ const.} + \varepsilon \quad (3)$$

$$BCON = \Pi \gamma_7 * INTERLOCK + \gamma_8 * FORM + \gamma_9 * URBAN \text{ const.} + \varepsilon \quad (4)$$

$$BCON = \Pi \gamma_{10} * INTERLOCK + \gamma_{11} * FORM + \gamma_{12} * URBAN + \gamma_{13} * CAPDEP + \gamma_{14} * LOANDEP + \gamma_{15} * RESDEP + \gamma_{16} * ROA \text{ const.} + \varepsilon \quad (5)$$

$\Pi ( )$  is a logistic cumulative distribution function. CLS is a dummy variable, which equals 1 if the bank was closed in the period from 1927 to 1929; otherwise it equals 0. RUN is a dummy variable which equals 1 if a run on the bank occurred in the period from 1927 to 1929, while BCON is a dummy variable which equals 1 if CLS or RUN is 1; otherwise it equals 0.

The information on bank closures and runs was collected from various issues of Ginko Jiko Geppo (Monthly Report on the Bank Issue) by the Bank of Japan, reprinted



in the Bank of Japan (1964). Unlike Yabushita and Inoue (1993), we focus not only on bank closures under the financial crisis, but also on bank closures and runs in ordinary periods.

The results of the Logit estimation are reported in Table 7. In equations (2), (3) and (4), the coefficients of INTERLOCK are positive and statistically significant at the 1% level.

These results indicate that interlocking lowered the valuation of banks in the financial market. Also, in equation (5), we find that low CAPDEP, high LOANDEP, low RESDEP, and low ROA increased the probability of bank closures and runs, which confirms Yabushita and Inoue (1993).

At the same time, in equation (5) the coefficient of INTERLOCK is positive and statistically significant at the 5% level, which means that interlocking was evaluated as additional negative information, adding to poor financial indices in the financial market.

Finally, we examine the valuation of the banks in the financial market using different data, namely the interest rate data by bank. In Toyo Keizai Shinposha (1928), the profit and loss accounts of 115 banks are available; of them, 114 are common to our samples. Although there may be a sample selection bias, it is the second best solution available under the constraint of data availability.

We regress the interest rates of deposit and loan to INTERLOCK. As reported in Table 8, in the equation using the deposit interest rate as a dependent variable, the coefficient of INTERLOCK is positive and statistically significant, implying that the market evaluated the deposits of banks with interlocking relationships as relatively risky. On the other hand, in the equation using loan interest rates as a dependent variable, the coefficient of INTERLOCK is not statistically significant.

While the banks with interlocking had to pay risk premiums to depositors to gather deposits, they were not able to earn higher interest rates from their loans. In other words, their profit margins were relatively small, which is consistent with the results of Table 6.

**Table 6. Estimation Results of Equation (1)**

<b>a. Dependent Variable : CAPDEP(OLS)</b>			
INTERLOCK	-4.64E-03	(-1.84)	*
FORM	0.330	(2.11)	**
URBAN	-8.75E-02	(-1.56)	
constant	0.377	(2.44)	**
adj-R squares	0.01		
<b>b. Dependent Variable : LOANDEP(OLS)</b>			
INTERLOCK	-2.99E-03	(-0.33)	
FORM	0.352	(0.63)	
URBAN	0.390	(1.94)	*
constant	1.1487	(2.06)	**
adj-R squares	0.00		
<b>c. Dependent Variable : RESDEP(OLS)</b>			
INTERLOCK	2.03E-04	(0.56)	
FORM	-5.71E-03	(-0.25)	
URBAN	2.83E-02	(3.51)	***
constant	6.92E-02	(3.11)	***
adj-R squares	0.01		
<b>d. Dependent Variable : ROA(Tobit)</b>			
INTERLOCK	-3.89E-04	(-4.03)	***
FORM	3.67E-03	(0.62)	
URBAN	-1.22E-02	(-5.68)	***
constant	4.47E-02	(7.49)	***
Log-likelihood Function	2227.2		
Limit	0		
Limit observations	57		
All observations	1190		

INTERLOCK	The number of interlocking the Bank had in 1926.
FORM	= 1 if the bank was the stock company, otherwise 0.
	= 1 if the bank was in the urban area
URBAN	(Tokyo, Kanagawa, Aichi, Osaka, Kyoto, Hyogo), otherwise 0.
CAPDEP	=[paid-in capital + fund]/deposits
LOANDEP	=loan/deposits
RESDEP	=reserve/deposits
ROA	=profit/[deposits+paid-in capital+fund]
t-values in parentheses	
***	significant at 1% level.
**	significant at 5% level.
*	significant at 10% level.

**Table 7. Estimation Results of Equations (2)-(5)**

Equation	(2)		(3)		(4)		(5)	
INTERLOCK	0.021	(2.05) **	0.050	(3.77) ***	0.031	(3.51) ***	0.022	(2.28) **
FORM	25.926	(0.00)	24.173	(0.00)	25.847	(0.00)	25.164	(0.00)
URBAN	0.652	(2.30) **	0.212	(0.37)	0.616	(2.39) **	0.336	(1.24)
CAPDEP							-1.636	(-2.94) ***
LOANDEP							0.107	(2.03) **
RESDEP							-4.718	(-2.27) **
ROA							-27.716	(-3.47) ***
constant	-29.304	(0.00)	-29.304	(0.00)	-29.078	(0.00)	-26.501	(0.00)
Log-likelihood Function		-219.9		-74.8		-256.1		-219.9
Maddala R-squares		0.01		0.01		0.02		0.01
dependent variable	CLS		RUN		BCON		BCON	
observations at one		56		15		70		56
observations at zero		1134		1175		1120		1134
total observations		1190		1190		1190		1190

INTERLOCK The number of interlocking the Bank had in 1926.  
 FORM equals 1 if the bank was the stock company, otherwise 0.  
 URBAN equals 1 if the bank was in the urban area (Tokyo, Kanagawa, Aichi, Osaka, Kyoto, Hyogo), otherwise 0.  
 CAPDEP [paid-in capital + fund]/deposits  
 LOANDEP loan/deposits  
 RESDEP reserve/deposits  
 ROA profit/[deposits+paid-in capital+fund]  
 CLS equals 1 if the bank closed within 3 years after the Showa Financial Crisis in 1927, otherwise 0.  
 RUN equals 1 if the bank was in the urban area (Tokyo, Kanagawa, Aichi, Osaka, Kyoto, Hyogo), otherwise 0.  
 BCON equals 1 if CLS or RUN is 1, otherwise 0.  
 t-values in parentheses  
 \*\*\* significant at 1% level.  
 \*\* significant at 5% level.  
 \* significant at 10% level.

**Table 8. Estimation of the Risk Premium**

**a. Dependent Variable: interest rate of deposit**

Estimation-2	dependent variable : deposit rate	
INTERLOCK	1.78E-04	(2.62) ***
DEPOSIT	-4.67E-05	(-4.69) ***
constant	4.53E-02	(26.33) ***
adj-R squares	0.16	

**b. Dependent Variable: interest rate of loan**

INTERLOCK	1.25E-04	(1.32)
LOAN	-6.14E-11	(-3.87) ***
constant	6.20E-02	(25.97) ***
adj-R squares	0.10	

t-values in parentheses  
 \*\*\* significant at 1% level.  
 \*\* significant at 5% level.  
 \* significant at 10% level.

## 5. Concluding Remarks

More than forty years ago, Kato (1957) posited the organ bank hypothesis, which has become one of the most basic hypotheses on the financial history of pre-war Japan. In this paper, we tested the organ bank hypothesis using quantitative data and econometric methodology.

First, we compiled a comprehensive database of company directors and auditors, based on the 1926 issue of *Zenkoku Shogaisha Yakuinroku* (Shogyo Koshinjo (1926)). Using the database we identified the interlocking of directors and auditors between banks and non-banking companies, and found that it was pervasive. In nearly 90% of ordinary banks, at least one director or auditor had a position as director or auditor of a non-banking company, and the average number of interlocking connections per bank was as large as 7.80. In addition, observations of banks by scale demonstrated that interlocking with non-banking companies was universal across the bank scale.

Second, using the interlocking variables, we examined the influence of interlocking of directors and auditors on bank performance. Through regression analyses we found that banks with interlocking were less profitable and had riskier financial structures, and that interlocking increased the probability of bank closures and runs. Further, the interest rates of the deposits of those banks with interlocking were relatively high, implying that the financial market evaluated interlocking negatively.

These findings support the organ bank hypothesis. In pre-war Japan, banking business practices, based on the connections of the directors and auditors, made the banking system unsound, and eventually caused the Showa Financial Crisis of 1927. In this sense, as we mentioned in Section 1, the Showa Financial Crisis can be seen as a precursor of the Asian Crisis of 1997.

Finally, we would like to discuss the evolutionary dynamics of the corporate governance and the banking system in economic development, integrating the results of this paper and our recent researches (Okazaki [2001]; Okazaki [2002]). It is said that organ bank relationship was already pervasive in early twentieth century (Kato [1957]). In this period, even Mitsui Bank, the largest zaibatsu bank loaned large amounts of funds to its affiliated companies (Tatsuki [1976]). On the other hand, instability of the financial market was not so serious compared with 1920's. The basic reason is supposed to be the high equity ratio of the bank (Figure 2). High equity ratio not only enhanced the risk-bearing capacity of the bank, but also alleviated agency problems between depositors and the bank, as Lamoreaux [1994] discussed concerning banks in early nineteenth century New England.

Expansion of the Japanese economy and upsurge of savings changed the environmental condition of the banking industry. While equity ratios of the banks declined due to the sharp increase of deposits, many banks loaned substantial amounts of funds to newly developed heavy and chemical companies, which brought about a serious agency problem. On the other hand, around this period, major zaibatsu carried out organizational reforms to establish holding companies. Through this reform, accounts of businesses including banking were made independent one another.

Also, concerning major zaibatsu, multiplicity of businesses, as well as the fact that affiliation of banks and companies was common knowledge in the business society, lowered the incentive of the core members of them to exploit minority shareholders and

depositors. For sharking was easily detected ex post, and if it were detected, penalties for it impacted on multiple businesses of the zaibatsu which sharked thorough decline of reputation (Matsushima [1998]). In our opinion, this is a basic reason why zaibatsu affiliated banks and companies achieved high performance, apart from effective monitoring by the holding companies which was stressed in Okazaki [2001].

Furthermore, after that zaibatsu exerted selection pressure on unsound banks—not to speak of, zaibatsu banks competing with them in the financial market. As a matter of fact, it is well known that market share of zaibatsu banks substantially went up in 1920's, which in turn made financial conditions of the other banks still worse. And as we indicated in this paper, the probability of closure was higher, if financial conditions of a bank were bad, which implies bad performing banks tended to be selected to exit (Okazaki [2002]). Additionally, zaibatsu merged and acquired many companies including banks in 1920's and 1930's to restructure them. Through these M&A, zaibatsu directly participated in the process of selection and evolution.

## References

- Aoki, M. (2001), *Towards A Comparative Institutional Analysis*, Cambridge, MA: MIT Press.
- Aoki, M., Sheard, P. and Patrick, H. (1994), “The Japanese Main Bank System: An Introductory Overview,” in M. Aoki and H. Patrick (eds.), *The Japanese Main Bank System: Its Relevance for Developing and Transforming Economies*, New York: Oxford University Press.
- Asakura, K. (1988), *Shinpen Nihon Kin'yu Shi (Japanese Financial History: New Edition)*, Tokyo: Nihon Keizai Hyoronsha.
- Bank of Japan (1933), “Kanto Shinsai yori Showa 2nen Kin'yu Kyoko niitaru Waga Zaikai,” (The Japanese Economy from the Kanto Earthquake to the Financial Crisis in 1927) in Bank of Japan (ed.) *Nihon Kin'yushi Shiryo (Resources on Japanese Financial History)* Meiji Taisho edition, vol. 22, Printing Bureau of the Ministry of Finance.
- Bank of Japan (1983a), *Nihon Ginko Hyakunen Shi (100 Years History of the Bank of Japan)*, Vol.2, Tokyo: Bank of Japan.
- Bank of Japan (1983b), *Nihon Ginko Hyakunen Shi (100 Years History of the Bank of Japan)*, Vol.3, Tokyo: Bank of Japan.
- Claessens, S., Djankov, S. and Lang, L. (1998), “East Asian Corporates: Growth, Financing and Risks over the Last Decade,” mimeo., World Bank.
- Goto, S. (1970), *Nihon no Kin'yu Tokei (Financial Statistics of Japan)*, Tokyo: Toyo Keizai Shinposha
- Goto, S. (1991), *Ginko Godo no Jisshoteki Kenkyu (Empirical Studies on Bank Mergers)*, Tokyo: Nihon Keizai Hyoronsha.
- Ishii, K. (1999), “Hyaku Sanjo Ginko to Matsumoto Jutarō,” (Hyaku Sanjo Bank and Jutarō Mastumoto) in K. Ishii, *Kindai Nihon Kin'yu Shi Josetsu, (Towards a Theory of the Modern Financial History of Japan)*, Tokyo: The University of Tokyo Press.
- Imuta, T. (1966), “Shohyo: Kazuo Shibagaki, Nihon Kin'yu Shihon Bunseki,” (Book Review of Kazuo Shibagaki's Analysis of the Japanese Financial Capital,” *Keizaigaku Zasshi (Osaka Municipal University)*, vol.54-2.
- Imuta, T. (1976), “Taishoki niokeru Kin'yu Kozo (Introduction of the Analysis of the Financial Crisis in 1927),” in *Gendai no Zaisei Kin'yu (Contemporary Fiscal and Financial Issues)*, Tokyo: The University of Tokyo Press.

- Kato, T. (1957), *Honpo Ginkoshi Ron (History of Banks in Japan)*, Tokyo: The University of Tokyo Press.
- Kobayakawa, T., Suzuki, T. and Wada, K. (1999a), “Meijiki no Kaisha oyobi Keieisha no Kenkyu: Nihon Zenkoku Shogaisha Yakuinroku (Meiji 31 issue) no Bunseki (Firms and Corporate Executives in Japan: An Analysis of the National Directory of Corporate Executives (1898),” *Sangyo Keizai Kenkyujo Kiyō* (Chubu University), vol.9.
- Kobayakawa, T., Suzuki, T. and Wada, K. (1999b), “Meijiki no Kaisha oyobi Keieisha no Kenkyu: Nihon Zenkoku Shogaisha Yakuinroku (Meiji 40nenban) no Bunseki (Firms and Corporate Executives in Japan: An Analysis of the National Directory of Corporate Executives (1907),” *Keizai Ronshu* (Gakushuin University) vol.36-3
- Lamoreaux(1994) *Insider Lending: Banks, Personal Connections, and Economic Development in Industrial New England*, New York, Cambridge University Press
- Lang, L. (2001), “Exploitation,” mimeo., Chinese University of Hong Kong.
- Matsushima, H.(1998) “Multimarket Contact, Imperfect Monitoring, and Implicit Collusion”, CIRJE Discussion Paper, F-24.
- Ministry of Finance (1928), *Ginkokyoku Nenpo (Year Book of the Bank Bureau of the Ministry of Finance)* 1926 issue.
- Ministry of Industry and Commerce (1928), *Kaisha Tokeihyo (Corporate Statistics)* 1926 issue.
- Miwa, Y. and M. Ramseyer (2000), “The Value of Prominent Directors: Lessons in Corporate Governance from Transition Japan,” (mimeo., The University of Tokyo and Harvard University).
- Murakami, H. (1983), “Futsu Ginko,” (Ordinary Banks), in T. Kato (ed.) *Nihon Kin'yu Ron no Shiteki Tenkai (History of Research on the Japanese Financial System)*, Tokyo: The University of Tokyo Press.
- Okazaki, T. (1999), *Mochikabu Gaisha no Rekishi (History of Holding Companies in Japan)*, Tokyo: Chikuma Shobo.
- Okazaki, T. (2001), “The Role of Holding Companies in Pre-war Japanese Economic Development: Rethinking Zaibatsu in the Perspective of Corporate Governance,” forthcoming in *Social Science Japan*.

- Okazaki, T. (2002) “Ginkogyo niokeru Kigyo Tota to Keiei no Koritsusei,” (Selection, Exits and Efficiency in the Japanese Banking Industry: An Historical Perspective), in M. Saito ed. *Kin’yu Shisutemu no Saisei* (Revival of the Financial System), Chuo Keizaisha
- Okazaki, T. and Yokoyama, K. (2001), “Governance and Performance of Banks in Pre-war Japan: Testing the ‘Organ Bank’ Hypothesis Quantitatively,” CIRJE Discussion Paper F-111 (The University of Tokyo).
- Shibagaki, K. (1965), *Nihon Kin’yu Shihon Bunseki* (*Analysis of the Financial Capital in Japan*), Tokyo: The University of Tokyo Press.
- Shibuya, R. Ishiyama, S. and Saito, K. (1983), “Taishou-shoki No Dai-Shisanka Meibo (Large Asset Holders List in the Early Taisho Period)” *Chihou Kin’yushi Kenkyu*, 14: 20-107.
- Shleifer, A. and Vishney, R. (1997), ”A Survey of Corporate Governance”, *The Journal of Finance* 52: 737-783.
- Shogyo Koshinjo (1926), *Zenkoku Shigaisha Yakuinroku* (*Directory of Company Directors of Japan*), 1926 issue, Tokyo: Shogyo Kishinjo.
- Sugiyama, K. (1976), “Gomeigaisha Mitsui Ginko no Kikan Ginko teki Seikaku,” (Attributes of the Organ Bank observed in Mitsui Bank,) in T. Ouchi (ed.), *Gendai Kin’yu* (*Contemporary Finance*).
- Takahashi K. and Morigaki, W., (1968) *Showa Kinyu Kyoko Shi* (*History of the Showa Financial Crisis*), Tokyo.
- Tatsuki, M. (1976) “Nichiro Daiichiji Taisen kan no Mitsui Ginko,” (Mitsui Bank between Russo-Japanese War and the First World War,) in T. Ouchi ed. *Gendai Kin’yu* (*Contemporary Finance*), Tokyo, University of Tokyo Press
- Teranishi, J. (1982), *Nihon no Keizai Hatten to Kin’yu* (*Japanese Economic Development and Finance*), Tokyo: Iwanami Shoten.
- Teranishi, J. (2000), “The Fall of the Taisho Economic System” in Aoki, M. and G. R. Saxonhouse (eds.), *Finance, Governance, and Competitiveness in Japan*, Oxford: Oxford University Press, 2000.
- Toyo Keizai Shinposha (1926), *Kabushiki Gaisha Nenkan*, vol.4, (*Year Book of Joint-stock Companies*), Tokyo: Toyo Keizai Shinposha.
- Toyo Keizai Shinposha (1928), *Ginko Nenkan* (*Year Book of Banks*), Vol.5, Tokyo: Toyo Keizai Shinposha.

- Toyo Keizai Shinposha (1991), *Kanketsu Showa Kokusei Soran (Final Version of the Collected Statistics of the Showa Era)*, Vol.2, Tokyo: Toyo Keizai Shinposha.
- Wada, K., Kobayakawa, T. and Shiomi, H. (1992a) “Meiji 40nen Jiten no Chikyo Zaikai niokeru Juyaku Kennin: Zenkoku Shigaisha Yakuinroku (Meiji 40nenban) no Bunseki,” (Interlocking of Directors in the Business Society of Chukyo District in 1907: An Analysis of the National Directory of Corporate Executives (1907), *Nanzan Kenkyu* (Nanzan University), vol.6-3.
- Wada, K., Kobayakawa, T. and Shiomi, H. (1992b) “Meiji 31nen Jiten no Chikyo Zaikai niokeru Juyaku Kennin: Zenkoku Shogaisha Yakuinroku (Meiji 31nenban) no Bunseki,” (Interlocking of Directors in the Business Society of Chukyo District in 1898: An Analysis of the National Directory of Corporate Executives (1898)), *Nanzan Kenkyu* (Nanzan University), vol.7-2.
- Wada, K., Kobayakawa, T. and H. Shiomi (1993), “Taisho 7nen Jiten no Chikyo Zaikai niokeru Juyaku Kennin: Zenkoku Shogaisha Yakuinroku (Taisho 7nenban) no Bunseki,” (Interlocking of Directors in the Business Society of Chukyo District in 1918: An Analysis of the National Directory of Corporate Executives (1918)), *Nanzan Keiei Kenkyu* (Nanzan University), vol.8-1.
- Yamazaki, H. (2000), *Showa Kin'yu Kyoko (The Showa Financial Crisis)* Tokyo: Toyo Keizai Shiposha.
- Yabushita, S. and Inoue, A. (1993), “The Stability of the Japanese Banking System: A Historical Perspective,” *Journal of the Japanese and International Economies*, vol.7-4.
- Yokohama City (Ed.) (1971), *Yokohamashi Shi, (History of Yokohama City)*, vol.5-1, Yokohama City.
- Yui, T. and Asano, T. (1989), *Zenkoku Shogaisha Yakuinroku Kaisetsu and Fukenbetsu Sakuin, (Commentary of the Directory of the Company Directors of Japan, and Index of Companies by Prefecture)*, Tokyo: Kashiwa Shobo.



## Appendix: Analysis of the List of Large Asset Holders

In section 3, we made it clear that as many as 86.6% of the total number of observed banks had at least one director or auditor who held a post as director or auditor of a non-banking company. We can compare this with the data of Shibuya et al. (1983), which contains data on large asset holders whose assets were over 500 thousand yen. Since the data include names, addresses, occupations and positions in the companies of the large asset holders in 1917, we can calculate how many bank directors and auditors with large assets held posts as directors or auditors in non-banking companies. The result is shown in Appendix Table. Thus 58.8% of bank directors and auditors held at least one position as director or auditor of a non-banking company, indicating that the results in Table 7 are plausible.

Appendix Table

	Number
Large asset holder	2,130
Bank director and auditor	648
Bank director and auditor who had a position of director or auditor of a non-banking company	381
/ (%)	58.8%

Source: Shibuya et al. [1983].

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