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Savings Mobilization
and Investment Financing
during Japan's Postwar
Economic Recovery

Juro Teranishi

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Foreword

This EDI Working Paper will be published as one of 12 chapters in a forthcoming book entitled: *Corporate Governance in Transitional Economies: Insider Control and the Role of Banks* edited by Masahiko Aoki and Hyung-Ki Kim. The book will have three parts:

Part 1: Generic and Comparative Issues: Theory and Policy Implications (chapters 1–3)

Part 2: Country Studies in Comparative Perspectives (chapters 4–8)

Part 3: Relevance and Lessons of the Japanese and German Experience (chapters 9–12)

A list of titles is provided on the inside back cover of this paper.

The book presents the results of a research project on corporate governance issues in transitional economies from a new perspective based on comparative institutional analysis. A concern with three issues—the emergent phenomena of insider control, the possible role of banks in corporate governance, and the desirability of the comparative analytic approach—sets the common ground for the research presented in this volume.

The coexistence of the alternative models of corporate control in the developed countries suggests that the possible "lessons" for the transitional economies may not be so obvious. It makes little sense to judge the merits of each corporate governance model and its applicability to the transitional economies without taking into account a country's stage of development and the history of its institutions and conventions. In designing corporate governance structures for the transitional economies, economists are required to identify the specific conditions under which each corporate control model (or combination of models) works, the availability of these conditions in the transitional economies, and the most efficient approach to achieve these conditions. By pooling rich individual country studies and cross-examining and comparing their implications, we may be able to avoid premature generalizations or theorizing based on the observation of a single economy. By comparing the workings of diverse systems, we may also be able to uncover latent factors that are conducive to, or constrain, the workability of particular governance structures. Comparative analysis may thus serve in the social sciences as a kind of proxy for laboratory experiments.

This work was prepared as part of EDI's multiyear *Program for the Study of the Japanese Development Management Experience* which is financed by the Policy and Human Resources Development Trust Fund established at the World Bank by the Government of Japan. The Program is managed by the Studies and Training Design Division of the World Bank's Economic Development Institute.

Hyung-Ki Kim, Chief
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Savings Mobilization and Investment Financing during Japan's Postwar Economic Recovery

Juro Teranishi

Japan's war against the Allied Forces ended in 1945. The Japanese high-growth era (1957–73), with an average annual growth rate in the gross national product (GNP) of 9.99 percent and an investment/GNP ratio of 31.6 percent, started between 1955 and 1957. It thus took ten years to rebuild the war-torn economy and put it on a trajectory of sustained growth. The first five of these years (1945–50), a subphase known as the period of reforms and stabilization (Teranishi 1994b), were spent fighting inflation. The near hyperinflation, which reached a peak monthly consumer price index (CPI) growth rate of 32.8 percent, was overcome by 1949. Yet despite achieving macroeconomic stability, the GNP growth rate and investment ratio stayed rather low during the next five years (1950–55), the subphase of institutional adjustment (Teranishi 1994b). The high growth rate and high investment ratio of the high-growth era seem to be closely related to the low growth rate and low investment ratio of the preceding period, 1950–55.

Let us call the periods 1945–50, 1950–57, and 1957–73 periods I, II, and III, respectively. This chapter examines time series data on investment financing, saving mobilization, and financial intermediation. Special emphasis is given to period II, an era that was characterized by (i) the onset of a dramatic increase in capital intensity, (ii) a low share of investment to GNP, and (iii) a heavy reliance by large manufacturing firms on financing through retained earnings.

The second section of the chapter briefly examines the first two characteristics of the period, and then turns to a close investigation of the third. This focus is especially useful in view of the high dependence on bank borrowing for corporate financing during wartime, period I, and period III, and it is apparently closely related to the first two characteristics. The third section of the chapter discusses the reasons for the heavy reliance of large manufacturers on retained earnings. First we will consider the borrower's side and the possible role of inactive investment behavior. Second, we turn to the lender's side and discuss related factors, such as the possibility of low levels of saving mobilization, bank lending behavior, and the adequacy of the maturity of funds mobilized.

Our analysis is still tentative and inconclusive. Nevertheless, it will be suggested that the low level of investment in period II is closely linked to the low level of bank borrowing through the increased capital intensity of production technology. In other words, we suggest that the relative scarcity of long-term funds, essential for active investment in capital-intensive equipment, prevented the general level of investment from rising during period II.

In the fourth section we calculate a time series of the indexes of the degree of maturity transformation carried out by the financial sector. The estimated series shows a medium-term cycle of about ten years duration, moving in close correspondence to the share of long-term corporate financing. The chapter concludes with a discussion of the reasons for the prominence of indirect financing during the high-growth era.

Three Characteristics of Period II

Let us first briefly compare the macroeconomic data of the three periods. As seen in table 11-1, the high investment ratio in period I is noteworthy in view of the turmoil and confusion of the day. The basic reason for this is that the fight against inflation mainly relied on supply-side measures such as the Priority Production System (concentrated lending and subsidies to important intermediate goods industries) and price anchoring.¹ Financed by new money, these measures were in themselves inflationary, and they were eventually replaced by the orthodox stabilization measures of tight fiscal and monetary policy. Even so, the supply-side measures effectively encouraged investment and reduced consumption through compulsory saving. Since this investment comprised mainly the repair of capital equipment and its conversion from military to peaceful use, the incremental capital-output ratio (ICOR— $\Delta I/\Delta Y$) was a very low 0.1, and production was free to increase at the considerable rate of 9.8 percent (see table 11-1). The rebound in production also owed much to the gradual resumption of the import of energy and basic material.

After the initial phase of recovery, however, ICOR rose considerably ($\Delta I/\Delta Y = 0.37$),² making further production gains difficult without investment in foreign technology imports to modernize obsolete equipment (the Industry Rationalization Policy). Table 11-1 shows that, at the same time, the investment ratio I/Y settled to a comparatively low 19.1 percent during period II. These characteristics are quite remarkable because both ICOR and the investment ratio were high during period III. In table 11-1, I/Y in period III is about 30 percent and ICOR approximately 0.40, a level comparable to period II. In other words, in period II ICOR reached levels as high as it did during the high-growth era, but the investment ratio declined to a low level.

The two characteristics of investment during period II—low I/Y and high ICOR—seem closely related to the pattern of investment financing. It will be shown that in a remarkable contrast to the high dependence on bank borrowing during periods I and III, during period II the corporate sector financed its investment mainly through retained earnings.

Let us investigate this point with the corporate financial data compiled by the Ministry of Finance in *Hojinkigyo Tokei Nenpo* (*Annual Statistics of Corporate Firms*). Coverage varies by firm size and changes slightly from year to year. As an example, in 1960 the ratios of sampled firms to total firms (the sampling ratio) are as follows: for firms with paid-in capital of less than 2 million yen, 1/200; for firms between 2 and 5 million yen, 1/50; for firms between 5 and 10 million yen, 1/10; for firms between 10 and 50 million yen, 1/5; for firms between 50 and 100 million yen, 1/2; and for firms over 100 million yen, coverage is 100 percent. For each category, figures for total firms are estimated by multiplying the number of sample firms by the inverse of the sampling ratio.³

Figure 11-1 compares various methods of financing as ratios to the sum of fixed tangible assets and inventories. Borrowings from financial institutions (hereafter, borrowing) are net of compensating deposits (assumed equal to time deposits)⁴ for all manufacturing firms.⁵ Trade credits are also net figures (accounts and bills receivable minus accounts and bills payable). This procedure roughly follows Colin Mayer (1990, p. 311) in calculating the unweighted average net financing of nonfinancial enterprises, 1970–85 (see table 12.1 in Mayer 1990).

One of the noteworthy features of figure 11-1 is the high ratio of retained earnings in period II and its decrease through the early years of period III, until about 1960. Borrowing rose correspondingly in period III and stayed very high through the later years of period III, in accordance with an often noted characteristic of the high-growth era financial system: the dominance of indirect financing.⁶

Table 11-1. Macroeconomic Characteristics of the Three Periods

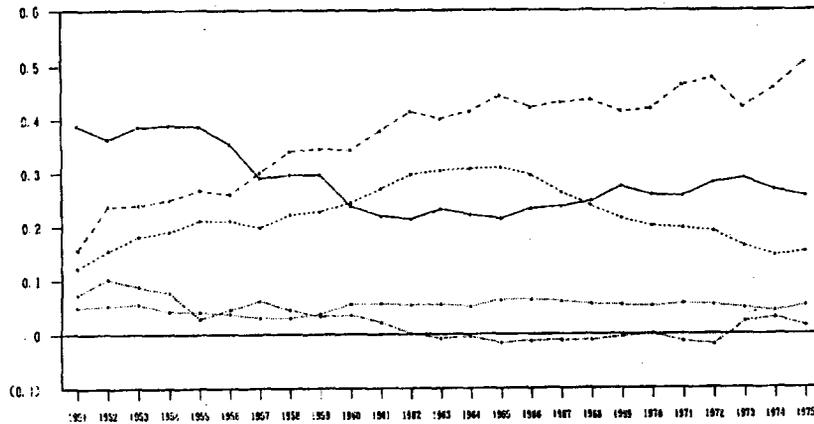
<i>Period</i>	$\Delta P/p(\%)$	$\Delta Y/Y(\%)$	$I/Y(\%)$	$\Delta I/\Delta Y$
I, 1946-51	57.21	9.8	31.1	0.10
II, 1952-57	4.64	7.1	19.7	0.37
III, 1957-62	1.04	9.5	26.1	0.39
1962-67	4.55	9.8	31.4	0.43
1967-72	4.96	10.8	37.3	0.44

Note: P = GNP deflator, Y = real GNP, I = gross capital formation. Until 1951, fiscal year and 1934-36 prices; after 1952, calendar year and 1950 prices.

Source: *Nihon Choki Tokei-Soran* 3: 363, 367-69.

Figures 11-2 and 11-3 offer information for large manufacturing firms (firms with paid-in capital over 100 million yen before 1960, and over 1 billion yen thereafter) and smaller manufacturing firms (the rest). Figure 11-2 shows movements of retained earnings and borrowing similar to those in figure 11-1, but figure 11-3 does not. The retained earnings and borrowing of smaller firms remained rather stable until the mid-1960s, and rose gradually thereafter.⁷

Figure 11-1. Financing of the Corporate Sector, Total Manufacturing

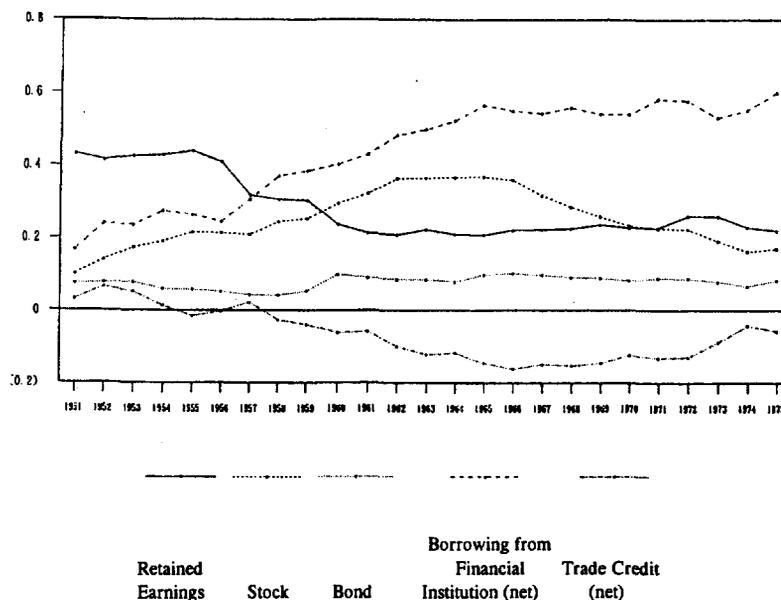


Retained Earnings Stock Bond Borrowing from Financial Institution (net) Trade Credit (net)

Note: Until 1959, calendar year; after 1960, fiscal year (begins April and ends March of next year). Borrowing from other sources is not shown for the sake of simplicity.

Source: Ministry of Finance, *Hojinkigyo Tokei Nenpo*, various issues.

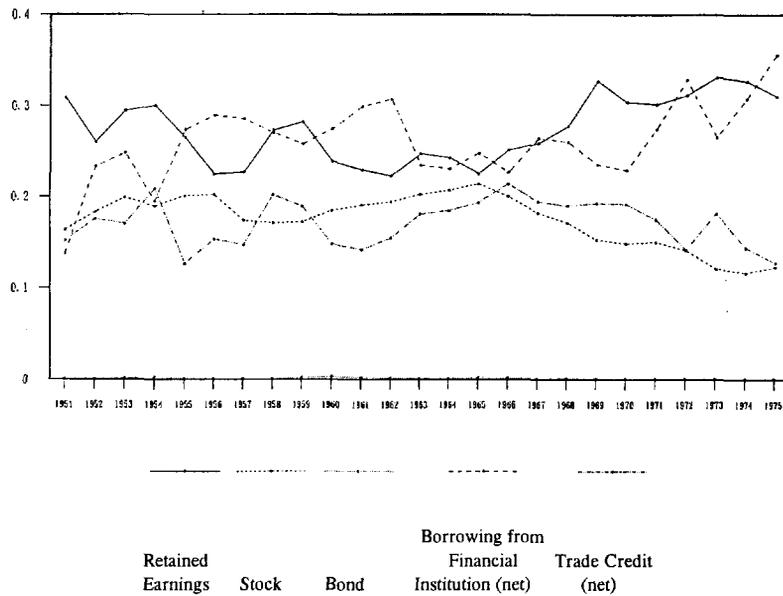
Figure 11-2. Financing of the Corporate Sector, Large Manufacturing Firms



The high share of retained earnings during period II has thus far gone relatively unnoticed, and further confirmation through other methods is in order. To begin with, table 11-2 shows an index similar to that in figures 11-1-3, but calculated on a flow basis for five periods—1951-56, 1956-60, 1961-66, 1966-71, and 1971-76—for large and small firms. Table 11-3 provides flow financing ratios based on gross figures and as ratios to total assets. In both tables one can see that during 1951-56 large manufacturing firms depended heavily on internal funds for financing; their reliance on borrowings is relatively slight compared with later periods.

The percentage composition of the flow of funds to all industries as compiled by the Bank of Japan is shown in figure 11-4. These data show the flow of total lendings by private and government financial institutions, issuance of corporate bonds, issuance of stocks, and corporate savings in national accounts. The percentage share of retained earnings rises from 1945 to the early 1950s, thereby confirming our earlier findings. Because this figure refers to total industry, the share of retained earnings is not so high. According to calculations based on data from the *Hojinkigyō Tokei Nenpo*, the percentage of the increase in retained earnings to the increase in total assets (to the increase in the sum of fixed tangible assets and inventories) during 1951-56 is 13.3 percent (26.7 percent) for total industry, 15.2 percent (32.7 percent) for total manufacturing, 23.0 percent (39.5 percent) for large manufacturing firms, and 5.7 percent (13.9 percent) for small manufacturing firms. The percentage of the increase in borrowings is 27.4 percent (42.9 percent) for total industry, 24.2 percent (34.1 percent) for total manufacturing, 20.8 percent (30.2 percent) for large manufacturing firms, and 31.0 percent (44.9 percent) for small manufacturing firms.

Figure 11-3. Financing of the Corporate Sector, Small Manufacturing Firms



Corporate Finance in the Recovery Period

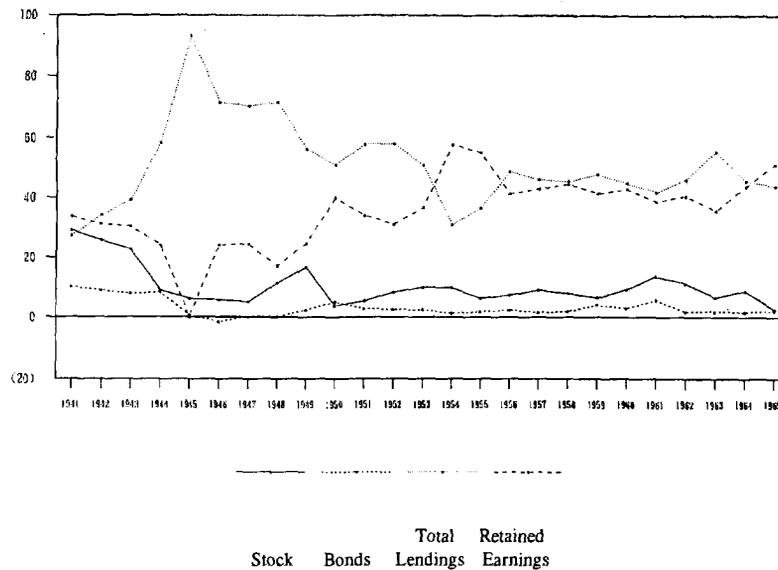
What explains the high share of retained earnings and relatively low share of borrowing among large firms? Both borrower's and lender's conditions play a role.

An explanation from the borrower's side is that low levels of investment activity led to a high reliance on internal funding. The reasons that entrepreneurs reduced investment during the period are powerful—for example, the instability in the corporate governance structure of firms at the time (Teranishi and Kosai 1993a). Owing to the “democratization” of securities, large companies came to be held by small stockholders with individual stakes insufficiently large to justify extensive monitoring, and managers faced constant takeover threats. At the same time, managers were locked in a fierce struggle for corporate control with powerful, militant labor unions. The absence of an adequate system of investment coordination also may have affected investment behavior. As suggested by the increased capital intensity, further investment was not possible without the introduction of foreign technology, especially in the case of large firms. Because the import of technology and the concomitant learning process has technical external effects throughout industry, proper coordination by the government can be effective in encouraging individual activity. In postwar Japan, the government's coordinating role formed gradually during period II. With respect to technological externalities, for example, industrial policy was adopted as a formal development measure when the government embarked on the Industry Rationalization Plan in 1951, targeting the coal and steel industries. Nevertheless, the first postwar economic plan—“Five-Year Plan for Economic Self-Support”—was published only in 1955.

Table 11-2. Composition of Corporate Manufacturing Financing (Flow)
(percentage of fixed tangible assets and inventories)

<i>Category and period</i>	<i>Retained earnings</i>	<i>Capital</i>	<i>Bonds</i>	<i>Net borrowing from financial institutions</i>	<i>Net trade credit</i>
(A) Large manufacturing corporations					
1951-56	39.5	29.0	3.8	30.2	-0.3
1956-60	-1.0	40.9	16.7	63.4	-14.7
1961-66	23.3	41.8	12.2	75.0	-32.1
1966-71	23.2	12.6	7.9	61.0	-10.9
1971-76	25.3	10.4	7.6	65.0	0.0
					-3.8
(B) Small manufacturing corporations					
1951-56	13.9	24.1	0.0	44.9	15.4
1956-60	24.5	17.7	0.4	27.7	14.6
1961-66	28.5	21.5	0.1	13.4	32.6
1966-71	34.4	10.8	0.0	31.9	14.2
1971-76	32.3	9.5	0.1	39.9	11.8

Figure 11-4. Flow of Funds to Total Industry, Bank of Japan Data



Taken as a whole, these conditions discouraged investment during period II. Agency cost of internal funds was at its lowest, investment could be financed mainly by internal funds, and dependence on external funds could be quite low.

Incidentally, figures 11-1 and 11-2 show a rising share of equity (capital) financing during period II, which needs additional explanation. One of the reasons for this is the compulsory new issue of equity. Hoshi (1994) shows that wartime losses were mainly offset by the stockholders' burden (*Kigyo Saiken Seibiho*). But after reorganization, firms were encouraged to increase their capital base with new stock issues at least equal to the sum of their fixed assets and fixed operating capital (Miyajima 1992).

Another reason for the increase in equity financing is rooted in the character of new stock issues. Table 11-4 shows that shares of new capitalization with no payment comprised about 19.9 percent of new issues during 1951-54. These are nothing but a shift of funds from retained earnings to paid-in capital, however, and they do not represent new financing in any sense. In addition, over 90 percent of new capitalization with payment was subscription by existing stockholders. Since existing stockholders are corporate insiders, such financing is quite similar to financing with retained earnings, and is free from agency problems (Horiuchi 1993).

Yet low investment activity cannot be the sole reason for the high corporate reliance on internal funds. If it were, firms with low levels of investment should rely on internal finance to a greater extent than other firms. A comparison between large and small manufacturing firms shows that this is not the case. As figures 11-2 and 11-3 and tables 11-2 and 11-3 show, dependence on internal funds was definitely higher for large firms during period II, but the increase in fixed tangible assets during 1951-56 was 3.40 times for large firms and 2.26 times for small firms.

Let us move on to lender-side sources of high levels of internal financing among large firms. First, it could be argued that a low level of financial saving mobilization forced reliance upon internal funds for corporate investment. Figure 11-5 shows the composition of assets beginning in period I in the personal sector (households plus unincorporated businesses, such as farms and small firms). Data are drawn from tables by the Ministry of Finance (1978) for the period 1946-52 and from the Bank of Japan's *Flow of Funds Accounts* for the period thereafter. The composition of personal sector assets in

period I reflects wartime financing. Because war financing was done through new currency issues, the proportion of cash to total assets was high during period I. The ratio was further increased during 1947-48, when Reconstruction Bank activity was financed by Bank of Japan note issues. The high share of cash persisted throughout period II, long after the containment of inflation (around 1949), although it gradually decreased. The slow speed of decrease in the share of cash to total assets implies a low share of deposits to total assets. It could be argued that the relatively feeble mobilization of bank deposits was one of the reasons for the low dependence of large firms on bank borrowings. The low level of mobilization can be explained by inflationary expectations, which reduce the real interest rates on deposits. Figure 11-6 indicates a very close relationship between the real deposit rate (the interest rate on six-month time deposits less the rate of increase in the GNP deflator) and the rate of increase in real deposits balance (total deposits in the banking sector divided by the GNP deflator). In light of the experience of the preceding years, it is reasonable to expect that a strong concern about inflation prevailed during period II, and that the expectation of falling real deposit rates induced people to hold cash in preparation for a shortage of goods.

Figure 11-5. Composition of Personal Sector Assets

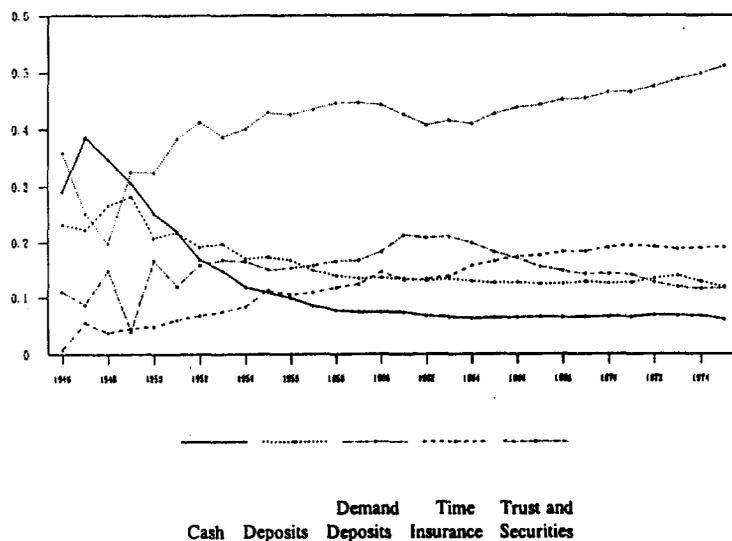


Table 11-3. Composition of Corporate Manufacturing Financing (Flow)
(percentage of total assets)

<i>Category and period</i>	<i>Retained earnings</i>	<i>Capital</i>	<i>Bonds</i>	<i>Gross borrowing from financial institutions</i>	<i>Gross financing by trade credit</i>
(A) Large manufacturing corporations					
1951-56	23.0	16.9	2.2	20.8	17.0
1956-60	-0.5	19.9	8.2	40.4	13.2
1961-66	7.8	14.0	4.1	39.9	16.6
1966-71	10.2	5.5	3.5	40.4	17.4
1971-76	10.1	4.2	3.0	35.9	23.2
(B) Small manufacturing corporations					
1951-56	5.7	9.9	0.0	31.0	35.4
1956-60	12.0	8.6	0.2	29.4	29.4
1961-66	10.2	7.7	0.0	27.3	37.4
1966-71	13.8	4.3	0.0	33.1	29.2
1971-76	11.6	3.4	0.0	31.8	32.0

Source: Nihon Choki Tokei-Soran 3.

Table 11-4. New Equity Issues of Listed Firms
(percentage)

<i>Period</i>	<i>New capitalization without payments</i>	<i>New capitalization with payments</i>	<i>Subscription rationed to existing shareholders</i>	<i>Public offering</i>	<i>Rationing to new shareholders</i>
1951-54	19.9	81.1	—	—	—
1955-59	20.1	79.9	96.5	3.4	0.1
1960-64	10.7	89.3	92.9	6.5	0.5
1965-69	14.7	85.3	93.3	5.3	1.4

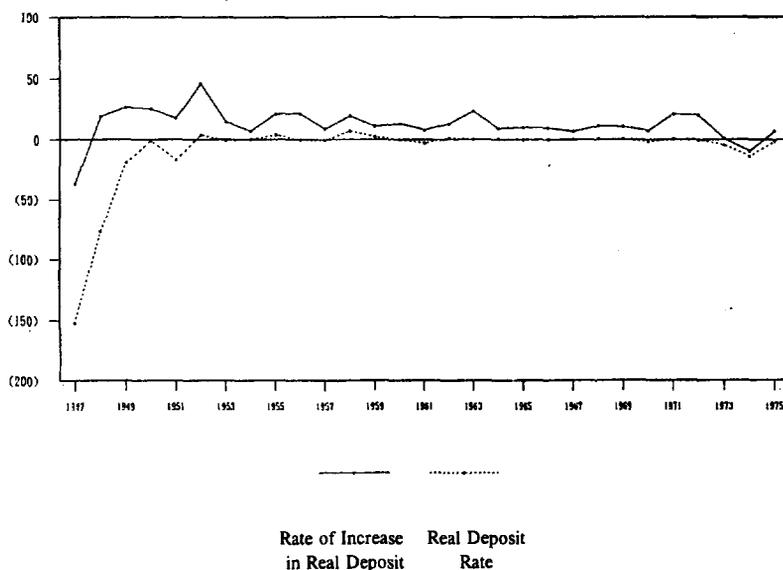
— Not available.

Note: The percentage of new capitalization with and without payments refers only to listed companies of the first section of Tokyo Stock Exchange. New capitalization without payments includes others, such as dividend payments in the form of stocks.

Source: Bank of Japan 1964 (p. 187), 1973 (p. 172); Ministry of Finance 1983 (p. 602); and Horiuchi 1993.

Another element that might be responsible for the low share of bank borrowing by large firms during period II is bank lending behavior. If banks were reluctant to lend to large firms, plagued as they were with labor disputes and lacking a long-term perspective on technology imports, firms might have been obliged to rely on internal funds. This conjecture, however, does not seem to be correct. As table 11-5 illustrates, the ratio of lending to deposits is quite high during period II for every group of banks. Moreover, city banks relied rather heavily on Bank of Japan borrowing, as well as interbank money markets. (The lending/deposit ratio of the Sogo banks is rather low, but this is because of the reorganization of the Sogo bank system, which included a dramatic increase in the number of branches.) It must also be noted that during period II many *ex-zaibatsu* firms tried to borrow from banks outside their corporate group, indicating an inability of large banks to satisfy the demand for loans by the firms of their own group (Miyajima 1992), and this tendency seems to have continued until around 1956 (Kitsukawa 1992, table 6-9).

Figure 11-6. Real Interest Rate and Rate of Increase of Real Deposits



Note: Deposits are total deposits of Zenkoku Ginko.
Sources: *Nihon Choki Tokeisoran*, vol. 3.

Third, it is possible that the short-term nature of available funds, rather than simply the paucity of mobilized funds, retarded corporate investment. Since large-firm investment required capital-intensive imported technology, but many small firms still relied upon investment through second-hand equipment purchases, the shortage of long-term funds may have had more severe effects on large firms than on small firms. When investment by large firms is constrained by a lack of long-term borrowing, their investment must be financed by internal funds or decline.

Whether there was a shortage of long-term funds during period II is a delicate issue. Let us discuss a couple of points, beginning with the supply of long-term assets by the personal sector. Figure 11-7

depicts the composition of the sum of long-term assets (time deposits, trust and insurance, and securities) and the ratio of time deposits to total deposits. The rapid rise of these two indexes during period I and the deceleration of the rise during period II is impressive. It could be argued that the supply of long-term funds decelerated when it was most needed. Second, we must touch upon the effects of the closure of the Reconstruction Bank, which mainly supplied investment funds. At the end of March 1949, private banks had lent 28.7 billion yen for equipment and capital investment and 397.5 billion yen as working capital. Reconstruction Bank loans included 85.6 billion yen for equipment and capital investment and 28.2 billion yen for working capital. Adding the two, the share of loans for equipment and capital investment was 21.9 percent. After the suspension of Reconstruction Bank activity in 1949, the share of loans for equipment in total private bank lending was only 7.2 percent, 12.2 percent, and 16.6 percent at the end of 1949, 1955, and 1960, respectively. It can be conjectured that although firms demanded long-term loans for fixed capital investment, banks could not accommodate this demand because of the short-term nature of the funds at hand.

Figure 11-7. Composition of Personal Sector, Long-Term Assets

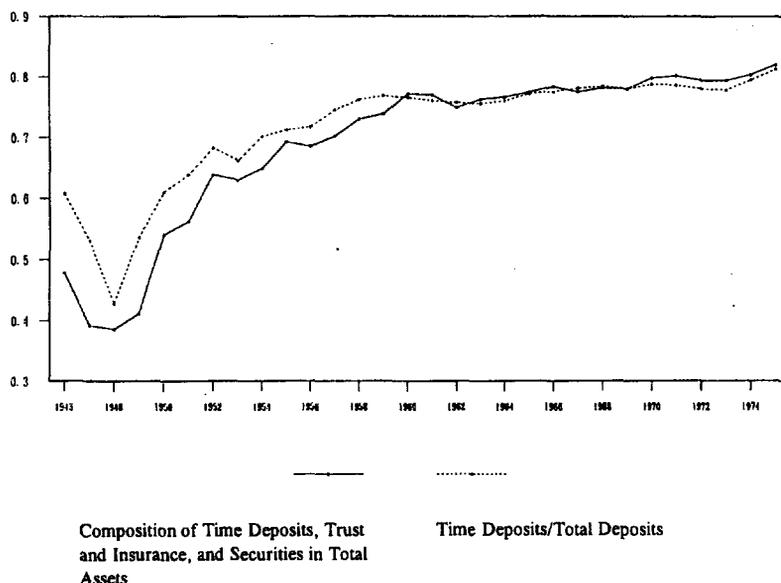


Figure 11-8 shows two indexes of long-term financing for large firms. (Data sources and the definition of large firms are the same as in figures 11-1 and 11-2). The long-term funds ratio, (a), is the ratio of the sum of long-term borrowing and bonds to total assets, while (b) is the ratio of long-term borrowing to total assets. One impressive phenomenon is the relative stability in ratios (a) and (b) during period II, and an extremely rapid rise thereafter until 1960. This phenomenon can be seen not only for large firms, but also for small firms (not shown). Since most bonds were rationed to financial institutions (in 1951, 84.6 percent; 1960, 89.9 percent; and 1970, 90.9 percent),⁸ and institutions were obliged to hold them until maturity, bonds were another form of long-term lending, at least during the period under consideration. Consequently, ratios (a) and (b) show the long-term funds supply by financial institutions.

Table 11-5. Lending-Deposit Ratio (a), Borrowings from Bank of Japan-Deposit Ratio (b), and Net Money Market Borrowing Rate (c)

Year	City bank			Local bank			Sogo bank (Daini-Chingin)		
	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
1945	93.3	—	-0.1	28.4	—	0.2	36.0	—	—
1946	119.4	—	0.4	36.6	—	1.4	31.0	—	—
1947	75.7	—	0.7	44.9	—	0.5	33.3	—	—
1948	74.7	12.6	0.1	66.3	1.6	0.2	37.3	—	—
1949	83.2	12.7	-0.3	78.1	4.7	0.3	45.7	—	—
1950	90.1	15.3	-0.4	86.3	7.3	0.0	51.9	—	—
1951	100.0	19.3	-1.3	82.4	2.0	1.5	—	—	0.6
1952	92.8	13.3	-2.2	81.7	1.7	1.7	45.2	—	0.7
1953	96.4	14.7	-2.2	82.8	1.4	2.0	50.2	—	0.5
1954	91.6	11.2	-2.9	81.2	0.6	2.9	53.7	—	1.6
1955	77.3	1.2	-2.7	78.7	0.0	3.1	52.0	—	1.6
1956	77.5	3.7	-2.5	78.2	0.0	2.9	52.4	—	1.5
1957	85.4	14.6	-3.4	79.0	0.1	2.9	55.5	—	2.8
1958	82.7	8.0	-4.3	77.3	0.2	3.7	58.8	—	3.6
1959	84.6	6.2	-4.8	77.9	0.2	4.2	66.0	—	1.6

1960	84.3	7.8	-4.2	78.5	0.2	3.9	68.6	—	1.8
1961	88.2	19.3	-3.0	78.2	0.3	1.9	70.6	—	2.2
1962	90.0	16.4	-5.2	77.5	0.2	3.6	72.5	—	1.9
1963	87.5	11.4	-5.8	78.2	0.2	2.5	74.9	—	1.5
1964	89.3	8.7	-10.0	77.5	0.2	3.1	75.9	—	3.0
1965	86.8	9.1	-7.4	77.8	0.3	3.5	78.2	—	2.1
1966	85.9	9.5	-5.7	78.0	0.3	2.6	80.4	—	1.6
1967	88.7	7.5	-7.1	78.7	0.4	3.4	81.1	—	2.0
1968	87.1	7.5	-5.5	78.6	0.3	3.1	80.4	—	2.0
1969	87.8	8.0	-6.9	79.0	0.3	3.2	80.7	—	2.3
1970	89.5	8.7	-8.4	81.1	0.3	3.8	81.8	—	2.8
1971	85.4	1.7	-1.4	82.3	0.2	3.3	81.8	—	2.0
1972	84.5	4.8	-6.8	83.0	0.4	1.9	83.0	—	1.4
1973	90.0	4.7	-12.1	81.9	0.3	2.0	80.4	—	1.6
1974	92.7	3.1	-15.6	81.7	0.2	2.6	78.5	—	2.9

— No borrowing.

Note: Net money market borrowing rate is [(call loan + bills receivable + lendings to financial institutions) - (call money + bills payable + borrowings from financial institutions)] / (deposits and financial debentures).

Source: Ministry of Finance, *Ginko-Kyoku Nenpo*, various issues.

In sum, corporate investment in period II was constrained by the low level of mobilization of funds and by the short-term quality of bank deposits. Mobilization of savings was retarded by the expectation of goods shortages and inflation. The share of long-term assets in the portfolio of the personal sector increased rapidly during period I, but this increase decelerated in period II. The shortage of long-term funds was especially serious for large firms, which were asked to invest in capital-intensive imported technology. Consequently, large firm investment relied mainly on retained earnings, and the ratio of investment to GNP became rather low during the period.

;aMaturity Transformation by Financial Institutions

Given the rather poor conditions in corporate financing in period II, what explains the high level of investment in capital-intensive technology during period III? The reasons lie both in real and monetary factors. On the monetary side, this section suggests that the financial system's increased ability to transform the maturity of monetary instruments is one reason for the surge of investment during period III. Let us start from a comparison of figures 11-7 and 11-8 immediately after period II (1958-61). The share of long-term funds in the portfolio of the personal sector was rising at a decelerating speed, while the rising share of long-term funds in the financing of the corporate sector accelerated. How could this happen? The answer can be found in an investigation of the behavior of financial institutions with respect to maturity transformation.

Let us combine the information from the *Hojinkigyo Tokei Nenpo* (on which figures 11-1 through 11-3 are based) with that from the *Flow of Funds Accounts* (on which figures 11-5 is based) to calculate indexes of maturity transformation. The first source contains data for the ratio of long-term borrowing to total borrowing for all industries. By multiplying this ratio with the sum of corporate and personal sector borrowing from the *Flow of Funds Accounts*, one estimates *total long-term private sector borrowing* (LB). Furthermore, by adding this to the bonds held by financial institutions, *total long-term private sector debt from financial institutions* (LD) is obtained. Estimated in this way, LB and LD comprise the borrowing from and the bonds held by both private and government financial institutions. By subtracting from LB the lending of government financial institutions, all of which is long term, we obtain *long-term private sector borrowing from private financial institutions* (LBP). Furthermore, by subtracting from LD the sum of government financial institution lending and bondholdings, we obtain *long-term private sector debt from private financial institutions* (LDP).

Turning from firm liabilities to financial institution liabilities, we derive another four indexes of long-term funds. The first is the *gross long-term funding of private financial institutions* (GLFP), defined as the sum of time deposits, trust funds, insurance, and financial debentures. Some financial debentures issued by long-term credit banks were held by financial institutions such as city banks. By subtracting these, an index for *net long-term funding of private financial institutions* (NLFP) is obtained.⁹ By adding to GLFP the funds from government financial institutions in the form of postal savings and government insurance, *gross long-term funding of financial institutions* (GLF) is obtained. Finally, by subtracting financial debentures held by government financial institutions from GLF, we derive *net long-term funding of financial institutions* (NLF).

Figure 11-8. Long-Term Funds Ratio, Large Manufacturing Firms

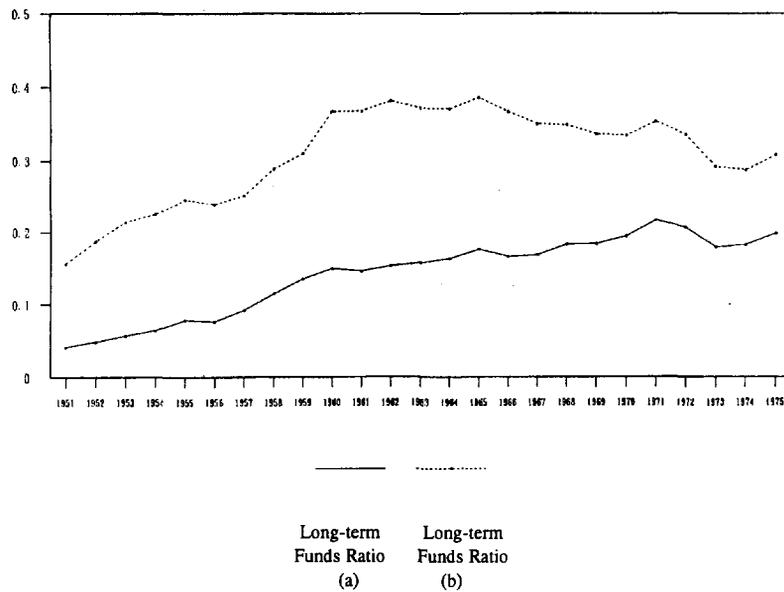


Figure 11-9 shows the indexes of maturity transformation by private financial institutions. LBP/GLFP and LDP/GLFP indicate ratios of private long-term lending and long-term lending plus bonds, respectively, to gross private long-term funds. LBP/NLFP and LDP/NLFP show similar ratios to the net long-term funds obtained by private financial institutions. Figure 11-10 shows corresponding indexes with respect to all financial institutions, including governmental financial institutions.

All the indexes suggest a similar pattern. First, transformation ratios gradually rise. Second, shifts in the transformation ratios evince a clear cyclical pattern. For the postwar period, these cycles are closely related to medium-term business cycles (Juglar cycles). Troughs of the cycles match troughs in the growth rate of the GNP and in corporate profit rates in 1955, 1965, and 1975, and transformation ratios tend to rise with increase in GNP and profits.

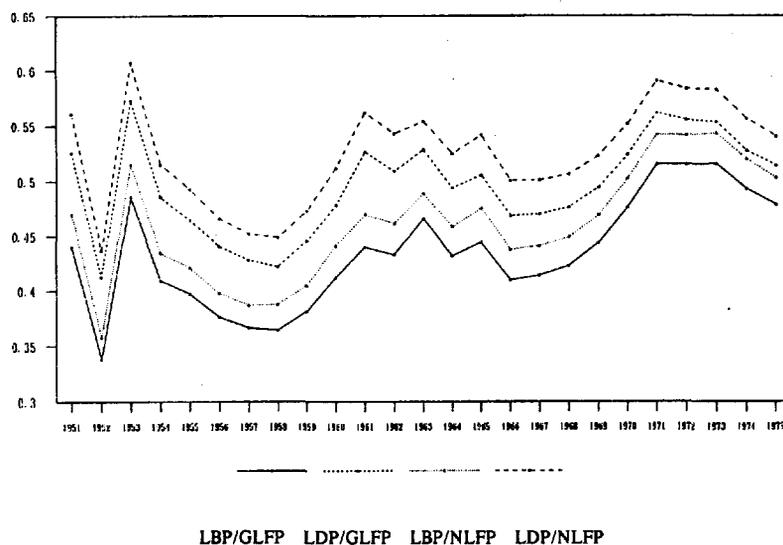
The indexes also show that around 1958–61 there was an upward surge in the maturity transformation ratio. This seems to be closely related to the sharp rise in the corporate sector's long-term financing ratio during period II, despite slow growth in the long-term assets ratio of the personal sector at the same time. An additional, unexplained, peak in the transformation ratios comes around 1953; the economic boom caused by the Korean War is a highly plausible explanation.

Our analysis of maturity transformation is still only preliminary, and much more needs to be done. It is pertinent to add a brief explanation of the financial institutions' maturity transformation mechanism, which we call *Strategic Intervention in Maturity Transformation* (SIMT) of the banking sector, following Teranishi (1993), and to discuss the emergence of this mechanism during period II.

The mechanism of strategic intervention in bank maturity transformation has two parts: the rationing system of corporate bonds and financial debentures and the accommodating supply of Bank of Japan (BOJ) credits at below-market rates. During the high-growth era, most bonds were issued at above-market prices and were rationed to banks. As of the end of 1960, 693 billion yen in corporate bonds were

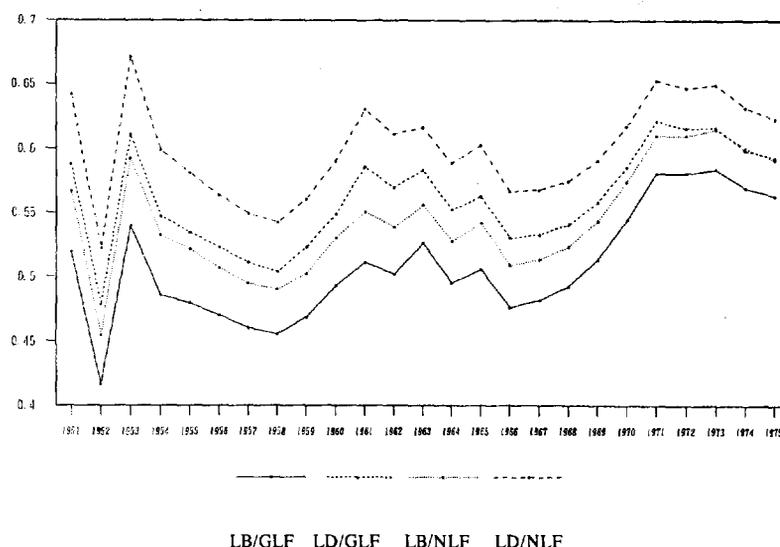
outstanding, of which 614 billion yen was held by private financial institutions (216 billion by city banks), 7 billion by the government financial institutions, and only 71 billion by the private nonbank sector. The outstanding amount of financial debentures was 1,054 billion yen, of which 603 billion was held by private financial institutions (307 by city banks), 175 billion by the government financial institutions program, and 278 billion by the private nonbank sector. Because these bonds were sold at above-market prices, the rate of return for subscribers was lower than the market rate.

Figure 11-9. Maturity Transformation by Private Financial Institutions



In 1960 (the latter half of fiscal year 1960), the average cost of funds for city banks was 6.43 percent and their average lending rate (opportunity cost) was 7.67 percent. Since a subscriber's rate of return on corporate bonds (*ichiryu-jigyosai*) and financial debentures (*ritsuki-kinyusai*) was 7.95 percent and 7.61 percent, respectively, it was not optimal for city banks to hold financial debentures, although it did not cause losses in their current account. Moreover, since banks purchased bonds and financial debentures at above-market prices, selling them on the secondary market would have caused losses to the banks. To avoid losses, banks held bonds and financial debentures until maturity, with a considerable reduction in the liquidity of their portfolios.

Figure 11-10. Maturity Transformation by Private and Government Financial Institutions



Why did banks (especially city banks) hold corporate bonds and financial debentures even though their rates of return were less than the opportunity cost and they had unfavorable effects on their liquidity position? The answer to this question lies in the second part of the SIMT mechanism, the strategic role of BOJ credits. First, the subscriber's rate of return is less than the borrowing rate from BOJ. Because banks are permitted to use corporate bonds and financial debentures as collateral for BOJ borrowing, they can obtain *de facto* subsidies by borrowing from BOJ on this collateral, and compensate for the difference between the opportunity cost and the subscriber's rate of return on bonds and debentures. Second, the BOJ took an accommodating stance in the supply of BOJ credits to city banks. On every business day, *ex post* demand and supply at the call market is reported to the BOJ at 3 P.M., and the BOJ in principle supplied the difference by lending directly to city banks, who were the major borrowers at the call market. Whenever BOJ felt it necessary to tighten the money supply, however, it had the option of reducing the supply of BOJ credits by requesting that city banks reduce their bank deposits at BOJ. Since reserve deposit rate requirements limited the extent of possible adjustment, however, by and large BOJ passively followed city bank demand for borrowing. In other words, the BOJ credit served as liquid assets or implicit reserves for city banks, thereby enabling city banks to hold illiquid corporate bonds and financial debentures during the high-growth era without liquidity risk.

It should now be clear that the SIMT mechanism, composed of bond rationing and an accommodating supply of cheap BOJ credits to city banks, was designed to convert short-term city bank deposits, together with deposits siphoned to the city banks from specialized financial institutions through the money markets, into the long-term debt of the corporate sector and the long-term credit banks. Most of the funds obtained by long-term credit banks were lent to the corporate sector at maturities of three to five years.

Note that this system of transforming short-term deposits into long-term lending was based on transfer of income between city banks and government in the form of implicit subsidies and taxation. The implicit subsidies to city banks could be calculated as the call market rate less the BOJ discount rate,

multiplied by outstanding borrowing from the BOJ. The implicit tax on city banks can be calculated as the market rate of return on bonds and debentures less the subscriber's rate of return on bonds and debentures, multiplied by the bonds and debentures held by city banks. It can be shown that financial debentures issued by long-term credit banks comprised the largest component of the implicit tax on city banks.

An important property of the SIMT can be identified in a comparison of estimates of tax and subsidies for the period 1966–77, reported in Teranishi (1993). The entire implicit subsidy amounted to 2,470 hundred-million yen, comparable in magnitude to the estimated value of the implicit tax of 2,255 hundred-million yen. In other words, the medium-term average of implicit subsidies to city banks from the maturity of transformation of short-term deposits to long-term lending almost balanced the average of implicit taxes on city banks. What does this mean? The equality implies

$$\begin{aligned} & (\text{call market rate} - \text{BOJ discount rate}) \times \text{city bank borrowing from BOJ} = (\text{market rate} \\ & \text{of return on bonds and debentures} - \text{subscriber's rate of return on bonds and debentures}) \\ & \times \text{bonds and debentures held by city banks.} \end{aligned}$$

Since call market rate \geq market rate of return
 $>$ subscriber's rate of return
 $>$ BOJ discount rate

city bank borrowings from BOJ $<$ bonds and debentures held by city banks.

In other words, through the SIMT, the amount of short-term deposits transformed into long-term lending (equal to the bonds and debentures held by city banks) is larger than the BOJ credits.

The importance of this proposition can be seen by contrasting the SIMT with the direct purchase of bonds and debentures by BOJ. In the case of direct purchases, BOJ must issue high-powered money equal to the amount of long-term funds to be created, at the risk of creating inflationary pressure. The well-known stability of the price level, especially wholesale prices, during the high-growth era suggests one additional role played by the SIMT.

Finally, let us touch briefly upon the process of the introduction of the SIMT during period II. The bond rationing system was established during periods I and II through a complicated political process including bankers, security companies, bureaucrats, and the occupation forces. The law on long-term credit banks whose financial debentures play a crucial role in the SIMT was promulgated in 1952. The Bank of Japan began its accommodating stance in lending and credit rationing in 1955. (These points were closely examined in Teranishi and Kosai 1993b.)

Concluding Remarks

We have discovered and analyzed the rather heavy dependence on retained earnings of large manufacturing firms during period II, a period after the initial recovery from wartime confusion and before the onset of rapid economic growth. This phenomenon stands in clear contrast with the financing structure of the high-growth era, especially in its early days when corporate firms were heavily dependent on bank borrowings.

Our analysis suggest three reasons for the dominance of indirect financing during the high-growth era. First, the mere existence of high rates of investment explains the high dependence on external financing, part of which is financed by financial institutions. The concentration of mobilization of financial savings in the banking sector is also important. One reason for this concentration is the

disappearance of informal credits in the inflation and reforms immediately after the war. Another cause lies in the regulation of the bond market by bureaucrats, which also became possible in the postwar confusion (Teranishi and Koshi 1993b). Finally, the establishment of an effective system of maturity transformation (SIMT) is also responsible for the dominance of indirect financing, because the SIMT mechanism spurred the supply of long-term funds without resorting to the securities market.

It is important to note that these three factors are a product of postwar conditions. The origin of the postwar financial system does not necessarily lie in the wartime system. Although we do not deny that the postwar financial system inherited various aspects of the prewar financial system and was influenced by the shock of World War II and defeat, we oppose the thesis that the postwar financial system is a simple inheritance or continuation of the wartime system. Incidentally, those who emphasize the continuity of the wartime and postwar financial systems often argue that once a banking system attains dominance during wartime, it tends to maintain its dominance over nascent securities markets through its favored access to and internalization of information. This theory, however, does not apply to the Japanese case for two reasons.¹⁰ First, under the system of the Wartime Designated Financial Institution for Munition Financing, the information-related capabilities of banks were completely neglected. Second, the renewed accumulation of information by the banking sector began through the process of rehabilitating the corporate balance sheets (*Kigyo saiken seibi*) immediately after the war and did not arise as a result of its previous dominant financing position.

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Footnotes Chapter 11

The author is grateful for the comments from Takeo Hoshi, Hideaki Miyajima, and other participants at the World Bank conference, "Corporate Governance in Transitional Economies," held at Stanford University April 22–23, 1994.

1. On these points, refer to the chapters by Masahiro Kuroda, Hiroshi Yoshikawa and Tetsuji Okazaki, and Teranishi, in Teranishi and Kosai 1993a.

2. See Kosai 1986.

3. For more detail and for changes over time, refer to Ministry of Finance, *Hojinkigyo Tokei Shuran (FY 1960–1974)*, vol. 1, pp. 1–2.

4. Because the *Hojinkigyo Tokei Nenpo* does not give separate figures for time deposits, the ratio of time deposits to the sum of total corporate time deposits, demand deposits, and cash was calculated from Bank of Japan, *Flow of Funds Accounts* and from Ministry of Finance (1978) and was multiplied with the total value of cash and deposits found in *Hojinkigyo-Tokei Nenpo*.

5. For the period 1951–55, the *Hojinkigyo-Tokei Nenpo* does not give figures for the entire manufacturing sector, so figures for the following industries were summed up: food, textiles, spinning, paper products, chemicals, fertilizer, glass and clay products, primary metals, steel, metal products, machinery (including electric and transportation machinery), and shipbuilding.

6. Although the share of retained earnings stays rather low during period III, it begins to surge in the mid-1970s and reaches more than 70 percent in the mid-1980s. This corresponds to the rather high share of retained earnings in the data for 1970–85 compiled by Mayer (1988, 1990).

7. As of the end of FY 1960, total gross assets of large and small manufacturing firms were 6,599 and 6,452 billion yen, respectively.

8. The reasons for and functions of bond rationing are explained in the next section.

9. Ministry of Finance (1983) *Flow of Funds Tables* gives only figures for the sum of financial debentures and corporate bonds. Financial debentures are estimated by multiplying the average ratio of financial debentures to the sum of financial debentures and corporate bonds during 1953–55. The same procedures were applied in the calculation of NFL.

10. These points were clarified through the recent research by Hoshi and others. Refer to Hoshi, in this volume.

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