Financial System Report

An Assessment of Financial System Stability

Focusing on the Banking Sector

Bank of Japan
August 2005

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Introduction

After more than a decade of struggle, Japan's financial system has almost overcome the nonperforming-loan (NPL) problem, and has entered a new phase of development. The full removal of the blanket guarantee of deposits on April 1, 2005 was a symbolic event of this phase shift.

In view of the changing circumstances, the Bank of Japan published, on March 22, 2005,[1] "The Bank of Japan's Measures regarding the Financial System after the Full Removal of Blanket Guarantee of Deposits." In this statement, the Bank announced that its basic stance in financial system policy would shift from crisis management to supporting private-sector initiatives toward providing more efficient and advanced financial services via fair competition, while maintaining financial system stability. In this regard, the Bank underwent organizational reforms to adapt to this shift: the establishment of the Financial Systems and Bank Examination Department, by integrating the Financial Systems Department and the Bank Examination and Surveillance Department; and the establishment of the Center for Advanced Financial Technology in the new department.

The announcement to start the publication of the Financial System Report (FSR) is another component of the statement. The FSR is comprised of two regular reports: one to evaluate the stability and functioning of the financial system; and the other to explain the Bank's policy. This report, "An Assessment of Financial System Stability: Focusing on the Banking Sector," in conjunction with "Measures Taken by the Bank of Japan for Financial System Stability" is the first issue of these reports.

The aim of this report is to examine, (1) the soundness of individual financial institutions, (2) the risks of macroeconomic imbalances or ones in the financial system, and (3) the functioning of the financial system in relation to the sound development of Japan's economy.

Ensuring the soundness of individual financial institutions is vital in maintaining overall stability of the financial system. It is of more significance when the system or the economy is unstable. Under such circumstances, a failure of an individual financial institution may trigger materialization of systemic risk.

Avoiding the risks of macroeconomic imbalances or ones in the financial system is essential in maintaining financial stability. Measures to this end include: prompt identification of macroeconomic risk factors that affect the banking sector; comprehensive analysis of the financial activities of economic entities, including banks, firms, and households, to check for the presence of any excessiveness or distortion; and thorough examination of whether this could result in the materialization of systemic risk.

Verifying the functioning of the financial system is the key to support the sound development of Japan's economy. It is also important to seek ways to enhance its functioning in this regard.

The Bank will publish this report annually to provide a comprehensive analysis and evaluation of Japan's financial system. The Bank will also continue to publish, simultaneously with this report, "Measures Taken by the Bank of Japan for Financial System Stability" to enhance the transparency of its policy measures.

[1] The original version in Japanese was published on March 18, 2005.

Summary: Financial System Stability in Japan

Having almost overcome the NPL problem, Japan's banks are gradually recovering stable business conditions. The significant improvement in the credit quality of loans, the decline in credit costs, and the reduction in the market risk associated with stockholdings, previously a considerable risk factor for major banks, have eased capital constraints which had been a significant burden to them since the latter half of the 1990s. These seem to have substantially decreased the likelihood that the functioning of the banking sector, the core of the financial system, will again become impaired and interfere with the functioning of the overall financial system in the near future.

There appears to be no evidence of a large increase in risks in individual areas of banking business. In extending loans to firms, banks have been paying careful attention to the balance of risks and returns. They have been controlling the amount and quality of loans, applying strict loan-loss provisioning policy, and employing advanced risk management methods. Business conditions at borrower firms have been improving, and this has also contributed to containing the credit risk borne by banks.

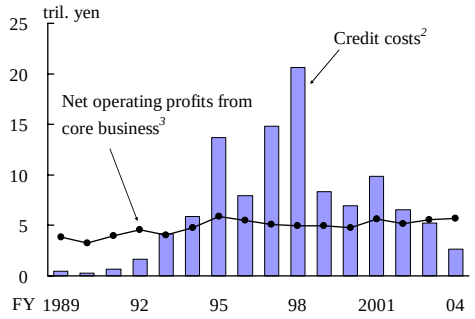
Banks have been increasing the amount outstanding of fixed income securities in their portfolios, but carefully controlling interest rate risk by decreasing the duration of their bond portfolios. Banks are also increasing "alternative investment" in, for example, structured bonds, hedge funds, and real estate funds, so as to realize higher returns. Risk for these types of investment should be appropriately assessed and managed in comparison with allocated capital for the investment.

As banks have gradually recovered more stable business conditions, they have started to offer more innovative financial services. In response to demand for wide-ranging and sophisticated financial services, banks have introduced new forms of credit supply and services for corporate customers, such as real estate non-recourse loans and uncollateralized business loans for small firms. Meanwhile, for households, banks have been offering various forms of housing loans and consumer loans, as well as expanding sales of investment trusts and private pension policies.

While possible macroeconomic shocks that need to be taken into consideration include an economic downturn and a rise in interest rates, the banking sector has become increasingly robust to such shocks. If the economy takes a downturn, credit costs will increase, but the possibility of credit costs reaching levels as high as in the past has diminished due to improvement in the credit quality of existing loans and in the borrower firms' financial positions. If interest rates rise, banks' profits will be affected in various ways depending on the shift of the yield curve, but significant negative effects are unlikely to be marked and banks' capital will mostly be able to cushion the negative shock.

With the easing of capital constraints, banks have been constructing new business models, adapting themselves dynamically to changes in their business environment under financial innovation. These positive movements have been fueled by the fact that reinforcement of stockholders' and market participants' activities has been increasingly exercising discipline over bank management. Further progress is desirable along these lines to continue enhancing the stability and functioning of the financial system.

Chart 1: Credit Costs and Net Operating Profits from Core Business[1]

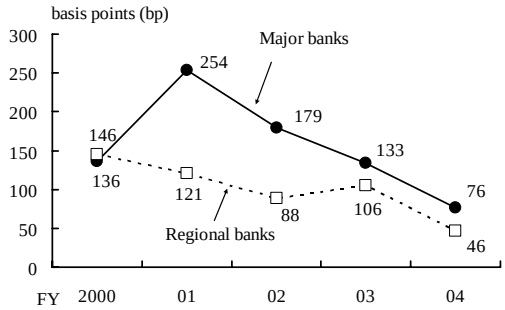


Notes: *1*. The aggregate figure for both major and regional banks. The 14 major banks include Shinsei Bank and Aozora Bank. The 112 regional banks comprise the 64 member banks of the Regional Banks Association of Japan and the 48 member banks of the Second Association of Regional Banks, as of the end of March 2005.

2. Credit costs include (1) loan write-offs, (2) net transfers to loan-loss provisions, and (3) losses incurred when NPLs are sold.

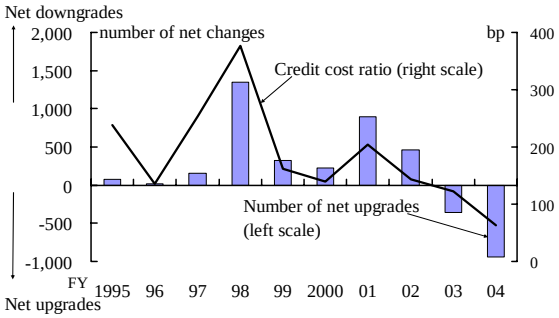
3. Net operating profits from core business = net operating profits – net realized bond-related gains/losses + net transfers to allowances for possible loan losses + loan write-offs in trust accounts.

Chart 2: Credit Cost Ratios[1]



Note: *1*. Credit cost ratio = credit costs/total outstanding loans. One basis point (bp) = 0.01 percent.

Chart 3: Credit Rating and Credit Cost Ratios[1,2]



Notes: *1*. The credit cost ratio is calculated by using the aggregate figure for both major and regional banks.

2. Net upgrades/downgrades are calculated by subtracting the number of downgrades from the number of upgrades. Changes in ratings by the following credit-rating agencies are covered: Moody's Investors Service, Standard & Poor's, Fitch Ratings, Rating and Investment Information, and Japan Credit Rating Agency.

I. Developments in Risks in the Banking Sector

A. Decrease in Credit Risk

During the period from the 1990s onward, increased credit risk resulting from deterioration in the credit quality of loans had exerted pressure on banking business. However, Japanese banks, on the whole, have almost overcome the NPL problem.

Losses from the disposal of NPLs, i.e., credit costs, have declined significantly (Chart 1). For a considerably long period of time, credit costs had exceeded basic profits (net operating profits from core business), but in fiscal 2004 these decreased to almost half the level of the latter. The credit cost ratio, the ratio of credit costs to the amount outstanding of loans, declined in fiscal 2004 in the 14 major banks and the 112 regional banks to 76 basis points and 46 basis points, respectively (Chart 2).

The decrease in credit costs reflected a substantial improvement in the quality of banks' loan assets, which occurred for the following reasons. First, firms' balance sheets improved significantly reflecting improvement in their business performance and progress in reorganization of unsound firms. And second, banks' efforts to dispose of NPLs made a considerable improvement in the credit quality of loans.

The improvement in firms' balance sheet was evidenced in the increasing number of upgrades of credit ratings, which mirrored progress in declining credit costs. The fall in credit costs in fiscal 2004 was almost in parallel with an increase in net upgrades, i.e., the difference between the number of firms upgraded and those downgraded by credit rating agencies (Chart 3).

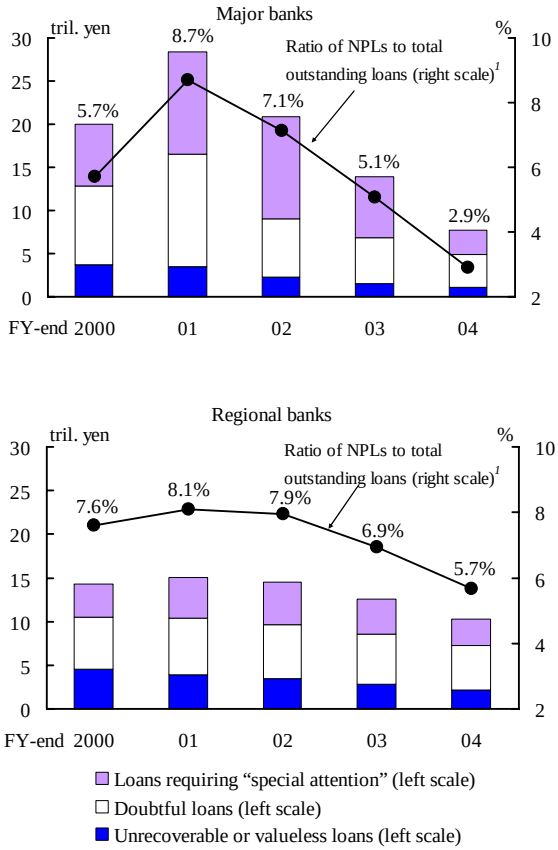
Major banks' and regional banks' NPLs outstanding

continued to decline after peaking at the end of fiscal 2001, indicating a steady improvement in the credit quality of loans. The ratio of NPLs to the total amount outstanding of loans at major banks declined significantly to 2.9 percent at the end of fiscal 2004 from 5.1 percent at the end of fiscal 2003. All major banks achieved the target set by the government of halving this ratio as of the end of fiscal 2001 within three years. The ratio of NPLs at regional banks also declined to 5.7 percent at the end of fiscal 2004 from 6.9 percent a year earlier (Chart 4).

The relationship between credit costs and NPLs outstanding is essential for understanding the NPL problem. Some banks have realized relatively small credit costs but still hold significant NPLs outstanding, suggesting the risk of substantial credit costs emerging in the future. By contrast, other banks may have realized significant credit costs as a result of drastic disposal of NPLs, but the decline in their NPLs outstanding has substantially reduced potential credit costs emerging subsequently. At major banks, both the credit cost and NPL ratios improved rapidly in and after fiscal 2002. At regional banks, on the other hand, credit costs have been declining steadily, but the pace of decline in their NPL ratio has been relatively moderate (Chart 5).

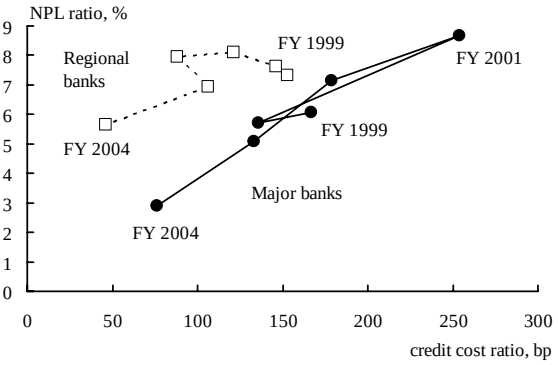
The rapid decline in the NPL ratio at major banks in and after fiscal 2002 was largely due to firms' improved business conditions reflecting the economic recovery, and to the positive attitude of major banks regarding the disposal of NPLs. The following factors can explain this change in major banks' attitude regarding NPL disposals. First, they gained a better understanding of the decline in the potential growth rate of Japan's economy and necessary changes in the industrial structure associated with globalization and innovations in information and communication technology (ICT). Second, the extent to which the fair value of their loan assets had been impaired

Chart 4: NPL Ratios



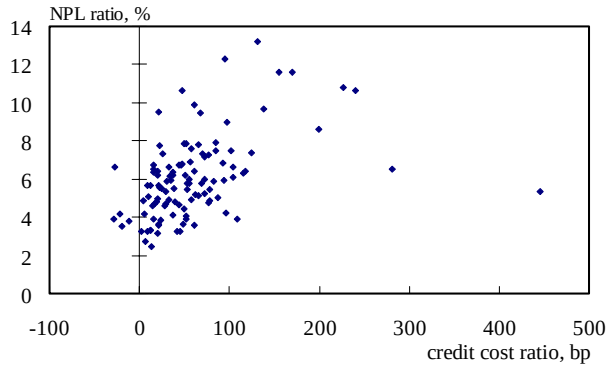
Note: *1*. NPLs disclosed under the Financial Reconstruction Law.

Chart 5: Credit Cost and NPL Ratios[1]



Note: *1*. Figures from fiscal 1999 to 2004.

Chart 6: Credit Cost and NPL Ratios at Regional Banks[1]



Note: *1.* Calculated based on figures at the end of fiscal 2004.

Chart 7: Net Unrealized Stock-Related Gains/Losses

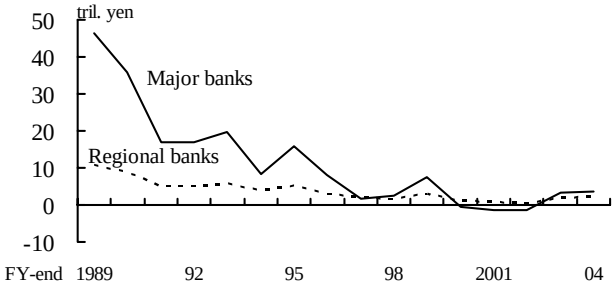
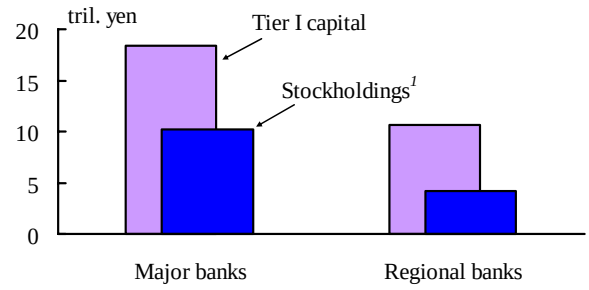


Chart 8: Banks' Stockholdings and Tier I Capital



Note: *1.* Amount outstanding of banks' stockholdings at the end of fiscal 2004. Calculated by subtracting unrealized stock-related gains.

became both more accurately assessed and widely recognized. Third, market risk arising from extensive cross-shareholdings increased due to a decline in stock prices, so that reducing the total risk relative to capital became an urgent issue for major banks. "Japan's Nonperforming Loan Problem" released by the Bank of Japan in October 2002 also contributed to the more accurate assessment and wider recognition of the above three issues. Fourth, the sale of cross-shareholdings to reduce exposure to market risk increased the proportion of stocks held by domestic and foreign institutional investors, and as a result, this increased pressure on banks for early disposal of NPLs (Appendix 1). And fifth, competition occurred among major banks to reduce their NPLs, as the government imposed on them the target of halving their NPL ratios and market participants began to place more emphasis on a lower NPL ratio when assessing banks.

Meanwhile, as seen above, the pace of decline in the NPL ratio among regional banks was rather slow compared with that among major banks. One of the reasons behind this may be the moderate pace of recovery in the local economies in which regional banks operate, compared with the pace of recovery in metropolitan districts. The difference in regional banks' attitude regarding NPL disposal also seems to be an influential factor. This difference has arisen because of regional banks' focus on long-term business relationships with borrower firms. The NPL and credit cost ratios have been declining at regional banks on the whole, but there are still some regional banks with high ratios (Chart 6). Such banks need to make further efforts to dispose of NPLs.

B. Decrease in Risk Associated with Stockholdings

Major banks had previously held a large amount of cross-shareholdings that were difficult to sell flexibly,

resulting in a concomitantly large exposure to market risk. Because of the continued decline of stock prices, banks' unrealized gains had disappeared by the end of fiscal 2000, and credit risks increased during the recession triggered by worldwide inventory adjustment of ICT-related goods. Accordingly, major banks were forced to reduce risks to an appropriate level relative to their capital (Chart 7). Taking advantage, therefore, of the stock purchasing program conducted by the Bank of Japan, major banks' active sales of stocks decreased their stockholdings to 55 percent of Tier I capital at the end of fiscal 2004 (Chart 8). Meanwhile, although regional banks did not have substantial stockholdings in the first place so that changes in the amount outstanding have not been large, the ratio of stockholdings to capital has also been declining slightly, to 39 percent at the end of fiscal 2004.

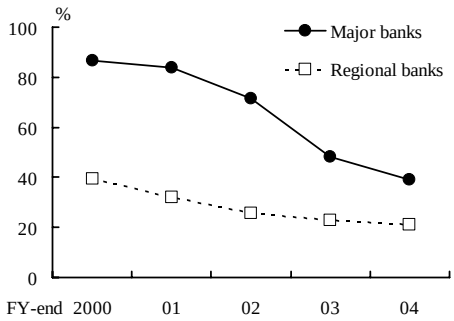
When calculating the risk associated with stockholdings, the results highly depend on the presumptions made in the calculation, and should be treated with some circumspection. Although subject to this proviso, the ratio of the risk associated with stockholdings to major banks' Tier I capital has been declining significantly, and the equivalent ratio at regional banks has also been declining moderately (Chart 9).

Major banks continued to unwind cross-shareholdings while acquiring unlisted preferred stocks through debt-equity swaps in connection with firms' reorganization efforts in fiscal 2004. It is necessary to assess the risk associated with such preferred stocks appropriately.

C. Developments in Risk Associated with Bond Holdings

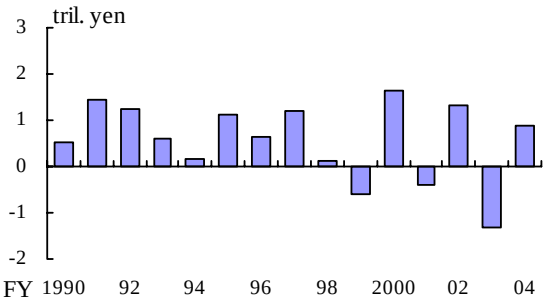
With overall loans declining, banks have been increasing investment in bonds. The weight of bonds on banks'

Chart 9: Ratio of Risks Associated with Banks' Stockholdings to Tier I Capital[1]



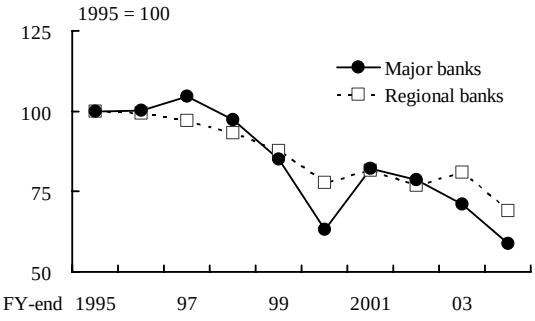
Note: *1.* The probable maximum loss arising from holding stocks on banks' balance sheets. It is calculated based on the assumption that stocks are held for one year with a confidence interval of 99 percent using historical volatility measured in 1-day units (the observation period is one fiscal year) and that the rate of change in the value of stockholdings is equal to that in the Tokyo Stock Price Index (TOPIX).

Chart 10: Overall Gains/Losses from Bond Investment[1]



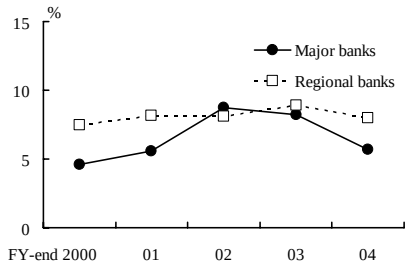
Note: *1.* The sum of net realized bond-related gains/losses and changes in net unrealized bond-related gains/losses on a year-on-year basis. The aggregate figure for both major and regional banks.

Chart 11: Duration of Banks' Yen-Denominated Bond Portfolios[1]



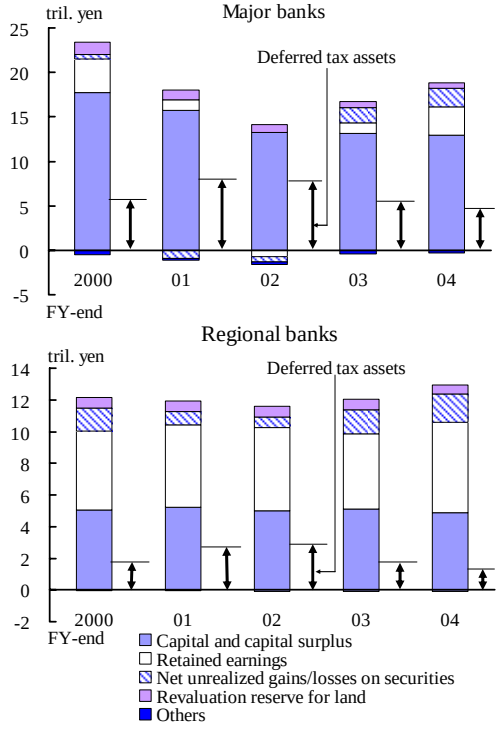
Note: *1.* Average remaining maturity is used as a proxy for duration.

Chart 12: Ratio of Risks Associated with Banks' Holdings of Yen-Denominated Bonds to Tier I Capital[1]



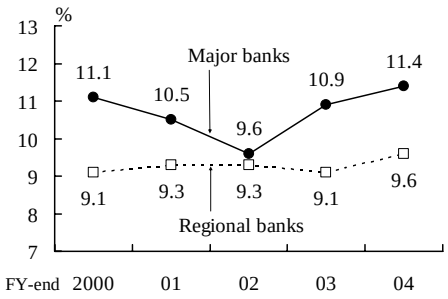
Note: *1.* Banks' bond holdings usually consist of yen-denominated bonds, foreign bonds, and derivatives. However, for simplicity of the calculation, the risk arising from only yen-denominated bonds on banks' balance sheets is estimated with the following assumption: a 100-basis-point rise in interest rates on 10-year bonds and a smaller rise in interest rates on bonds with shorter maturities.

Chart 13: Developments in Capital[1]



Note: *1.* On a consolidated basis.

Chart 14: Capital Adequacy Ratios[1]



Note: *1.* On a consolidated basis.

balance sheets has been increasing, and consequently, banks have to consider how to control the risk of possible interest rate rise in the future, which would mean losses arising from selling bonds with decreased market value and an increase in unrealized losses. In fact, overall gains/losses from bond investment have fluctuated significantly in recent years (Chart 10).

Major banks have been making efforts to decrease the duration of their yen-denominated bond portfolios by raising the weight of bonds with shorter maturity and 15-year floating-rate bonds that function as a hedge for a rise in long-term interest rates (Chart 11). Major banks accelerated these activities after the rise in long-term interest rates in the summer of 2003, followed by a further temporal rise in June 2004, since they had become more cautious about the interest rate risk. At regional banks, the ratio of the risk associated with bond holdings relative to Tier I capital has been virtually flat in recent years. At major banks, this ratio has recently been declining. On the whole, banks have prevented an increase in the risk by carefully decreasing the duration, in spite of the increase in the amount outstanding of bonds they hold (Chart 12).

D. Easing Constraints on Capital

Banks have become significantly less capital-constrained, as major risks such as credit risk and market risk have decreased.

With regard to developments in capital (as defined in the capital account of banks' balance sheets), major banks' capital started to increase after bottoming out at the end of fiscal 2002. It increased on a year-on-year basis at the end of fiscal 2004 mainly due to expansion in retained earnings (Chart 13). Regional banks' capital increased slightly at the end of fiscal 2004 from its level in the previous fiscal year. Meanwhile, the ratio of deferred tax assets to capital has been on a declining trend, indicating

the strengthening of banks' capital in terms of quality. Capital adequacy ratios rose for both major and regional banks at the end of fiscal 2004 (Chart 14).

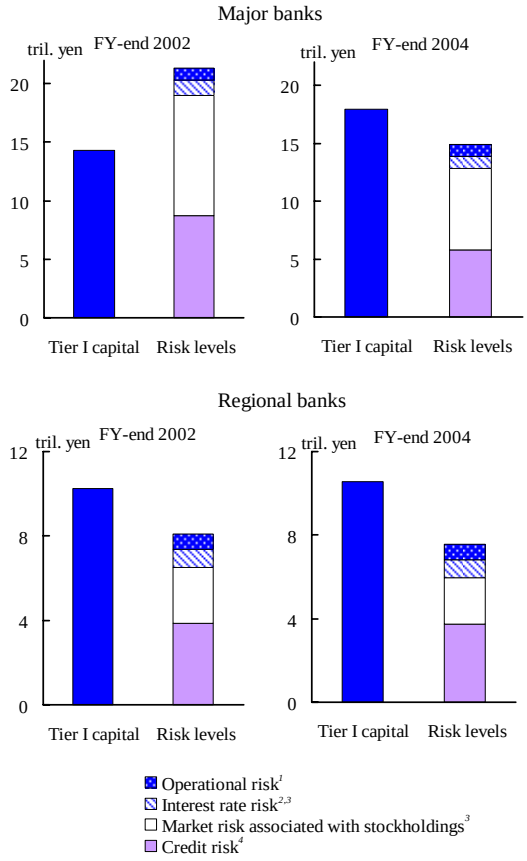
Overview of the relationship between changes in risk levels and the capital that acts as a buffer against those risks can be obtained by aggregating the risks of each risk category, and comparing their level to banks' capital. The total amount of calculated risk at major banks fell below Tier I capital at the end of fiscal 2004 mainly due to decreases in credit risk and the risk associated with stockholdings, though this calculation highly depends on certain presumptions. The equivalent figure for regional banks has been below their Tier I capital, and the situation remained the same at the end of fiscal 2004 (Chart 15). This shows that the degree of capital constraints, especially for major banks, has been easing significantly.

E. Improvement in the Market's Evaluation

The reduction in risks and the increase in banks' capital indicate that business conditions at individual banks, and the banking sector as a whole, are gradually becoming more stable. Although the blanket guarantee of deposits was fully removed as scheduled on April 1, 2005, there was no significant shift of funds between financial institutions either before or after April 1, in marked contrast to the drastic shift of funds at the partial removal of the blanket guarantee of deposits three years ago (Chart 16).

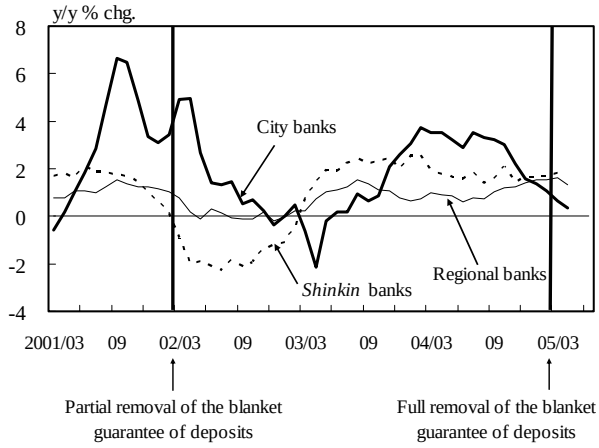
Market participants have evaluated the state of the banking sector positively (Chart 17). Banks' stock prices have been on a recovering trend, after bottoming out in the first half of fiscal 2003. Meanwhile, an increasing number of banks have been upgraded by credit rating agencies in and after fiscal 2004. The assessment by the market, as evinced in their stock prices and ratings, also supports the view that the banking sector has been

Chart 15: Risk Levels and Tier I Capital



Notes: *1.* Operational risk is defined to be 15 percent of gross profits based on the Basel II risk weight formulas.
2. Interest rate risk is limited to yen-denominated bond portfolios.
3. Market risk associated with stockholdings and interest rate risk are calculated by the same methods as in charts 9 and 12, respectively.
4. Credit risk is the probable maximum loss based on the Basel II risk weight formulas with a confidence interval of 99 percent. In the estimation, borrowers classified as requiring "special attention" or below (in terms of credit quality) are considered to be in a state of default.

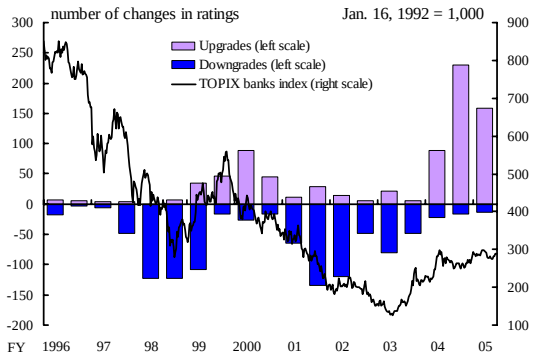
Chart 16: Amount Outstanding of Deposits by Type of Bank



Source: Bank of Japan, "Principal Figures of Financial Institutions," "Financial and Economic Statistics Monthly."

regaining its stability.

Chart 17: Credit Rating and Prices of Bank Stocks[1]



Note: *1*. The number of upgrades and downgrades is the sum of the number of changes in ratings made by the following credit-rating agencies: Moody's Investors Service, Standard & Poor's, Fitch Ratings, Rating and Investment Information, and Japan Credit Rating Agency.

II. Banks' Profitability

A. Profitability of Japanese Banks

Japanese banks had posted net losses from the middle of the 1990s due to substantial increases in credit costs. However, in fiscal 2004 they recorded positive net income: major banks for the first time since fiscal 2000 and regional banks for the first time since fiscal 1994 (Chart 18). Net income at regional banks as a whole exceeded the previous record in fiscal 1989, while at some major banks net income recorded its highest-ever level.

The recovery in net income has been mainly due to the decline in credit costs. At the same time, other factors also contributed to the recovery: for example, the increase in non-interest income due to expansion of fee business and the decline in general and administrative expenses due to continued restructuring efforts by banks.

B. Improvement in Net Returns on Loans

The profit structure of both major and regional banks continues to be based on lending operations as is evident from the breakdown of gross operating profits from core business (Chart 19). Net returns on loans, which are calculated as the interest margin on loans after deducting general and administrative expenses and credit cost ratios, had been significantly negative at both major and regional banks for a considerably large period of time. In fiscal 2004, however, net returns on loans at regional banks recovered to a level as high as in 1992 and those at major banks recovered almost to zero (Chart 20). Since it is technically difficult to distinguish operational expenses arising from lending operations from those arising from other operations (e.g., fee business and trading activities), the calculation for net returns on loans employed here deducts all general and administrative expenses from the interest margin on loans. Since some part of operational

Chart 18: Net Income/Loss

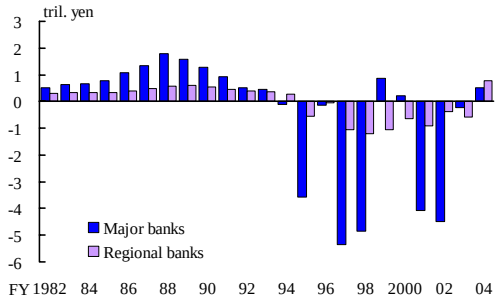
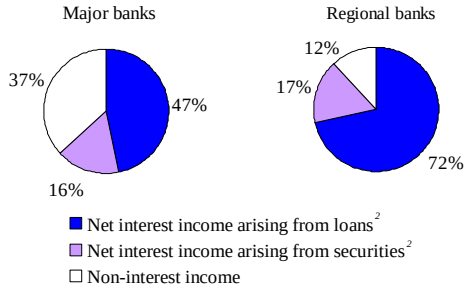


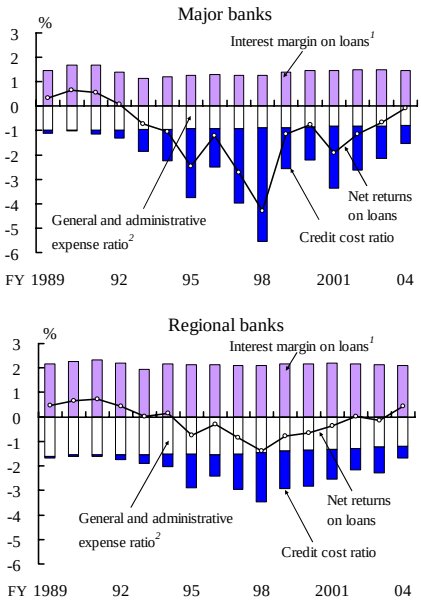
Chart 19: Gross Operating Profits from Core Business[1]



Notes: *1*. Gross operating profits from core business = net operating profits from core business + general and administrative expenses. For the definition of net operating profits from core business, see Note 3 to Chart 1.

2. "Net" means subtracting funding cost from incomes. General and administrative expenses are still included because the incomes are breakdowns of "gross" operating profits. The funding costs for each of loans and securities are estimated by dividing up the total funding costs in proportion to each weight of incomes from loans and securities in their sum.

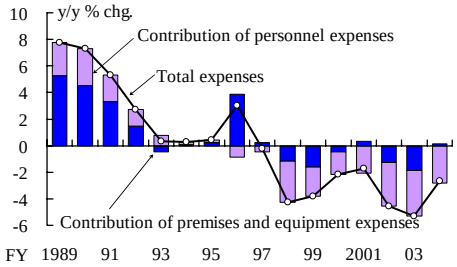
Chart 20: Net Returns on Loans



Notes: *1*. Interest margin on loans = interest rate on lending – interest rate on interest-bearing liabilities.

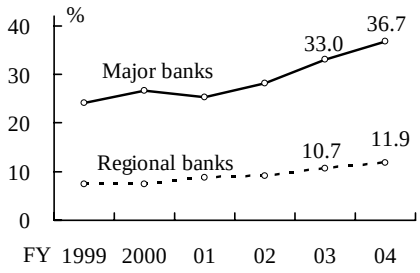
2. General and administrative expense ratio = general and administrative expenses/amount outstanding of total interest-earning assets.

Chart 21: General and Administrative Expenses[1]



Note: *1*. The aggregate figure for both major and regional banks.

Chart 22: Ratios of Non-Interest Income to Gross Operating Profits[1,2]



Notes: *1*. Ratio of non-interest income to gross operating profits from core business = non-interest income/(net interest income + non-interest income).

2. Non-interest income = net fees and commissions + profits on specified transactions + other operating profits – net realized bond-related gains/losses.

Chart 23: Fee Income from New Financial Services

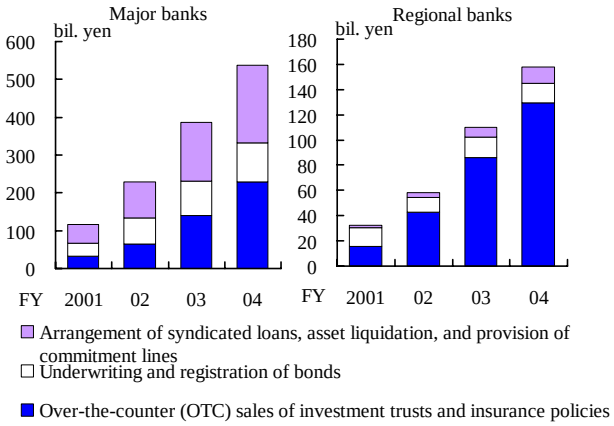
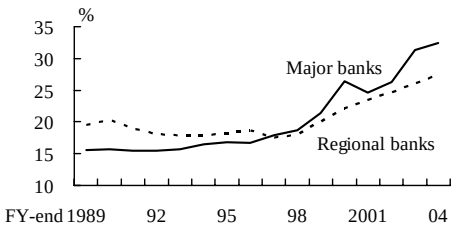


Chart 24: Securities Investments[1]



Note: *1*. The ratio of the amount outstanding of securities investment to total interest-earning assets outstanding.

costs arises from non-lending business, net returns on loans of major banks may have in fact also turned positive. The recovery in net returns on loans has been mainly attributable to the sharp decline in the credit cost ratio and the decline in the general and administrative expense ratio due to persistent restructuring efforts. Developments in those expenses at both major and regional banks show that they have continued to cut expenses, particularly personnel expenses, since the middle of the 1990s (Chart 21).

C. Increase in Income from Fee Business

Deterioration in net returns on loans to firms caused by the expansion in credit costs from the mid-1990s prompted banks to broaden their sources of income. Consequently, banks have been increasing their non-interest income through, for example, sales of investment trusts and private pension policies to households, now possible because of deregulation. Banks have also increased fee business to firms, including arrangement of syndicated loans and sales of derivatives to small firms. As a result, the contribution of non-interest income to total profits has been increasing (Charts 22 and 23). At major banks, non-interest income has become an essential component of their profits, as shown by the fact that the ratio of net non-interest income to gross core operating profits has risen to almost 40 percent (Chart19).

D. Decline in Profits from Securities Investment

While bank lending has continued to decline, the ratio of securities investments to total interest-earning assets has been rising for major banks since fiscal 1997 and for regional banks since fiscal 1998. At the end of fiscal 2004, the ratio increased to 32 percent for major banks and 27 percent for regional banks (Chart 24). Although securities investment was second to lending business, the performance of securities investment has come to substantially influence banks' overall profits.

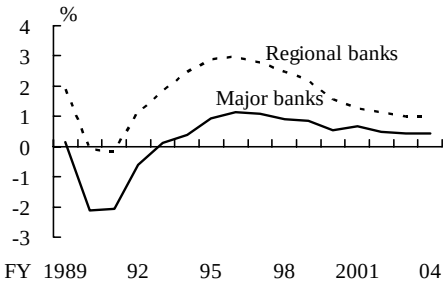
The interest margin on securities investment declined substantially due to redemption of bonds with high coupon rate and banks' shift to holding bonds with shorter maturity to reduce interest rate risk. As a result, the interest margin on securities investment for fiscal 2004 was as low as that recorded in fiscal 2003 (Chart 25). The interest margin on securities investment for major banks was approximately half that of regional banks.

The difference between major banks and regional banks is attributable to the fact that major banks sold bonds to realize capital gains in the process of disposing of a large amount of NPLs in recent years. Moreover, they have been keen to reduce interest rate risk by investing in Japanese government bonds (JGBs) and short-term securities with less than 1-year maturity (Chart 26).

Both major and regional banks have been increasing alternative investment (such as structured bonds, securitized products, hedge funds, private equities, and real estate funds), as a means of improving their profitability in the face of declining returns on securities investment. Banks' investment in "other securities," which includes alternative investment as well as securities other than bonds or stocks, has increased substantially in recent years, although this category remains around 3 percent of their overall securities portfolio (Charts 27 and 28).

Alternative investment offers relatively high returns, and correlation between its returns with those from traditional investments is deemed to be low, thus making it attractive to banks. However, its risk profiles may be difficult to assess and its market liquidity is sometimes low. Therefore, alternative investment requires more rigorous risk management than traditional financial products. Banks aiming for higher investment return plan to increase their investment in this category, and therefore it

Chart 25: Interest Margin on Securities Investment[1]



Note: *1*. Interest margin on securities investment = interest rate on securities investment – interest rate on interest-bearing liabilities.

Chart 26: Major Banks' JGB Holdings in Their Overall Securities Portfolio

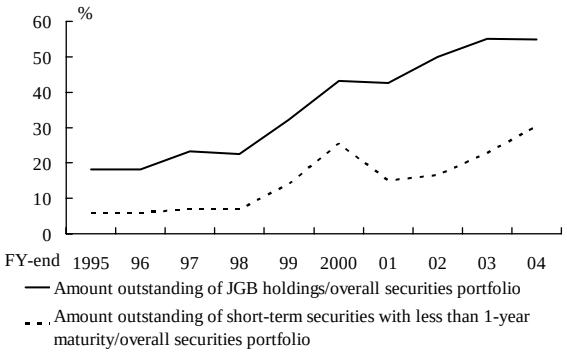
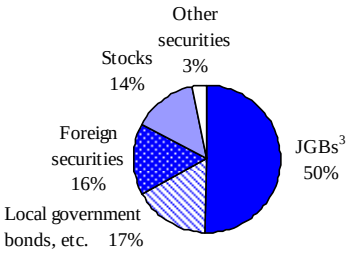
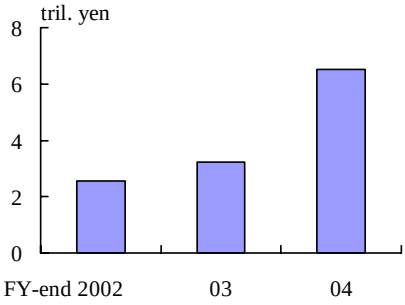


Chart 27: Components of Banks' Securities Portfolio[1,2]



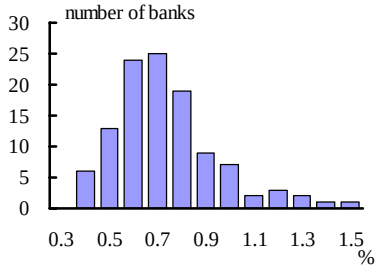
Notes: *1*. The aggregate figure for both major and regional banks. Amount outstanding at the end of fiscal 2004.
2. Some of "alternative investment" is included not in "other securities," but in "foreign securities" and others.
3. JGBs include Japanese government securities (JGSs).

Chart 28: Banks' Investment in "Other Securities"[1]



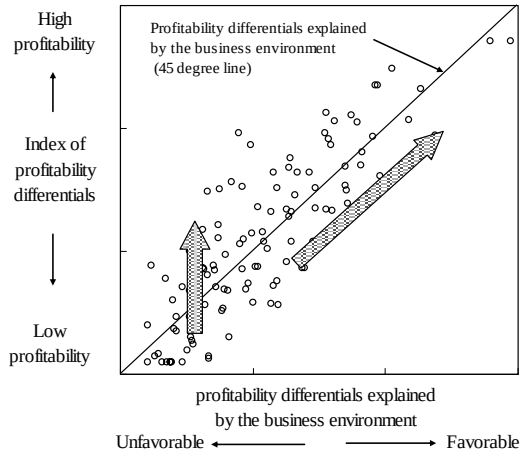
Note: *1*. The aggregate figure for both major and regional banks. Amount outstanding.

Chart 29: Histogram of ROA for Regional Banks[1]



Note: *1*. ROA = net operating profits from core business/total assets. Figures for fiscal 2004.

Chart 30: Regional Banks' Profitability Differentials Explained by the Business Environment[1]



Note: *1*. First, the profit-earning structure of regional banks is estimated by an profit function to explain net operating profits from core business. The profit function has regressors of quantity and price, such as the amount outstanding and yields of loans and securities, and personnel costs per employee. The estimation supports the existence of economies of scale at regional banks. Wide difference in profitability that remains unexplained by the profit function, that is, a factor unique to individual banks, is also estimated as the fixed effect in panel data analysis. The unique factor is assumed to result from variations in business environment for regional banks and the difference among these factors is called a "profitability" differential, which is then plotted on the vertical axis of the chart. Next, this differential is regressed on a set of explanatory variables designed to capture the business environment. These include the efficiency of banks' business operations (the size of loans per firm, or the size of economy where a bank has its business foundation divided by the number of branches) and the degree of competition (concentration of bank lending by prefecture in terms of the Herfindahl index). The part of the profitability differential that is explained by these business environment variables is plotted on the horizontal axis of the chart. If the differential could be perfectly explained by differences in these business environment variables, then all points in the chart would lie on the 45 degree line. There might be the reverse causality that high profitability leads to low concentration, i.e., high competition due to entry of banks into a highly profitable area. This, however, is not considered within the framework of the current model. The effect on banks' profitability of long-term business relationships between regional banks and various entities in their area is also an issue, but is beyond the scope of this analysis.

is important for them to manage risks appropriately in making alternative investment.

E. Implications of the Difference in Profitability among Banks

Banks' profitability has been recovering due to a decline in credit costs, an expansion in fee business, and their cost-cutting and other restructuring efforts. However, banks need to further increase their profitability if they want to attain greater stability of business conditions. This subsection takes up the case of regional banks to discuss how this could be achieved.

Return on assets (ROA), which is defined as the ratio of net operating profits from core business to total assets, is distributed within a wide range of 0.3–1.5 percent for regional banks (Chart 29). This difference in profitability among regional banks can partly be explained by factors regarding quantity and price, such as the size of assets, yields on loans, and personnel costs. However, it is also influenced by the business environment, such as the size of the local economy and the degree of competition among banks in their business areas. A regression on a set of business environment variables shows that the part of profitability differential that remained unexplained by the quantity and price information is indeed attributable mostly to differences in the business environment (Chart 30).

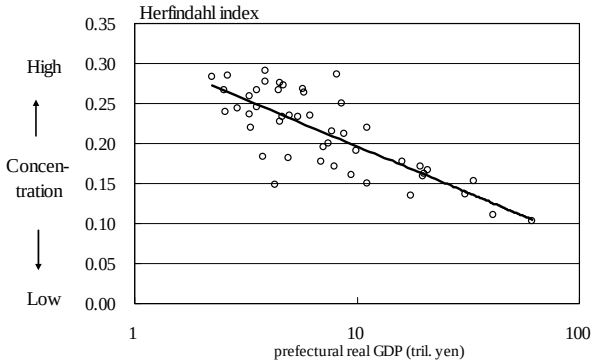
For regional banks to improve their profitability, it is essential not only to expand their assets to pursue economies of scale, but also to change their business environment in ways favorable to them. The change is captured by movement upward to the right in Chart 30. Banks can achieve this by the following two strategies: (1) increasing their advantage in competition within their own business area (i.e., strengthening their pricing power and their branding power by increasing their share in their

own business area); and (2) raising efficiency in their business operations through consolidation and reallocation of their branches as well as expanding their business base (for example, by expanding operations in city areas which have large economies and a high density of firms and households).

There has recently been marked evidence of regional banks' efforts to change their business environments so as to raise their profitability. For example, to increase their lending, some regional banks have set up new branches in the major cities of neighboring prefectures. Others have strategically merged with other regional banks to improve their competitive position in a given region. However, the relationship between the degree of banks' concentration (a proxy for monopoly power) and the size of local economies indicates that the competition is higher in prefectures with larger and more active economies (Chart 31).

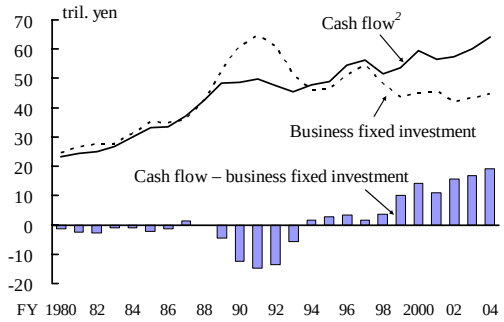
Thus, for banks to increase profitability, it is important to change their business environment in ways favorable to them and to improve their business management. The latter will require the development of high-value-added products and services based on new business models, and the use of sophisticated risk management methods to prevent various risks from materializing. Chart 30 shows that there are still differences in profitability among banks which cannot be explained even by differences in their business environment. For this reason, innovative changes in banks' business management are also likely to play a crucial role in improving profitability. In Chart 30, such innovations are captured by movement upward.

Chart 31: Concentration in Terms of Herfindahl Index and Size of Economies[1]



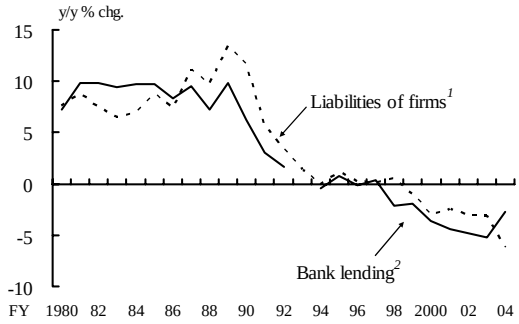
Note: *1*. Dots indicate the concentration of bank lending in each prefecture relative to the size of local economies.
The lower the level of concentration, the more competitive the lending market. The Herfindahl index is a commonly used measure of industry concentration. It is defined as the sum of squares of the market shares of each individual firm in the industry. Here, the share in lending is used.

Chart 32: Cash Flow and Business Fixed Investment[1]



Notes: *1*. Figures are for all sample firms in all industries, adjusted for changes in the sample firms.
2. Cash flow after tax is calculated by current profits multiplied by 0.5 (approximate tax rate) plus depreciation.
Source: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry."

Chart 33: Bank Lending and Interest-Bearing Liabilities of Firms



Notes: *1*. Figures are for all sample firms in all industries, adjusted for changes in the sample firms.
2. The figure for 1993 is excluded because it is an outlier due to a revision of the definition of Japanese banks in that year.
Sources: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry;" Bank of Japan, "Financial and Economic Statistics Monthly."

III. Recent Developments in Financial Services by Banks

Since the second half of the 1990s, a fall in the expected rate of economic growth has reduced firms' appetite for business fixed investment while many of blue-chip companies have increased their cash flow. Consequently, the level of firms' cash flow continued to exceed the level of fixed investment substantially (Chart 32). Firms are using the increased free cash flow mainly to improve the state of their financial positions, through the reduction of debt. As a result, bank lending has continued to decline (Chart 33). In addition, firms' debt reduction has been urged by changes in Japan's industrial structure, and this has also contributed to the decline in bank lending (Appendix 2).

It has become essential for banks to provide a variety of sophisticated financial services to meet the needs of firms and households. Under these circumstances, banks have been developing new forms of corporate lending and various new financial services to maintain and increase their profitability. In addition, banks have been offering various forms of loans for households as well as increasing sales of investment trusts and private pension policies. These developments show that banks are steadily strengthening their capability to provide more attractive financial services.

A. New Developments in Banks' Corporate Customer Business

1. New forms of lending to corporate customers

a. Syndicated loans

One of the factors behind the serious NPL problem was the undue concentration of loans to a limited number of large firms. Accordingly, the default risk of a single firm is likely to concentrate in a specific financial institution, in particular, its "main bank", and this

sometimes made banks' credit risk control difficult. Bearing these experiences in mind, banks are increasingly involving themselves in syndicated loans, which enable credit risk sharing among participants (Chart 34). Formerly, syndicated loans used to be arranged by a few major banks, but lately an increasing number of such loans are being arranged by regional banks due to the swift spread of expertise. For borrower firms, syndicated loans contribute to diversification of their borrowing sources and smooth procurement of a greater amount of funds.

b. Real estate non-recourse loans

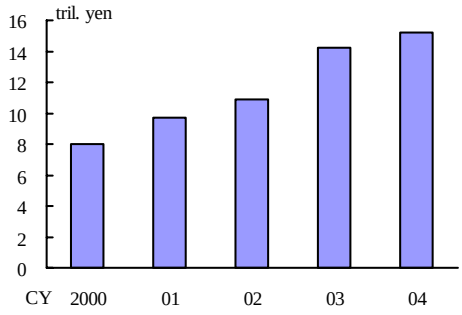
Banks are also promoting project-finance-type loans. Banks, especially trust banks, are increasing real estate non-recourse loans.

Under the agreements in such non-recourse loans, repayments of principal and interest are secured solely on cash flow and the value of the real estate pledged as collateral, and the lender has no recourse against other assets of the borrower, unlike normal (recourse-type) loans (Chart 35). Banks will make loans or invest based on their assessment of the risks and returns on a particular project. This opens up a new source of financing for firms, especially for those with low credit standings. They can raise funds on the basis of the profitability of their particular projects.

c. Uncollateralized business loans

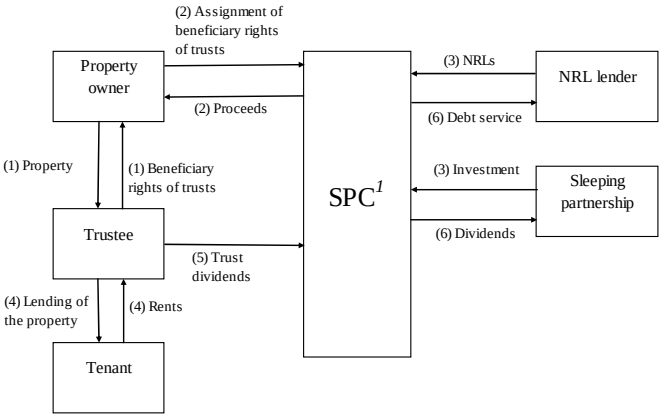
Banks have rapidly increased uncollateralized business loans to small firms (Chart 36). This form of loan is based on the evaluation of loan applicants through a credit scoring model. This model makes use of statistical data to screen borrowers, awarding points for various aspects of their operations and financial conditions. Banks extend loans if the total points awarded reach a required level. In addition, banks reduce overall credit risk

Chart 34: Loans Syndicated in Japan[1]



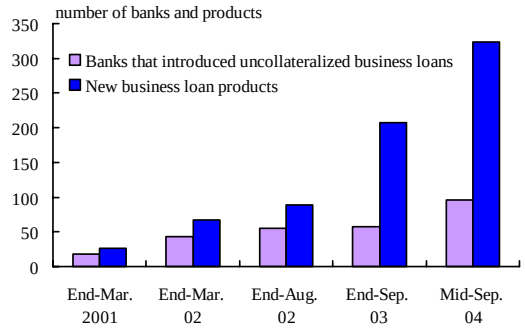
Note: *1.* The figure for calendar year 2004 was 19.6 trillion yen in the Bank of Japan's "Loans Syndicated and Loans Transferred."
Source: Thomson Financial.

Chart 35: Real Estate Non-Recourse Loans (NRLs) : A Typical Scheme



Note: *1.* SPC stands for special purpose company.

Chart 36: Uncollateralized Business Loans for Small Firms

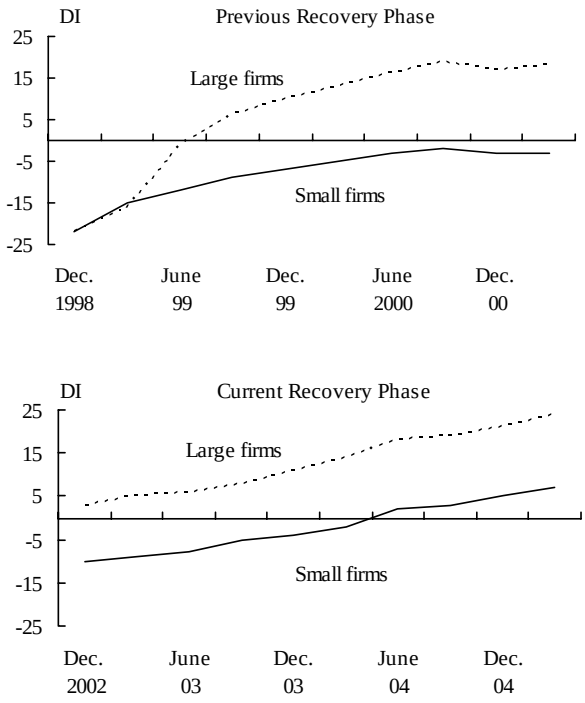


Source: Yano Research Institute, "Business Loan Market 2005."

through diversification effect by pooling a large number of small-lot loans. This allows banks to offer uncollateralized business loans with appropriate levels of interest rate.

Banks are willing to increase their lending to small firms as evidenced by an increase in uncollateralized business loans and the establishment of new branch offices specializing in small-firm lending. In the recovery phase of banks' lending attitude to firms from 1998, improvement in the lending attitude was not as marked for small firms as for large firms. However, in the current recovery phase, there is little difference between the two (Chart 37). It is also noteworthy that some major banks are trying to develop a market for middle-risk loans. They are initiating merger or joint operations with non-banks, equipped with more advanced know-how in the loan market for small firms.

Chart 37: Banks' Lending Attitude toward Firms[1]



Note: *1.* Changes in the *Tankan* DI for lending attitude of financial institutions starting from December 1998 and December 2002 when the DI marked the bottom in each recovery phase.
Source: Bank of Japan, "*Tankan* – Short-Term Economic Survey of Enterprises in Japan."

2. New developments in financial services for corporate customers

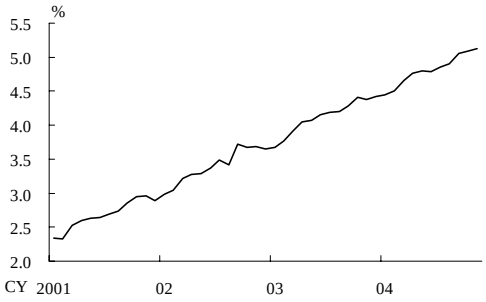
Firms are trying to advance their fund management and to cut the operational costs for it. For this reason, banks are now providing various derivative schemes for risk hedging, cash management services (CMS), factoring services, and commitment line agreements. By embarking on these activities, banks seek to increase incomes from fee business.

To meet firms' demand for risk-hedge measures, banks are offering various derivative schemes designed to hedge against interest rate and exchange rate fluctuations. Furthermore, in recent years, major banks have started offering derivatives based on commodities including crude oil and the so-called weather derivatives. These products enable firms to hedge against wide-ranging risks arising from business activities.

Banks are also stepping up efforts to sell CMS and to offer factoring services, because the demand for those services has been growing rapidly in recent years. CMS aims to handle corporate cash management more efficiently by managing funds on a consolidated group basis instead of a single-firm basis. Factoring services help firms to convert their accounts receivable swiftly into employable funds. In the established method, accounts receivable are purchased in exchange for funds. In recent years, however, a new method has been developed, which involves transferring the trust beneficiary's interest in accounts receivable, allowing banks to offer the service without being hindered by contractual limitations on the assignment of receivables.

Banks are also increasing their provision of commitment line agreements, which continue to raise the ratio of commitment line to loan outstandings (Chart 38). This increase can be attributed to demand from banks' customers. Firms, with their credit ratings in mind, can streamline their balance sheets while still retain availability of sufficient funds.

Chart 38: The Ratio of Commitment Line to Loan Outstanding in Bank Lending[1]



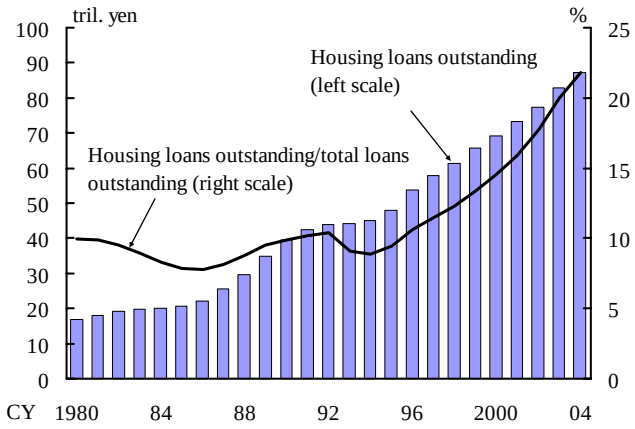
Note: *1.* Amount outstanding.
Source: Bank of Japan, "Financial and Economic Statistics Monthly."

B. Strengthening of Individual Customer Business

1. Increase in housing loans

Banks have been actively extending housing loans to households. In 2004, the share of housing loans has grown to account for 22 percent of total loans outstanding (Chart 39).

Chart 39: Housing Loans Extended by Banks[1]



Note: *1.* Amount outstanding of loans extended by "domestically licensed banks" defined in the Bank of Japan's "Financial and Economic Statistics Monthly."
Source: Bank of Japan, "Financial and Economic Statistics Monthly."

This has taken place against the following background: (1) an expansion in the housing loan market for banks accompanying the reform of the Government Housing Loan Corporation (GHLC) including its resizing; (2) wider scope for risk management as the market for securitized housing loans has grown; and (3) the lower risk weight on housing loans under the new capital

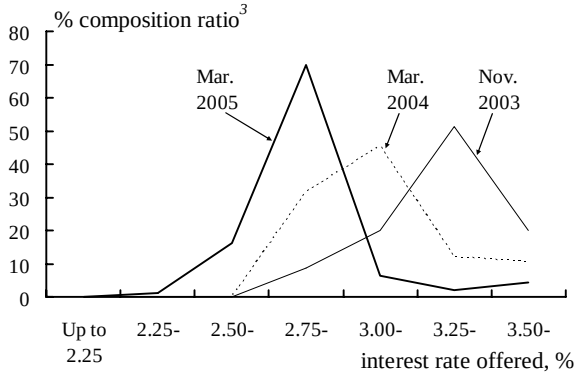
Chart 40: Interest Rates on Housing Loans[1,2,3]

%

Term (years)	Bank A	Bank B	Bank C	Bank D
3	0.95	0.95	0.95	0.95
	(- 0.05)	(- 0.05)	(- 0.50)	(- 0.60)
5	1.30	1.30	1.30	2.10
	(- 0.60)	(- 0.10)	(- 1.10)	(- 0.10)
10	2.00	2.00	2.00	2.80
	(- 0.70)	(- 0.20)	(- 1.15)	(- 0.15)
20	4.00	2.70	2.75	2.60
	(- 0.95)	(0.00)	(- 0.75)	(- 0.38)
Over 20	—	—	—	2.68
	—	—	—	(- 0.75)

Notes: *1*. Figures for major banks in June 2005. Those in parentheses indicate the percentage point change from September 2004.
2. Fixed lending rates applied at the beginning of the term, excluding special discounts offered during campaign periods.
3. As of the end of the first half of fiscal 2004, loans with floating lending rates and fixed lending rates with three year-or-less maturity accounted for 38.4 percent and 34.8 percent of total outstanding of loans, respectively. Based on "A Survey on Housing Loans by Commercial Banks in Fiscal 2004" (in Japanese) compiled by the Ministry of Land, Infrastructure and Transport.

Chart 41: Interest Rates on "Flat 35"[1,2]



Notes: *1*. "Flat 35" is a housing loan product with long-term fixed interest rate.
2. Based on rates offered by both major and regional banks.
3. The number of banks offering "Flat 35" in each interval of the interest rate over the total number of banks offering "Flat 35."
Source: A list of interest rates applied to "Flat 35" products, released by the Government Housing Loan Corporation.

adequacy regulation, commonly known as Basel II, effective from the end of fiscal 2006. The risk weight will be lowered to 35 percent from its current level of 50 percent.

While competition among banks in the housing loan market is intensifying, greater benefits have been made available to borrowers. Interest rates on housing loans have declined with the application of a special lower interest rate for campaigns (Chart 40). Moreover, a housing loan product with a long-term fixed interest rate, referred to as "Flat 35,"[2] has been widely sold and the interest rates applied on it by banks have continued to shift downward (Chart 41).

Banks' active engagement in housing loans has kept the outstanding residential mortgage obligations of households on the rise. Meanwhile, the source for repayment, that is, household income and savings, has been on the declining trend. As a result, the real debt burden ratio, which is, the ratio of outstanding obligations to household income and savings, has been on an upward trend (Chart 42). This trend suggests that banks have aggressively fulfilled their financial intermediation function in this market. It also, however, implies a possible increase in borrowers' debt service burdens in the future. Given these circumstances, banks are expected to satisfy demand for housing loans by appropriately managing the accompanying risks.

2. Sales of investment trusts and insurance policies

With regard to sales targeting households, banks have focused on products such as investment trusts and private pension policies that generate higher fee incomes. These efforts include: (1) stronger business alliances with investment trust companies and/or insurance companies with expertise in developing products suitable for banks'

[2] The GHLC purchases the assets of "Flat 35" from banks so as to allow longer-term loans to borrowers.

customers; (2) reinforcing their sales forces by recruiting mid-career professionals with experience in the securities business; and (3) creating joint branches with affiliate securities firms. These efforts have helped banks to steadily improve their revenues from sales of investment trusts and private pension policies. New legislation introduced in December 2004 has allowed banks to act as securities brokers, and since then an increasing number of banks, particularly major banks, have entered into the securities intermediation business by taking on personnel transferred from affiliate securities firms.

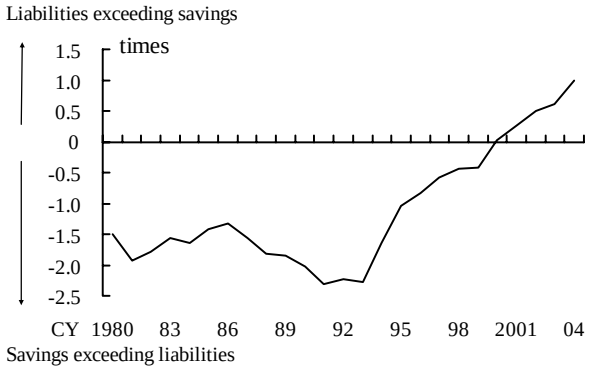
The net amount outstanding of investment trusts sold by banks increased significantly in fiscal 2004 from the previous year, with the sector "banks and others" increasing its share to more than 40 percent (Chart 43). From the perspective of purchasers, banks' participation in the risk product business improves their convenience by creating new distribution channels and by increasing the number of branches where those products are available. This may influence the asset allocation of households in Japan.

3. Consumer finance

Through business tie-ups or joint ventures with consumer finance companies, major banks have been entering the consumer finance market from which they can expect more income than conventional lending business. Such business coalitions provide benefits for major banks, for example: (1) allowing them to access the personal credit information database of the Federation of Credit Bureaus of Japan, and take advantage of expert credit assessments based on the database; and (2) allowing them the benefit of consumer finance companies' expertise in debt collection.

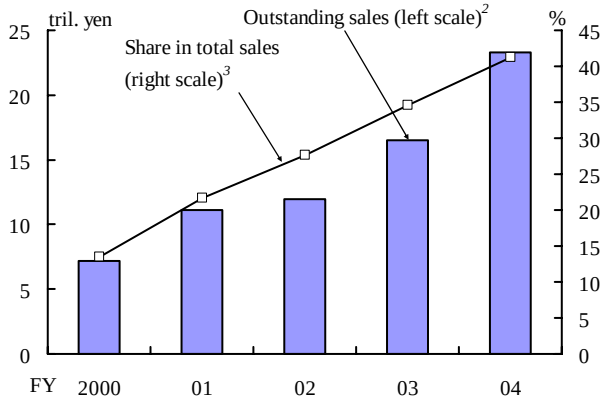
Banks' consumer loans offered via joint ventures or their

Chart 42: Liabilities and Savings in the Household Sector[1,2]



Notes: *1.* Households' outstanding housing loan obligations as a ratio to source for repayment calculated as follows: (outstanding residential mortgage obligations of households – outstanding savings)/(annual amount of repayment + net annual increase in savings).
2. Data for 2001 are not available and therefore figures for 2000 and 2002 are linearly spliced.
Source: Ministry of Internal Affairs and Communications, "Annual Report on the Family Income and Expenditure Survey"; "Family Saving Survey."

Chart 43: Investment Trusts Sold by Banks[1]



Notes: *1.* "Banks" are equivalent to the registered financial institutions in the source.
2. Amount outstanding of investment trusts sold by banks on commission.
3. Share of banks' sales in the total sales.
Source: Investment Trusts Association in Japan, "Investment Trusts."

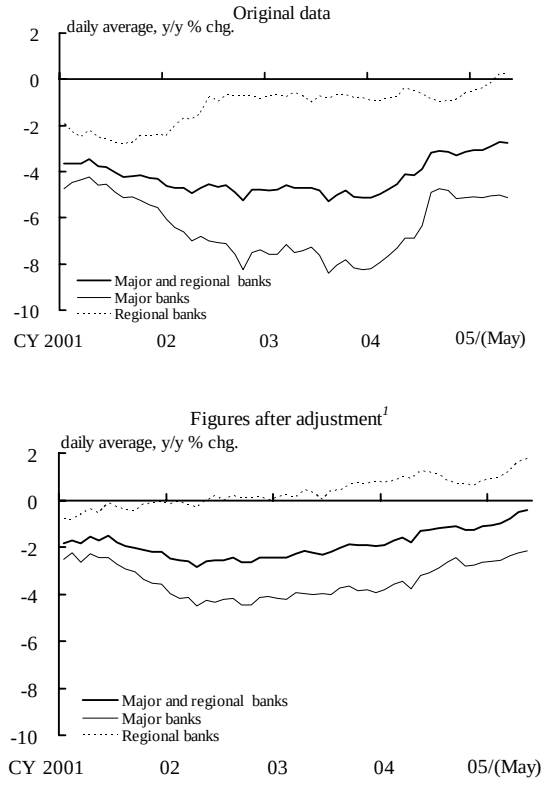
Chart 44: Net Returns on Loans[1]

%

	Consumer finance companies[2]	Banks[3]
Interest margin (A)	21.1	1.7
Credit cost ratio (B)	6.7	0.6
Net return on loans (A) - (B)	14.3	1.1

Notes: *1*. Interest margin on loans after deducting the realized credit cost ratio. Figures for fiscal 2004.
2. Average figures for four major consumer finance companies.
3. Average figures for both major and regional banks.

Chart 45: Bank Lending



Note: *1*. After adjustment for the effects of write-offs and liquidation of loans.
Source: Bank of Japan, "Principal Figures of Financial Institutions."

own branches generally offer lower lending rates than those of consumer finance companies. By capitalizing on the expertise of consumer finance companies to develop the new customer base, banks are looking to expand into the new lending market, potentially more profitable than their conventional lending business (Chart 44).

C. Recent Changes in Bank Lending

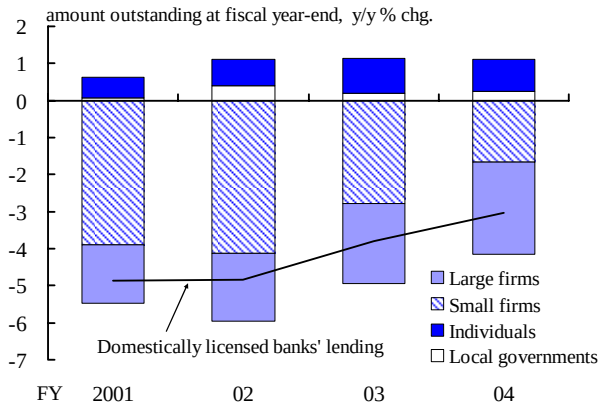
Although bank lending has long been on a downtrend on a year-on-year basis, the recent rate of decline has been easing gradually (Chart 45). This is due to significant easing in the negative growth rate of lending to small firms, in addition to the ongoing increase in housing loans (Chart 46). There are several factors to support the contraction in the negative growth rate of lending to small firms, such as stronger funds demand by firms in some regions, and more active lending activities targeting small firms through, for example, uncollateralized business loans. In addition, real estate non-recourse loans have been increasing[3]. The year-on-year growth in lending by regional banks has become positive partly due to the increase in lending to large firms through participation in syndicated loans.

As described above, recent changes in bank lending may partly be attributed to their new forms of lending. These new forms of lending have involved various refinements of banks' risk evaluation and management, taking into account the experiences in dealing with the NPL problem. At present, therefore, there seem to be no signs of any notable build-up of risk in line with the new forms of bank lending described above. However, there are a number of uncertainties with regard to these new products. For example, there exist various factors which may affect future cash flow from a real estate project, i.e., a key variable when deciding whether to extend real estate

[3] Most of real estate non-recourse loans is classified as loans to small firms because the size of SPCs capital is usually small.

non-recourse loans. There have been cases where the surge in property prices in certain metropolitan districts has lowered the profitability of projects financed by real estate non-recourse loans. In conducting these new forms of loans, it is essential for banks to evaluate and manage relevant risks appropriately.

Chart 46: Bank Lending by Type of Borrowers



Source: Bank of Japan, “Financial and Economic Statistics Monthly.”

Chart 47: Loan Quality and Credit Costs

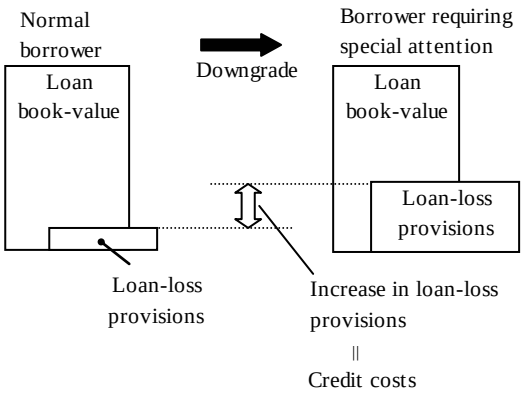
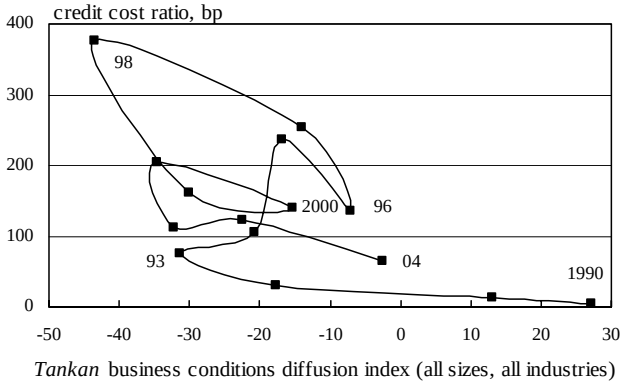
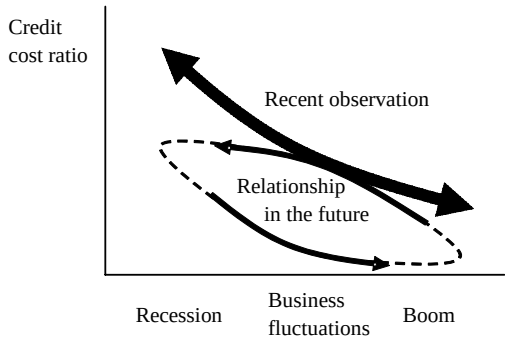


Chart 48: Business Cycle and Credit Cost Ratio[1]



Note: *1.* The aggregate figure for both major and regional banks.

Chart 49: Business Cycle and Developments in Credit Cost Ratio



IV. Evaluating the Robustness of the Banking System

As discussed above, the Japanese banking system is recovering its stability. This recovery is not only the result of the management efforts of banks and firms and policy efforts designed to stabilize the banking system, it has also been supported to a significant extent by the recent economic recovery. Since the banking system is heavily influenced by the macroeconomic and financial environments, it is important to evaluate the robustness of the banking system against macroeconomic shocks.

Possible macroeconomic shocks to be taken into consideration include an economic downturn as well as a rise in interest rates. The following discussion evaluates the robustness of the banking system from two perspective: (1) the impact of economic fluctuations on banks' credit costs; and (2) the impact of interest rate fluctuations on banks' profits.

A. Relationship between Economic Fluctuations and Credit Costs

Banks incur credit costs when they increase loan-loss provisioning and write-offs to deal with a deterioration in loan quality, i.e., a decline in the fair value of loan assets (Chart 47). Since economic fluctuations have an impact on the credit quality of loans, credit costs are correlated with the business cycle: in an economic downturn, credit costs are high, and vice versa (Chart 48).

Consequently, credit costs will increase again if the economy experiences a downturn. However, the magnitude of the increase is likely to be smaller than in the past when banks disposed of a huge amount of NPLs because the quality of existing loans has improved significantly with the progress in the disposal of NPLs (Appendix 3). In addition, default risks of firms have

decreased. Firms' financial positions have improved as a result of financial restructuring in recent years. These structural improvements will keep credit costs contained in the event of an economic downturn (Appendix 4). The relationship between business cycles and credit costs is illustrated in Chart 49. Banks' capital has strengthened both in quality and quantity. Banks have improved their profitability through diversification of profit sources and reduction of the general and administrative expenses. As a result, the banking system seems to have enhanced robustness against economic downturns.

B. Interest Rate Risks on Banking Accounts

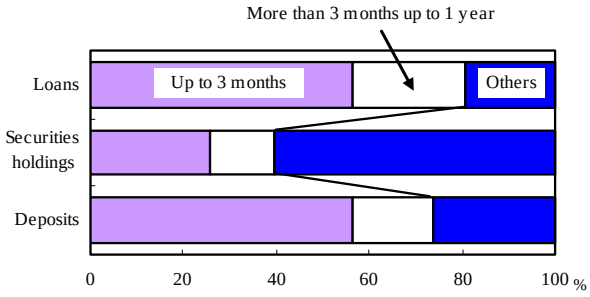
The impact of changes in market interest rates on banks' profits and equity capital depends on, among many factors, the composition of banks' balance sheets, the interest rate sensitivity of loans and deposits (banks' interest rate setting behavior), and how the amount of loans and deposits responds to changes in interest rates.

Most of banks' loans and deposits are those with relatively short maturity, and they are usually renewed within less than one year (Chart 50). In contrast, more than half of banks' bond holdings have maturity longer than one year. A rise in short-term interest rates increases periodical earnings because deposit rates are usually less responsive to market rates than loan rates. In contrast, a rise in long-term interest rates increases unrealized losses on bonds. In order to get a comprehensive picture of the effect of a rise in market interest rates on banks' profits, banks' robustness against interest rate risk is assessed using a bank profit model below (Appendix 5).

1. Impact of Changes in the Yield Curve: An Overview

With respect to variation in the shape of the yield curve in an upward direction, we consider two scenarios, a

Chart 50: Assets and Liabilities by Maturity to the Renewal of Interest Rates[1]



Note: *1*. Figures for major banks. Amount outstanding at the end of September 2004.

Chart 51: Shifts in Yield Curves

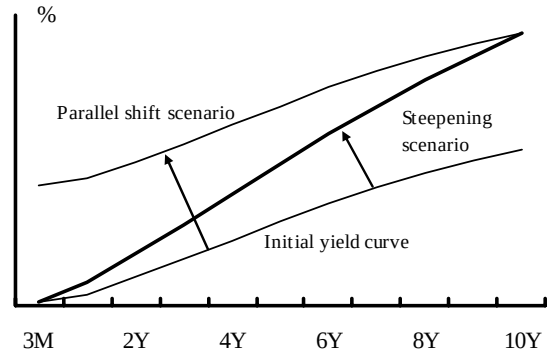
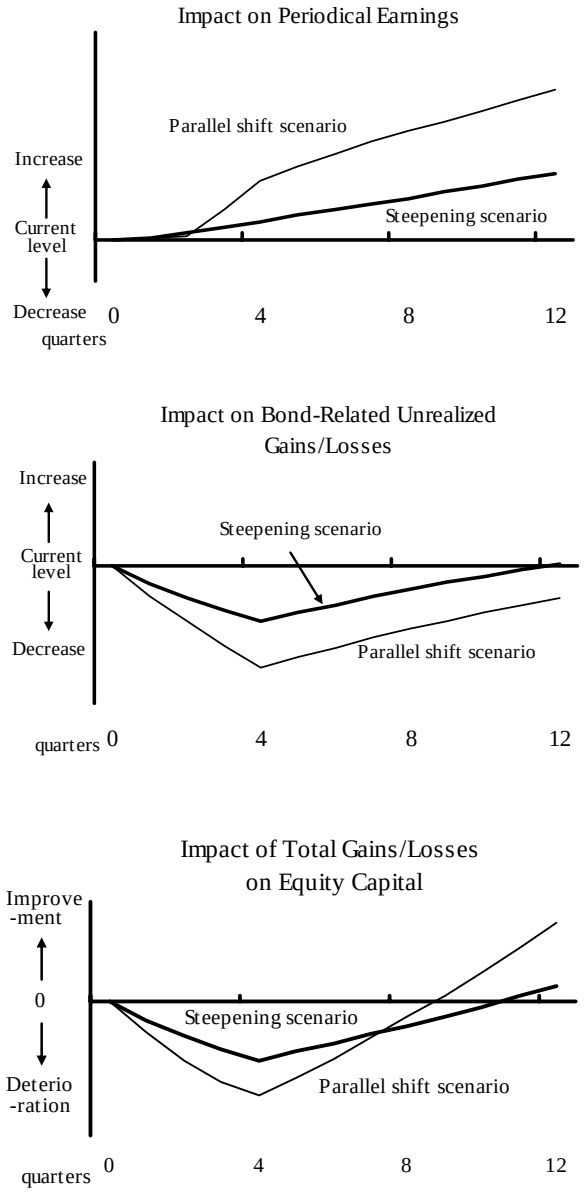


Chart 52: Scenario Analysis[1]



Notes: *1*. Figures for major banks.

2. In the analysis, it is assumed that the yield curve changes gradually over one year and then remains unchanged for two years. This distinction is made so as to examine the impact of the process of the yield curve shifting and that of the difference in the shape of the yield curve, separately. Recovery in unrealized losses in and after the second year is caused by the "roll-down effects" (i.e., with an upward-sloping yield curve which has not changed for a certain period of time, the yield will fall and the price of bonds will rise as the remaining maturity becomes shorter). The effects of periodical earnings on equity capital are shown as the change from the earnings at the initial period. It is assumed that all bonds are in the "securities available for sales" account because most bonds are registered in the account in which unrealized gains/losses directly impact banks' capital without changing banks' profit/loss.

"steepening scenario" and a "parallel shift scenario" (Chart 51). For both of these scenarios, the impacts on periodical earnings, unrealized losses/gains on bond holdings, and equity capital are estimated. The impact on equity capital is calculated as the sum of the cumulative periodical earnings and unrealized losses/gains on bond holdings. Chart 52 shows the results. In both scenarios there is an initial impairment in banks' equity capital due to unrealized bond-related losses, but this fades with time mainly due to improved periodical earnings. The impacts, both negative in the earlier stage and positive in the later stage, are greater in the parallel shift scenario.

The above calculations are based on the assumption that the size and composition of banks' balance sheets do not change. However, it may be necessary to consider a possible shift of demand deposits into time deposits and other financial assets during the phase of rising interest rates; the weight of demand deposits in banks' liabilities is now very high under low interest rates (Chart 53). Calculations with such consideration show that changes in the composition of interest-bearing liabilities have a non-negligible impact on banks' profits and equity capital.

2. Extended VaR analysis

In the extended VaR analysis shown below, yield curves are generated under various economic and financial states, each of which occurs with a certain probability. This approach reflects the fact that the shape of the yield curve does indeed vary dynamically (Appendices 5 and 6).

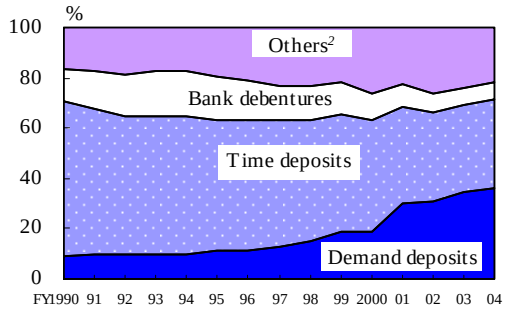
Chart 54 shows the cumulative impacts of variation in the shape of the yield curve on periodical earnings, unrealized losses/gains on bond holdings, and equity capital using the extended VaR framework. Looking at the distribution of the impact on equity capital, it initially has a long downward tail as the impact on unrealized losses on bonds

holdings exceeds that on periodical earnings. However, over time, the distribution shifts upward as the effect of increased periodical earnings starts to dominate and equity capital begins to recover. Eventually, the distribution has a longer tail in the upper range. This impact transition is essentially the same observed in the scenario analyses.

In summary, it is confirmed that the most significant interest rate risk posed to bank profits and equity capital is expansion of unrealized losses on bond holdings. However, losses in equity capital measured by the extended VaR analysis (with a 99 percent confidence interval) in one year's time only amount to the equivalent of a 1 percent decline in the capital adequacy ratio of major banks (see the bottom chart in Chart 54). In comparison with the costs spent on the disposal of NPLs since the second half of the 1990s, the impact associated with interest rate risk remains limited. Since periodical earnings are likely to improve with time, the possible negative effects of unrealized losses on bond holdings on equity capital are likely to be mitigated gradually. Accordingly, it is unlikely that interest rate risk will be so large as to have a considerable impact on banks.

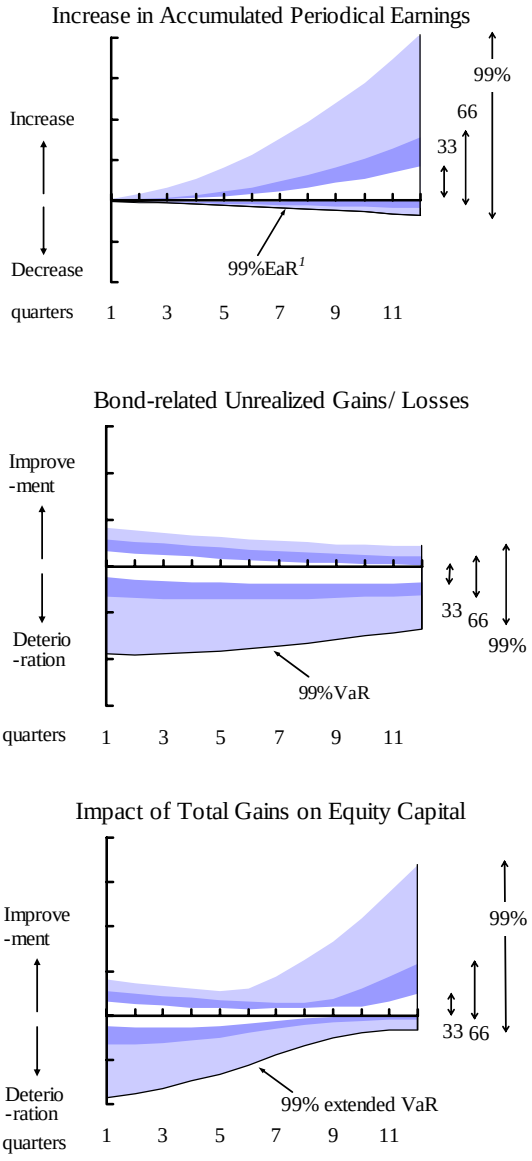
This subsection has analyzed the impact of interest rate risk on banks' profits. If the origin of the rise in interest rates is the business cycle, then credit costs may be reduced as the quality of loan assets improves or unrealized gains on stockholdings increase due to a rise in stock prices. This suggests that the negative effects of interest rate risk on banks' profits are likely to be offset, to some extent by a decline in other risks.

Chart 53: Breakdown of Liabilities[1]



Notes: *1*. Figures for major banks.
2. Including money market instruments.

Chart 54: Extended VaR Analysis



Note: *1*. Earnings at risk (EaR), (measured with a 99 percent confidence interval), is defined here as 99 percent of accumulated periodical earnings. Normally, it is defined as periodical earnings.

V. Enhancing the Stability and Functioning of the Financial System

The Japanese banking sector has almost overcome the NPL problem, and has entered a new phase of development.

Banks have enhanced their ability to control credit risk by evaluating the fair value of loan assets and establishing more sophisticated risk management systems. Although factors such as business cycles may influence the degree of credit risk, it has become less likely that credit costs will increase as high as those in the past, due to improvement in the credit quality of existing loan assets and structural improvement in borrower firms' financial positions.

There remain some regional banks that are still required to swiftly dispose of their NPLs and to reduce their credit costs. However, it has become much less likely that a shock caused by a failure of individual banks will spread to the overall financial system and significantly impair its functioning.

As for market risk, the risk associated with stockholding has declined considerably due mainly to the substantial reduction of stockholdings in accordance with the unwinding of cross-shareholdings. Interest rate risk as well is unlikely to significantly destabilize business conditions of banks in general. Attention should be paid to some aspects of the risk management of securities investment, in particular, alternative investment where the assessment of the nature of risks is rather difficult. However, it is unlikely that these risks will have a significant negative impact on business conditions of banks in general in the near future.

Banks inevitably take on a variety of risks as they provide various financial services including financial intermediation. The characteristics of those risks may change depending on financial and economic environment and the mode of financial services. Given that one of the fundamental functions of banks is to control risks, they are required to continue appropriately identifying and controlling risks with advanced risk management technologies even after they overcome the NPL problem.

As the proportion of stockholdings by domestic and foreign institutional investors has increased and the disclosure of information has progressed, stockholders and market participants have been exerting greater discipline on banks' management. Accordingly, a larger number of banks are setting clear goals to increase their corporate value by enhancing their profitability. Moreover, improving profitability is essential for banks which have received public funds injections, in order to make early repayment of those funds.

Against the background of changes in banks' business conditions and the easing of capital constraints, banks have been constructing new business models, adapting themselves dynamically to changes in their business environment under financial innovations.

Further evidence of such dynamism is provided by new financial services that banks are starting to offer. Banks have been developing new forms of corporate lending and offering services to support firms' fund management, in response to demand for more sophisticated financial services. They have also been diversifying the forms of loans and increasing sales of investment trusts and private pension policies to households. In providing these services, banks have utilized recent advances in financial technology such as securitization, credit scoring models, and risk reduction by pooling small loans. The development of credit-related markets, such as the

asset-backed securities and the credit derivative markets, has begun to spur progress of new financial services and sophisticated risk management techniques. At the same time, the latter leads to the development of those markets. These developments are also evidence of a recovery in the financial intermediary function of banks.

There have also been new developments in banks' organizational structure. Banks are increasingly consolidating their businesses, merging, and establishing joint ventures in order to satisfy diverse and sophisticated customer needs and to make full use of innovations in financial technology. Banks are strengthening their ties with consumer finance companies as well as with securities firms. These developments show Japanese banks' efforts to respond to developments on both the demand and the supply sides. Regional banks have also been strategically merging with other regional banks outside their home bases. Although it is still too early to make predictions about the future design of the Japanese banking sector that will result from these structural changes, they could be understood to reflect banks' vigorous efforts to transform themselves to deal with prospective developments in the financial system.

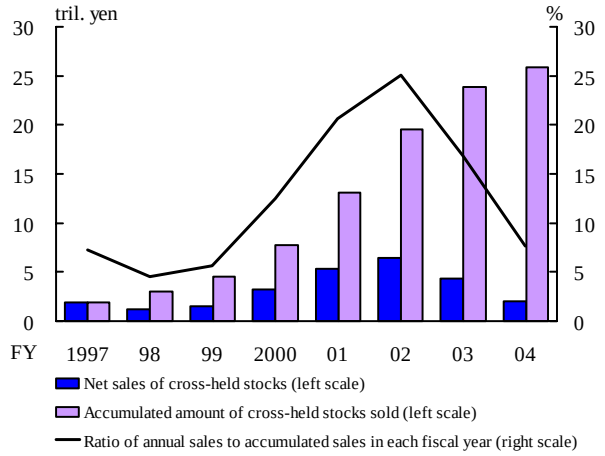
The positive developments in the Japanese banking sector will contribute to further strengthening the stability and functioning of the financial system as a whole.

Appendix 1: Reduction in Banks' Stockholdings and Changes in Their Own Stockholder Structure

Stock selling by major banks has been accompanied by the sale of cross-held bank stocks, pushing forward the process of unwinding cross-shareholdings (Chart 1 for Appendix 1). Major banks started to sell stocks actively in fiscal 1997, and have since sold a total of 26 trillion yen worth of stocks, more than 70 percent of their initial holdings. Bank stocks sold by firm and other cross-holding counterparties have been absorbed by both domestic and foreign institutional investors, the latter in particular, and this has generated a significant change in major banks' stockholder structure (Chart 2 for Appendix 1). This change has seemingly had the effect of strengthening discipline on bank managers both directly and indirectly. It may also have affected business arrangements between banks and firms: terms and conditions, which used to be strongly influenced by the degree of cross-shareholdings, have come to be reviewed. This change in the relationship between banks and firms is viewed as a factor behind banks' tender of various forms of credit supply: for example, syndicated loans have been growing.

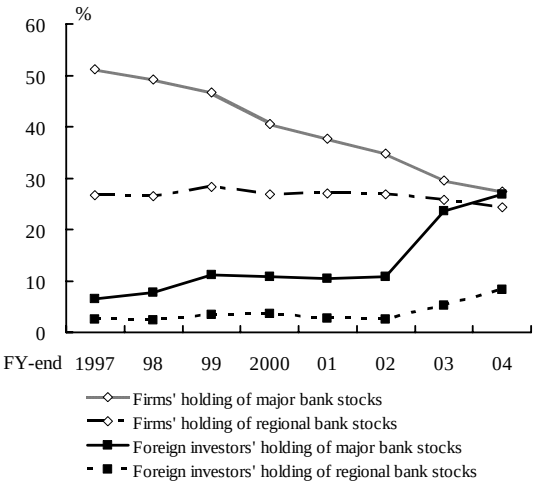
In contrast, no significant overall change has been observed in the stockholder structure of regional banks whose stockholdings were not as large as those of major banks. As for individual banks, however, the ongoing unwinding of cross-shareholdings by their stockholders, such as major banks, has resulted in a rise in institutional investors' share of their ownership. Some regional banks have strengthened cross-shareholdings with other regional banks in response to the unwinding of cross-shareholdings by their stockholders. Since these distinctive developments in the banks' policy on stockholding may influence the management of regional banks, it should be closely monitored hereafter.

Chart 1 for Appendix 1:
Unwinding of Cross-Shareholdings by Major Banks



Sources: Annual securities reports, Appendices to *Kessan Tanshin* (Financial Materials), investor relations materials.

Chart 2 for Appendix 1:
Stockholder Structure for Banks' Ordinary Stocks[1]



Note: *1*. Firms' holdings include those held by local governments.
Source: Annual securities reports.

Appendix 2: Bank Lending and Distortion in Resource Allocation

One of banks' roles as a financial intermediator is to allocate funds efficiently through lending: banks reduce credit to industries and firms with low potential growth and profitability while they increase the credit to those with high potential growth and profitability. However, Japanese banks' "forbearance lending" to low-performing borrowers, including the construction industry, after the bursting of the bubble allowed these borrowers to survive, and this was said to have delayed the necessary structural adjustment of Japan's economy. In recent years, however, bank lending has been declining in line with progress in structural adjustments through reorganization, liquidation, and mergers of unsound firms, as well as cost-cutting and other restructuring efforts.

In this appendix, the relationship between bank lending and structural adjustment is examined from a macroeconomic perspective. Structural adjustment is defined here as the shift of capital and labor from industries with low profitability to those with high profitability, so as to equalize profitability across industries. In the optimal resource allocation, the ratio between the rates of return on capital and wages must be equalized across industries without any obstacle preventing resource reallocation. If, however, the process of structural adjustment is hindered for some reasons, this ratio dose not equalize across industries. Therefore, measuring the degree to which the current state diverges from the hypothetically most efficient one enables us to grasp quantitatively the degree of distortion in resource allocation. In this analysis, the degree to which each industry's returns to capital and labor diverge from those of the electrical machinery industry, which is regarded as a benchmark, is estimated, and this is defined as the resource allocation distortion indicator.

The indicator for manufacturing industries that are exposed to severe domestic and international competition has remained at relatively low and stable levels. On the other hand, the indicator of nonmanufacturing industries exceeded that of manufacturing industries and rose throughout the 1990s. With respect to the relationship between the degree of distortion and banks' lending by industry, it is observed that banks increased lending to the construction industry where resource allocation was most distorted in the 1990s. This indicates that forbearance lending might have prevented improvement in distortion and obstructed resolution of the overall structural problems in Japan's economy. From 2001 onward, the distortion for nonmanufacturing industries including the construction industry has considerably improved in line with the decline in banks' lending to these industries.

Chart 1 for Appendix 2:
Distortion in Resource Allocation[1]

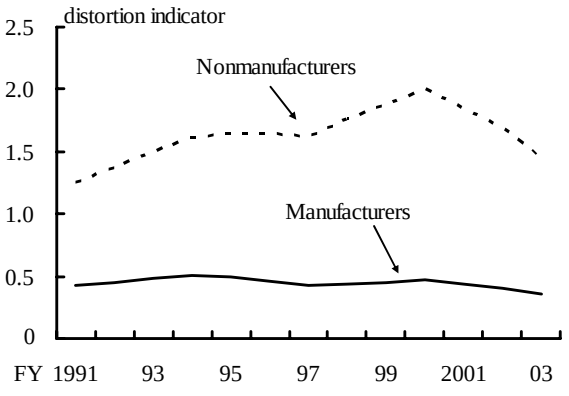
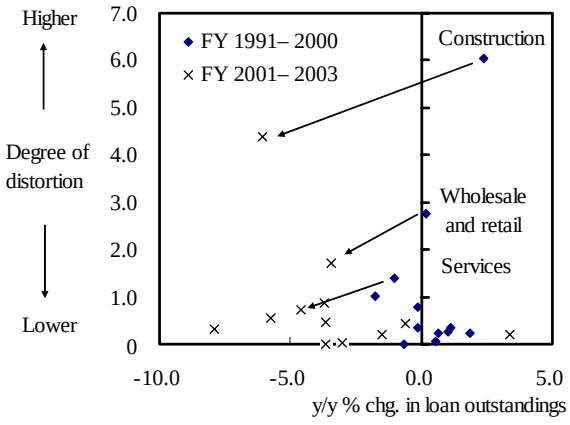


Chart 2 for Appendix 2:
Distortion and Changes in Lending by Industry



Note: *1*. The distortion indicators for manufacturers and nonmanufacturers are calculated by averaging the figures for each industry with their relative shares of GDP as weights. The distortion indicators for each industry are calculated based on the method proposed by A. Otani, S. Shiratsuka, and M. Nakakuki in "Distortions in Factor Markets and Structural Adjustments in the Economy," *Monetary and Economic Studies*, Institute for Monetary and Economic Studies, Bank of Japan, 2004, Vol. 22, No. 2, pp. 71-99. Data are from Japan Industry Productivity (JIP) database before 1999; Cabinet Office, "National Accounts" and "Capital Stock of Private Enterprises Statistics;" and Bank of Japan, "*Tankan* - Short-Term Economic Survey of Enterprises in Japan", from 1999 onward.

Appendix 3: The Business Cycle and the Credit Cost Ratio

To gain an insight into the relationship between economic conditions and credit costs, the impact of the business cycle on the credit quality of loan portfolios should be assessed. Following the self-assessment guideline by the Financial Services Agency (FSA), banks categorize their loan portfolios taking into account business conditions of individual borrowers. The likelihood of shifts in borrower categories between the start and end of a given term period is summarized in the transition probability matrix, which shows how banks' loan portfolios are likely to alter in credit quality (Chart 1 for Appendix 3).

Observing the distribution of loan portfolio quality by the breakdown of borrowers in each category (Chart 2 for Appendix 3), it is confirmed that the center point of the distribution is in parallel with the business cycle (charts 3 and 4 for Appendix 3). With regard to the relationship between the distribution of bond issuing firms' credit ratings and the business cycle, co-movement between the two is confirmed in the long run.

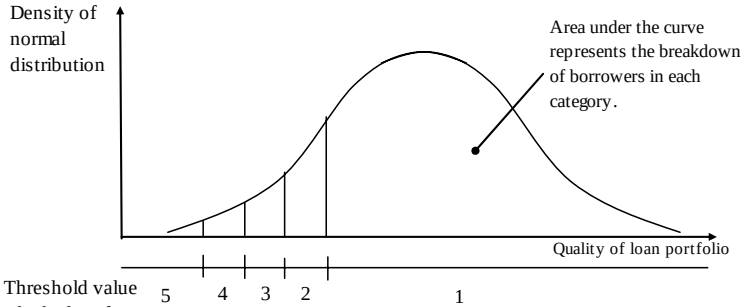
Downgrading of two notches or larger of individual borrowers has not been unusual over the course of the massive disposal of NPLs by banks, and this has resulted in credit costs that were large relative to the magnitude of the cyclical downturn. This observation implies that these asymmetric transitions between upgrades and downgrades will gradually dissipate as the resolution of NPL problem makes progress. A model based on this assumption predicts that banks' credit costs will be smaller in the future than those suggested by the historical relationship between loan portfolio quality and credit costs.

Chart 1 for Appendix 3:
Transition Probability Matrix of Borrower Categories: Sample[1]

		Beginning of term					%
		Normal	Need attention	Special attention	In danger of bankruptcy	Effectively bankrupt or bankrupt	sum of row
End of term	Normal	76	1	0	0	0	77
	Need attention	3	7	0.5	0	0	10.5
	Special attention	1	2	3	0	0	6
	In danger of bankruptcy	0	0.5	1	2	0	3.5
	Effectively bankrupt or bankrupt	0	0	0	1	2	3
	sum of column	80	10.5	4.5	3	2	100

Notes: *1*. In this table, all cells sum to 100 percent. A transition probability matrix is generally represented as a conditional probability so that the values in a column sum to 100 percent. The estimation model here uses a representation above because the model approximates the probability matrix by a bivariate normal distribution with thresholds.
2. "Need attention" in the table excludes "special attention".

Chart 2 for Appendix 3:
Distribution of Quality of Loan Portfolio



1 Normal
2 Need attention excluding special attention
3 Special attention
4 In danger of bankruptcy
5 Effectively bankrupt or bankrupt

Chart 3 for Appendix 3:
Index of Loan Portfolio Quality[1,2]

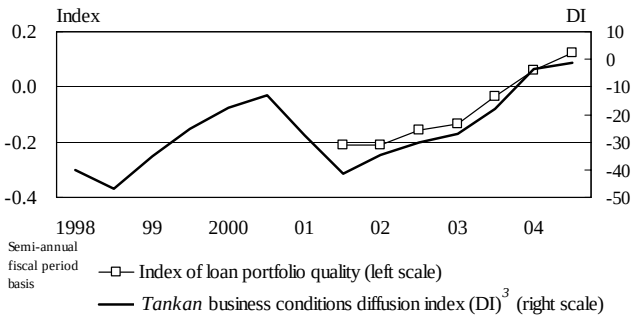
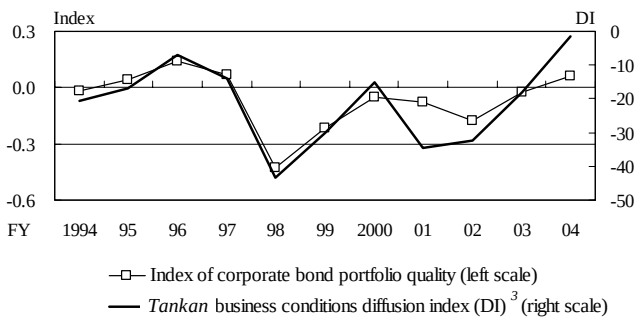


Chart 4 for Appendix 3:
Index of Corporate Bond Portfolio Quality[1,2]



Notes: *1*. Plotted by the mean of the distribution in the Chart 2 for Appendix 3.

2. The data for the analysis of loan portfolio quality are available only somewhat later when the self-assessment system was introduced by the FSA. Analysis is directed at major banks' loans. For analyzing credit ratings of long-term bonds of Japanese firms, ratings by Rating and Investment Information (R&I) are used. Proportion of bond rating categories represents the credit quality of the whole bond portfolio made of all bonds in the data source. The loan portfolio quality index in the Chart 3 for Appendix 3 is the level of index, while the bond portfolio quality index in the Chart 4 for Appendix 3 is the change in the index within a period. Portion of borrower categories in the self-assessment of bank loans can improve for two reasons: 1) upgrading toward higher borrower categories and 2) NPL write-offs, an increase in new loans to sound firms and in loan collection from unsound firms both prompted by recovery of the economy. The latter effect is observed by a jump in the credit quality from the end of the previous period to the beginning of the next period, reflecting the break of population to calculate the transition probability matrix. On the other hand, changes in the portion of bond rating categories excluding the effect of rating transition mainly attribute to bond redemptions and launches which are independent of business cycles. These may be rationale that the level of and the change in the credit quality indicators have positive relationships with business cycles, respectively.

3. The DI is for firms of all sizes in all industries.

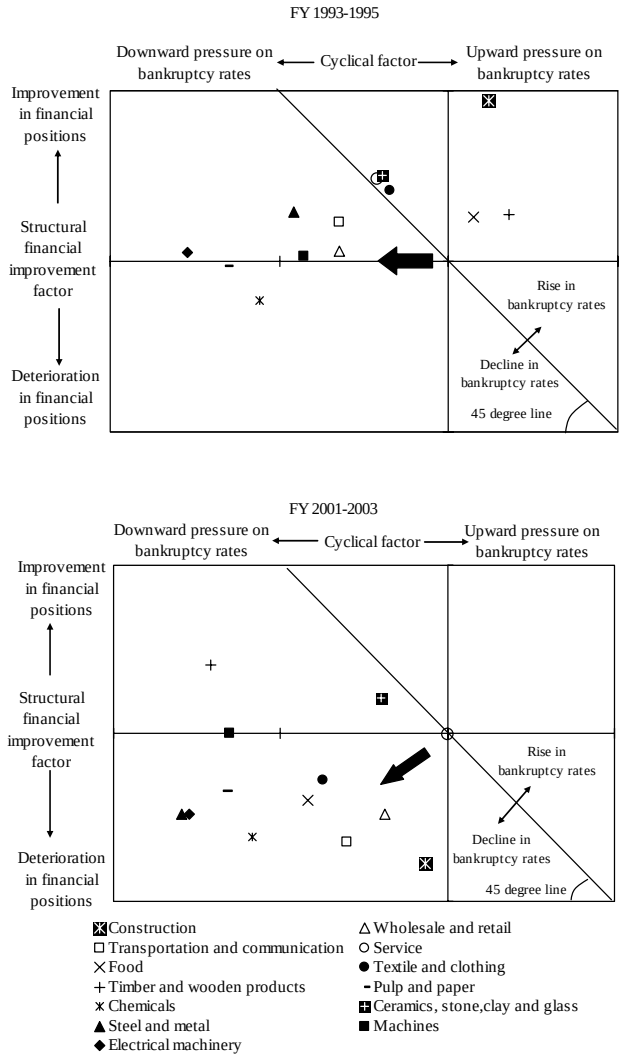
Appendix 4: Credit Scoring Model: Structural Factors Capturing Improvements in Firms' Financial Positions vs. Business Cycle Factors

A credit scoring model is used to assess, by looking at indicators of a firm's financial position (collectively termed "financial indicators" in what follows) and other firm attributes, the probability that the firm will default. This method for default assessment is employed when extending loans such as uncollateralized business loans to small firms. Typical financial indicators that include profitability, the debt overhang, capital sufficiency, and cash management are used in credit scoring, but most of these are highly influenced by business cycles. It is therefore difficult to judge whether the recent decline in the bankruptcy ratio is attributable to structural improvement in firms' financial positions achieved via reductions in excess debt and personnel costs or to the cyclical economic upturn.

The contribution of these structural factors affecting firms' financial positions vis-à-vis the contribution of cyclical factors is therefore examined, using the credit scoring model to explain bankruptcy rates (the number of annual bankruptcies / the total number of firms, according to data compiled by the Tax Administration Agency) across industries. The scoring model developed here applies the business conditions diffusion indices (DI) from the *Tankan* (Short-Term Economic Survey of Enterprises in Japan) as a representative business cycle indicator. As for structural shift in financial positions, the developments of financial indicators are decomposed into co-movement parts with the DI and independent parts of the DI as the residuals of the former.

First, twenty financial indicators such as ratios of current profits to total assets and of interest payment to sales from the Financial Statements Statistics of Corporations by Annual are regressed on the DI, industry by industry. Second, the twenty residuals of financial indicators independent of business conditions in each industry are compiled into four indices: profitability, debt overhang, capital efficiency, and cash management, corresponding to characteristics of these indicators. The total contribution of the four indices is regarded as that of structural factors capturing financial positions independent of the business cycle. Finally, the originally developed scoring model estimates contributions of the structural factors and the business cycle factors represented by the DI across industries. The analysis reveals that the decline in bankruptcy rates from fiscal 1993 through fiscal 1995 was fueled mainly by business cycle factors, although financial factors also contributed significantly to lowering bankruptcy rates from fiscal 2001 through fiscal 2003. In fiscal 2004, probability of firms' default in the face of an economic downturn is expected to have decreased still further, as both their profitability and financial positions continue to strengthen.

Chart 1 for Appendix 4:
Contribution to Bankruptcy Rates[1]



Note: *1.* Along the 45 degree line, the contributions of cyclical factors and the structural financial improvement factors sum to zero. Credit scoring models include (1) models that identify bankrupt firms as "1" and non-bankrupt firms as "0"; and (2) models that score firms based on certain criteria and then evaluate firms according to their scores. Here, a model which estimates average bankruptcy rates by industry is developed for the specific analysis.

Appendix 5: EaR and Extended VaR Model Based on Profit Model

Value at Risk (VaR) is one of the most popular methods used for evaluating risk in the trading accounts of banks that require mark-to-market accounting. Although banks' deposit and loan accounts are not evaluated on a mark-to-market basis, they are subject to significant interest rate risk, so that an Earnings at Risk (EaR) model has been devised to evaluate the risk accompanying fluctuations in periodical earnings due to interest rate changes. In this analysis, the impact on equity capital is calculated as the sum of net unrealized bond-related gains/losses and accumulated periodical earnings (i.e., the sum of lending-related profits and interest income from bonds). Models to evaluate risks of both periodical earnings and unrealized capital gains and losses are referred to as "extended VaR (ExVaR)" models. As for changes in interest rates, stochastic fluctuations of yield curves are generated via the yield curve model described in Appendix 6. This methodology makes it possible to verify how fluctuations in interest rates impact on banks' equity capital, via their loan-deposit business and bond investment, and to derive a distribution for equity capital in each future period. While a more realistic analysis would also take into account credit costs, taxes, and dividends, these are disregarded. The risk associated with stockholdings in the banking account is outside the scope of the current analysis, focusing on interest rate risk.

Essences in model building for calculating periodical earnings are the following: (1) variations in amounts outstanding of assets and liabilities such as loans and time deposits, which are illiquid and thus difficult to sell or withdraw at will; (2) the mechanism in which yield averages fluctuate when a new interest rate is applied after rollover or after an increase in the amount of deposits, lending, or bonds; (3) mechanisms for determining particular interest rates, for example lending rates linked to the short-term prime rate, lending rates based on market interest rates, and rates on various time and demand deposits; (4) the prepayment feature typical of housing loans and of others; (5) strategic trading in which investment is steered toward highly marketable assets such as liquid bonds; and (6) assets and liabilities that have no obligatory maturity. This analysis uses a model that addresses only the first three issues, mainly because of data constraints.

In (1) above, loans, deposits, and bonds are assumed to be rolled over at the end of their maturities or reinvested in the same products with the same maturities, so that their amounts outstanding are fixed during the simulation period for EaR and ExVaR. As for (3) above, banks' interest rate setting behavior in response to changes in the level and shape of the yield curve is estimated. In this regard, the model enables us to verify some notable features of interest rate setting behavior in the past: interest rates on demand deposits are insensitive to fluctuations of the risk free yield curve; the expense ratio seems to be the floor when setting the short-term prime rate (the prime rate can hardly be set below the expense ratio); the setting of interest rates for deposits and lending displays a real option feature (i.e., banks do not respond to a change in market interest rates which can be seen to be temporary). With regard to the sensitivity of interest rates on time deposits, it is confirmed that the sensitivity varies for each maturity and also that there is a difference between the sensitivities in the current low interest rate environment and prior to this.

In general, interest rates on loans and deposits are determined simultaneously with firms' demand for loans and the household's supply of deposits, as well as depending on the competitive environment surrounding banks. These factors, however, are not taken into account here. With regard to the estimation period, this runs back to 1994 when deposit interest rates were fully liberalized. This allows us to exclude the period during which interest rate regulations resulted in a different pricing system as well as periods when interest rates were at a substantially higher level. The only occasion when there was an increase in short-term interest rates was during the summer of 2000 when the zero interest rate policy was temporarily lifted (the rises in short-term interest rates around the time of the Y2K concerns and the financial crisis in the fall of 1997 were caused by temporary turbulence in the money market, and they were not reflected in the short-term prime rate or in deposit interest rates).

Banks' interest rate-setting behavior during phases when short-term interest rates are rising is not always symmetrical with their behavior during phases when they are falling. It may also be substantially affected by the demand for loans, the supply of deposits, and by competition among banks. Since changes in such factors may cause banks' behavior to differ from past patterns, it should be noted that the effect of an interest rate rise on periodical earnings and equity capital may be substantially different from the results implied by this analysis.

Appendix 6: Yield Curve Models

Yield curve models that explain stochastic developments in yield curves play an extremely important role in evaluation of interest rate risk, pricing of various financial products, and asset liability management (ALM) at banks, insurance companies, and pension funds. Various yield curve models have been developed in the field of financial engineering, however in recent years, in view of the fact that short-term interest rates constitute an important policy variable controlled by the central bank, yield curve models that incorporate macroeconomic variables have begun to be developed.

The yield curve model used in the EaR and extended VaR analysis here is following this trend and is based on a very simple macroeconomic model of the real economy and the central bank's policy response. The model assumes that the future path of short-term interest rates is determined by exogenous shocks such as demand shocks to the macroeconomy and that yield curves are determined by the future path of short-term interest rates based on the pure expectations hypothesis.

The macroeconomic model consists of three equations: the IS curve that determines the GDP gap; the Phillips curve that determines the CPI inflation rate; and a Taylor-rule-based policy reaction function of the GDP gap and the inflation rate. First of all, in the IS curve, changes in the GDP gap are generated by the real interest rate's divergence from its long-term equilibrium (i.e., [the nominal short-term interest rate – inflation rate] – equilibrium real interest rate) and by aggregate demand shocks. For the equilibrium real interest rate, the long-run trend of potential growth rate of the macroeconomy is used. In the long run, the inflation rate is determined by the GDP gap on the Phillips curve, however in the short run, it can deviate temporarily from the curve due to inflation shocks. The GDP gap and the inflation rate determine the nominal short-term interest rate via the monetary policy response function. The policy reaction function includes a CPI inflation rate commitment: the nominal short-term interest rate is set to remain at zero regardless of GDP gap developments until the inflation rate remains positive for a given period of time. The model adopts a classic Phillips curve rather than a Friedman-style Phillips curve; in other words, the influence of future inflation expectation on the current inflation rate is not cared. This is both for technical reasons involved in implementing the simulation, and owing to the recent deflationary environment in the Japan's economy.

The economic system captured in this model is exposed to three kinds of exogenous shocks: aggregate demand shocks, inflation shocks, and fitted errors in the monetary policy reaction function. These three kinds of stochastic shocks drive the economic system, causing fluctuations. Since feedback is generated in the IS curve by movements in the nominal short-term interest rate and the inflation rate via the real interest rate, the GDP gap tends to fluctuate cyclically, mirroring the business cycle. Based on the pure expectations hypothesis, the future path of the short-term interest rate produced by this economic system shapes the yield curve. A problem emerges here in that, because the risk premium embedded in the yields is ignored, the level of the yield curve is that much lower. The problem is dealt with by calibrating the constant term in the AR(1)-type IS curves to fit the model' yield curves to those currently observed.

In the transition probability matrix model shown in Appendix 3, the business cycle causes changes in the credit cost ratio, while in the yield curve model in this Appendix, the business cycle, corresponding to movements in the IS curve, is one of the factors driving interest rate fluctuations. There is thus a correlation between credit risk and interest rate risk, both of which have the business cycle as a common factor. When considering the integrated risk management of these two risks, therefore, it is not only an approach focusing on statistical correlations among economic and financial variables, but also an approach like the one used here, which makes use of a yield curve model reflecting both the real economy and monetary policy.