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Corporate Financing Trends in Recent Years:
Fund Shortages and Repayment Burden

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Contents

Corporate Financing Trends in Recent Years: Fund Shortages and Repayment Burden

Summary

1. In the 1990s, the corporate sector shifted from insufficient funds to a surplus and, during the latter half, in particular, the repayment of liabilities was promoted and balance sheet adjustment progressed; however, how much has the burden of repayment of fixed liabilities improved? In this report, while summarizing corporate fund procurement during the 1990s, I discuss the corporate fund shortages/surpluses and the burden for the repayment of fixed liabilities.

2. Transitions in fund shortages in the non-financial corporate sector indicate that the scale of fund shortages gradually narrowed throughout the 1990s and that, by FY 1999, there was a surplus of 4% against GDP. While the contribution of large corporations to this change is great, the same tendency is also noted among small and medium-scale companies.

In order to pursue the background of this surplus of funds, the money flow among private sector non-financial companies in the1990s shows that, while management aspects overall did not fluctuate greatly, in terms of procurement, loans, which account for the majority of procurement during the period of 1990-96 increased by ¥110 trillion; however, during the three subsequent years, internal reserves were allocated to the reduction of financial liabilities and dropped by ¥20 trillion. One possible way of viewing this is that cash flow during this time rather was sluggish and, rather than saying that there was abundance in funding, capital investments were restrained and the reduction of liabilities was promoted.

A comparison of the funding shortfall (net) by industry in FY 1991 and FY 1998 shows that there were fund shortages shared by many industries but that industry-specific disparities become apparent in FY 1998. Estimating the funding shortfall in individual industries and comparing gross totals by industry shows that surpluses and shortfalls are evident even within industries. These disparities are especially conspicuous in non-manufacturing industries.

3. Funding shortfalls correspond to net financial balance and are important in observing the changes in the balance of financial assets and liabilities. On the other hand, when considering investments and other corporate decisions, since repayments and/or redemptions are frequently determined by contract at the time of past procurements, the degree of room that there is becomes important in the cash flow after repayment (i.e., cash flow – repayments and/or redemptions), which is cash with a high degree of freedom that is readily available for investment purposes. In addition, when repayment becomes difficult, when carrying out additional financing, etc., to avoid being short on cash, cash shortage is resolved for the time being and do not come to the surface. In order to grasp the actual circumstances, rather than fund shortages, the level of the repayment burden (i.e., repayments and redemptions/cash flow) becomes the focus of attention.

4. Examining the repayment burden of fixed liabilities, the ratio of the amount of repayments and redemptions to cash flow (i.e., repayment burden) shows that cash flow dropped throughout the 1990s due to a drop in profits, resulting in a higher ratio and a heavier burden. Therefore, there was pressure on the cash flow after repayment and it became in size. An analysis of the primary factors in the increase in the ratio shows that, because the repayment term remained level and the number of year of redemption increased, the repayment burden increased.

In order to investigate the conditions of internal funds that are readily available for individual corporations to use, I estimated cash flow after repayment of listed publicly-traded companies based on individual companies and observed the gross total by industry. The amount in FY

1991 indicates that, in manufacturing industries, positive and negative amounts virtually offset one another and cash flow and repayments, etc., are essentially balanced, while there were conspicuous industries with large negative amounts in non-manufacturing industries. Nevertheless, when viewing by the number of companies in the same year, there was no great disparity between manufacturing and non-manufacturing industries. Based on this, it becomes clear that, in industries with large negative amounts among non-manufacturing industries, there is a combination of some companies with extremely heavy repayment burden and others in which it is not so heavy.

5. As indicated above, in the latter half of the 1990s, the corporate sector shifted from funding shortfalls to surpluses and, in the corporate sector overall, balance sheet adjustments progressed showing a reduction in the balance of liabilities. Nevertheless, within the context of prolonged decline in cash flows, in addition to an increase in the repayment burden of fixed liabilities, disparities became evident in the degree of expansion between industries and between companies. The increase in the repayment burden put pressure on self-financed funds that are readily available for investments. In light of these circumstances, there is probably still a need in a number of industries for further balance sheet adjustments. In addition, in individual cases, if adjustment is difficult on their own, it is perhaps also necessary for them to adopt drastic measures such as enhancing profitability through company restructuring.

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Introduction

These was a tone of constraint in the attitude of banks toward lending during the 1990s and it is said that, as the demand for funds by companies was also restrained, adjustments of the level of liabilities, which had been excessive, also moved forward, while, on the other hand, the writeoff of non-performing debts, which is referred to as an aftereffect of the bubble economy, is still in progress.

In the 1990s, the corporate sector shifted from fund shortages to fund surpluses and, especially during the latter half, the repayment of liabilities progressed and balance sheet adjustments were also promoted. To what degree, though, has the repayment burden of fixed liabilities been alleviated? In this report, I present an overview of corporate funding procurement during the 1990s based on macro data and examine corporate fund shortages/surpluses and the repayment burden of fixed liabilities based on corporate financial data.

The characteristic feature of the analyses in this report is the point that economic analyses are conducted while considering data from the perspective of company analyses and screening. First of all, in order to consider the background of fund shortages as the outcome, I will attempt to evaluate company strength focusing on cash flow after repayment. The importance of cash flow has become fully understood in recent years; it is also necessary, however, to be aware that the funding that companies are free to use is limited by their past record. This is also a discussion of the effect not only on funding demand in net terms but also on gross funding demand. Secondly, attention is given particularly to repayment burden. Balance sheet adjustments are often discussed in terms of the interest burden; however, the repayment burden is also a frequent focus of attention as another important factor. Rather, in actuality, these are cases in which the reason why companies reach an impasse directly is obstacles that appear in the repayment burden rather than the heavy weight of the interest burden and there is sufficient reason to say that this point of view has been lacking in the discussion to date. This perspective is undoubtedly especially important in an age in which greater certainty in repayments and loans is screened most severely.

The reason why there have been few analyses based on this point of view is probably due to the limited availability of concrete data regarding repayment amounts, in particular; however, in this report, I proceeded to confirm repayment amounts by tabulating corporate financial data available for use at the Development Bank of Japan.

The contents of this report are as indicated below. In Chapter I, I give an overview of the general trends in the balance sheet conditions of the corporate sector based on the National Accounts. In Chapter II, I confirm the cash flow surrounding companies based on macro money flow accounts, while estimating funding shortfalls and surpluses by industry and by company based on micro corporate financial data and examine corporate sector conditions. In Chapter III, I confirm the level of cash flow after repayment and the repayment burden, which is the margin of funding flexibility that companies have, using corporate financial data and examine the underlying factors.

I Corporate Balance Sheet Conditions from a Macro Perspective

1. Corporate Sector Balance Sheet as Seen in SNA Statistics

Let us confirm first of all an overall image of the balance sheets of the non-financial corporate sector based on SNA statistics (Table 1-1). Since the value of each item of both assets and liabilities in SNA statistics is basically market value, it is possible to know the market price at any given time.[1]

The gross assets of the overall non-financial industries in Japan was ¥1,805 trillion as of the end of 1999, consisting of ¥1,055 trillion (58%) in real assets and ¥751 trillion (46%) in financial assets. 60% of the real assets were fixed assets and inventory and the other 40% was land. Liabilities were ¥1,526 trillion, consisting of ¥524 trillion in stock[2] and ¥573 trillion in loans. Net assets were about ¥230 trillion.

The movements[3] in this balance sheet throughout the 1990s show that fixed assets increased by ¥120 trillion while land holdings dropped ¥230 trillion due to the decline in land prices and other reasons and financial assets also declined by ¥55 trillion. Therefore, gross assets dropped by ¥157 trillion.

In regard to procurements, the primary move was an increase of ¥100 trillion in stock and "nonstock liabilities" (i.e., so-called current liabilities or fixed assets) overall remained steady.

Table 1-1 Transitions in Non-Financial Corporate Sector Balance Sheet

Item	End '90	End '91	End '92	End '93	End '94	End '95	End '96	End '97	End '98	End '99	'91 – '99
Real assets	1,157	1,151	1,130	1,130	1,120	1,109	1,112	1,133	1,080	1,055	-102
Fixed assets	453	496	522	536	538	544	551	576	575	573	120
Land	632	581	534	524	513	495	489	481	433	412	-220
Inventory	71	72	72	70	68	71	72	75	72	69	-1
Other	1	1	1	1	1	1	1	1	1	1	0
Financial assets	806	803	723	733	750	755	731	723	665	751	-55
Incl. stock	178	172	121	128	154	150	133	111	87	160	-18
Total	1,963	1,954	1,853	1,864	1,870	1,864	1,843	1,855	1,745	1,805	-157
Financial liabilities	1,428	1,457	1,345	1,372	1,462	1,480	1,465	1,430	1,308	1,526	99
Stock	424	411	299	320	397	398	379	339	290	524	100
Nonstock	1,003	1,047	1,046	1,052	1,065	1,082	1,086	1,091	1,018	1,002	-1
Loans	556	589	600	602	608	617	618	628	596	573	17
Corporate bonds, etc.	136	142	151	156	163	174	185	192	180	181	45
Other	311	317	296	294	294	291	283	271	241	247	-64
Net assets	535	497	508	491	408	384	378	425	437	279	-256

Source: Prepared based on Cabinet Office, National Accounts

[1] It is basically book value in the case of corporate accounting and a disparity arises with market value. Therefore, it is not possible to know the market value at any given time unless adjustments are made for unrealized gains and losses.

[2] Stock is considered to be one form of liabilities in SNA statistics and the net value is the company's own value that is not embodied in the value of the stock. Based on the viewpoint of the fictional theory of the corporation, this value is essentially the possession of the shareholder; however, it has a strong character of wealth owned by the corporation itself.

[3] In more precise terms, the 9-year period from 1991 through 1999, when consistent data based on the new standard of 93SNA existed.

Financial liabilities, therefore, increased by ¥99 trillion.

Due to these movements on the asset and liability sides, net assets decreased by ¥256 trillion from 1990 through 1999 to about half of the original ¥535 trillion.

2. Background of Changes in the Corporate Sector Balance Sheet

Next, we will observe what happens when changes in the corporate sector balance sheet are decomposed to changes in funding management and procurement behavior based on company transactions[4] and assets value fluctuations, etc.

Fund management based on transactions (Table 1-2) indicates that there were few investments in land in the overall investments in real assets that increased to ¥715 trillion throughout the 1990s and that investments in fixed assets accounted for the majority, ¥710 trillion. Though investments continued at a level that exceeded depreciation, the depreciation amount continued to increase throughout the 1990s while investments tended toward restraint, hence bringing the two amounts close together. Investments in financial assets were negative during the 1990s and the negative amount was especially large in 1992-93 after the collapse of the bubble economy and more recently in 1997-98.

In regard to funding procurement, there was an increase of ¥69 trillion in financial liabilities, of which stock increased by ¥13 trillion and nonstock liabilities increased by ¥56 trillion. However, as indicated below, the latter amount of ¥56 trillion matches precisely with ¥56 trillion in bad loan writeoffs.

Focusing on movements during the period 1997-99, while ¥41 trillion in financial assets were disposed, ¥64 trillion in financial liabilities were reduced. This coupled with the ¥56 trillion in bad loan writeoffs caused the balance of nonstock liabilities to ultimately remain steady even though the economy continued to expand in scale.

Table 1-2 Funding Management and Procurement in the Non-Financial Corporate Sector (based on transactions)

(unit: ¥tril.)

Item	1991	1992	1993	1994	1995	1996	1997	1998	1999	1997-99 subtotal	1991-99 subtotal
Investments in real assets	96.5	87.0	74.4	69.0	79.2	75.3	86.1	77.0	70.4	234	715
Incl. fixed asset formation	89.5	84.2	76.2	71.6	73.5	75.6	84.2	80.3	75.3	240	710
Increase in land	3.8	1.7	-1.8	-1.8	3.5	-3.3	-0.7	-3.3	-3.7	-8	-6
Increase in inventory	3.2	1.1	0.1	-0.8	2.2	2.9	2.7	0.0	-1.2	1	10
Investment in financial assets	8.8	-24.0	-12.6	1.3	8.1	13.3	-22.8	-24.9	6.9	-41	-46
Total	105.3	63.1	61.9	70.3	87.2	88.5	63.4	52.1	77.3	193	669
Change in net assets	11.7	3.2	-0.3	2.8	6.5	9.5	23.8	37.7	21.5	83	116
Depreciation costs	46.8	50.2	51.4	52.2	53.4	55.9	57.1	58.6	57.7	173	483
Financial liabilities	46.9	9.7	10.7	15.3	27.3	23.1	-17.5	-44.1	-2.0	-64	69
Stock	3.1	2.9	2.9	4.5	2.3	3.4	-16.2	3.7	6.8	-6	13
Nonstock	43.8	6.8	7.8	10.8	25.0	19.6	-1.3	-47.8	-8.7	-58	56
(Reference) Contribution to gross asset increase	58.6	12.9	10.5	18.1	33.9	32.6	6.2	-6.5	19.5	19	186

Source: Prepared based on Cabinet Office, National Accounts

[4] "Based on transactions" means based on economic transactions actually carried out by companies.

Looking at changes due to asset value variability, etc. (Table 1-3), a broad capital loss occurred during the 1990s due to asset value variability, etc., while bad loan writeoffs also occurred. In regard to the capital loss, overall the loss in stocks and other financial assets was not great, primarily a drop of ¥215 trillion in land due to the drop in land values. The writeoff of bad loans proceeded from the mid-1990s and decreased by ¥56 trillion overall from 1991 through 1999. Net assets increased by ¥116 trillion based on transactions throughout the 1990s but decreased by ¥372 trillion through valuation loss and so forth.

Focusing on nonstock liabilities, in particular, the overall positive amount during the 1990s was about ¥110 trillion based on transactions but remained steady at a level of about ¥1,000 trillion at the end of the 1990s due to the reduction in liabilities of ¥58 trillion and writeoff of bad loans of ¥56 trillion during the latter half of the 1990s. It could be said that, within the context of a tentative expansion in the scale of the economy, success was achieved in restraining the level of liabilities.

Nevertheless, while gross assets dropped by almost ¥160 trillion, net assets also decreased, and it will be more difficult hereafter to continue sustaining the level of liabilities indicated above. With the drop in land values, in particular, aside from whether or not this will emerge in accounting, in real terms, valuation losses continued to occur and, during that time, company profits, including capital loss, were considerably constrained. If land values happen to stop falling sometime in the not too distant future, it will become possible to lighten this burden; however, the asset value level, on which liability repayment is based, continues to drop[5] with a burden that is heavier than ever.

Table 1-3 Valuation Loss and Bad Loan Writeoffs, etc. (adjustment account)

(unit: ¥tril.)

Item	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
Real assets	-55.8	-57.8	-22.4	-27.2	-36.1	-16.8	-8.3	-71.4	-37.6	-334
Incl. land	-54.5	-49.0	-8.5	-9.4	-21.5	-2.3	-7.2	-45.3	-17.2	-215
Financial assets	-11.6	-56.0	22.5	15.4	-3.2	-37.1	14.4	-32.5	78.5	-9
Contribution to gross assets	-67.4	-113.8	0.2	-11.8	-39.3	-54.0	6.0	-103.9	41.0	-343
Financial liabilities	-17.2	-121.6	16.4	74.2	-9.0	-38.1	-17.4	-78.2	220.4	29
Incl. stock value variability	-16.7	-114.6	18.6	71.9	-1.2	-22.1	-23.3	-53.1	227.6	87
Incl. bad loan writeoffs (-)	-0.9	-1.5	-2.8	-4.4	-9.1	-7.4	-7.6	-13.8	-8.7	-56
Contribution to net assets	-50.1	7.8	-16.3	-86.0	-30.3	-15.8	23.4	-25.7	-179.5	-372

Source: Prepared based on Cabinet Office, National Accounts

[5] Since the profit rate is also dropping, the level of profit is falling. Refer to the Japan Development Bank (2000).

II Fund Shortages in the Corporate Sector in the 1990s

1. Funding Conditions in the Corporate Sector in the 1990s – From Fund Shortages to Fund Surpluses –

Until the 1980s and especially the latter half known as the bubble era, there was a strong demand for capital backed by vigorous capital investments and, even given the margin of flexibility for the cash flow, there was a great expansion in fund shortages.[6] In this section, I will confirm how this situation changed in the 1990s as well as the circumstances surrounding corporate fund procurement and cash flow.

Transitions in fund shortages in the non-financial corporate sector viewed in terms of money flow accounts (Fig. 2-1) indicates that the breadth of the funding shortfall from FY 1990 through FY 1995 narrowed, expanded subsequent to that in FY 1996 and continued in a deficit situation until FY 1997. This means that funds necessary for capital investments were covered not only by procurement through cash flow generated by companies themselves but also by procurement of outside fund, which then increases the balance of liabilities. In the following FY 1998, it shifted to a fund surplus and the surplus in 1999 amounted to 4% against GDP.

The allocation of the household fund surplus, i.e., savings, to the corporate fund shortages is the basic financial flow. This relationship collapsed in recent years, however, and household cash savings are being absorbed by the government sector where losses are gradually expanding. Nevertheless, as confirmed in the next section, this does not necessarily mean that the corporate sector has developed a margin of flexibility in the procurement of funds.

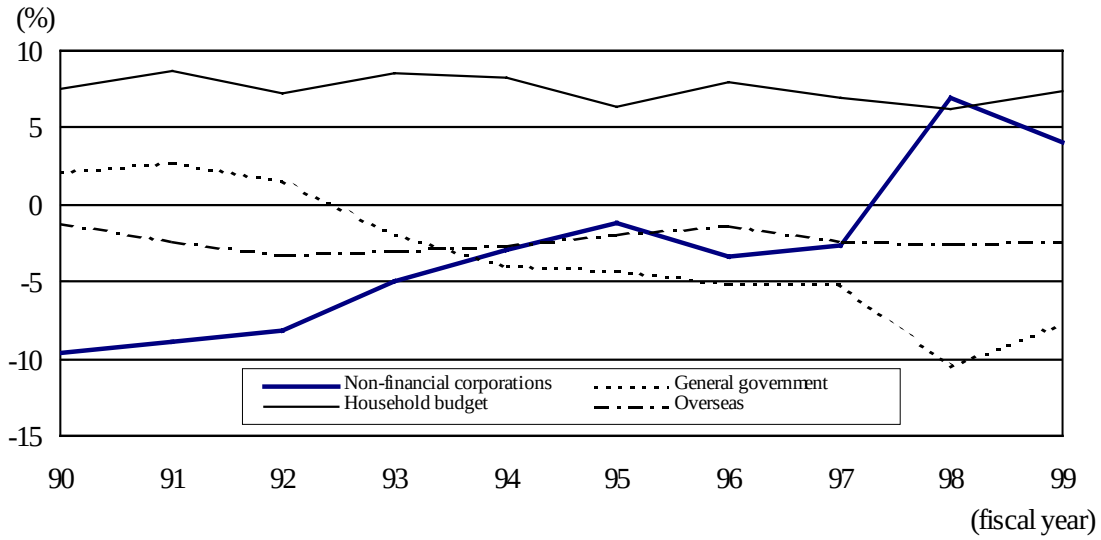


Fig. 2-1 Transitions in Fund Shortages by Sector (against GDP)

Source: Prepared based on the Bank of Japan, Cash Flow Accounts

[6] Refer to the Japan Development Bank (1992) for funding conditions in the 1980s. In addition, refer to the Development Bank of Japan (2001) for trends in longer term fund shortages.

The major change from fund shortages to surpluses in the non-financial corporate section described above is a characteristic feature even if compared to other countries (Fig. 2-2). Fund shortages against GDP in European countries during the 1990s was held within a plus/minus range of about 2%, while the range in Japan varied greatly from –9% to +5%.

In order to confirm trends in fund shortages by company scale, let us look at the cash flow amount less capital investments by company scale (Fig. 2-3). This value expresses fund shortages relating to capital investments.

Based on the graph, it is evident that, as large movements overall, the moves of companies with more than ¥1.0 billion in capital contribute greatly; however, the effect of companies with less than ¥100 million in capital is also sizable and the effect of small-scale companies, in particular, underlies the recent fund surpluses.

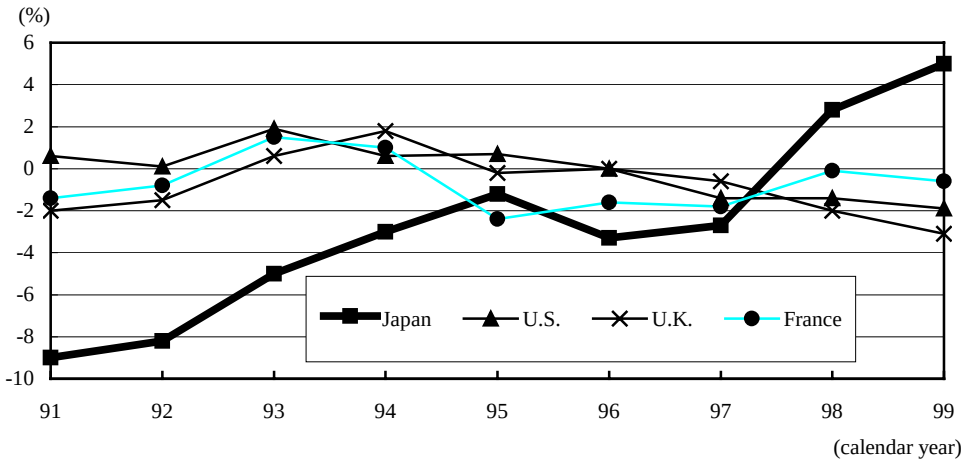


Fig. 2-2 Comparison of Non-Financial Corporate Sector Fund Shortages (against GDP)

Source: Prepared based on the Bank of Japan, International Comparative Statistics

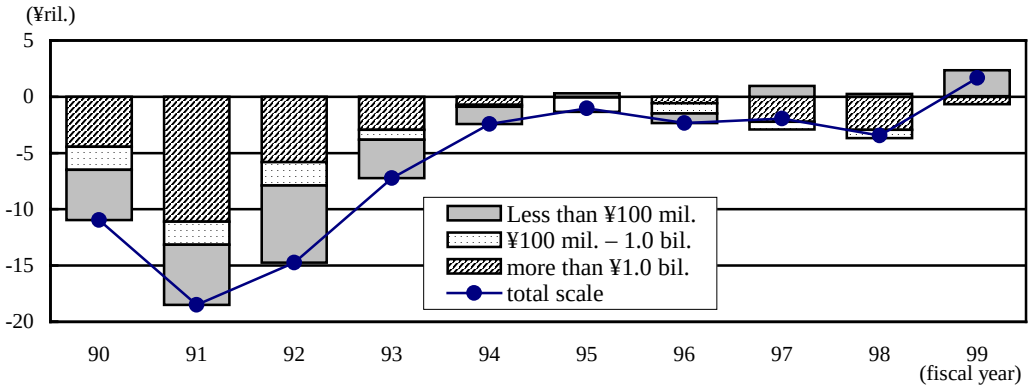


Fig. 2-3 Cash Flow – Capital Investments (by scale)

Note: Cash flow = current term net profit – dividends – bonuses + depreciation costs
Capital investment amount = amount of increase of tangible fixed assets (excluding land) + depreciation costs

Source: Prepared based on the Ministry of Finance, Corporate Statistics Annual Report

2. Corporate Sector Money Flow in the 1990s – Restrained Capital Investments and Reduced Financial Debt –

In this section, I will confirm how the non-financial corporate sector is managing the funds against the background of fund shortages seen in Section 1.

Viewing the overall flow of money of the corporate sector in the 1990s by money flow accounts, we see that there was an increase of no more than ¥8 trillion in terms of management while there was an increase of ¥97 trillion in terms of procurement. The increase in loans accounts for ¥91 trillion of this and it increased by ¥110 trillion during the period 1990-96, though it was followed by a drop of ¥20 trillion during the subsequent three years (Tale 2-1).

The diagram below illustrates the correspondence between such money flow (fund shortage) and actual fund demand (Fig. 2-4).

In FY 1990-96, there were many investments in real assets, which gave rise to a ¥121 trillion funding shortfall. Cash flow is the sum of internal reserves and depreciation costs while capital investments, etc., are the sum of the net increase in real assets and depreciation costs.

In FY 1997-99, the increase in real assets grew and ¥32 trillion of the cash flow was allocated to a reduction in financial liabilities as a fund surplus.

Table 2-1 Money Flow in Private Sector Non-Financial Corporations (based on transactions)

Management (unit: ¥tril)

FY	90~96	97~99	90s
Cash & deposits	-3	0	-3
Stock and disbursements	-9	-4	-13
Loans	11	0	11
Nonstock securities	-1	16	15
Accounts due & accrued liabilities	-2	-3	-5
External credit	28	8	36
Inter-company credit & other	12	-45	-33
Total	36	-28	8

Procurement (unit: ¥tril)

FY	90~96	97~99	90s
Stock and disbursements	16	4	20
Borrowings	110	-20	91
Nonstock securities	17	0	17
Accounts due & accrued liabilities	-13	-2	-15
Inter-company credit & other	27	-42	-16
Total	157	-60	97

Management and procurement amount (unit: ¥tril)

FY	90~96	97~99	90s
Total fund management	36	-28	8
Total fund procurement	157	-60	97
Fund shortage	-121	32	-89

Source: Prepared based on the Bank of Japan, Cash Flow Accounts

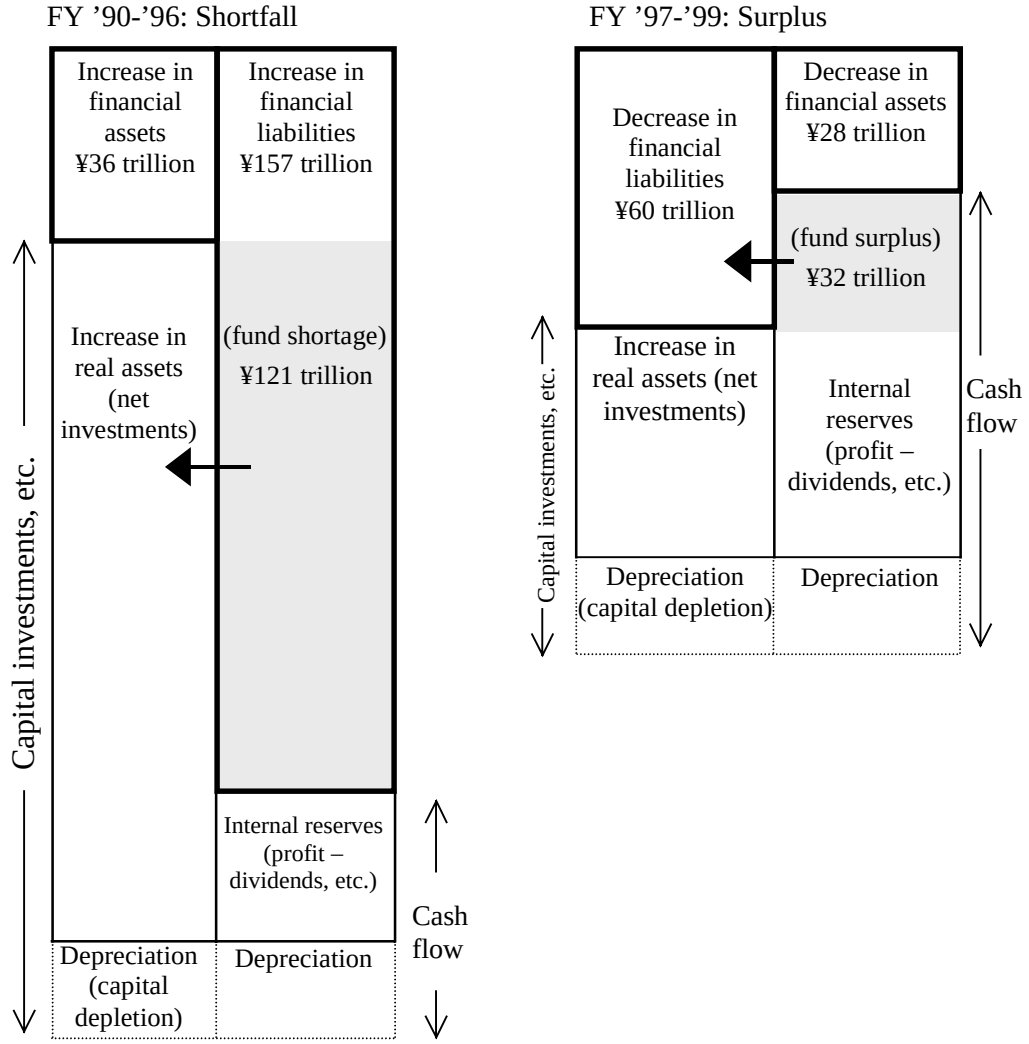


Fig. 2-4 Correspondence between Private Sector Non-Financial Corporation Money Flow and Investments/Internal Reserves

The fund surplus at the end of the 1990s was thus allocated to financial liabilities. That does not mean, however, that there was a margin of flexibility in the cash flow. At the end of the 1990s, cash flow instead was stagnant and capital investments were also restrained at a level lower than that at the beginning of the 1990s (Fig. 2-5). Combining these various factors, it is possible to see this as the promotion of a reduction in liabilities by restraining capital investments, etc., rather than as leeway in the cash flow.

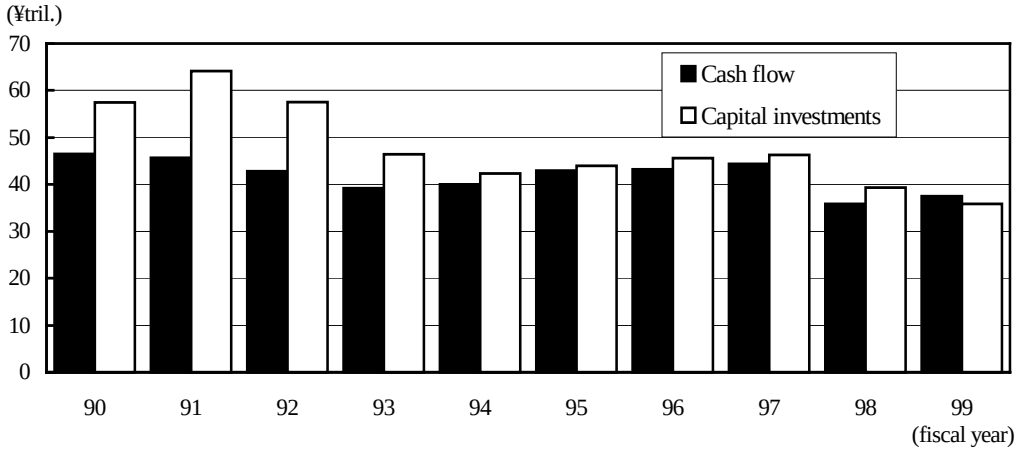


Fig. 2-5 Cash Flow and Capital Investments

Note: Cash flow = current term net profit – dividends – bonuses + depreciation costs
Capital investment amount = amount of increase of tangible fixed assets (excluding land) + depreciation costs

Source: Prepared based on the Ministry of Finance, Corporate Statistics Annual Report

3. Transitions in Fund Shortages as Indicated in Corporate Financial Data – Inter-Industry and Inter-Company Disparities –

I estimated the total net amount of the fund shortage and surplus by industry and the gross amount by company and confirmed the changes throughout the 1990s.

Let us look first at comparisons in the net fund shortage by industry in FY 1991 and FY 1998 (Figs. 2-6 & 2-7). The monetary amount shown by the bold line in the graphs is the net fund shortage by industry.

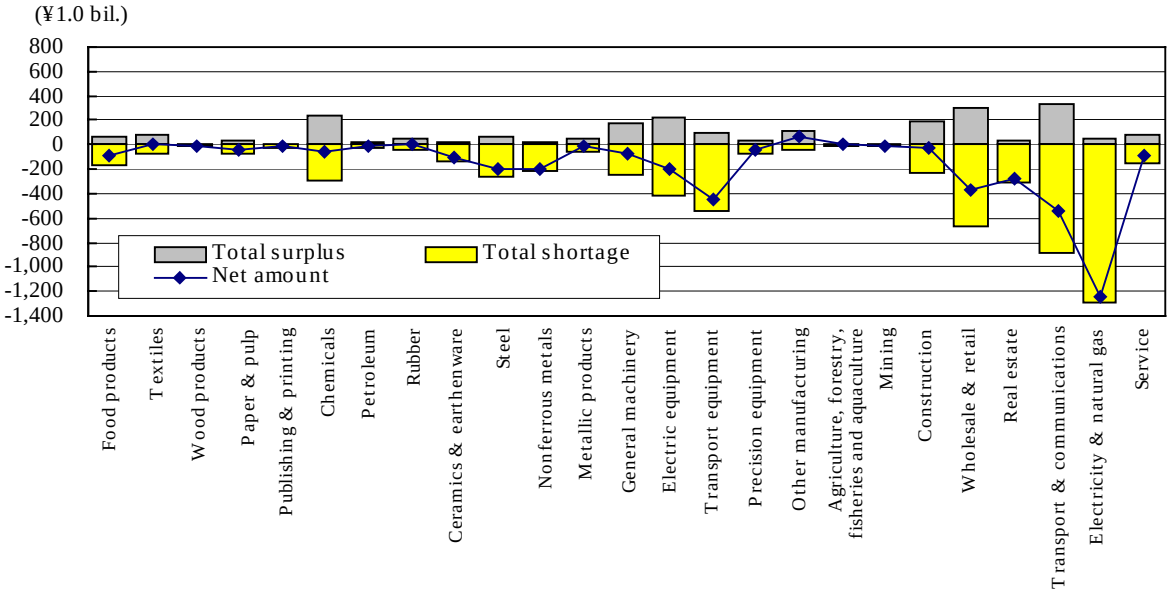


Fig. 2-6 Fund Shortage by Industry (FY 1990, gross)

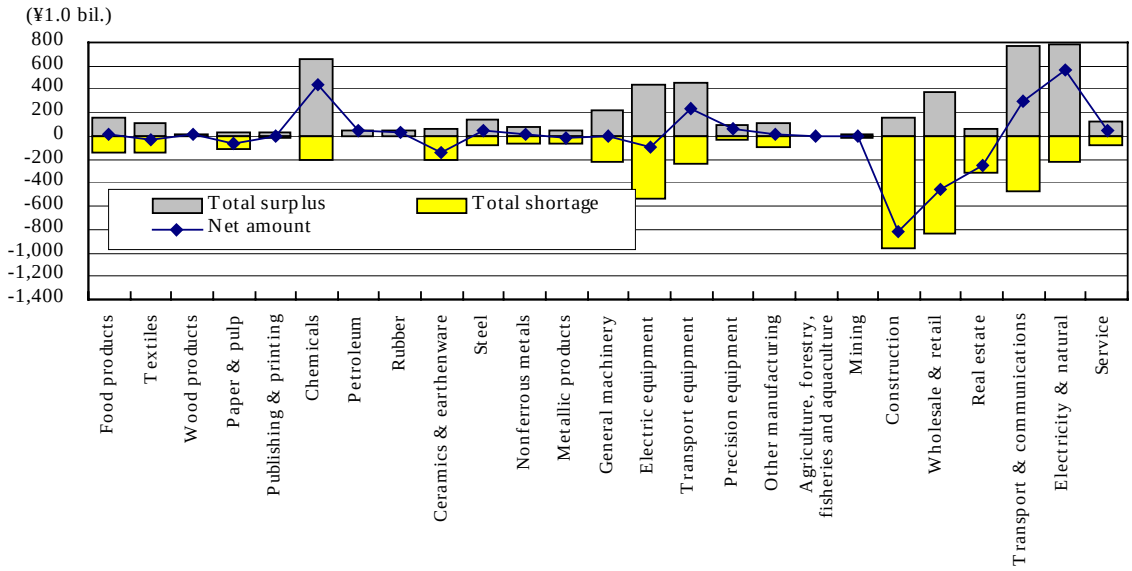


Fig. 2-7 Fund Shortage by Industry (FY 1998, gross)

Notes: 1. 2,224 listed publicly-traded common companies with usable common data
2. Fund shortage = cash flow – capital investments
Cash flow = internal reserves + depreciation costs
Internal reserves = after-tax current profit /loss – dividends – bonuses

Source: Prepared based on Development Bank of Japan corporate financial data

In FY 1991, similar to a macro-trend, the overall net amount was negative and it is apparent that many industries shared the same fund shortage situation. In contrast, there was an increase in industries that switched to the positive in FY 1998, moving overall toward a surplus.

The bar portion of the graphs shows a comparison of the total gross amount of individual industries based on estimates of the fund shortage amount by industry. The disparity between companies with a surplus and those with an shortage is relatively narrow depending on the industry; in 1998, however, the differences between companies with surpluses and those with shortages is large depending in the industry and the disparity is notable.

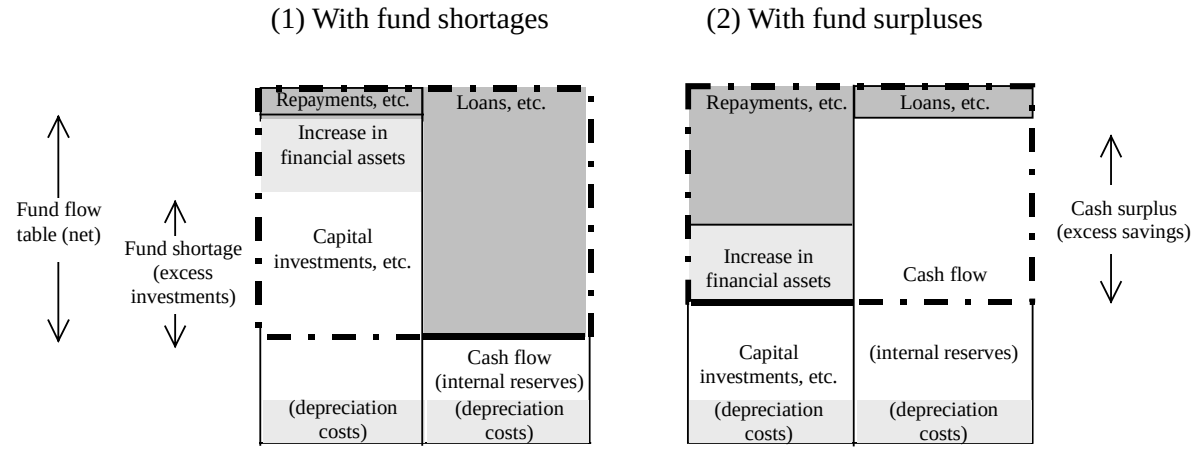
Above, in Chapter II, I confirmed the fund shortage from various angles and the fund shortages are basically linked to changes in the net financial liability balance. Inter-industry and inter-company disparities as reflected in these fund shortages and surpluses emerge more distinctly than indices that show the degree of freedom of fund capabilities that companies have. I confirm this point in Chapter III.

III Corporate Sector Repayment Burden

1. Cash Flow after Repayment and Repayment Burden

In Chapter III, I focus on the indices of cash flow after repayment and repayment burden instead of fund shortages and surpluses in order to analyze the effects of liability repayment on fund procurement decisions by corporations. As explained below, these are indices that show the amount of cash that companies have that they are relatively free to use. The external procurement of funds generates considerable additional costs[7] compared to procurement through internal funds and importance is placed on this difference.

Fund shortages express the so-called net financial balance and are important in observing changes in the net balance of financial liabilities (Fig. 3-1). Fund shortages in financial terms (= loans, etc. – repayments, etc. – increase in financial assets of (1)) correspond to excess investment in real terms (= capital investments, etc. – cash flow of (1)) and fund surpluses (= repayments, etc. + increase in financial assets – increase in loans of (2)) correspond to excess savings (= cash flow – capital investments, etc. of (2)). If investments are within the scope of the cash flow, the net financial balance = 0 and there is no change in the financial position (= net financial liabilities).



Fund shortages/surpluses (= net financial balance) ← correspondence → excess investments in real assets (= capital investments – cash flow)

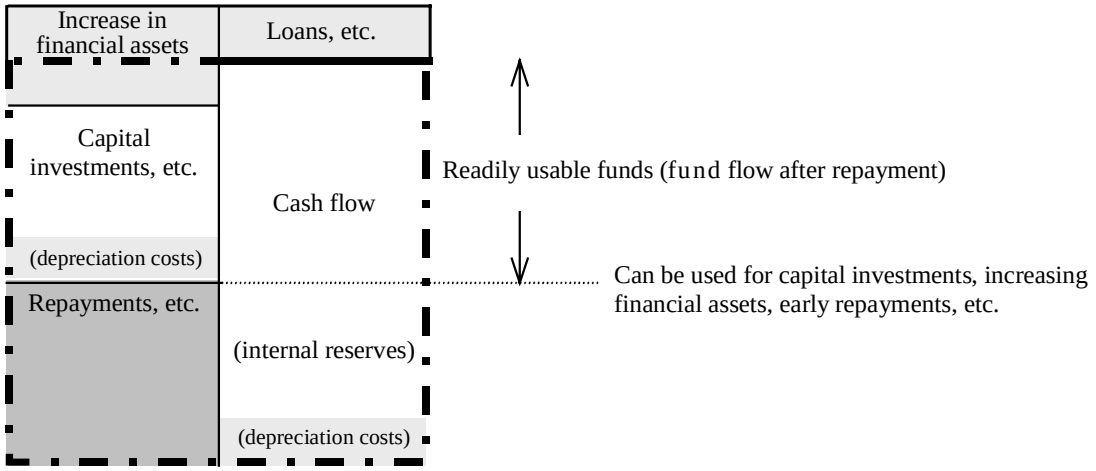
Fig. 3-1 Relationship of Fund Shortages/Surpluses and Real Investments, etc.

[7] It is necessary to be aware that opportunity costs must also be taken into consideration in the case of internal reserves. That is, investments that do not generate profits that would be linked to dividends (or increase in stock price) of a level corresponding to the going market price basically do not have the support of shareholders. Consequently, it is necessary for company management to be aware of an internal profit rate of a certain extent when undertaking investments.

Nevertheless, it is necessary when considering the fund procurement decisions for investments, etc., to be aware of the fact that repayments, etc. (= repayment of loans or redemption of corporate bonds) are frequently determined by contract at the time of past procurements.[8] Fig. 3-2 is a recombination of the left-hand side of Fig. 3-1 viewed from this perspective. The use of funds and procurements is decided with priority from the bottom up. Consequently, what is important here in procuring funds to be used by companies for investments is not fund shortages but that portion of funds that is readily available for use indicated by the arrows, in other words, cash flow less repayments, etc. This is referred to as "cash flow after repayment." As indicated in the next section and on, it is possible to comprehend the situation by industry and make comparisons between industries by calculating and tabulating these funds for individual companies.

As an additional index, the ratio of repayments, etc., to cash flow is defined in this study as "repayment burden." This is an index for observing the ratio of funds in the possession of the company with usage restricted in advance by repayments, etc., and it indicates the degree of the burden of liabilities for company management.

Though, with fund shortages and surpluses, it is only possible to see excess funds being applied to net repayments, viewed in terms of repayment burden makes it possible to see the degree to which repayments that must be made with priority are covered by the cash flow generated by the company. Repayment burden is therefore more appropriate than fund shortages and surpluses as a way of ascertaining the vitality of the company. For example, when additional financing, etc., is undertaken in order to avoid short on cash when repayment is difficult, cash shortages are tentatively resolved and the difficulties do not come to the surface; the weight of the repayment burden, however, still remains the same.



Cash flow after repayment (= cash flow – repayments, etc.): Readily available funds (high degree of freedom in decisions)

Fig. 3-2 Cash Flow after Repayment and Scheduled Repayment Burden

[8] It is normally necessary, therefore, to make regular payments in certain amounts (contract repayment). It is said that this subjects company managers to a certain degree of discipline.

The repayment burden is equivalent to the redemption term (index of profit earning capacity in relation to liability balance) / repayment term (index expressing the vital importance of repayment) and the fewer the number of redemption years and the longer the repayment term, the lighter the burden (Fig. 3-3).

$$\frac{\text{repayments, etc.}}{\text{cash flow}} = \frac{\dfrac{\text{liabilities}}{\text{cash flow}}}{\dfrac{\text{liabilities}}{\text{repayments, etc.}}}$$

∴ repayment burden =
redemption term ÷ repayment term

Fig. 3-3 Meaning of Repayment Burden (= Repayment and Redemption / Cash Flow)

Consequently, when the liability burden > 1, repayments, etc. > cash flow and then the redemption term > the repayment term. In other words, if the repayment burden is greater than 1, the cash flow is no longer capable of offsetting repayments and it is necessary to replenish operating funds. That means that, even if the repayment burden happens to be less than 1, as it approaches closer to 1, difficulties that arise in repayment become more readily evident due to profit fluctuations, resulting in so-called "term risk."

2. Increase in the Repayment Burden of Fixed Liabilities

The transitions in the repayment burden of actual fixed liabilities (long-term loans and corporate bonds) based on company financial data (Fig. 3-4) show that the repayment burden became gradually heavier throughout the 1990s because profits dropped and cash flow was reduced.

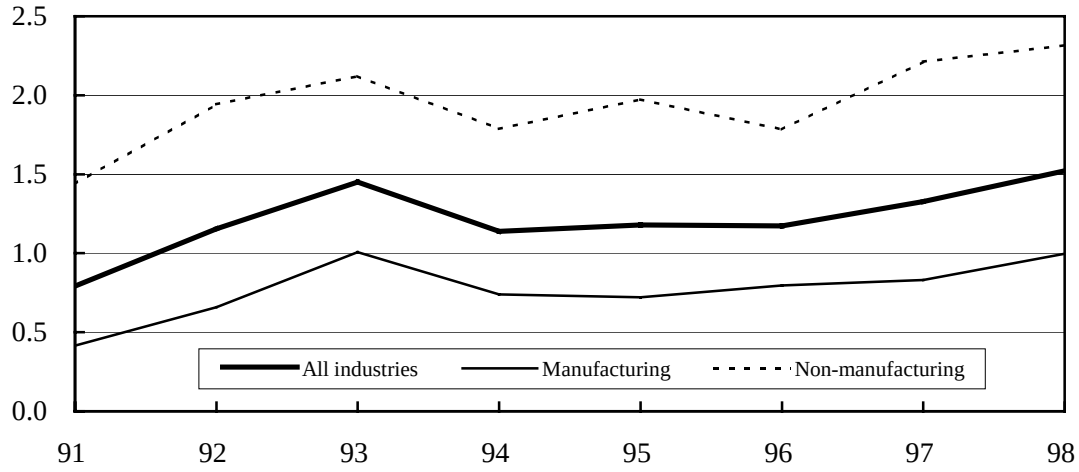


Fig. 3-4 Repayment Burden = (Repayment + Redemption Amount)/Cash Flow

Notes: 1. 2,189 listed publicly-traded common companies with shared data available
2. Cash flow was defined as internal reserves + depreciation costs.
Internal reserves = after-tax current term profit/loss – dividends – bonuses

Source: Prepared based on company financial data of the Development Bank of Japan

Dividing this background into the number of years of redemption and repayment term using the decomposition equation in Fig. 3-3, it can be seen that, while essentially flat at a repayment term of about five years (Fig. 3-6), the number of years of redemption term increases from about five to about seven years (Fig. 3-5). The long redemption term for non-manufacturing industries is due in part to their unique characteristic of requiring a long term for collection. However, attention is drawn to the fact that the number of years of redemption has been on the increase in both manufacturing and non-manufacturing industries in recent years. In contrast, the repayment term has tended to become shorter, albeit slightly.

The widening mismatch between the number of years of redemption and the repayment term aggravates the term risk associated with the liabilities held by the company and it could be said that it is stimulating the demand for cash for longer terms. In addition, with this situation in the background, it also results in requests for rescheduling the repayment, etc., of existing liabilities. On an individual basis, this is probably inevitable if there are no prospects for cash flow recovery. Even so, however, if it remains impossible to remedy the situation, liabilities in actuality becomes uncollectable and there is no recourse but to take steps such as reducing the principal.

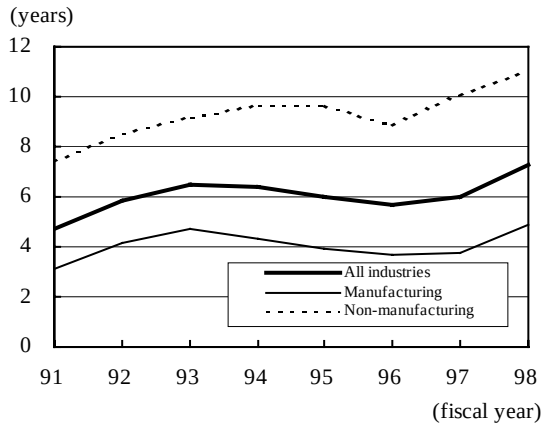


Fig. 3-5 Redemption Term

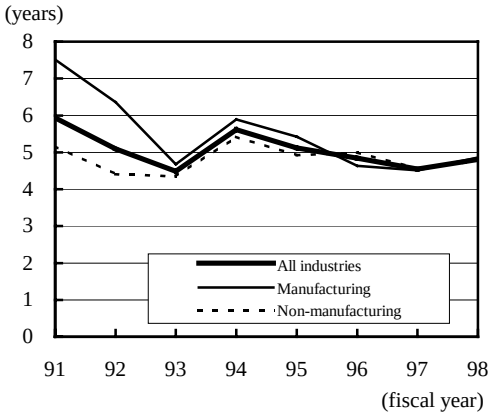


Fig. 3-6 Repayment Term

Notes: 1. 2,189 listed publicly-traded common companies with common data available
2. Cash flow was defined as internal reserves + depreciation costs.
Internal reserves = after-tax current term profit/loss – dividends – bonuses
3. Redemption term = liabilities/cash flow; liabilities = long-term loans + corporate bonds
4. Repayment term = liabilities/(repayments + redemption amounts)

Source: Prepared based on Development Bank of Japan corporate financial data

Viewing the repayment term of long-term loans and corporate bonds (Figs. 3-7 & 3-8), a tendency toward shorter repayment terms for corporate bonds was evident through 1993. Rather than a shortening of the average repayment term, this is probably due to a temporary concentration of redemptions of bonds that were issued during the time of the bubble economy.

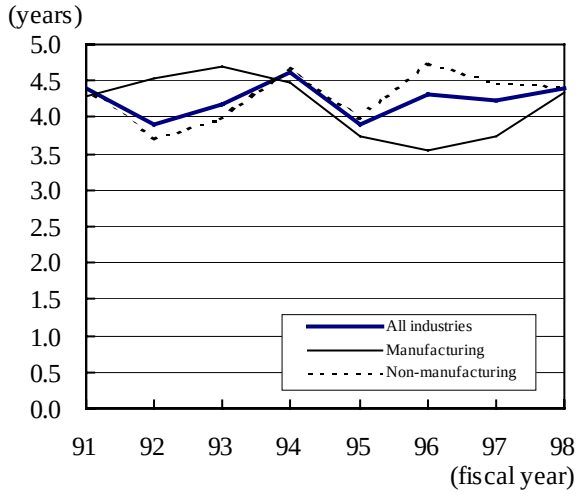


Fig. 3-7 Repayment Term of Long-Term Loans

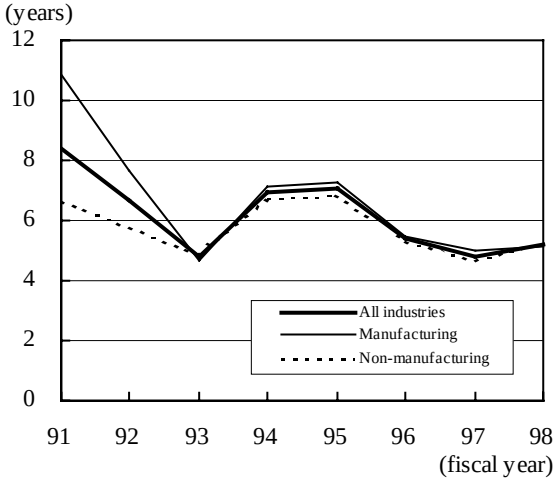


Fig. 3-8 Repayment Term of Corporate Bonds

Notes: 1. 2,189 listed publicly-traded common companies with common data available
2. Cash flow was defined as internal reserves + depreciation costs.
Internal reserves = after-tax current term profit/loss – dividends – bonuses
3. Repayment term of long-term loans = long-term loans/repayment
4. Repayment term of corporate bonds = corporate bonds/redemption amount

Source: Prepared based on Development Bank of Japan corporate financial data

3. Balance between Cash Flow and Repayment Burden by Individual Company

Next, I will calculate the cash flow after repayment of listed publicly-traded companies and total positive amounts for each positive and negative amounts for each negative in "gross" terms for each industry and observe the extent of the internal funds that are readily available for use by the company.

The amounts in FY 1991 (Fig. 3-9) show that they were positive in gross terms for most industries and companies, which is linked to a positive in net terms for industries overall. There were many negative amounts such as in wholesale and retail industries and they were also negative in net terms.

The amounts in FY 1998 (Fig. 3-10) show that positive and negative amounts generally offset one another in manufacturing industries and that cash flow and repayments, etc., are essentially balanced. Real estate and other industries with large negative amounts are notable among non-manufacturing industries.

Still, on the other hand, there is also a large disparity between manufacturing and non-manufacturing industries in the number of companies in FY 1998 (Fig. 3-11).

It is evident based on the above that there is a combination in non-manufacturing industries with large negative amounts of some companies with an excessively heavy repayment burden and others with a burden that is not so heavy.

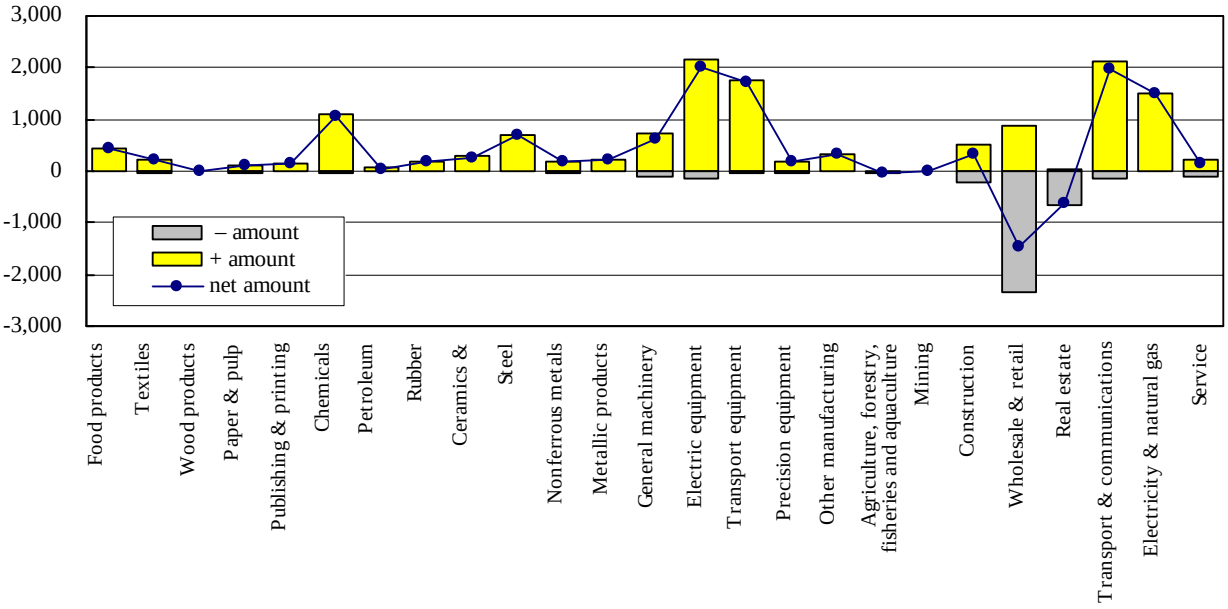


Fig. 3-9 Conditions of Cash Flow after Repayment (= Cash Flow – Repayments, etc.) (FY 1991, gross)

Notes: 1. 2,189 listed publicly-traded common companies with common data available
2. Cash flow was defined as internal reserves + depreciation costs.
Internal reserves = after-tax current term profit/loss – dividends – bonuses
3. Repayments, etc. = long-term loan repayments + corporate bond redemption amount

Source: Prepared based on Development Bank of Japan corporate financial data; figures for FY 1998

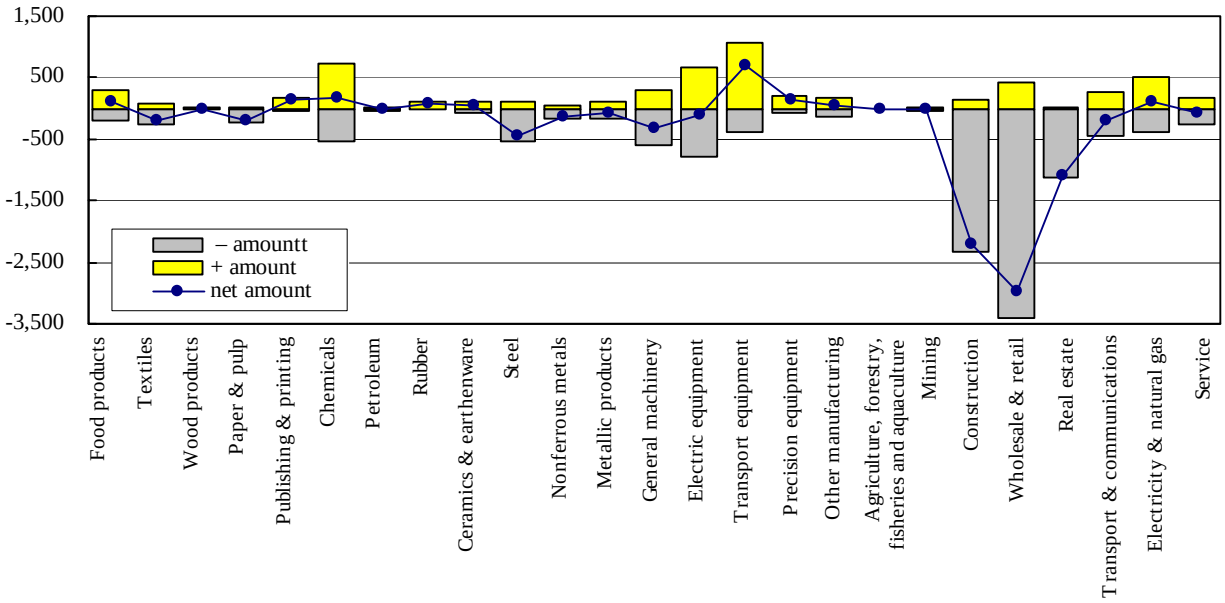


Fig. 3-10 Conditions of Cash Flow after Repayment (= Cash Flow – Repayments, etc.) (FY 1998, gross)

Note: Same as Fig. 3-9

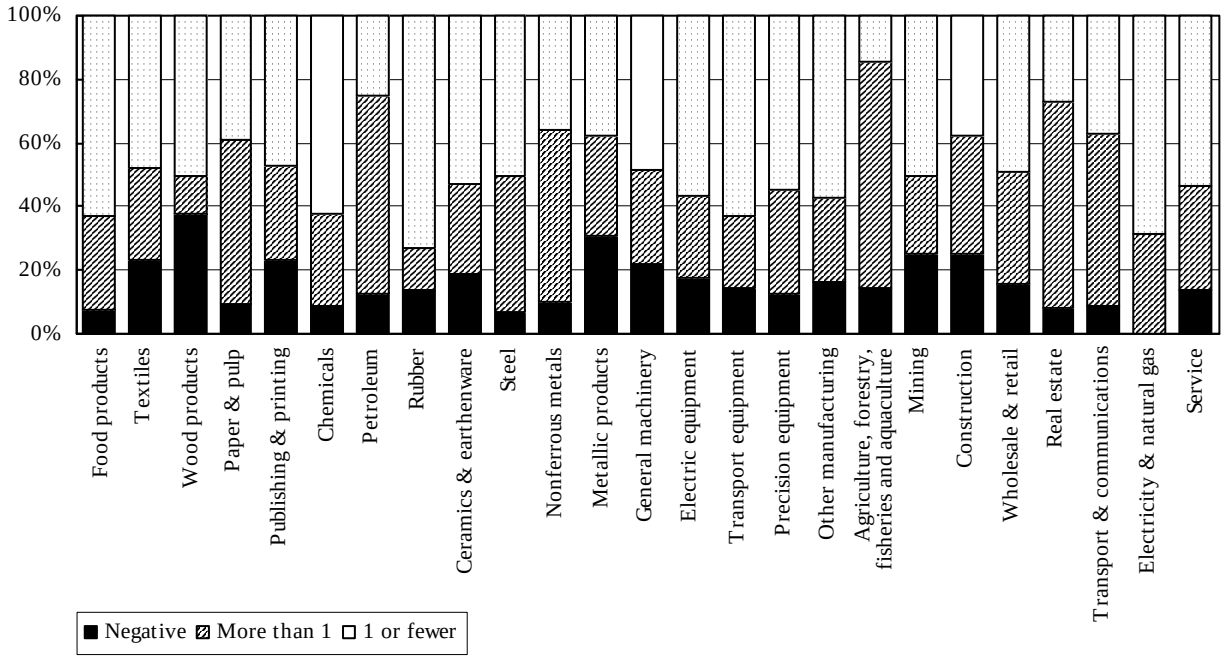


Fig. 3-11 Ratio of the Number of Companies According to Repayment Burden (= (Repayments + Redemption Amounts)/Cash Flow)

Notes: 1. 2,189 listed publicly-traded common companies with common data available
2. Cash flow was defined as internal reserves + depreciation costs.
Internal reserves = after-tax current term profit/loss – dividends – bonuses

Source: Prepared based on Development Bank of Japan corporate financial data; figures for FY 1998

4. From the Perspective of Cash Flow Trends in Recent Years

Though itemized statements of long-term loans have not been released since FY 1999 accompanying the change in accounting systems, there are some companies that have started releasing their cash flow calculation sheets and these make it possible to observe the relationship between cash flow and repayments, etc. Though data for no more than 223 companies is available for FY 1999 and 301 companies for FY 2000 (Table 3-1), they reveal that repayments, etc., account for the majority of cash flow obtained through routine business activities.

Table 3-1 Cash Flow and Repayment Burden

(unit: ¥tril., %)

	FY 1999		FY 2000	
# of companies releasing data	223		301	
Unit	¥ trillion	%	¥ trillion	%
Pre-adjusted cash flow from operating activities	464.0	152.0	666.5	155.7
(incl. depreciation costs)	(172.3)		(216.9)	
Refunds on corporate tax, etc. – paid amount	-146.2	-47.9	-221.2	-51.7
Total other	-12.5	-4.1	-17.5	-4.1
Cash flow from operating activities	305.4	100.0	428.0	100.0
Disbursements due to repayment of long-term loans (△)	-141.6	-46.4	-244.1	-57.0
Disbursements due to redemption of corporate bonds (△)	-38.8	-12.7	-63.8	-14.9
Dividend payments (△)	-39.9	-13.1	-67.4	-15.7
Interest payments (△)	-0.4	-0.1	-0.6	-0.1

Conclusion

In the latter half of the 1990s, the corporate sector shifted from a funding shortfall to a surplus and, in the overall corporate sector, balance sheet adjustments proceeded in the form of reductions of the liability balance. Nevertheless, within the context of prolonged funding flow decline, the repayment burden of fixed liabilities increased and disparities between industries and companies became apparent in the degree to which the adjustments were promoted.

While there was little change in the repayment term, there was a tendency for the redemption term (= number of years of redemption capability) to lengthen and, therefore, the repayment burden intensified and the term risk of the liabilities also heightened. Consequently, this seemingly led to an increase in the long-term funding demand.

The increase in the repayment burden constrained self-financed funds that are readily available for investments and became a factor in the slowdown of investments. Cash flow after repayment became large negative amounts in a number of industries and balance sheet adjustments will probably need to be continued until conditions that facilitate investments are restored. In addition, when adjustments are difficult to implement on their own in individual cases, there is probably also a need for such companies to adopt drastic remedies such as enhancing profitability through restructuring.

References

Ando, K. 2001. "Risk-Averting Portfolio Trends of Japanese Households," *DBJ Research Report* **15**

_____, Tomita, H. 2000. "The Slump in Plant and Equipment Investment in the 1990s: Focusing on Lowered Expectations, the Debt Burden and Other Structural Factors," *DBJ Research Report* **3**

Hachisuka, K., and Watanabe, T. 1992. "Flow of Funds in the 80s and Future Corporate Finance in Japan," *JDB Research Report* **29**

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