BOJ
Reports & Research Papers

FSR
Financial System Report

Bank of Japan
September 2007

This report mainly covers the 12 major banks and 110 regional banks.
The 12 major banks comprise Mizuho Bank, The Bank of Tokyo-Mitsubishi UFJ, Sumitomo Mitsui Banking Corporation, Resona Bank, Mizuho Corporate Bank, Saitama Resona Bank, Mitsubishi UFJ Trust and Banking Corporation, Mizuho Trust and Banking Company, The Chuo Mitsui Trust and Banking Company, The Sumitomo Trust and Banking Company, Shinsei Bank, and Aozora Bank. The 110 regional banks comprise the 64 member banks of the Regional Banks Association of Japan and the 46 member banks of the Second Association of Regional Banks, as of the end of March 2007.

In the charts, "I" and "II" represent the first half and second half of the relevant year, respectively.

Unless otherwise stated, this document uses data available as of August 24, 2007.

Please contact the Financial Systems and Bank Examination Department at the e-mail address below in advance to request permission when reproducing or copying the content of this report for commercial purposes.

Please credit the source when quoting, reproducing, or copying the content of this report for noncommercial purposes.

Financial System Report
Bank of Japan
September 2007

Contents

(Blank Page)

Preface

The Bank of Japan biannually publishes the *Financial System Report* with two objectives. The first is to present a comprehensive analysis and assessment of the stability and the functioning of Japan's financial system. The second is to enhance communication with concerned parties toward ensuring the stability and efficient functioning of the financial system, thereby contributing to the sustained stability of the financial system and sound economic growth.

Macroprudential research calls for a timely appraisal of the functioning and the robustness of the financial system as a whole. The functioning of the financial system should be assessed in terms of whether it promotes a more efficient allocation of economic resources, thereby contributing to sound economic growth. Robustness should be examined in terms of the extent to which the financial system is robust to imbalances that may impede the sustainable growth of the economy. Macroprudential research is also useful in assessing the functioning of the transmission channels of monetary policy.

The September 2007 issue of the *Financial System Report* assesses the current state of Japan's financial system and analyzes its functioning and robustness. In addition, it explores the profitability of Japan's banking sector. The report concludes that the banking sector needs to enhance its profitability as a source of capital in order to ensure the sustained stability of the financial system and to strengthen its functioning in financial intermediation. From a long-term perspective, the profitability and the stability of the financial system are thus complementary.

The Bank of Japan continues to contribute to ensuring the stability and efficient functioning of Japan's financial system through analyzing the financial system, publishing research results, and implementing appropriate policy measures.

An Assessment of the Current State of Japan's Financial System and Its Challenges: An Overview

1. Japan's financial system, on the whole, has remained stable. The functioning of the system in financial intermediation has improved and its robustness against various types of shocks has strengthened. Nevertheless, banks' long-term profitability remains rather weak when taking into account the need for sufficient capital bases to ensure the sustained stability of the financial system. Banks need to review their business lines, based on a proper grasp and assessment of risk-return balances, and to develop and deliver higher-value-added financial services by responding to diversified customer needs, in order to strengthen their profit base.

2. In terms of soundness, Japanese banks' capital positions have improved both in quality and quantity. Compared to the early 2000s, total risks borne by banks have largely been restrained, and, at the same time, market risk associated with stockholdings has become the largest component of risks borne by the banking sector overall. Regarding profitability, Japanese banks' profits have remained close to all-time-high levels, partly supported by significant declines in credit costs in the past few years. In fact, assuming that the real GDP growth rate will remain at levels slightly higher than the potential growth rate, the credit cost ratio is estimated to be in the range of approximately 0.2-0.4 percent. Indicators of core profitability, which exclude the impact of volatile components such as credit costs, have remained low. Improving profitability thus remains an important business challenge for banks (Chapter I).

3. Some Japanese financial institutions have invested in U.S. subprime mortgage-related products as alternative investments. However, the share of investments in such products in financial institutions' total assets outstanding is small and, at the moment, the subprime mortgage problem in the United States is unlikely to significantly affect the stability of Japan's financial system. Nevertheless, financial institutions need to properly grasp and manage risk-return profiles of alternative investments as well as changes in such profiles, with due consideration of the complex nature of risks inherent in such investments (Chapter I).

4. The functioning of Japanese banks in financial intermediation has continued to improve in tandem with the easing of banks' capital constraints, which has led to an expansion of their risk-taking capacity. Bank loans have been increasing moderately and progress has been made in the diversification of borrowers and loan types. In the meantime, new channels of financial intermediation relating to the M&A and real estate business have been expanding, reflecting increased inflows of funds through various investment funds. Against this background, Japanese banks have become more deeply involved in such new channels through the extension of loans for M&A-related transactions and non-recourse loans to real estate funds. Although loan conditions in Japan, such as covenants and collateral valuations, have yet to ease significantly, interest rates on non-recourse loans have been declining. Risks related to real estate financing, including future developments in risk-return balances of non-recourse loans, thus warrant careful monitoring (Chapter II).

5. Japan's financial system has become more robust against changes in interest rate and credit risks. Although in the short term, increases in interest rates produce an adverse impact on banks' profits through the decline in the market value of bond portfolios, in the medium term they improve profits through higher net interest income. Such an improvement in banks' profits is more evident in the case of the major banks than the regional banks, reflecting the different maturity structures of assets and liabilities. Meanwhile, credit risk has declined significantly even under a stress scenario assuming a severe and prolonged economic downturn, reflecting the improved quality of banks' loan portfolios. Nevertheless, close attention has to be paid to the possibility of deterioration not only in credit risk but also in market risk associated with stockholdings in the case of an economic downturn (Chapter III).

6. Looking at the profitability of Japan's banking sector from a long-term perspective, interest margins have been too narrow to sufficiently cover average credit costs, while general and administrative expense ratios have been restrained. Profitability has remained rather weak from the viewpoint of ensuring necessary capital positions to maintain the sustained stability of the financial system (Chapter IV).

7. Japan's banking sector needs to map out strategies as to how to enhance its profitability from a long-term perspective. To this end, each bank needs to seek its own way to expand interest margins. In this context, each bank needs to differentiate its financial services and diversify the price-quality mix of its services in response to customer needs. In this process, banks are expected to shift their management resources to higher-value-added financial services, such as investment banking and global payment operations. To enable the development of such business, banks need to properly assess risk-return balances and thereby explore new avenues to make use of their capital through the reorganization of existing business lines (Chapter IV).

8. The report highlights three directions in which, based on a proper assessment, risk-return balances can be improved. First, the profitability of the traditional banking business with large firms based on long-term stockholdings needs to be improved, since such business does not produce sufficient returns to cover costs once the market risk associated with such stockholdings is included. Second, credit portfolio management (CPM) is expected to contribute to improving the allocation of banks' loan portfolios in terms of their distribution by firm size, industry, and region through a proper assessment of risk-return balances. Third, small and medium-sized enterprise (SME) financing needs to incorporate proper assessment of risks associated with loans to SMEs by making use of credit scoring methods, while establishing the necessary infrastructure, including mechanisms enabling banks to make use of credit bureaus (Chapter IV).

Chart 1-1: Net Income/Loss

Major banks
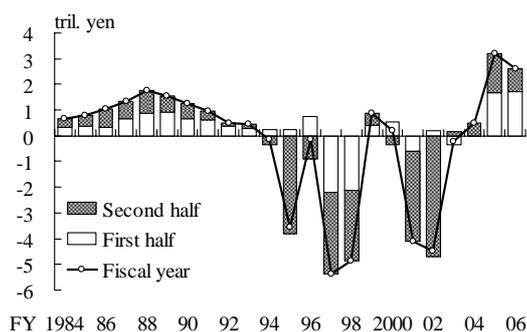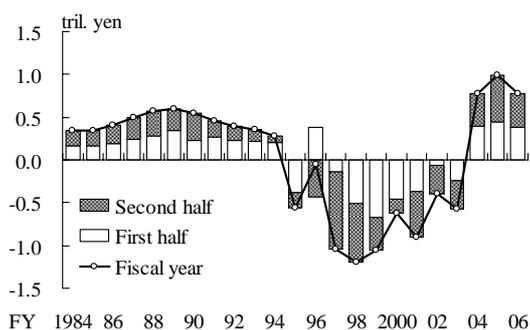
Regional banks

Chart 1-2: Contributions to Changes in Net Income/Loss
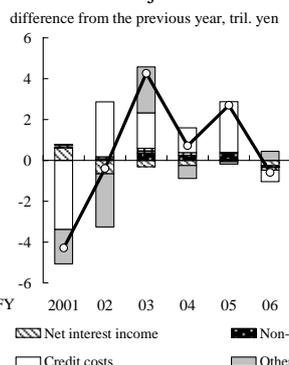
Major banks   Regional banks
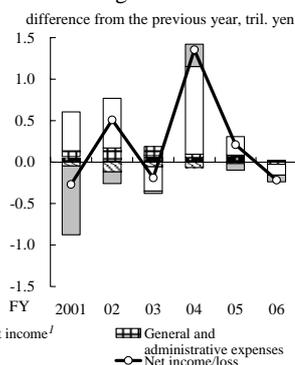
Note: *1*. Non-interest income = net fees and commissions + profits on specified transactions + other operating profits - net realized bond-related gains/losses.

Chart 1-3: Net Interest Income[1]
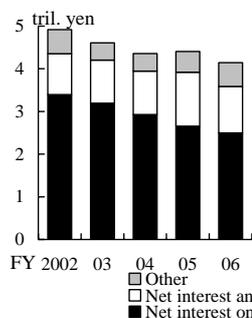
Major banks   Regional banks
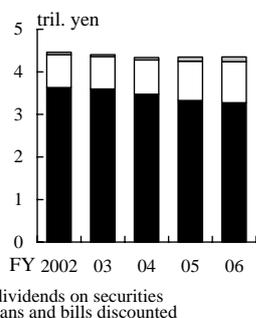
Note: *1*. The composition of interest expenses is calculated assuming that the ratio of each component to total expenses is the same as the ratio of interest on loans and bills discounted, interest and dividends on securities, and other interest income to total interest income.

I. Business Conditions of Japanese Banks

A. Developments in Banks' Profits

The net income of the major and the regional banks slightly declined in fiscal 2006 from the all-time high recorded in fiscal 2005 (Charts 1-1 and 1-2; see Box 1 for the consolidated profits of the three mega financial groups and Box 2 for the profits of *shinkin* banks that hold current accounts at the Bank of Japan). Although the net income of the major banks reached another all-time high, on a biannual basis, in the first half of fiscal 2006, it declined for the year as a whole. This was due to an increase in credit costs (net losses resulting from the disposal of nonperforming loans and from other factors) and the devaluation of equity investments caused by a downturn in the business of consumer finance companies (see Box 3 for the business conditions of consumer finance companies). As for the regional banks, the decline in overall net income in fiscal 2006 was attributable to large provisions for loan losses at some banks.

In spite of the decline, the net income of the major and the regional banks in fiscal 2006 remained close to the all-time high. This high net income was attributable mostly to low overall credit costs despite the increase in loan-loss provisions for consumer finance companies.

While the major banks registered a decrease in interest and non-interest income in fiscal 2006, the regional banks recorded only a slight increase (Chart 1-2). Interest income on loans declined because interest margins on loans continued to narrow (Chart 1-3). Non-interest income at the major banks declined because the pace of increase in income from the sale of investment trusts and private pension policies slowed significantly and the profits on foreign exchange and derivative transactions decreased (Chart 1-4).

The ratio of non-interest income to gross operating profits rose slightly both for the major and the regional banks (Chart 1-5). It should be noted, however, that the rise in the non-interest income ratio for the major banks was due to the fact that interest income declined more than non-interest income.

The degree of improvement in banks' profitability can be seen in the core return on equity (ROE), which is calculated by excluding the impact of volatile components such as credit costs, gains/losses on securities, and corporate income tax from net income. The core ROE in fiscal 2006 fell below the fiscal 2005 level both for the major and the regional banks, reflecting the somewhat sluggish improvement in banks' profits relative to the increase in their capital (Chart 1-6). The core ROE and the degree to which it improved varied considerably from bank to bank and there were in fact a substantial number of banks whose profitability had not improved in fiscal 2006 when compared with fiscal 2003 (Chart 1-7).

The above analysis suggests that banks' net income in fiscal 2006 was at a historically high level, but such good performance reflected temporary factors, including reversals of allowances for loan losses at some banks. In fact, the pace of improvement in banks' core ROE has slowed and improving core profitability remains an important challenge for both the major and the regional banks. Further examination of banks' profitability and how it can be improved will be provided in Chapter IV.

Chart 1-4: Non-Interest Income

□ Other
□ Gains related to foreign exchange and derivative transactions[1]
■ Income from fees and commissions
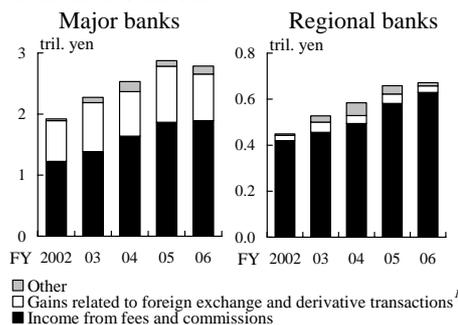
Note: 1. Figures are profits from selected items in specified transactions and other operating profits.

Chart 1-5: Ratios of Non-Interest Income to Gross Profits[1]
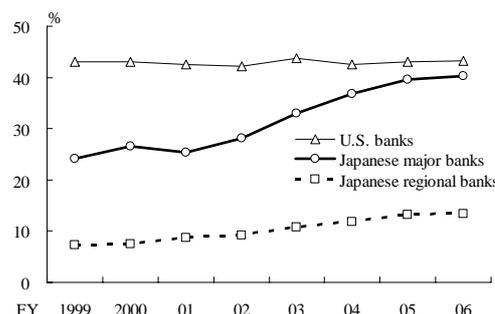
Note: 1. Ratio of non-interest income to gross profits from core business = non-interest income/(net interest income + non-interest income).
Source: Federal Deposit Insurance Corporation (FDIC), "Statistics on Banking."

Chart 1-6: Core ROE of Banks[1,2]
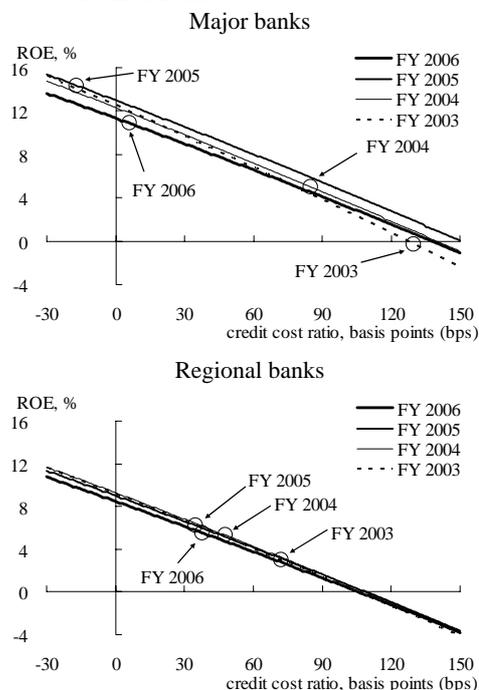
Notes: 1. Core ROE is recalculated by excluding the impact of volatile components such as credit costs, gains/losses on securities, and corporate income tax. See Hattori, Masazumi, Joji Ide, and Yasuo Miyake (2007), "Bank Profits in Japan from the Perspective of ROE Analysis," Bank of Japan Review, for details.
2. One basis point (bp) = 0.01 percent.

5

Chart 1-7: Core ROE for Individual Banks[1,2,3,4]

ROE in fiscal 2006, %

Improved (39 banks)

Deteriorated (78 banks)

ROE in fiscal 2003, %
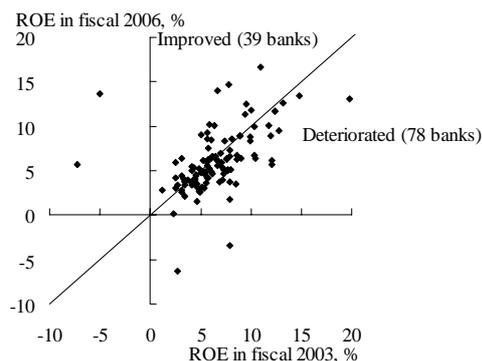
Notes: *1.* Core ROE is calculated using the same method as in Chart 1-6.
    2. Credit cost ratio is assumed to be 30 basis points.
    3. The observation for one of the banks falls outside this chart.
    4. Observations above the 45-degree line indicate that the core ROE (core profit basis) in fiscal 2006 had improved when compared with fiscal 2003.

Chart 1-8: NPL Ratios and the Amount of NPLs[1,2]

Major banks

tril. yen   %

Ratio of NPLs to total credit exposure (right scale)

FY 2000 01 02 03 04 05 06

☐ Loans requiring "special attention" (left scale)
☐ Doubtful loans (left scale)
■ Unrecoverable or valueless loans (left scale)

Regional banks

tril. yen   %

Ratio of NPLs to total credit exposure (right scale)

FY 2000 01 02 03 04 05 06
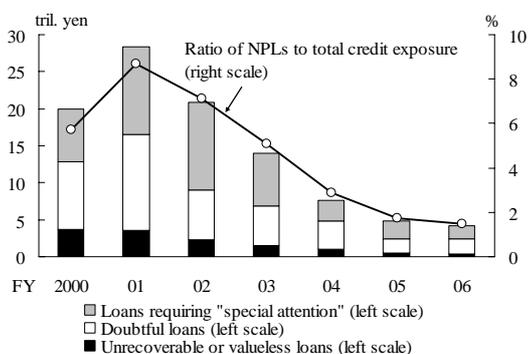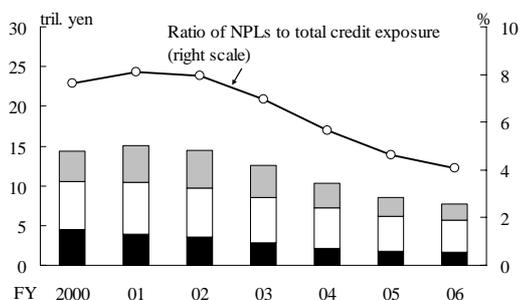
Notes: *1.* NPLs disclosed under the Financial Reconstruction Law.
    2. Figures include NPLs which are transferred to subsidiary companies for corporate revitalization.

Chart 1-9: NPL Ratios at the Regional Banks[1]

number of banks

0-3   -4   -5   -6   -7   -8   -9   -10   Over 10   %
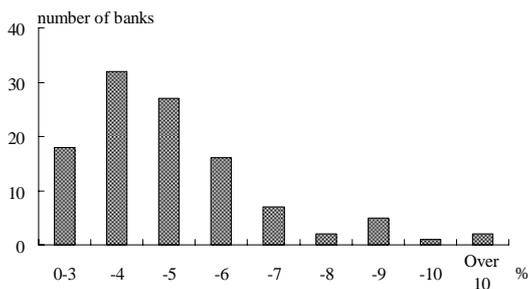
Note: *1.* Calculated based on the end of fiscal 2006 figures.

B. Credit Costs

Banks' nonperforming loans (NPLs) have been declining, reflecting firms' strong business performance amid the continued expansion of Japan's economy. The ratio of NPLs to total credit exposure at the major banks declined to 1.5 percent at the end of fiscal 2006, down from a peak of 8.7 percent at the end of fiscal 2001 (Chart 1-8). The ratio at the regional banks also declined, to 4.1 percent at the end of fiscal 2006, compared with 8.1 percent at the end of fiscal 2001.

The pace of decline in the NPL ratio at the regional banks has been moderate compared with that at the major banks, suggesting that the pace of the removal of NPLs from banks' balance sheets at the regional banks has been slower than at the major banks. In fact, at some regional banks, NPL ratios still remained high, highlighting the need for these regional banks to intensify their efforts to dispose of NPLs (Chart 1-9).

Credit cost ratios in fiscal 2006 rose from the previous fiscal year, but still remained low on the whole (Chart 1-10). Low credit cost ratios were attributable to two factors: the emergence of new NPLs was contained as a result of favorable economic conditions; and the creditworthiness of existing borrowers improved further.

While the credit cost ratio at the major banks was negative (minus 0.22 percent on an annualized basis) in the first half of fiscal 2006, it turned positive (0.06 percent) for fiscal 2006 as a whole. This was attributable to the increases in provisions for loan losses to large borrowers, including consumer finance companies, mentioned above.

The current low level of credit costs should be considered a temporary phenomenon since the reversals of allowances for loan losses are expected to

diminish gradually as the quality of loan portfolios improves. In fact, at the major banks, the share of loans to borrowers requiring "special attention" was already below 2 percent at the end of fiscal 2006 (Chart 1-11). Therefore, credit cost ratios are unlikely to decline further due to any additional improvement in the creditworthiness of borrowers (Chart 1-12).

Based on the above considerations, the following analysis projects the future increase in credit cost ratios by focusing on provisions for loan losses that tend to fluctuate in response to the business cycle. First, the relationship between the transition matrix of borrower classification and the GDP growth rate is estimated in order to forecast the transition matrix depending on the future GDP growth rate (see Box 8 for details on the framework for macro stress-testing of credit risk underlying the analysis here). Then, given the estimated transition matrix and loans outstanding as of the end of fiscal 2006, the loan-loss provision ratio and loans outstanding by type of borrower are estimated and future loan-loss provisions are derived (costs related to direct write-offs are assumed to be equal to the average of those in fiscal 2005 and 2006).

Assuming that there are no idiosyncratic factors such as an increase in credit concentration risk associated with large borrowers and that the future GDP growth rate is 2 percent, which is somewhat above, but close to, the potential growth rate, the credit cost ratio is estimated to be about 0.2 percent at the major banks (99 percent confidence interval: 0.18-0.29 percent) and about 0.4 percent at the regional banks (99 percent confidence interval: 0.37-0.48 percent). It should be noted that credit cost ratio estimates of course depend on the quality of loan portfolios. As a robustness check, credit cost ratios are also calculated applying the same scenario but using loan portfolios at the end of fiscal 2004. In this case, the estimated credit cost

Chart 1-10: Credit Cost Ratios[1,2]
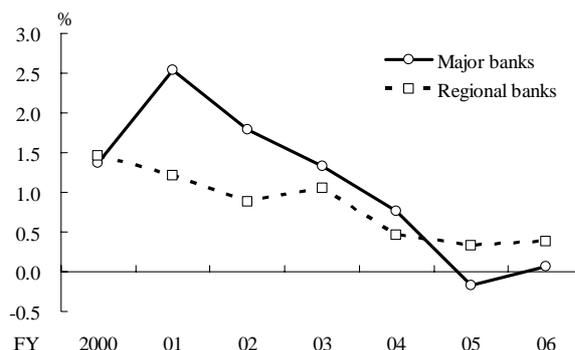
Notes: 1. Credit cost ratio = credit costs/total loans outstanding.
2. From fiscal 2000 to 2005, the figures include credit costs of subsidiary companies for corporate revitalization.

Chart 1-11: Breakdown of Bank Loans Outstanding by Creditworthiness of Borrowers

Classification of borrowers:
⊠ Normal   ■ Need attention
□ Special attention   ⊞ In danger of bankruptcy
▨ De facto bankrupt or bankrupt
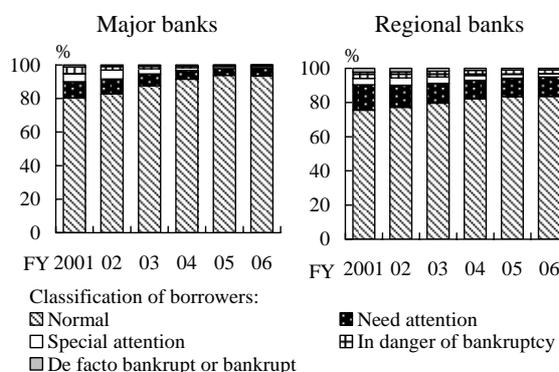
Chart 1-12: Components of Credit Cost Ratios
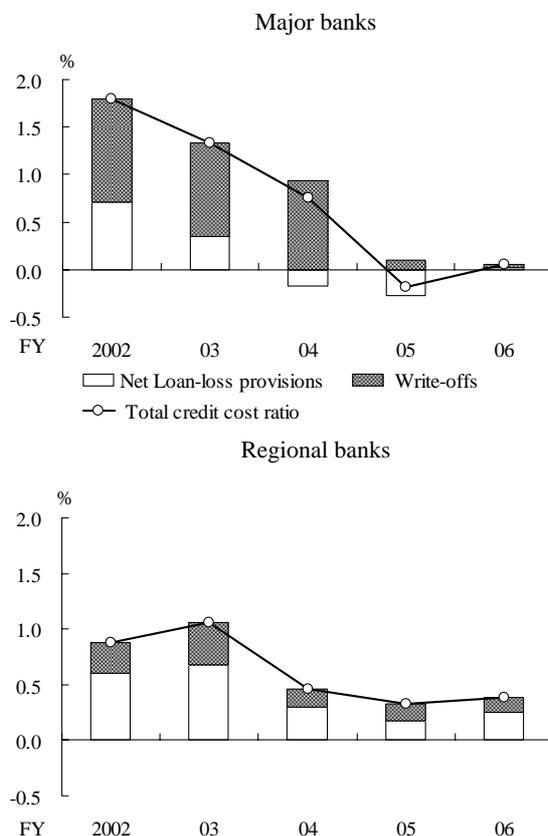
Major banks

□ Net Loan-loss provisions   ▨ Write-offs
○ Total credit cost ratio

Regional banks

7

In this analysis, the credit cost ratio at the major banks increases even if the future GDP growth rate is assumed to be about the same as in fiscal 2006, since the quality of loan portfolios is already quite high and thus unlikely to improve further, and because temporary factors such as reversals of allowances for loan losses at some banks will have run their course.

C. Risks Associated with Bond Holdings and Stockholdings

During fiscal 2006, both the major and the regional banks recorded slight overall gains on securities holdings, measured by the sum of net realized securities gains/losses and changes in net unrealized securities gains/losses (Chart 1-13). Overall, they recorded relatively small gains on bonds due to a fall in medium- and long-term interest rates and almost no gains or losses on stocks.

The average maturity of bonds in the major banks' portfolios lengthened in the second half of fiscal 2006 as a result of an increase in the share of medium- and long-term bonds (Chart 1-14). In contrast, at the regional banks, the average maturity of bonds in their portfolios continued to shorten.

Against this background, the ratio of risk associated with yen-denominated bond holdings (100 basis point value [bpv]) relative to Tier I capital, or core capital, at the major banks increased somewhat during the second half of fiscal 2006 (Chart 1-15). In contrast, at the regional banks, this ratio decreased during the same period. Overall, the ratios of interest rate risk in bond portfolios relative to Tier I capital were relatively low, indicating that banks' stance with regard to interest rate risk-taking continued to be restrained.

Chart 1-13: Overall Gains/Losses on Securities
Major banks
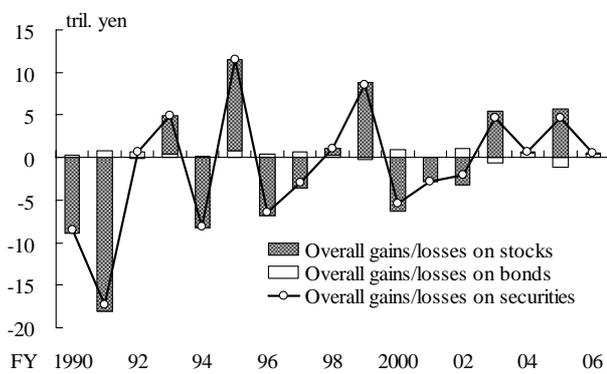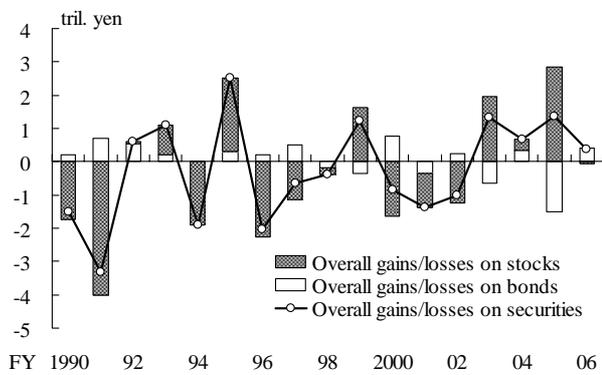
Chart 1-14: Average Maturity of Banks' Yen-Denominated Bond Portfolios[1]

Note: 1. Bank of Japan estimation.

8
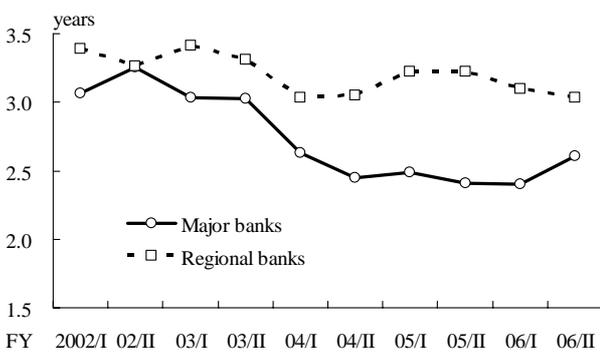
On the other hand, banks' holdings of "alternative investments" such as investments in structured products, credit investments, and hedge funds -- financial products that have risk-return profiles different from traditional assets -- have continued to increase (Chart 1-16). At present, such alternative investments account for only a small share of the total balance of securities investments of the banking sector overall (3.7 percent at the major banks and 4.5 percent at the regional banks in fiscal 2006). There are, however, some banks that have invested more than 20 percent of their total securities investments in these products.

Many of these products have complex risk-return profiles compared to traditional assets. For example, credit risk premiums for U.S. subprime mortgage-related products have risen sharply from early 2007, reflecting mounting concerns regarding the subprime mortgage sector (Chart 1-17). In the U.S. and European credit markets, these premiums have further risen partly due to a decline in market participants' risk tolerance. This example reaffirms the importance of properly grasping and managing changes in the risk-return profiles of alternative investments.

Some Japanese financial institutions have invested in U.S. subprime mortgage-related products as alternative investments. However, the share of these investments in financial institutions' total assets outstanding is small, and at the moment, the subprime mortgage problem in the United States is unlikely to significantly affect Japan's the stability of financial system.

With respect to market risk associated with stockholdings, value-at-risk (VaR) at the end of fiscal 2006 was higher than a year earlier due to a rise in stock price volatility, while the amount of banks' stockholdings remained more or less unchanged.

Chart 1-15: Ratios of Risk Associated with Banks' Holdings of Yen-Denominated Bonds to Tier I Capital[1,2]
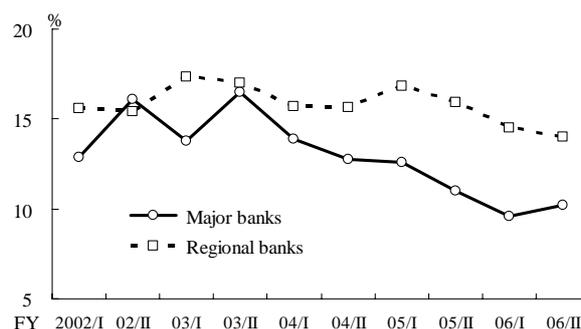
Notes: 1. The risk is estimated based on the assumption that market interest rates increase by 100 basis points on all maturities.
2. Bank of Japan estimation.

Chart 1-16: Alternative Investments: Amount Outstanding of "Other Securities" and Ratios to Total Securities Outstanding[1]
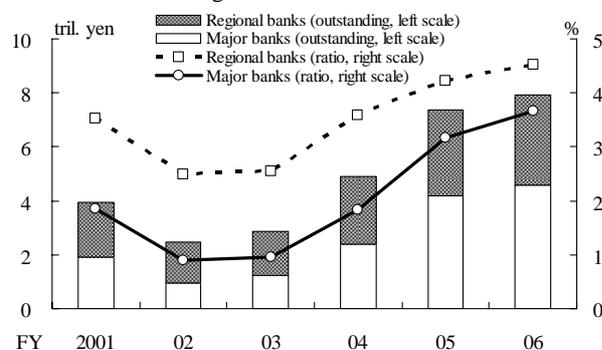
Note: 1. "Other securities" refers to banks' holdings of securities other than government bonds, corporate bonds, and stocks.

Chart 1-17: Spreads of U.S. Subprime Mortgage-Related Products (ABX-HE 2006-1)[1]
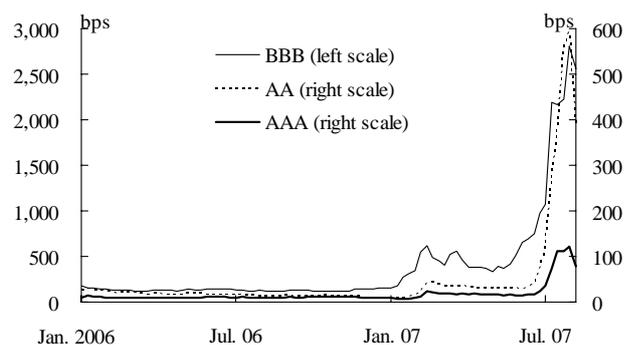
Note: 1. ABX-HE 2006-1 is a credit default swap index linked to subprime residential mortgage-backed securities (RMBS). Its reference pool is 20 subprime RMBS issued within the period between July and December 2005.
Source: JPMorgan (originally taken from Markit).

Chart 1-18: Banks' Stockholdings[1,2]
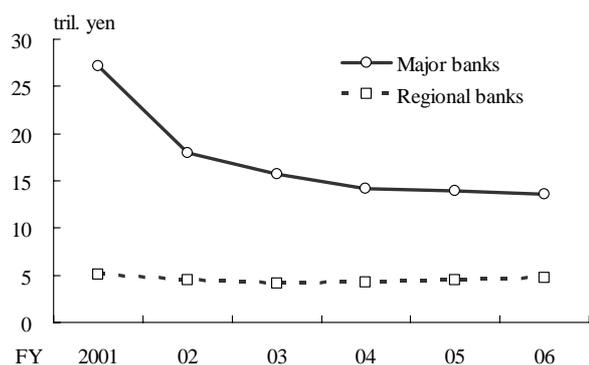
Notes: 1. Figures are based on acquisition prices.
     2. On a consolidated basis.

Chart 1-19: Ratios of Risks Associated with Banks'
        Stockholdings to Tier I Capital[1]
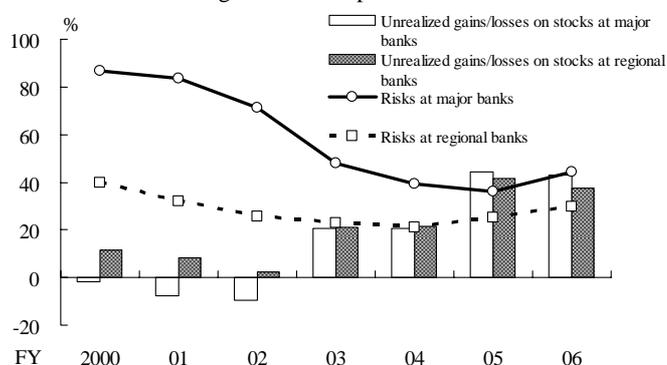
Note: 1. Bank of Japan estimation. As measured by 1-year, 99 percent
     VaR (using TOPIX as a risk factor).

Chart 1-20: Capital Adequacy Ratios and Tier I Capital Ratios[1]
     Major banks   Regional banks
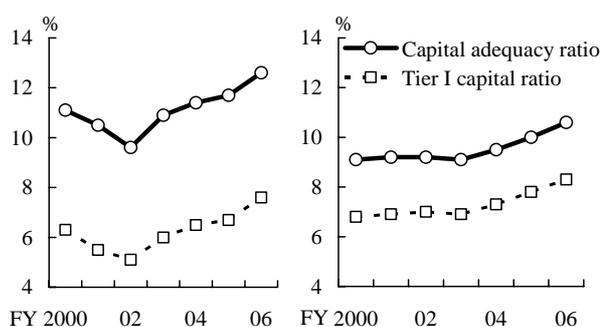
Note: 1. On a consolidated basis.

Looking at the relative size of the risk vis-à-vis banks' Tier I capital, VaR associated with stockholdings rose to a little more than 40 percent at the major banks and around 30 percent at the regional banks (Charts 1-18 and 1-19). At the same time, banks' unrealized gains on stockholdings have increased, reflecting the recovery in stock prices.

At present, the increase in risk associated with stockholdings is comparable in magnitude to unrealized gains on stockholdings at both the major and the regional banks (see Box 4 for a discussion of the handling of unrealized gains/losses in banks' risk management). However, considering that in the period up to fiscal 2002 the major banks experienced several years of unrealized losses on stockholdings, it is important to assess the benefits of stockholdings and associated costs from a long-term perspective, especially the benefits and costs regarding the long-standing practice of Japanese banks to base transactions with client firms on the ownership of those firms' stocks. An analysis of risk-return balances of such transactions is provided in Chapter IV.

D. Banks' Capital and Risk Balance

Banks' capital adequacy ratios at the end of fiscal 2006 (Basel II basis) increased from their levels at the end of fiscal 2005 (Basel I basis) and remained above levels required by capital adequacy regulations: at the major banks they were a little more than 12 percent, while at the regional banks they were a little more than 10 percent (Chart 1-20). These results mainly reflected the reduction of risk-weighted assets due to the transition to Basel II and the build up of retained earnings (see Box 5 for further details on the effects of the transition to Basel II on the capital adequacy ratio). Also, Tier I capital ratios at the end of fiscal 2006 were higher than

a year earlier, reaching over 7 percent at the major banks and over 8 percent at the regional banks.

Looking at the composition of capital, both at the major and the regional banks deferred tax assets have further declined, indicating an improvement in the quality of banks' capital (Chart 1-21). Nevertheless, at the major banks the shares of preferred securities, which are included in Tier I capital, and subordinated debt, which is included in Tier II capital, have remained at high levels. Several major banks have been trying to expand their overseas operations and have striven to raise their Tier I capital ratios above 8 percent, a level comparable to those of leading foreign banks.

Banks further accelerated the repayment of public funds they had received to boost their capital. As a result, nearly 8.8 trillion yen, or about 75 percent of the total public funds (approximately 12 trillion yen) injected since 1998, had been repaid by the end of June 2007, while the three mega financial groups had already fully repaid public funds in fiscal 2006 (Chart 1-22).

The total amount of risk in the banking sector increased slightly at the major banks but remained almost unchanged at the regional banks (Chart 1-23). Looking at risks by category, market risk associated with stockholdings increased at both the major and the regional banks due to the rise in stock price volatility. Credit risk at the major banks increased by a small amount, since the business conditions of consumer finance companies deteriorated due to the abolishment of "gray-zone" interest rates (see Box 3 for details). Interest rate risk, on the other hand, continued to be restrained as a result of a decline in bond holdings both at the major and the regional banks.

Chart 1-21: Composition of Capital[1]

Major banks

Regional banks

Notes: 1. On a consolidated basis.
2. Only banks subject to the international standard are allowed to include unrealized gains in Tier II capital. The proportion of unrealized gains at the regional banks is smaller than that at the major banks, many of which are subject to the international standard.
3. Issued by consolidated offshore special purpose companies.

Chart 1-22: Repayment of Public Funds
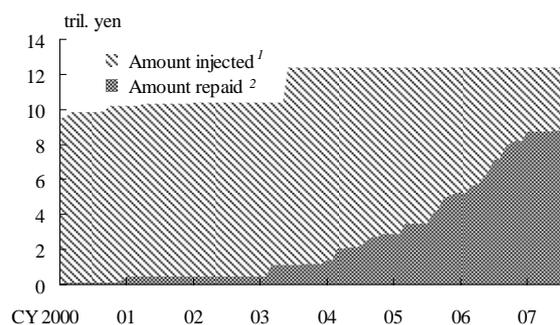
Notes: 1. The sum of public funds injected pursuant to the Early Strengthening Law, the Financial Function Stabilization Law, the Deposit Insurance Law, the Financial Reorganization Promotion Law, and the Financial Functions Strengthening Law.
2. At face value.
Source: Deposit Insurance Corporation of Japan.

Chart 1-23: Overall Amount of Risk and Tier I Capital

Major banks   Regional banks

☒ Credit risk *1*   □ Market risk associated with stockholdings *3*

▨ Interest rate risk *2*   ■ Operational risk *4*
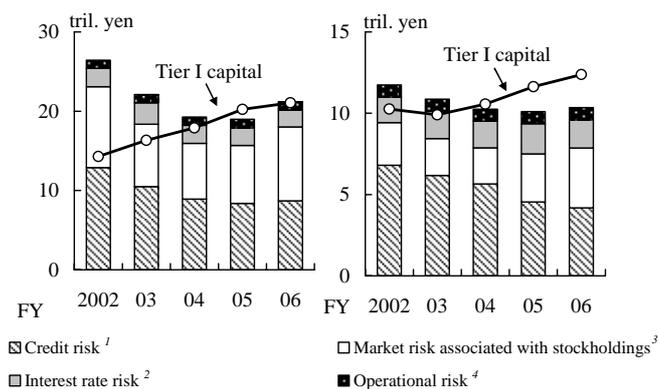
Notes: *1.* Credit risk is calculated by subtracting the expected loss (EL) from the maximum loss (EL + Unexpected Loss [UL]) based on the Basel II risk weight formulas with a confidence interval of 99 percent. In the estimation, borrowers classified as requiring "special attention" or below (in terms of credit quality) are considered to be in a state of default.
     2. Interest rate risk is limited to yen-denominated bond portfolios and calculated by the same method as in Chart 1-15.
     3. Market risk associated with stockholdings is calculated by the same method as in Chart 1-19.
     4. Operational risk is defined to be 15 percent of gross profits based on the Basel II basic indicator approach.

Chart 1-24: Credit Rating and Prices of Bank Stocks*1*

☐ Upgrades (left scale)
▨ Downgrades (left scale)
— TOPIX subindex for banks (right scale)
— TOPIX (right scale)
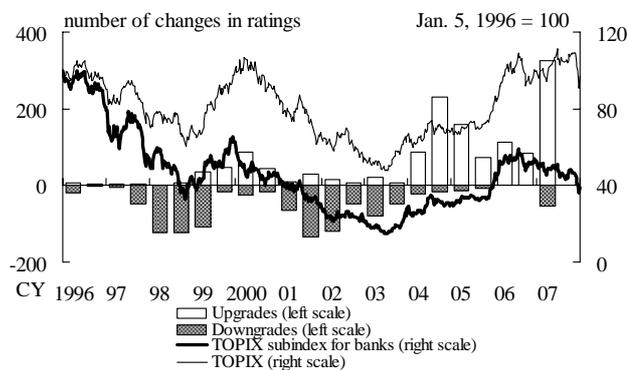
Note: *1.* The number of upgrades and downgrades is the sum of the number of changes in ratings made by the following credit rating agencies: Moody's Investors Service, Standard and Poor's, Fitch Ratings, Rating and Investment Information, and Japan Credit Rating Agency.
Sources: Tokyo Stock Exchange; Bloomberg.

Tier I capital continued to increase both at the major and the regional banks. At the major banks, the easing of capital constraints, however, moderated somewhat as the increase in the overall amount of risk exceeded that of Tier I capital. Therefore, the major banks need to strengthen their risk controls through the efficient allocation of capital. On the other hand, at the regional banks, the easing of capital constraints continued.

E. Financial Market's Assessment of Japan's Financial System

Various indicators suggest that the financial market's assessment of Japan's financial system continues to improve. A closer examination of these indicators highlights, however, that there is considerable variation in the market's assessment of the financial system.

While banks' stock prices have remained stagnant since the first half of 2006, credit ratings of Japanese banks have been revised upward (Chart 1-24). Moody's now treats government support for the banking sector on a uniform basis around the globe. As a result, the ratings of banks, most notably of those registered in Europe, have been revised upward. Japanese banks' ratings have risen as well, mainly reflecting the improvement in their financial strength. More recently, Standard and Poor's has also revised Japanese banks' ratings upward, citing the improvement in the quality of assets and capital.

Meanwhile, the credit default swap (CDS) premiums for the three major Japanese banks have risen since late July in 2007, in part reflecting heightened concerns over the subprime mortgage problem in the United States (Chart 1-25). However, the CDS premiums for major banks registered in Europe and the United States have risen more sharply.

These indicators of the market's assessment of Japan's financial system highlight that the conclusions vary considerably depending on the perspective, i.e., whether one places greater weight on the stability or the profitability of the financial system, as pointed out in the March 2007 issue of the *Financial System Report*. While Japan's financial system has become increasingly stable over the years, a major challenge for banks remains to improve the profitability of their core business. Higher credit ratings reflect the increasing stability of the financial system, while on the other, the weak performance of banks' stock prices reflects market concern over the long-term profitability of banks' core business.

Chart 1-25: CDS Premiums of Major Banks[1]
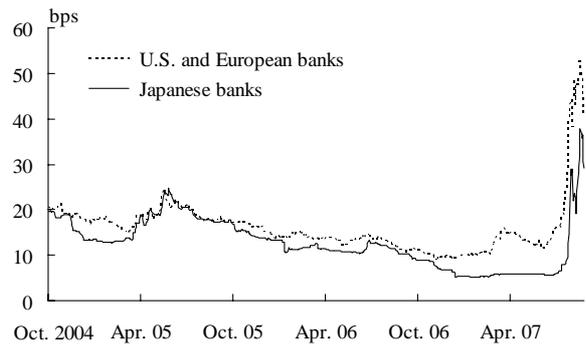
Note: *1*. The values for Japanese banks are calculated as the simple average of the CDS premiums of Mizuho Corporate Bank, The Bank of Tokyo-Mitsubishi UFJ, and Sumitomo Mitsui Banking Corporation. The values of U.S. and European banks are the simple average of those of Citigroup, Bank of America, JPMorgan Chase, Wells Fargo, Goldman Sachs, HSBC, and UBS.

Sources: Tokyo Financial Exchange; Bloomberg.

Box 1: Business Conditions of the Three Japanese Mega Financial Groups

The *Financial System Report*, in principle, employs data for banks on a non-consolidated basis. However, in an attempt to improve profitability, banks have established financial groups following the removal of the ban on pure holding companies. This box focuses on the three Japanese mega financial groups (Mitsubishi UFJ, Sumitomo Mitsui, and Mizuho) to examine their profitability on a consolidated basis.

First, looking at operating profits and total assets outstanding, the ratio of consolidated profits (assets) to non-consolidated profits (assets) has been rising in recent years with the increase in profits (assets) of financial groups' subsidiaries and affiliates and the decrease in profits (assets) on a non-consolidated basis (Chart B1-1). Nevertheless, non-consolidated profits (assets) still account for a substantial share of the consolidated figures.

Chart B1-1: Operating Profits and Total Assets Outstanding[1,2]

(1) Operating Profits

(2) Total Assets Outstanding

Difference between the consolidated figure and the non-consolidated figure (left scale)
Non-consolidated figure (left scale)
Ratio of the consolidated figure to the non-consolidated figure (right scale)
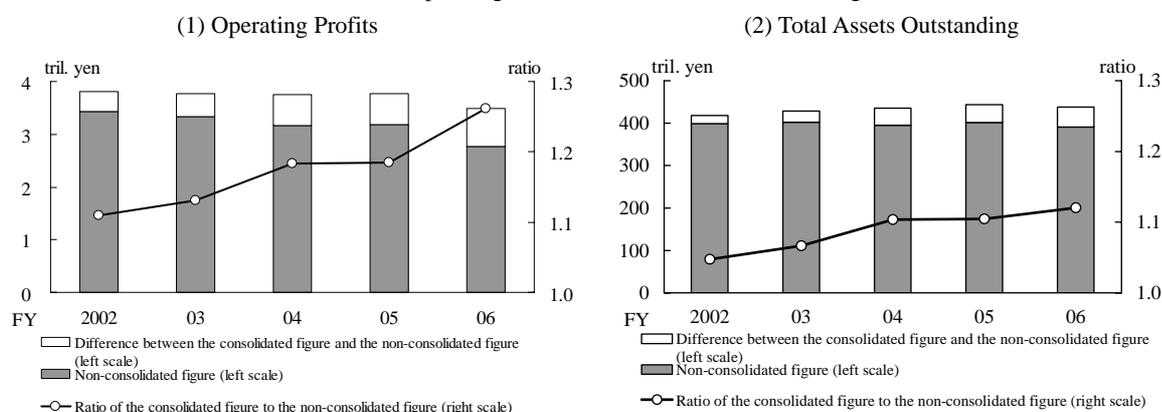
Notes: 1. Operating profits = gross profits on operations - general and administrative expenses.
2. Consolidated operating profits include profits on investments in affiliates.

Second, as for the return on equity (ROE), financial groups' consolidated ROE is getting close to the non-consolidated ROE, suggesting that financial groups' subsidiaries and affiliates are gradually beginning to help improve financial groups' profitability as a whole (Chart B1-2). However, reflecting the increase in banks' capital and sluggish profit growth, financial groups' ROE on a non-consolidated basis, and hence also on a consolidated basis, has been declining.

Chart B1-2: ROE[1,2]

(1) Average ROE of Financial Groups

(2) ROE by the Three Mega Financial Groups

MUFG[3]
SMFG[4]
Mizuho FG
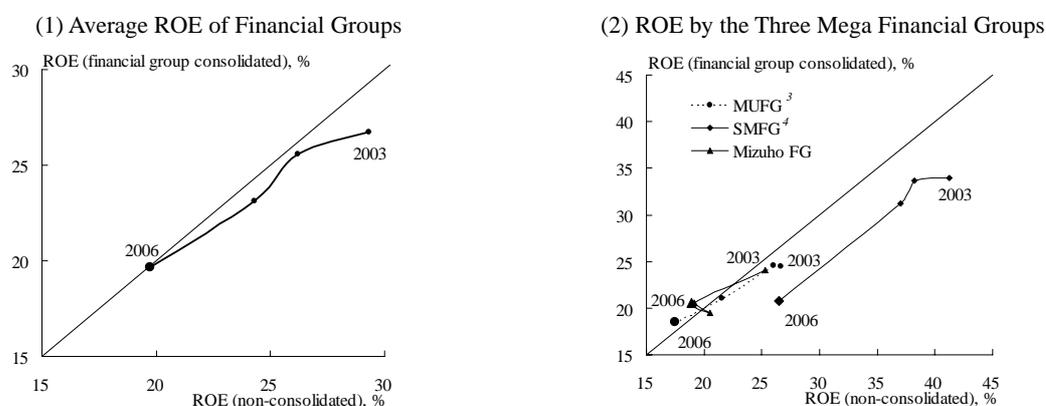
Notes: 1. ROE = operating profits/(net assets - net realized gains on securities).
2. Values above the 45-degree line indicate that the ROE on a financial group consolidated basis was higher than that on a non-consolidated basis.
3. Mitsubishi UFJ Financial Group.
4. Sumitomo Mitsui Financial Group.

In order to compare the profitability of the three Japanese mega financial groups with major foreign financial groups, Chart B1-3 plots the ROE on the vertical axis and the Tier I capital ratio on the horizontal axis. Both the ROE and the Tier I capital ratio of the Japanese financial groups are lower than those of their foreign counterparts. These differences are partly attributable to Japanese financial groups' strategy of holding large amounts of assets on their balance sheets. This suggests that the three Japanese mega financial groups need to reorganize their business lines to make more efficient use of their capital and improve risk-return balances.

Chart B1-3: ROEs and Tier I Capital Ratios[1,2]
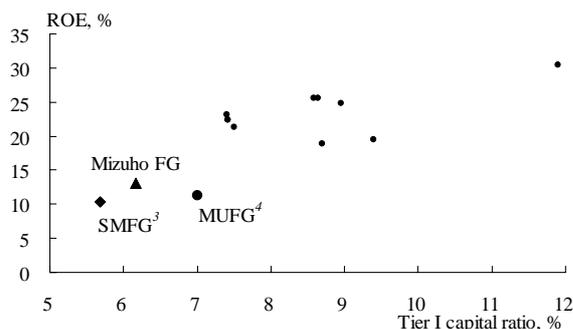
Notes: *1*. ROE = net income/average of Tier I capital (Basel I basis) at the end of fiscal 2005 and fiscal 2006. Tier I capital is used in calculating the ROE for the following reasons. First, the three mega financial groups have issued a large amount of preferred securities, which has contributed to the difference between shareholders' equity and regulatory risk capital. Second, they possess a large amount of net unrealized gains, 45 percent of which is included in Tier II capital.
  2. The major foreign financial groups are Banco Santander, Bank of America, BNP Paribas, Citigroup, HSBC, JPMorgan Chase, Royal Bank of Scotland, UBS, Wachovia, and Wells Fargo.
  3. Sumitomo Mitsui Financial Group.
  4. Mitsubishi UFJ Financial Group.

In fact, the process of group reorganization, which has been ongoing since the establishment of the holding companies, continues (Chart B1-4). Given that the traditional lending business offers only very limited scope for growth, the three mega financial groups face the major challenge of creating new profit opportunities by exploring synergy effects through group realignments and mergers and acquisitions.

Chart B1-4: Recent Reorganization of the Three Mega Financial Groups

Financial Group (Established)	Mitsubishi UFJ Financial Group (Oct. 2005)		Sumitomo Mitsui Financial Group (Dec. 2002)		Mizuho Financial Group (Jan. 2003)	
Securities	Oct. 05	Mitsubishi UFJ Securities — Established by a merger of Mitsubishi Securities and UFJ Tsubasa Securities.	Apr. 03	SMBC Friend Securities — Established by a merger of Sakura Friend Securities and Meiko National Securities.	Mar. 03	Mizuho Securities — Became a wholly owned subsidiary of Mizuho Corporate Bank. (The shareholding ratio of Mizuho Corporate Bank declined to 81.5 percent in September 2004.) Mizuho Investors Securities — Became a consolidated subsidiary of Mizuho Bank.
	Sep. 07	Mitsubishi UFJ Securities — Scheduled to become a wholly owned subsidiary.	Sep. 06	SMBC Friend Securities — Became a wholly owned subsidiary.	Jan. 08	Mizuho Securities — Scheduled to be merged with Shinko Securities.
Credit cards & consumer credit	Oct. 05	UFJ NICOS — Established by a merger of Nippon Shinpan and UFJ Card.	July 07	Central Finance — Became an affiliate.	Oct. 05	UC Card — Transferred part of business to Credit Saison.
	Apr. 07	Mitsubishi UFJ NICOS — Established by a merger of UFJ NICOS and DC Card.	July 07	QUOQ — Became a consolidated subsidiary.		
	N/A	JACCS — Scheduled to become an affiliate.	Feb. 08	OMC Card — Scheduled to become an affiliate.		
Leasing	Apr. 07	Mitsubishi UFJ Lease & Finance — Established by a merger of Diamond Lease and UFJ Central Leasing.	Oct. 07	SMBC Leasing — Scheduled to be merged with Sumisho Lease.		
Consumer finance	Apr. 04	ACOM — Became an affiliate.	July 04	Promise — Became an affiliate.		
	Jan. 05	DC Cash One — Became a consolidated subsidiary of ACOM.	Sep. 07	Sanyo Shinpan Finance — Scheduled to become a subsidiary of Promise.		

Source: Published accounts.

Box 2: Business Conditions of the *Shinkin* Banks

This box focuses on the business conditions of *shinkin* banks that hold current accounts at the Bank of Japan (hereafter the *shinkin* banks). The number of the *shinkin* banks has decreased by 84 to 273 in the last ten years as a result of mergers and other causes.

Although the net income of the *shinkin* banks has increased for five consecutive years, the increase in net income in fiscal 2006 was very small, and in fiscal 2006 net income was still below earlier peaks (Chart B2-1). Thus, in contrast with the major and the regional banks, whose net incomes reached record highs in recent years, the *shinkin* banks have seen only a very sluggish improvement in earnings. As for fiscal 2006, although interest income rose, this was offset by increases in credit costs and general and administrative expenses, thus depressing net income growth overall (Chart B2-2).

Chart B2-1: Net Income/Loss
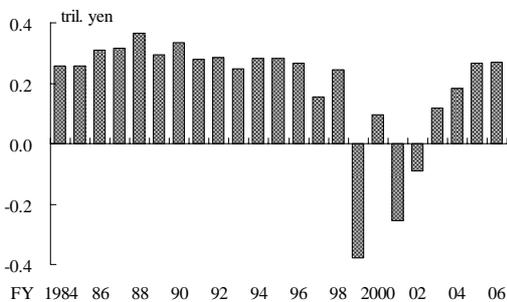
Chart B2-2: Contribution to Changes in Net Income/Loss
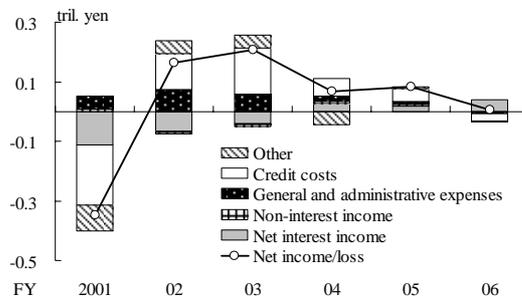
Looking at net interest income components, a decrease in net interest income on loans was more than offset by an increase in net interest income and dividends on securities, thus resulting in the overall increase in net interest income (Chart B2-3). The decrease in net interest income on loans reflects the severe business environment of narrowing interest margins on loans and the declining ratio of loans to deposits (Chart B2-4). Against this background, the distribution of the ratio of securities holdings to deposits at individual *shinkin* banks has become skewed to the right, indicating that at many *shinkin* banks, the dependence on securities holdings is growing (Chart B2-5).

Chart B2-3: Net Interest Income

Chart B2-4: Interest Margins on Loans, Ratio of Loans to Deposits, and Ratio of Securities Holdings to Deposits
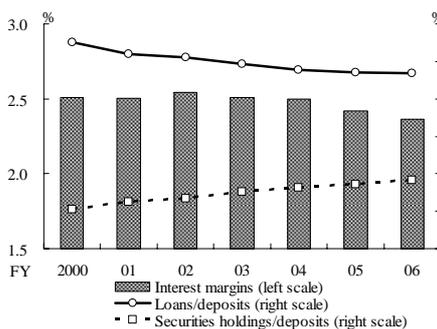
Chart B2-5: Ratio of Securities Holdings to Deposits
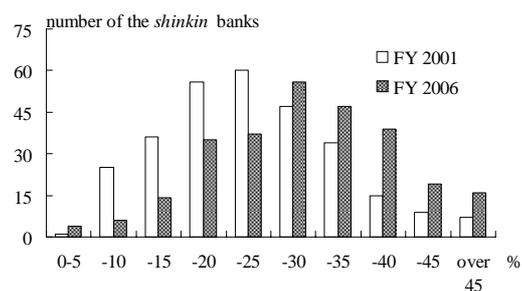
Nonperforming-loan (NPL) ratios have continued to decline from their peak in fiscal 2001, and capital adequacy ratios have been on an upward trend; thus, the soundness of the *shinkin* banks overall has increased (Chart B2-6). However, the aggregate figure conceals wide variations among individual *shinkin* banks: while at some, NPL ratios remain high and capital adequacy ratios below 10 percent, others boast capital adequacy ratios in excess of 20 percent.

These discrepancies become especially clear when the *shinkin* banks are divided into those located in the three metropolitan areas and those in other regional areas (Charts B2-7 and B2-8). While in the metropolitan areas the number of the *shinkin* banks with NPL ratios of over 10 percent has fallen dramatically, their number remains quite high in the other areas. Moreover, while both in the three metropolitan areas and in regional areas capital adequacy ratios have improved overall, the wide dispersion in the regional areas stands out: there are both many *shinkin* banks with single-digit capital adequacy ratios and many with ratios exceeding 20 percent.

Chart B2-6: NPL and Capital Adequacy Ratios
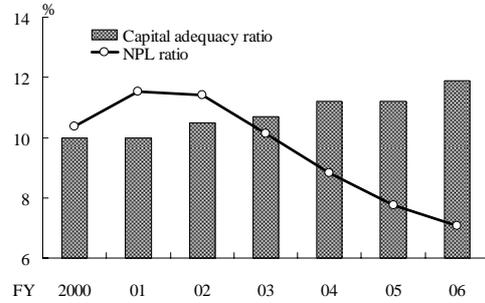
Chart B2-7: NPL Ratios of the *Shinkin* Banks in the Metropolitan and Other Areas

(1) Metropolitan Areas (Tokyo, Osaka, and Aichi)
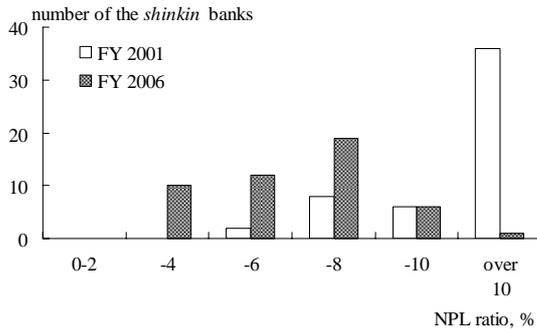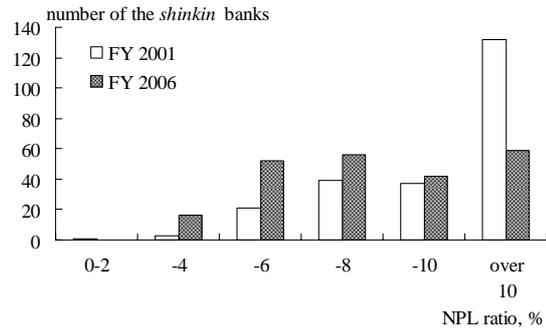
(2) Other Areas

Chart B2-8: Capital Adequacy Ratios of the *Shinkin* Banks in the Metropolitan and Other Areas

(1) Metropolitan Areas (Tokyo, Osaka, and Aichi)
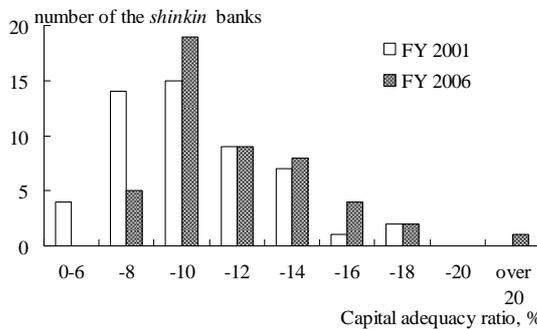
(2) Other Areas
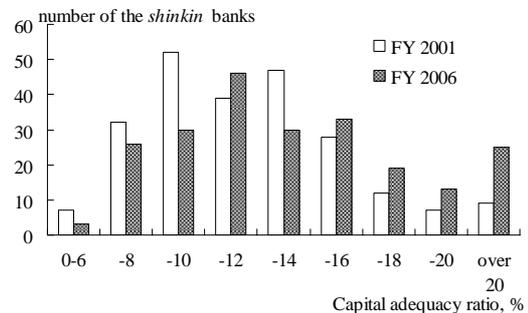
In sum, while the profitability and business situation of the *shinkin* banks overall have improved in recent years, there are large discrepancies between individual banks in terms of their earnings and balance-sheet structure. Against this background, the *shinkin* banks need to carefully assess the business environment and make further efforts to strengthen their profitability by, for example, expanding the range of financial services they offer in regional areas and making further progress in risk management capabilities.

Box 3: Business Conditions of Consumer Finance Companies

"Gray-zone" interest rates fall between two separate legal cap rates for consumer loans: 15-20 percent in the Interest Rate Restrictions Law, and 29.2 percent in the Investment Deposit and Interest Rate Law. "Gray-zone" interest rates are due to be abolished within one year of the enactment of the amendment of the Money-Lending Business Law, which was passed in December 2006, following judgments by the Supreme Court in recent years supporting the wide-scale reimbursement of overcharged customers. In response, major consumer finance companies (CFCs) have already lowered their lending rates below "gray-zone" interest rates, refrained from making new loans to high-risk borrowers by tightening screening processes, and started downsizing both workforces and branch networks.

The fiscal 2006 balance sheets of the five largest CFCs (Acom, Aiful, Promise, Sanyo Shinpan Finance, and Takefuji) indicate that following these changes the amount of loans outstanding has shrunk, while operating profits have declined marginally. In addition, net income turned substantially negative as a result of a jump in provisions for refunding excess interest repayments and a rise in loan-loss provisions reflecting the abolishment of "gray-zone" interest rates (Charts B3-1 and B3-2).

Chart B3-1: Net Income of Five Large CFCs[1]
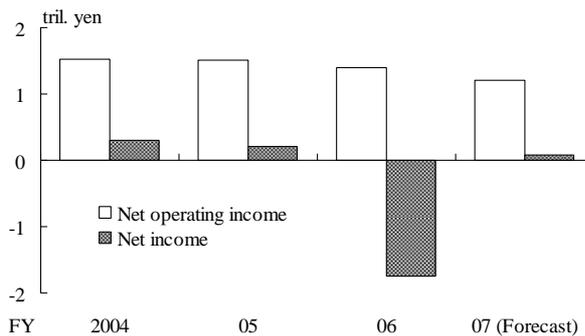
Chart B3-2: Loss Provisions for Five Large CFCs
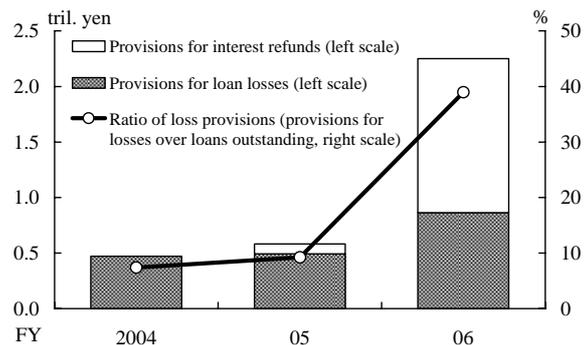
Note: 1. Based on values for Acom, Aiful, Promise, Sanyo Shinpan Finance, and Takefuji.
Source: Published accounts.

Because the large CFCs originally had high capital adequacy ratios, they were able to maintain ratios of around 15 to 35 percent at the end of fiscal 2006 despite the large losses in net income. Moreover, although the CFCs project a further decline in operating profits for fiscal 2007, net income is expected to return to the black because the companies have already made ample provisions for interest refund claims.

Meanwhile, the number of CFCs continues to decline from year to year, reflecting the cessation of business by small and medium-sized CFCs (Chart B3-3).

Chart B3-3: Number of Moneylenders[1]
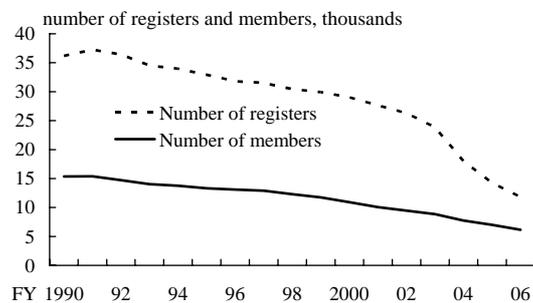
Note: 1. "Number of registers" represents the sum of the number of registers at local finance bureaus and prefectural governors. "Number of members" refers to the number of members of the Federation of Moneylender Association of Japan.
Source: Federation of Moneylender Association of Japan.

Box 4: Unrealized Stock Gains and the Quantification of Market Risk

As a result of rises in stock prices in recent years, banks have amassed substantial unrealized stock gains, which at the end of fiscal 2006 amounted to 9.1 trillion yen at the major banks and 4.6 trillion yen at the regional banks. For this reason, whether unrealized stock gains are included or not makes a crucial difference in the assessment of market risk associated with stockholdings (hereafter, market risk). This box therefore considers approaches to dealing with unrealized stock gains when quantifying market risk.

In the discussion below, Tier I capital is assumed to be the allocated risk capital, and the maximum loss is assumed to be the amount of risk. The first issue concerns whether or not unrealized stock gains should be counted at all in the assessment of allocated risk capital or the amount of risk. Next, if unrealized stock gains are counted, another question regards whether they should be added to allocated risk capital (Tier I capital) or subtracted from the amount of risk. A further issue concerns to what extent unrealized stock gains should be counted; that is, whether such gains should be counted in full or only to the same extent as Tier II capital (i.e., 45 percent), for example. Based on these considerations, five approaches are obtained, which are summarized in Chart B4-1.

Chart B4-1: Approaches to Dealing with Unrealized Gains on Stockholdings

	Approach		Definition	
	Risk	Allocated risk capital	Risk	Allocated risk capital
1.	Not counted	Not counted	Maximum loss	Tier I capital
2.	Regulatory capital counted	Not counted	Maximum loss - unrealized stock gains (Tier II capital)	Tier I capital
3.	All counted	Not counted	Maximum loss - unrealized stock gains (all)	Tier I capital
4.	Not counted	Regulatory capital counted	Maximum loss	Tier I capital + unrealized stock gains (Tier II capital)
5.	Not counted	All counted	Maximum loss	Tier I capital + unrealized stock gains (all)

If stocks are held from a long-term perspective, i.e., to develop long-term business relationships with clients, and are unlikely to be sold, then it would be inappropriate to consider unrealized stock gains in the quantification of market risk or allocated risk capital (Approach 1). On the other hand, if banks are ready to sell off stocks at short notice, then it is worth considering whether unrealized stock gains should be added to allocated risk capital or subtracted from the amount of risk. Next, when it is appropriate to consider such gains, it is necessary to determine how they are counted. One possibility is to subtract them from market risk (in which case they are not added to allocated capital); it then further needs to be decided whether to subtract only 45 percent -- the rate applied to regulatory (Tier II) capital -- of the unrealized stock gains (Approach 2), or whether to subtract the full amount (Approach 3). Another possibility is that unrealized stock gains are counted toward allocated risk capital (in which case they are not subtracted from market risk). It then again needs to be further decided whether only

the 45 percent-share applicable to regulatory capital is added (Approach 4), or the entire amount (Approach 5). It should be noted that in the case where unrealized stock gains, either partly or fully, are counted toward allocated risk capital, the added amount will be used as allocated risk capital for market risk and not for other risk categories.

These considerations suggest that there is no single approach that is the "correct" one for the management of market risk. Rather, banks need to adopt rules for the treatment of unrealized stock gains that are based on the particular characteristics of their stockholdings.

Box 5: Effects of the Basel II Framework on the Capital Adequacy Ratio

Basel II, the revised international capital adequacy framework, was implemented in Japan at the end of fiscal 2006. The framework consists of three pillars: (1) minimum capital requirements; (2) supervisory review; and (3) market discipline. This box focuses on the first pillar, minimum capital requirements, and examines the impact of the change in the calculation of capital adequacy ratios in Japan.

Minimum capital requirements remain unchanged under the Basel II framework at 8 percent for banks subject to international standards and 4 percent for banks subject to domestic standards. However, the way the capital adequacy ratio is calculated has been revised (Chart B5-1). Among the most important changes are that capital needs to be allocated to operational risk and the calculation of risk-weighted assets (RWAs) for credit risk has been refined, reflecting recent advances in risk management techniques.

Chart B5-1: The New Capital Adequacy Framework

1. Formula

   Capital adequacy ratio = regulatory capital/risk-weighted assets (RWAs)

   Total RWAs = (credit risk-weighted assets) + (market risk equivalent assets)
   $\times$ 12.5 + (operational risk equivalent assets) $\times$ 12.5

2. Main revisions

---

a. Credit risk-weighted assets (refinement of risk measurement)
   -- Various types of risk weights are applied depending on the type of quality of the assets.
   -- Also applied to assets other than loans such as hedge funds and securitized products.

   -- Banks can choose from three approaches (standard, basic internal ratings-based, or advanced internal ratings-based) the one most appropriate for their operations.

---

b. Operational risk equivalent assets
   (newly introduced risk measurement methods)
   -- Measurement of the risk of loss resulting from inadequate or failed internal processes and system.
   -- Banks can choose from three approaches above the one most appropriate for their operations.

Based on the revised standards, the overall amount of RWAs of the major banks at the end of fiscal 2006 was down by 14.5 trillion yen compared with a year earlier, with RWAs for credit risk (on-balance assets and off-balance items) registering a decrease of 35.9 trillion yen, while in addition to the increase in market risk equivalent assets, operational risk equivalent assets increased by 16.0 trillion yen (Chart B5-2). The overall amount of RWAs of the regional banks was also down, albeit only by a small amount (0.7 trillion yen). Most of the major banks have adopted a basic internal ratings-based approach, resulting in the observed decrease in RWAs for credit risk.

Chart B5-2: Banks' Risk-Weighted Assets

Major banks

Regional banks

□ Market risk equivalent assets and other
■ Operational risk equivalent assets
□ Credit risk-weighted assets (off-balance items)
▨ Credit risk-weighted assets (on-balance assets)
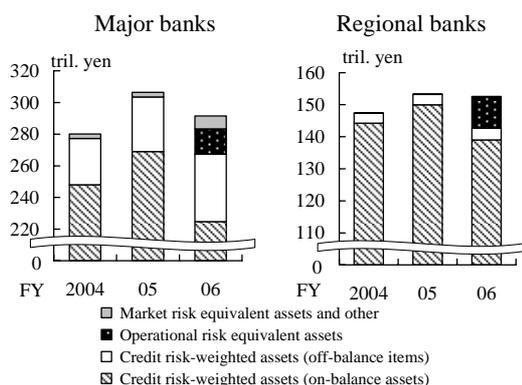
Chart B5-3: Impact of Basel II on Banks' Capital Adequacy Ratio[1,2]

changes from the Basel I basis ratio, % pt
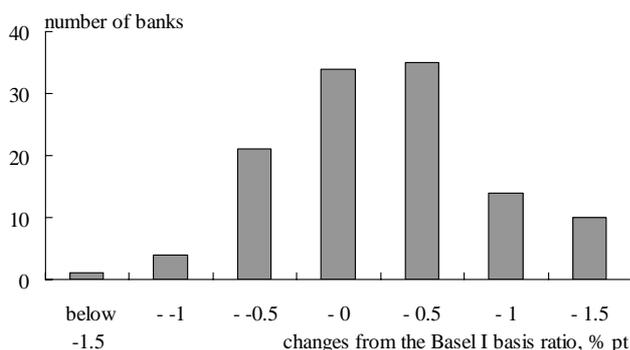
Notes: 1. The chart shows the difference between the capital adequacy ratio based on Basel II and that based on Basel I. Capital adequacy ratios based on Basel I have either been estimated by the Bank or are actual figures taken from statements for financial accounts.
2. Figures for the regional banks are for 108 banks, excluding the Ashikaga Bank and the Kiyo Bank. Figures for the Bank of Tokyo-Mitsubishi UFJ, Mitsubishi UFJ Trust and Banking Corporation and Sumitomo Mitsui Banking Corporation are on a consolidated financial group basis.

The impact of the change in the calculation of capital adequacy ratios at the level of individual banks is difficult to gauge, because although most of the major banks have disclosed the effects, many of the regional banks have not. An estimation of the effect suggests that the introduction of Basel II had very little impact on the capital adequacy ratios of individual banks, and for most of them the difference between the capital adequacy ratio based on Basel II and that based on Basel I is less than 1 percentage point (Chart B5-3).

II. Banks' Financial Intermediation Function

This chapter starts with a summary of recent macroeconomic and financial conditions in Japan, followed by a review of developments in banks' lending activity and a discussion of developments in M&A and real estate financing.

A. Economic and Financial Developments

Since the publication of the March 2007 issue of the *Financial System Report*, Japan's economy has been expanding moderately. The real GDP growth rate has been around 2 percent on average, slightly higher than the potential growth rate (Chart 2-1 [1]). Looking ahead, the economy is likely to continue its sustained expansion supported by a virtuous circle of production, income, and spending.

On the price front, the rate of change in consumer prices (on a year-on-year basis, excluding fresh food) has been around 0 percent, partly due to price declines in, for example, durable consumer goods, mobile telephone charges, and housing rents and imputed rents (Chart 2-1 [2]). Looking ahead, however, the rate of change in consumer prices is expected to be positive as estimates of the output gap indicate tighter supply and demand conditions.

Against this background, the overnight call rate, which is the operating target of the Bank, remained at its target level of around 0.5 percent with temporary deviations, for example, at the end of the fiscal year (Chart 2-2 [1]). Interest rates on term instruments rose moderately toward the summer, reflecting market expectations of an increase in the operating target rate.

Long-term interest rates in Japan were about 1.6 to 1.7 percent until the middle of May and rose to about 1.9

Chart 2-1: Economic Growth and Prices in Japan

(1) Real GDP Growth Rate

(2) CPI (Excluding Fresh Food)

Sources: Cabinet Office, "National Accounts"; Ministry of Internal Affairs and Communications, "Consumer Price Index."
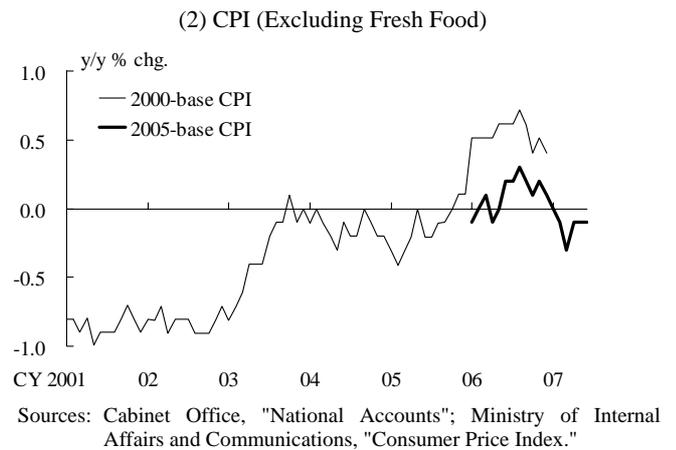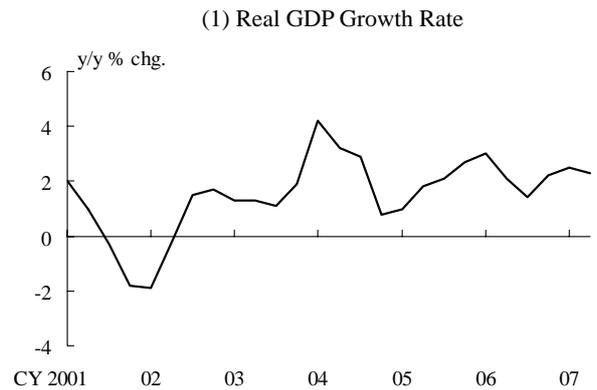
Chart 2-2: Market Interest Rates

(1) Short-Term Interest Rates

(2) Medium- and Long-Term Interest Rates (JGBs)
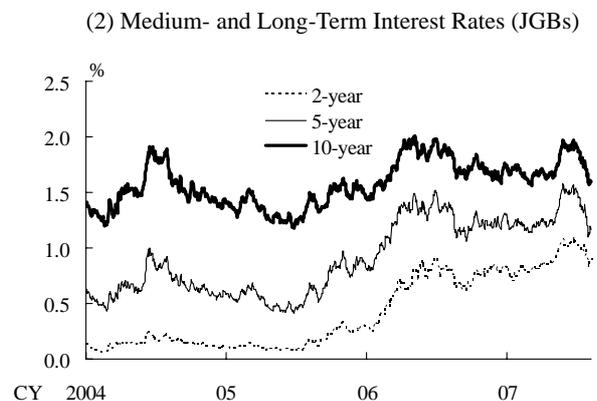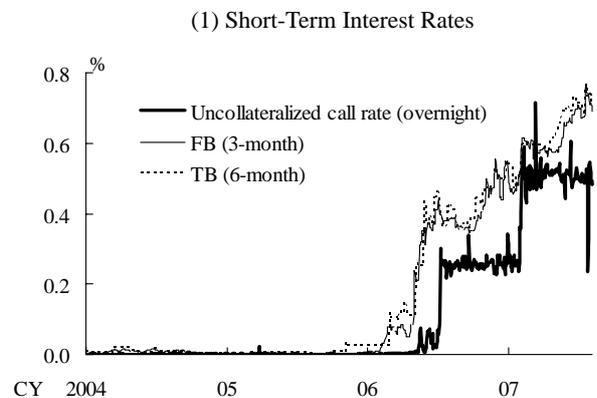
Sources: Bloomberg; Japan Bond Trading Co., Ltd.; Bank of Japan.

Chart 2-3: Stock Prices
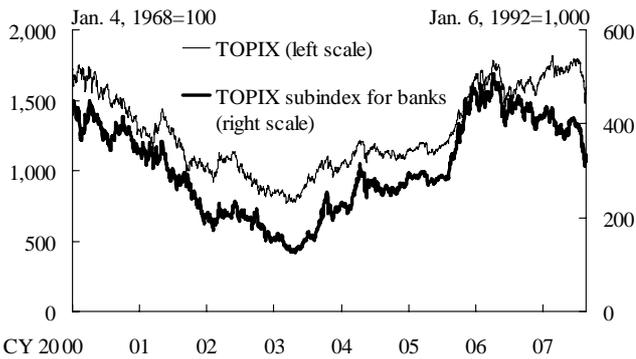
Source: Tokyo Stock Exchange.

Chart 2-4: Land Prices[1,2]

(1) All City Areas in Japan

(2) Six Major City Areas
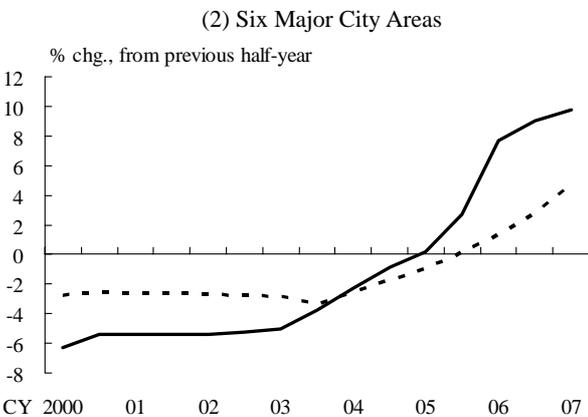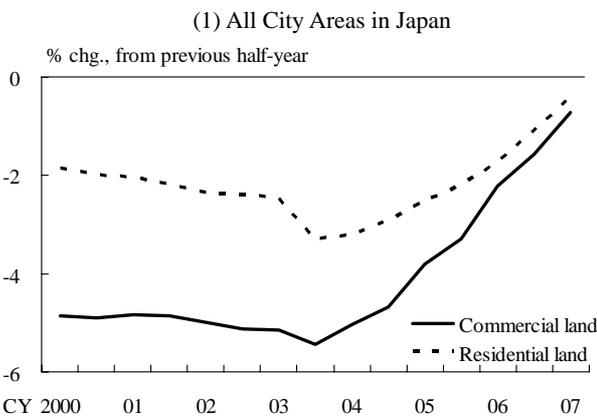
Notes: 1. The Urban Land Price Index is based on surveys conducted at the end of March and September each year.
2. The six major city areas are the 23 wards of Tokyo, Yokohama, Nagoya, Kyoto, Osaka, and Kobe.
Source: Japan Real Estate Institute, "Urban Land Price Index."

percent in the middle of June, partly reflecting the hike of long-term interest rates abroad brought about by strong business conditions in the United States and Europe and higher inflation expectations in the United States (Chart 2-2 [2]).

Stock prices in Japan, following a relatively short period of worldwide decline at the end of February, stagnated toward the middle of the year, reflecting investors' cautious assessment of firms' business performance in fiscal 2007 (Chart 2-3).

Since late July, long-term interest rates and stock prices in the United States and Europe declined as a result of the resurgence of concerns over the subprime mortgage problem in the United States. In response, long-term interest rates and stock prices in Japan declined, with stock prices falling to a record low for the year.

As for land prices, their rate of increase accelerated in metropolitan areas, while they continue to decline in regional areas, albeit at a decelerating pace (Chart 2-4).

B. Flow of Funds

The "Flow of Funds Accounts" shows that the overall picture of the funds surplus/deficit structure by sector has remained unchanged since the late 1990s: households and private non-financial firms have continued to register a surplus, while the general government has continued to register a deficit (Chart 2-5). Looking at the underlying trends in fiscal 2006, the surplus of households grew, reflecting increases in income, while the surplus of private non-financial firms decreased due to increased demand for business fixed investment. As a result, for the first time in five years, households, instead of private non-financial firms, ran the largest surplus.

The fact that private non-financial firms still run a surplus, although their excess funds are decreasing, indicates that firms' appetite for external funds remains weak despite the continued expansion of Japan's economy. Firms' ample cash flows still exceed the increases in their expenditure.

The volume of financial assets of households continued to follow a moderate upward trend, reaching 1,536 trillion yen at the end of fiscal 2006 (Chart 2-6). Holdings of currency and deposits, which accounted for the largest share of households' financial assets, slightly decreased while holdings of investment trusts increased, thereby confirming the gradual transition from deposits to investments. Overall, however, the share of currency and deposits is still large and the shift to risky assets is still limited. On a stock basis, currency and deposits accounted for 50.1 percent of household assets, shares and other equities for 12.2 percent, and investment trusts for 4.5 percent.

The volume of financial debt of private non-financial firms bottomed out in fiscal 2004 and has been increasing since, although the pace of increase has been moderate (Chart 2-7). Loans stopped falling and started to rise slightly in fiscal 2006. Trade credits and foreign trade credits, shares and other equities, and securities other than shares have increased.

Chart 2-5: Funds Surplus/Deficit
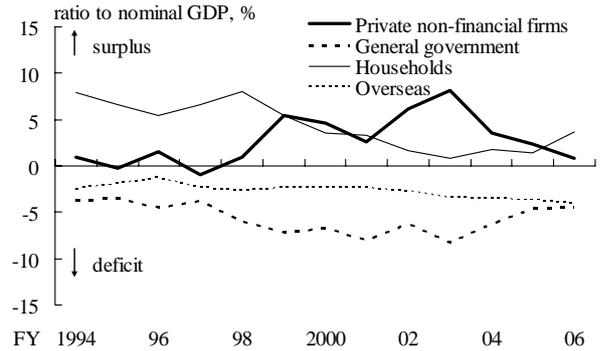
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-6: Financial Assets Held by Households[1]
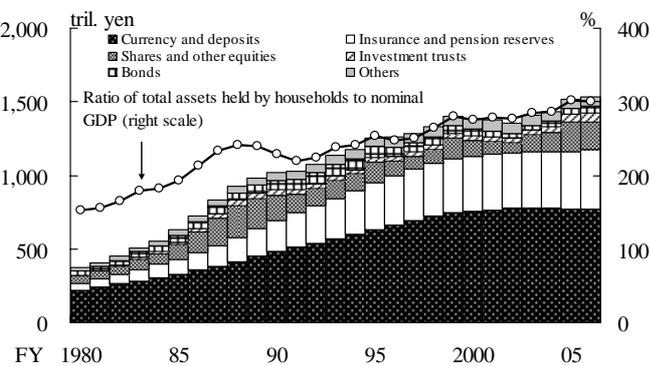
Note: 1. Share and equities, investment trusts, bonds, and some financial products which are included in others are evaluated at market prices.
Source: Bank of Japan, "Flow of Funds Account."

Chart 2-7: Financial Debt of Private Non-financial Firms[1]
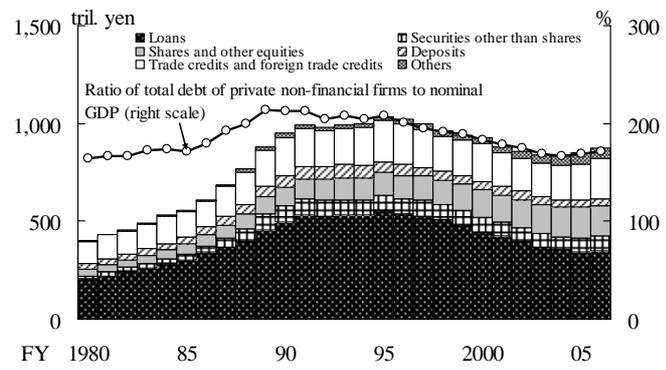
Note: 1. Loans, shares and equities, and securities other than shares are evaluated at face or book values.
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-8: Lending Attitude of Financial Institutions as Perceived by Firms[1]

DI, % points

Large firms
Small firms

CY1996 97 98 99 2000 01 02 03 04 05 06 07
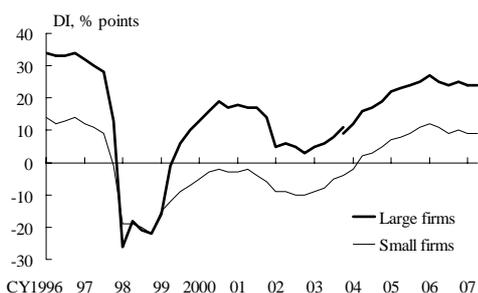
Note: *1*. DI = "accommodative" - "severe."
Source: Bank of Japan, "*Tankan* (Short-Term Economic Survey of Enterprises in Japan)."

Chart 2-9: DI for Demand for Loans: Classified by Borrower Type[1]

DI, % points

Firms
Households

CY 2001 02 03 04 05 06 07
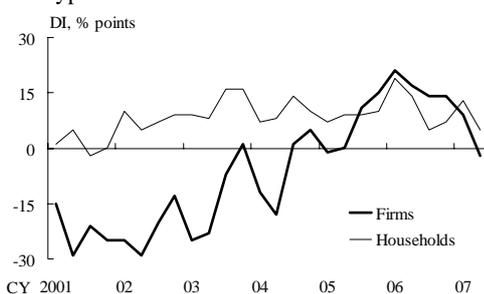
Note: *1*. DI for demand for loans = (percentage of respondents selecting "substantially stronger" + percentage of those selecting "moderately stronger" × 0.5) - (percentage of those selecting "substantially weaker" + percentage of those selecting "moderately weaker" × 0.5).
Source: Bank of Japan, "Senior Loan Officer Opinion Survey on Bank Lending Practices at Large Japanese Banks."

Chart 2-10: Bank Loans Outstanding by Type of Borrower

y/y % chg.

Large firms
Medium-sized firms
Small firms
Individuals
Total loans

FY 2001 02 03 04 05 06
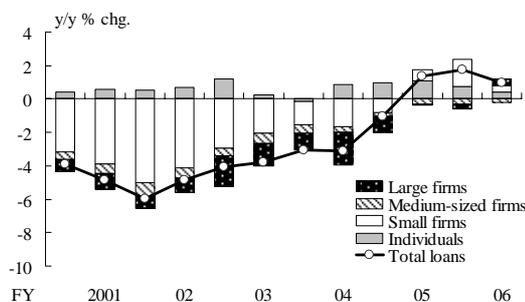
Source: Bank of Japan, "Loans and Discounts Outstanding by Sector."

Chart 2-11: Syndicated Loans Arranged in Japan[1]

tril. yen

FY 2001 02 03 04 05 06
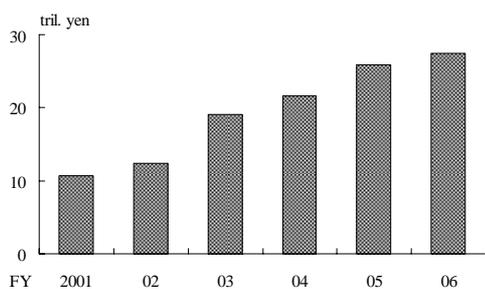
Note: *1*. Figures for fiscal 2001 and 2002 are from Thomson Financial, and those for other years are from the Bank of Japan.
Sources: Thomson Financial; Bank of Japan, "Loans Syndicated and Loans Transferred."

C. Bank Loans

This section reviews trends in financial intermediation by the banking sector.

1. Increase in bank loans

Banks' lending attitude has been more accommodative as a result of the improvement in borrowers' financial condition and the easing of banks' capital constraints. This has led to an expansion of their risk-taking capacity (Chart 2-8). On the other hand, although the upward trend appears to remain intact, the increase in firms' demand for bank loans recently has come to a halt (Chart 2-9).

The year-on-year rate of change in bank loans outstanding turned positive in 2005 and bank loans outstanding have continued to rise moderately since (Chart 2-10). Looking at the contribution of various types of loans to the year-on-year rate of change shows that while the rate of change in loans to medium-sized firms remained negative, that of loans to large firms turned positive in the second half of fiscal 2006 and that of loans to small firms remained positive. The contribution of loans to individuals also remained positive, with housing loans as a driving force.

The increase in loans to firms reflects not only buoyant corporate activity but also banks' active expansion of their lending to small and medium-sized firms, for example, by opening small branches which specialize in small business lending. In addition, the amount of syndicated loans to relatively large firms is on an increasing trend (Chart 2-11; see Box 6 for a comparison of the syndicated loan market in Japan and the United States). While the major banks actively engage in all aspects of the syndicated loan business, including the arrangement of such loans, the regional banks participate in the syndicated loan business mainly as providers of small loans.

With respect to the regional allocation of loans, the ratio of loans outstanding in the three major metropolitan areas to overall loans outstanding was more or less unchanged at the major banks, following the decline from 2003 to 2005, and the ratio has been rising at the regional banks since around 2005 (Chart 2-12). The changes in the regional allocation of loans reflect various trends, including the major banks' strategy to reduce the concentration of credit to large firms and the increase of loans to small and medium-sized firms, as well as the regional banks' active involvement in the syndicated loan market.

Turning to lending to individuals, banks maintained an accommodative attitude, offering, for example, special discount rates for housing loans through promotional campaigns (Chart 2-13). The pace of increase in housing loans, however, has recently been slowing due to the diminishing effects of the replacement of loans from the Japan Housing Finance Agency (formerly the Government Housing Loan Corporation of Japan) and the increased securitization of housing loans. As a result, the ratio of housing loans outstanding to total loans outstanding has continued to rise, but at a slower pace (Charts 2-14 and 2-15).

Meanwhile, Japanese banks also expanded overseas lending in most regions of the world. This reflects strong demand for funds for energy-related project finance against the backdrop of rising raw material prices and for corporate acquisitions in an environment of increasing worldwide M&A activity (Chart 2-16; see Box 7 for an analysis of the long-term trend in cross-border bank exposure).

2. Interest margins on loans

Interest margins on loans continued to narrow in fiscal 2006 both at the major banks and the regional banks.

Chart 2-12: Ratio of Loans Outstanding in the Three Major Metropolitan Areas (Tokyo, Osaka, and Aichi) to Overall Loans Outstanding
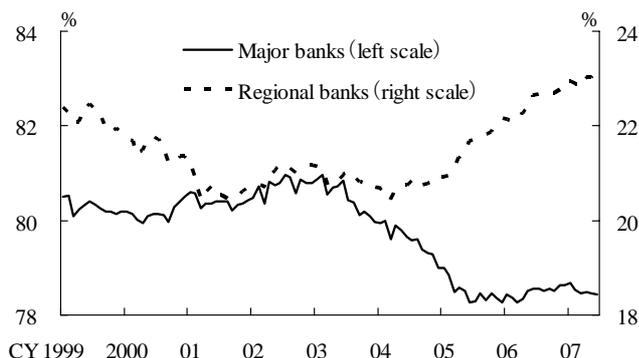
Source: Bank of Japan, "Table of Deposits, Vault Cash, and Loans and Discounts Outstanding of Domestically Licensed Banks by Prefecture."

Chart 2-13: Interest Rates on Housing Loans[1,2]
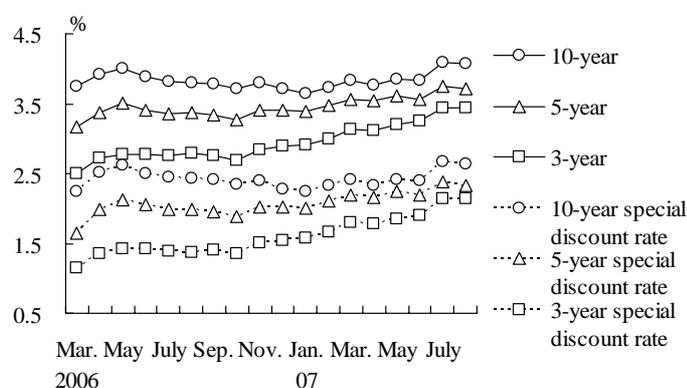
Notes: 1. Figures are calculated by averaging interest rates on housing loans offered by Mizuho Bank, The Bank of Tokyo-Mitsubishi UFJ, Sumitomo Mitsui Banking Corporation, Resona Bank, Mitsubishi UFJ Trust and Banking Corporation, The Chuo Mitsui Trust and Banking Company, and Sumitomo Trust and Banking Corporation.
2. Data for interest rates on housing loans are as of the beginning of each month.
Source: Published accounts.

Chart 2-14: RMBS Issuance[1]
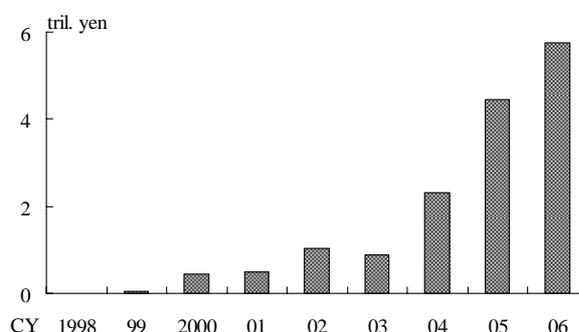
Note: 1. RMBSs are a type of mortgage-backed security that focuses on residential instead of commercial debt.
Source: Deutsche Securities Inc.

Chart 2-15: Housing Loans Extended by Banks[1]
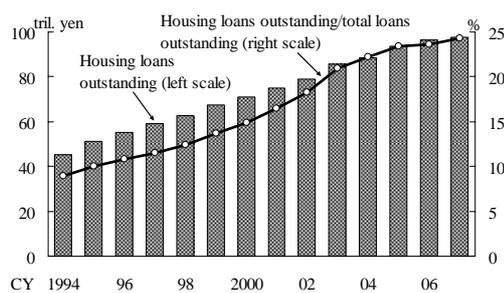
Note: 1. Figures for 2007 are as of the end of June 2007.
Sources: Bank of Japan, "Loans and Discounts Outstanding by Sector,"
"Outstanding of Loans (Others)."

Chart 2-16: Cross-Border Bank Exposures[1,2]
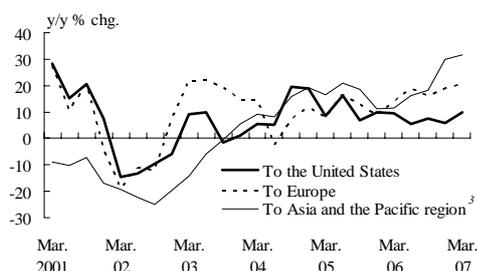
Notes: 1. Figures are year-on-year changes in aggregate exposures from
Japanese banks to each country and region.
2. Loans and advances to banks and non-banks, and holdings of
securities and participations.
3. NIEs, ASEAN, China, Australia, and New Zealand.
Source: Bank for International Settlements, "Consolidated Banking
Statistics."

Chart 2-17: Interest Margins on Loans Extended[1,2]
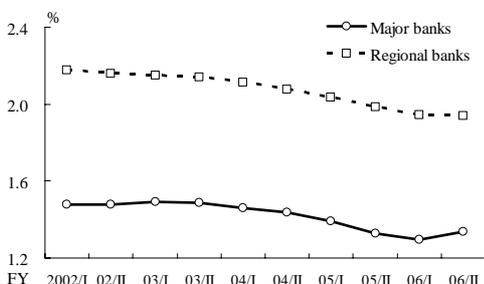
Notes: 1. Margins in domestic operations.
2. Interest margin on loans (lending margin) = interest rate on
lending - interest rate on interest-bearing liabilities.

Chart 2-18: DI for Spread of Loan Rates[1]
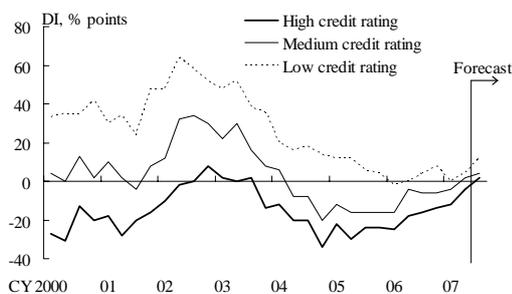
Note: 1. DI for spread of loan rates = percentage of respondents selecting
"widened" - percentage of respondents selecting "narrowed." All
responses were given considering lending margins set over the
past three months.
Source: Bank of Japan, "Senior Loan Officer Opinion Survey on Bank
Lending Practices at Large Japanese Banks."

However, in the second half of fiscal 2006, the declining trend in interest margins observed since the first half of fiscal 2003 came to a halt and margins increased for the major banks, while they moved sideways for the regional banks (Chart 2-17).

According to the survey regarding banks' stance on setting interest margins, there were more banks that narrowed interest margins for borrowers with a high credit rating than those that widened margins, while the results were the opposite for borrowers with low and medium credit ratings (Chart 2-18). Looking ahead, the number of banks that plan to raise interest margins for borrowers of all credit ratings has been increasing somewhat.

Below, to analyze interest margins in more detail, the interest margin is divided into interest rate spreads on deposits (i.e., market interest rates minus interest rates on deposits) and interest rate spreads on loans (i.e., interest rates on loans minus market interest rates).

Interest rate spreads on ordinary deposits and on 3-month to 1-year time deposits, which account for the largest share of time deposits, have continued to widen (Chart 2-19). Nevertheless, interest rate spreads on 3-month and 6-month time deposits still remain close to zero as a result of offering preferential interest rates. At the same time, interest rate spreads on 2-year or longer time deposits have narrowed.

Next, turning to interest rate spreads on loans, the spreads have continued to narrow. In order to examine this trend in detail, a multivariate time-series model is used to decompose the change in interest rate spreads on loans into three factors: (1) long-term changes in the lending market environment; (2) cyclical changes induced by the business cycle; and (3) short-term changes due to the stickiness of loan interest rates (Chart 2-20). The results of the decomposition suggest

that in the past few years cyclical changes induced by the business cycle were the dominant factor behind the narrowing of interest rate spreads on loans, but since mid-2006 the short-term changes due to the stickiness of loan interest rates have played a growing role in the narrowing of interest rate spreads.

The analysis suggests that two factors are potentially responsible for the narrowing of interest rate spreads on loans. The first is that, as a result of the continued economic expansion, the financial condition (and hence creditworthiness) of borrowers has improved and banks have adopted a more accommodative lending attitude. And the second is that interest rates on loans have failed to keep up with increases in market rates since mid-2006.

In fiscal 2006, the profitability of banks' lending activity, which in addition to interest margins depends on the general and administrative expense ratio and the credit cost ratio, has worsened due to the slight decrease in interest margins on loans and the slight increase in credit cost ratios (Chart 2-21). As for the prospects, general and administrative expense ratios have stopped declining and are beginning to increase again, while the effects of temporary factors such as the reversal of loan-loss allowances are likely to diminish; thus, even if interest margins widen somewhat in the wake of rising market interest rates, banks will find it difficult to increase the overall profitability of their loan business. Consequently, improving core profitability remains a critical challenge for Japan's banking sector as a whole. This issue will be further discussed in Chapter IV.

D. New Channels of Financial Intermediation

Finally, this section provides an overview of developments in, and risks associated with, new

Chart 2-19: Interest Rate Spreads on Time Deposits[1,2]
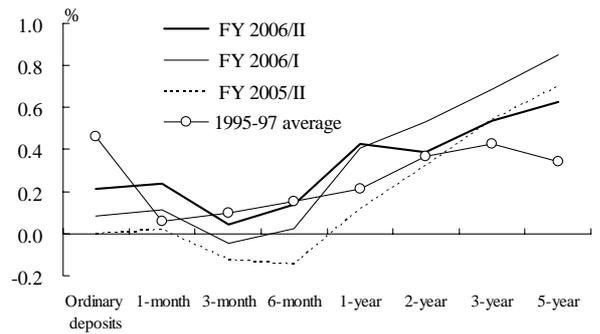
Notes: 1. Interest rate spread on time deposits = market interest rate - time deposit rate.
2. LIBOR data are used for market interest rate for 1-month to 1-year maturity, and the swap rate data for 2-year maturity or more. The overnight call rate is used for market interest rate for ordinary deposits.
Sources: Bank of Japan, "Average Interest Rates on Time Deposits by Term (New Receipts)"; Bloomberg.

Chart 2-20: Decomposition of Changes in Interest Rate Spreads on Loans[1,2,3]
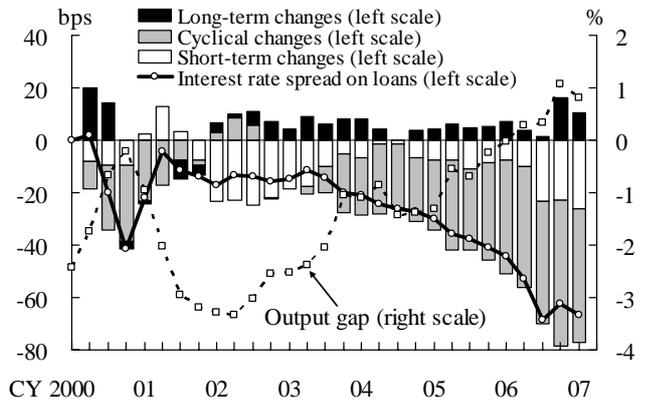
Notes: 1. Interest rate spread on loans = average contracted interest rate on new loans and discounts (short-term) - CD interest rate (3-month).
2. Figures for interest rate spread on loans and their components are the gap from those in 2000/Q1 (167 basis points).
3. For details, see Box 1 of the March 2007 issue of the *Financial System Report*.

Chart 2-21: Net Returns on Bank Loans
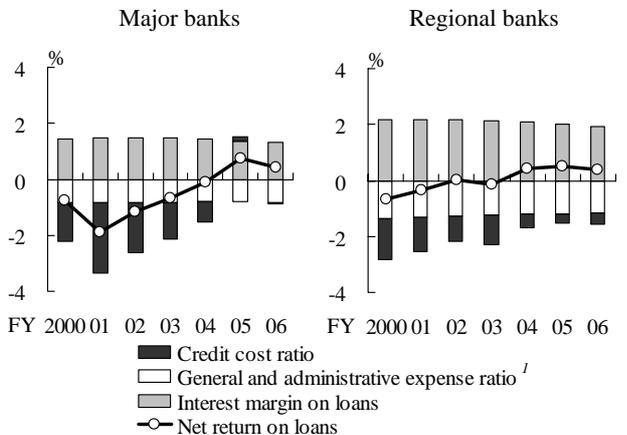
Note: 1. General and administrative expense ratio = general and administrative expenses / amount outstanding of total interest-earning assets.

Chart 2-22: Size of M&A Market Worldwide

Source: Thomson Financial.

Chart 2-23: Size of M&A Market in Japan

Source: RECOF.

Chart 2-24: Buyouts via Funds in Japan[1,2]

Notes: 1. The source of this chart is different from that of Chart 2-23.
2. Aggregates of acquisition projects in which funds, including PE funds, invested.
Source: Japan Buy-out Research Institute, Inc.

financial intermediation channels, such as M&A financing and real estate financing.

New channels of financial intermediation relating to M&As and the real estate business have been expanding, reflecting increased inflows of funds through various investment funds. Against this background, Japanese banks have become more deeply involved in such new channels through the extension of loans for M&A-related transactions and non-recourse loans to real estate funds.

1. M&A financing

Global M&A activity bottomed out in 2002 and marked a new record high in 2006, partly reflecting the expansion of the inflow of funds through private equity funds (PE funds; Chart 2-22).

Domestic M&A activity is also on an upward trend recently, although the M&A market in Japan, at a volume of slightly more than 10 trillion yen, represents only about 3-4 percent of the global market (Chart 2-23). Moreover, although the number of M&As in Japan involving PE funds is gradually increasing, they still account for less than 1 trillion yen of M&As in the domestic market (Chart 2-24).

While in the past Japanese banks (mostly the major banks) typically provided funds for M&As overseas, more recently they have also been actively providing funds for domestic M&As. In addition to extending loans for M&As, banks have been investing in M&A-related PE funds, although the amounts involved have remained limited so far.

To analyze the risks associated with M&A financing in Japan, ratios of enterprise value to earnings before interest, taxes, depreciation, and amortization (EV/EBITDA ratios) as proxies for the payback period

are compared for Japan, the United States, and Europe. Here, EVs are used as proxies for firms' value and are not necessarily identical to actual acquisition prices.

As shown in Chart 2-25, EV/EBITDA ratios in Japan are lower than those in the United States and Europe. In particular, the right tail of the distribution of the ratios for Japan is thinner than those for the United States and Europe, indicating that there are more M&As with a low EV/EBITDA ratio in Japan. This implies that compared with the United States or Europe, targets in Japan are more likely to be firms with a shorter payback period.

Looking at trends over time, the median of the EV/EBITDA ratio for Japan has stayed slightly lower than that for Europe and substantially lower than that for the United States (Chart 2-26). This pattern of a lower EV/EBITDA ratio for Japan, compared with the United States and Europe, becomes more evident when examining the upper 10 percentile of the distribution.

It is unlikely that M&A financing in Japan will have an immediate impact on financial stability in Japan since the volume of domestic M&A financing, including inflows of funds through PE funds, is still limited. However, given the increasing trend of M&As, risks associated with M&A financing warrant careful monitoring.

For example, looking at loans for leveraged buyouts (LBOs), which represent one form of M&A financing, the interest rate spreads on such loans have not contracted that much; instead, such loans are increasingly refinanced through traditional corporate loans at relatively low interest rates shortly after the buyout. In the United States and Europe, there were instances where, as a result of intensified competition in M&A financing, loan covenants (i.e., compliance rules borrowers must adhere to) were eased.

Chart 2-25: EV/EBITDA Ratios of M&As in Japan, the United States, and Europe in 2006[1,2]
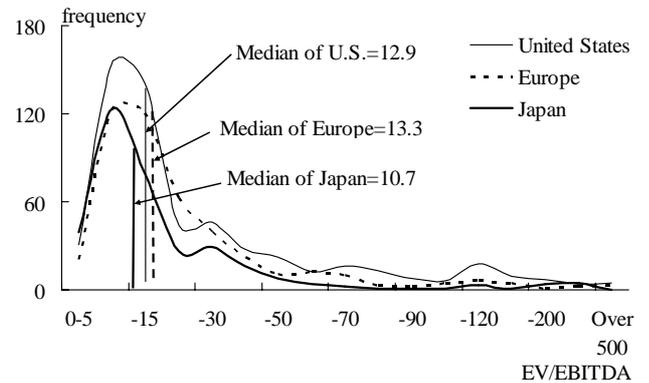
Notes: 1. EV = total value of shares + total value of debt.
2. EBITDA = earnings before interest, taxes, depreciation, and amortization.
Source: Thomson Financial.

Chart 2-26: Percentiles of Distributions of EV/EBITDA Ratio[1]
Upper 10 percentile
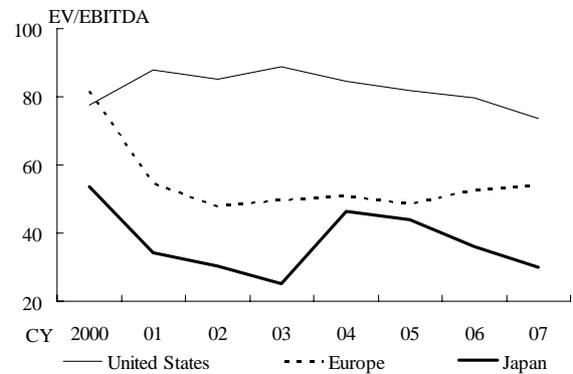
Upper 50 percentile (median)
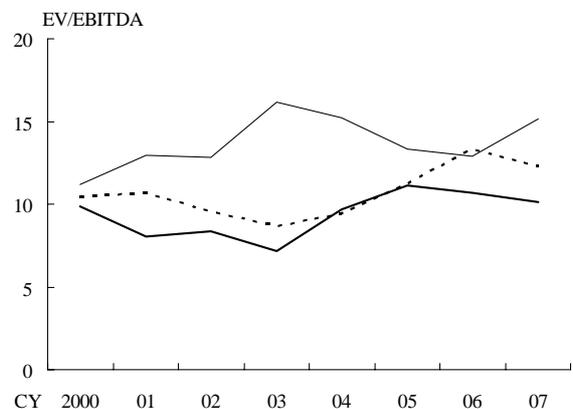
Note: 1. The figure for 2007 is calculated using data from January to June.
Source: Thomson Financial.

Chart 2-27: Size of the J-REIT and the Private Real Estate Fund Market[1]
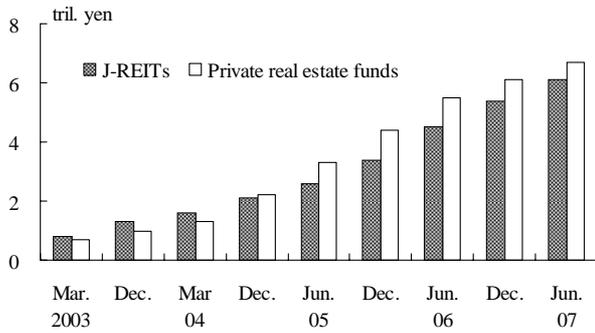
Note: 1. Figures for private real estate funds do not include foreign funds doing business in Japan. According to the STB Research Institute, if foreign funds were included, the figure for June 2007 would reach 10.2 trillion yen.
Source: STB Research Institute.

Chart 2-28: LTV Ratios of Real Estate Funds[1,2,3]
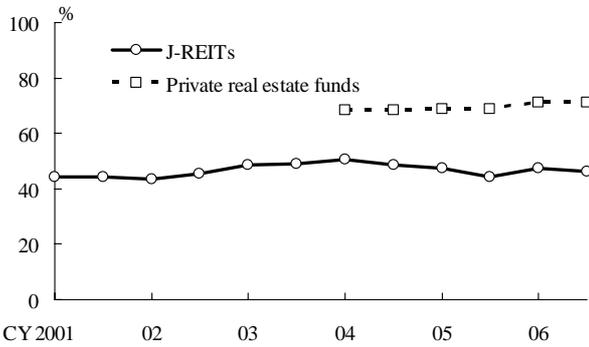
Notes: 1. The LTV ratio for J-REITs is the simple average of the LTV ratios registered in their financial statements.
2. The LTV of private real estate funds is based on a questionnaire from the STB Research Institute.
3. Data on private real estate funds cover funds which are currently managed in Japan.
Sources: Financial statements of investment corporations; STB Research Institute, "Market Survey Results of Private Placement Real Estate Funds."

2. Real estate financing

In recent years, there has been diversification in the channels of funding for the real estate sector. In addition to traditional loans from financial institutions, funds from households, from non-financial firms, and from abroad have been flowing directly into the real estate market through real estate funds (see Chapter II in the March 2007 issue of the *Financial System Report* for details on the underlying changes in the inflow of funds to the real estate market). In particular, the inflow of funds through real estate funds has been expanding rapidly in recent years (Chart 2-27).

As for risks related to real estate funds, loan-to-value (LTV) ratios have increased slightly for private real estate funds, while they have been stable at around 40 to 50 percent for J-REITs, and no significant increase in leverage has been observed (Chart 2-28). Banks seem to be managing their collateral cautiously, taking account of the lessons learned from the bursting of the asset price bubble in the early 1990s.

Looking at developments in interest rates on loans to real estate funds, the pace of the decline in spreads on such loans has been slowing somewhat (Chart 2-29). However, the difference with the spread on corporate bonds with the same credit rating has already become quite small. Furthermore, the yield spread on J-REITs (i.e., the difference between dividend yields on J-REITs and long-term interest rates) has narrowed further due to the rapid rise in the price index of J-REITs beginning in the second half of 2006 (Charts 2-30 and 2-31). More recently, it seems that the rise in the price index of J-REITs has come down and the yield spread has stopped falling.

As mentioned above, with regard to real estate fund financing, banks have so far managed their collateral

cautiously, although interest rate spreads on loans have narrowed considerably due to intensified competition. Amid expectations of a rise in real estate prices in metropolitan areas, inflows of funds to real estate funds have been increasing in recent years. Taking these circumstances into account, risks related to real estate financing, including future developments in risk-return balances of non-recourse loans, warrant careful monitoring.

Chart 2-29: Interest Rate Spreads on Loans to a J-REIT[1,2,3,4]
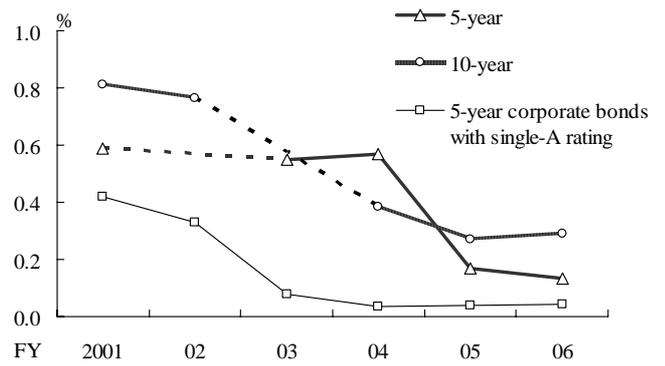
Notes: 1. Interest rates on loans to the J-REIT are calculated by averaging those on loans to Nippon Building Fund Inc. weighted by the amount of loans.
2. Spreads against swap rate.
3. Corporate bond yields are quotations by ratings published by the Japan Securities Dealers Association. The rating is that of Moody's Investors Service.
4. The issuer rating for Nippon Building Fund Inc. is A1, assigned by Moody's Investors Service.
Sources: Nippon Building Fund Inc.; Japan Securities Dealers Association; Moody's Investors Service; Bloomberg.

Chart 2-30: Dividend Yield Spreads on J-REITs[1]
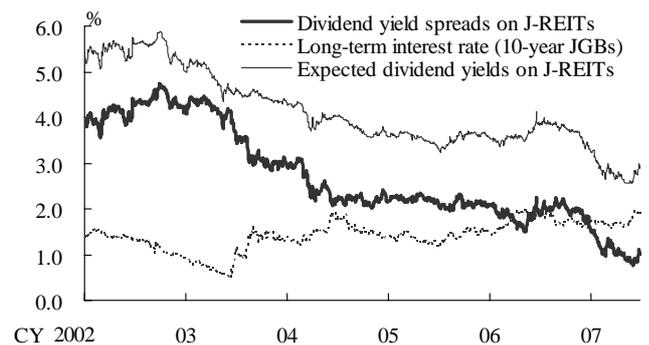
Note: 1. Difference between dividend yields on J-REITs and yields on 10-year JGBs.
Sources: STB Research Institute; Bloomberg.

Chart 2-31: Price Index of J-REITs
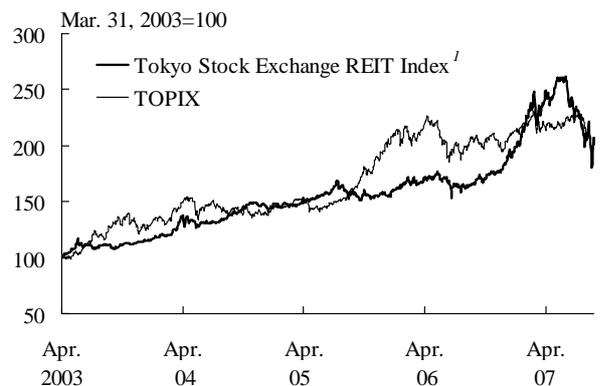
Note: 1. The Tokyo Stock Exchange REIT Index is a capitalization-weighted index based on all REITs listed on the Tokyo Stock Exchange.
Source: Tokyo Stock Exchange.

33

Box 6: The Syndicated Loan Market in Japan and the United States

The syndicated loan market in Japan has been expanding in recent years. The main features of Japan's syndicated loan market can be summarized as follows (see Chart B6-1 for the structure of syndicated loans). First, the average size of primary deals has become smaller. And second, the volume of credit risk shared in the secondary loan market is small. In many syndicated loan deals, initial arrangers work as agents after lending is executed, and accordingly the following discussion will simply assume that arrangers and agents are the same.

With regard to the first feature, the declining trend in the average size of primary deals is discernible in Chart B6-2. The borrowers are generally small firms that cannot provide sufficient financial data and on which little information is publicly available. Lenders have to collect and analyze information themselves in order to make decisions on lending and to control credit risk. Because such monitoring is costly to lenders, it is not easy for arrangers to attract many lenders. Studies on the

Chart B6-1: Structure of Syndicated Loans

loan market in the United States, e.g., Sufi (2007), show that the higher the lending share of the arranger, the easier it is to attract more lenders, because arrangers with a higher lending share are more likely to monitor credit risk. Following Casolaro et al. (2003), this effect is called the "certification effect."
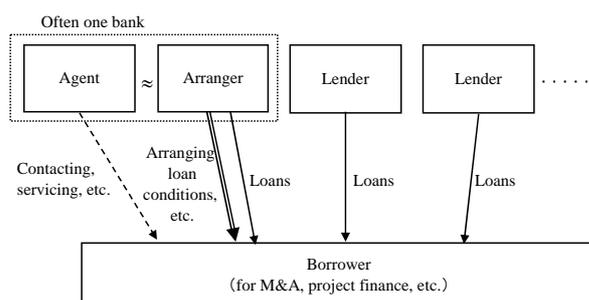
Chart B6-2: Average Size of a Syndicated Loan by Country
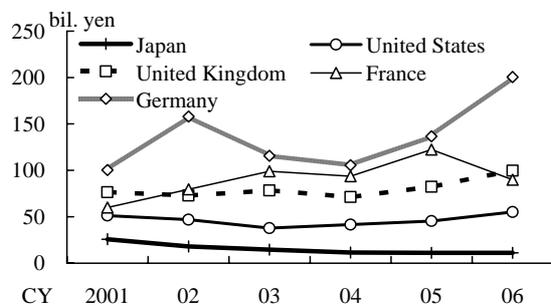
Source: Thomson Financial.

Chart B6-3: Lending Shares of Arrangers in the Japanese Syndicated Loan Market by Deal Size[1,2]

Deal size	2005	2006
50 billion yen and over	39.3%	25.6%
From 10 to below 50 billion yen	44.0%	48.3%
Under 10 billion yen	46.9%	51.2%
Number of observations	1,009	923
Total syndicated volume	7.0 tril. yen	3.6 tril. yen
Average syndicated volume	7.0 bil. yen	3.9 bil. yen

Notes: 1. Deals included in the observations are those where the share of each lender is known.
2. Arrangers include joint arrangers and co-arrangers.
Source: Thomson Financial.

In order to test the certification effect for the Japanese market, the lending shares of arrangers by deal size are presented in Chart B6-3, which highlights the following facts. First, the shares of arrangers are larger in smaller deals. And second, in 2006, the shares of arrangers declined in large deals (50 billion yen and over) while they increased in small deals (below 50 billion yen). These facts suggest that the certification effect works to some extent in the syndicated loan market in Japan.

Each lender in loan syndication, however, assumes a pro rata loss proportional to the lender's share in the event of the borrower's default. Therefore, in addition to the arranger, each lender needs to monitor the credit risk of the loan. As the average deal size in Japan is smaller than in other countries, lenders in Japan need to monitor

credit risk more closely. For example, lenders should actively exercise their right to investigate borrowers and demand disclosure in order to control credit risk.

The second feature of Japan's syndicated loan market is that the amount of credit risk shared by participants in the secondary loan market is relatively small. The general pattern is that major firms account for the bulk of syndicated loans, which are typically arranged by one of the major banks. The main lenders are the regional banks, and they tend to hold loans to maturity. In the United States, leveraged loans -- syndicated loans with a low credit rating (i.e., syndicated loans with a credit rating below BB) -- account for about one-third of the total volume of syndicated loans (Chart B6-4). Investment trusts, hedge funds, private equity funds, and other institutional investors have invested heavily in leveraged loans, and the secondary loan market has been expanding (Chart B6-5). This market, where many investors can share credit risk, has enabled the syndication of various classes of loans, including low-quality loans, and has contributed to the expansion of M&A activity through debt financing.

Chart B6-4: Volume of Syndicated Loans by Credit Rating in the United States
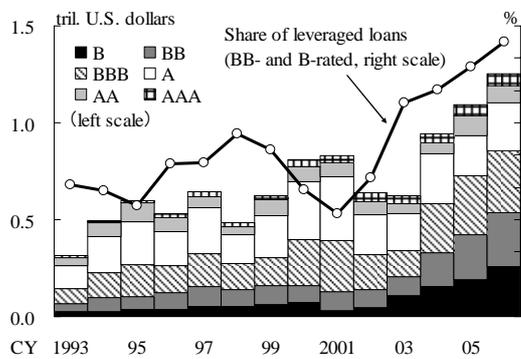
Source: Reuters LPC.

Chart B6-5: Volume of Loans Purchased in the U.S. Secondary Loan Market by Credit Rating
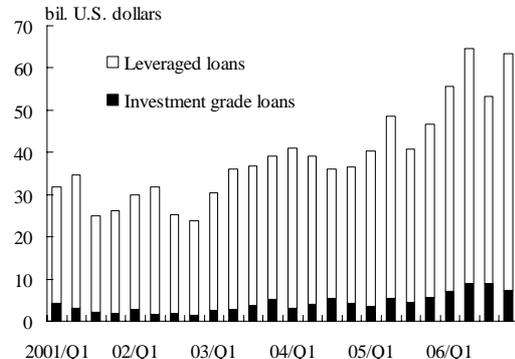
Source: Reuters LPC.

The difference in the performance of the secondary loan market in Japan and the United States is due to structural factors in financial markets, such as the business environment for regional banks, the amount of speculative money available, and the vigor of M&A activity. While this does not necessarily mean that the Japanese loan market is less advanced than the U.S. market, Japan does need to improve the environment for the primary and secondary loan market in order to encourage M&A activity and facilitate the use of credit portfolio management. Development of the secondary loan market would attract a greater diversity of investors and achieve a more efficient allocation of money and risk. The valuation of syndicated loans and the assessment of arrangers' ability and behavior through the market mechanism would help lenders monitor credit risk.

In the United States, the secondary loan market has expanded through a variety of efforts to develop and expand the necessary infrastructure, ranging from the basic market infrastructure by industry associations to services provided by rating companies and information vendors. In Japan, too, initiatives are underway to further deepen the syndicated loan market, including the introduction of a "Master Agreement" by the Japan Syndication and Loan-trading Association and the distribution of standard loan prices (for about 80 firms) by Reuters LPC.

References:
Casolaro, Luca, Dario Focarelli, and Alberto Franco Pozzolo, "The Pricing Effect of Certification on Bank Loans: Evidence from the Syndicated Credit Market," Economics & Statistics Discussion Paper, No. 10/03, Department of Economics, Management and Social Sciences, University of Molise, 2003.
Sufi, Amir, "Information Asymmetry and Financing Arrangements: Evidence from Syndicated Loans," *Journal of Finance*, 62, 2007, pp. 629-668.

Box 7: A Network Analysis of Cross-Border Bank Exposures

The Bank for International Settlements (BIS) quarterly releases data reported by the participating central banks of 30 countries and economies on the exposure of national banking systems to borrowing countries in the *Consolidated Banking Statistics*. Using these statistics, Hattori and Suda (2007) employ a network approach to examine various aspects of developments in cross-border exposures. Specifically, they define each country as a "node" and credit exposure of a bank in one country to another country as a "link." They then estimate standard statistical measures used in network analysis -- the "average degree" and "average path length" -- based on long-term time-series data from the *Consolidated Banking Statistics*.

First, the average degree, the average number of countries each reporting country has connections with, increased sharply during the second half of the 1990s. While the average degree remained more or less unchanged around the turn of the millennium, it has started to rise again in recent years (Chart B7-1). This upward trend in the average degree has remained unaffected by major turbulences in international financial markets such as the Mexican peso crisis in 1994 or the East Asian currency crisis in 1997. Next, the average path length, the average number of links from each of the reporting countries to each of the other countries, shows a substantial decline since the mid-1990s (Chart B7-2). These trends, i.e., the increase in the average degree and the decrease in the average path length, suggest that since around the mid-1990s the probability of direct exposure of one country to another has grown and that the network of cross-border bank exposures has become more tightly connected.

Chart B7-1: Average Degree[1]   Chart B7-2: Average Path Length[1]
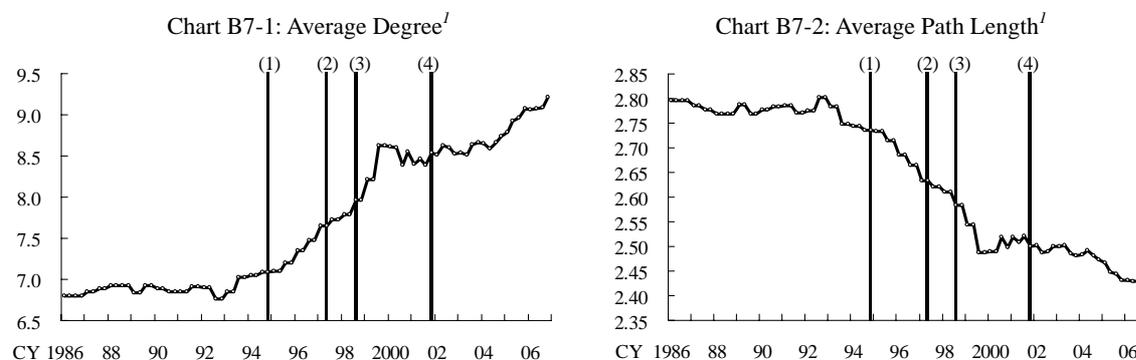
Note: *1.* The vertical lines show when a particular financial crisis broke out and refer to: (1) the Mexican peso crisis (December 1994); (2) the East Asian currency crisis (July 1997); (3) the Long-Term Capital Management (LTCM) near-default event (August 1998); and (4) the Argentine crisis (December 2001).

The implications of these changes in the network structure of cross-border bank exposures for the stability of the international financial system include: first, the higher probability of direct exposure means that a shock in one country is likely to be transmitted to a greater number of countries; and second, a more tightly connected network means that risk sharing across countries has become more efficient. In normal times, such a network structure enhances the functioning of international financial intermediation; but if turbulence occurs in international financial markets, its impact is likely to spread quickly to a large number of countries, increasing the risk of a more severe crisis. It is therefore indispensable to closely monitor the described developments.

Reference:
Hattori, Masazumi, and Yuko Suda, "Developments in a Cross-Border Bank Exposure 'Network,'" Bank of Japan Working Paper, Bank of Japan, 2007, forthcoming.

III. Robustness of the Financial System

This chapter examines the robustness of Japan's banking sector against changes in interest rate risk and credit risk associated with economic fluctuations.

A. Impact of a Rise in Market Interest Rates on Banks' Net Profits

This section employs a simulation model in order to analyze the impact of rises in market interest rates on the future path of banks' net profits. The model incorporates the actual balance-sheet structure of the major and the regional banks at the end of fiscal 2006 as well as their price-setting behavior in the past (see Chart 3-1 for the basic structure of the model).

First, the maturity structure of assets and liabilities at the end of fiscal 2006 is estimated for both the major and the regional banks. In addition, it is assumed that the funds from every product maturing at each point in time are reinvested in the same product with the same maturity. This means that the maturity structure of banks' balance sheets remains unchanged.

Second, with respect to the future path of market interest rates, four scenarios -- a baseline scenario, a parallel shift scenario, a steepening scenario, and a flattening scenario -- are considered (Chart 3-2). The baseline scenario assumes that future short-term interest rates follow the expected path implied by the forward rate curve at the end of fiscal 2006. The parallel shift scenario assumes that the spot rate curve itself shifts upward compared to the baseline scenario by 1 percentage point over one year. The steepening scenario assumes that the 10-year spot rate shifts upward compared to the baseline scenario by 1 percentage point over one year and that, for spot rates with time-to-maturity of less than ten years, the shorter

Chart 3-1: Basic Structure of Banks' Income Simulation Model
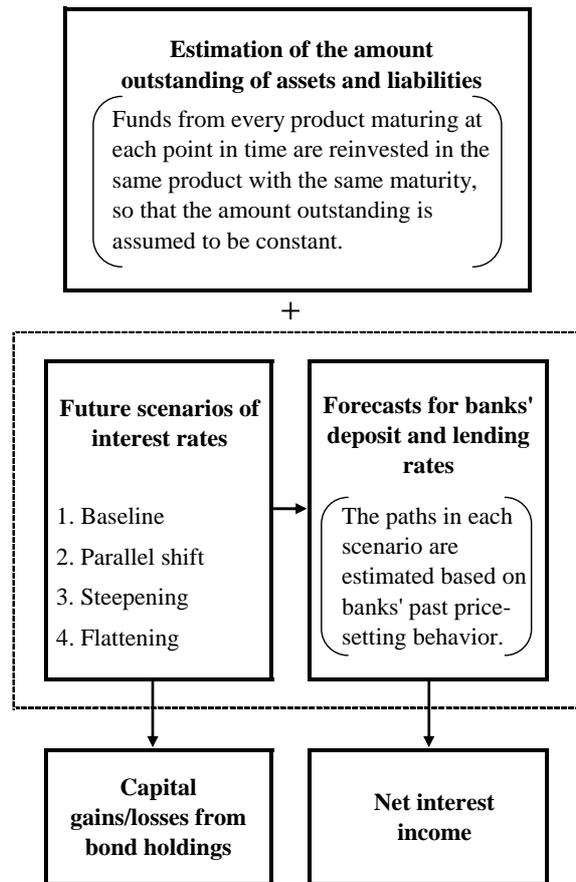
Chart 3-2: Spot Rate Curves[1]

(1) Baseline Scenario

——— End of FY 2006
·········· End of FY 2007
– – – End of FY 2008
——— End of FY 2009
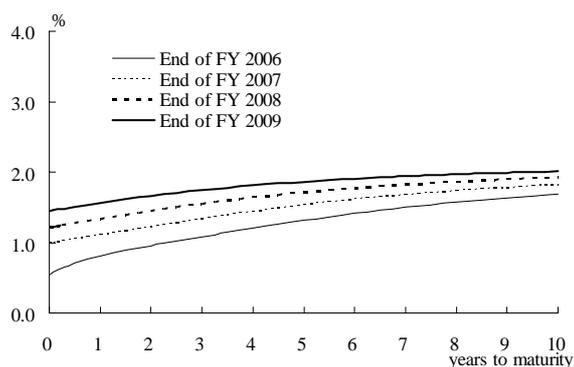
(2) Parallel Shift Scenario
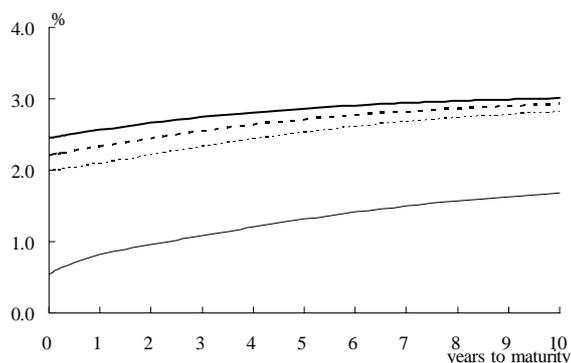
(3) Steepening Scenario
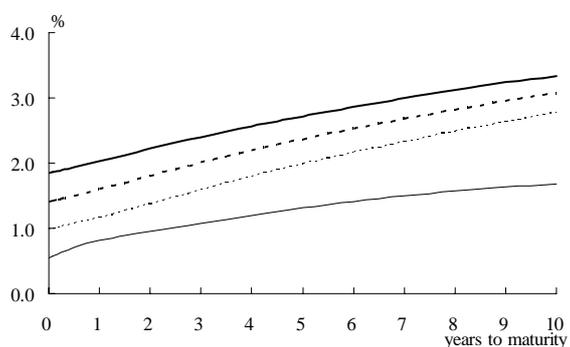
(4) Flattening Scenario
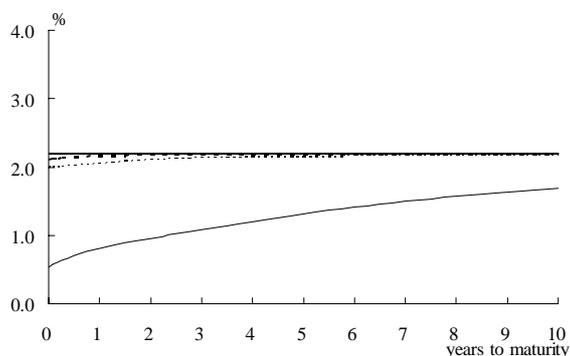
Note: *1*. The market yields used for estimations are the uncollateralized overnight call rate, LIBOR (1-month, 3-month, 6-month, 9-month, and 12-month) and swap rates (2- to 13-year, 15-year, and 20-year). For details on estimations, see Box 7 of the March 2007 issue of the *Financial System Report*.

the time-to-maturity, the smaller the upward shift. The flattening scenario assumes that the overnight rate shifts upward compared to the baseline scenario by 1 percentage point over one year and that, for spot rates other than overnight rates, the longer the time-to-maturity, the smaller the upward shift, thereby leading to a flattening of the spot rate curve at the level of the long-term forward rate. It should be noted that the interest rate scenarios here do not necessarily mean that they are likely to materialize. Rather, the purpose is to crystallize the effect on the risks banks are currently exposed to.

Third, banks' interest-rate-setting behavior for various products is estimated using past values of deposit/lending rates and market rates. In the estimation, the spread between deposit/lending rates and the corresponding market rate for products with a similar maturity is assumed to converge to its historical average in the long run. One major exception, however, is the assumption regarding the ordinary deposit rate. Based on past observations, the ratio of the ordinary deposit rate to the 1-month LIBOR is assumed to be about 20 percent.

Finally, using the scenarios of future interest rates and the estimation results mentioned above, out-of-sample forecasts for banks' deposit/lending rates are obtained and the future paths of net interest income as well as the net capital gain from bond holdings are calculated.

The overall picture of the impact of a rise in market interest rates on banks' net profits can be summarized as follows (Chart 3-3). First, looking at the capital gain/loss from bond holdings, the capital loss occurs in the short term while it disappears in the medium term. The magnitude of the initial loss and the pace of its decay depend on the scenario.

Second, looking at net interest income, the increase in interest payments on short-term debts such as deposits and market-based financing tends to exceed the increase in interest income from lending and bond holdings in the short term. Therefore, in most scenarios, net interest income for both the major and the regional banks slightly declines from the initial level in the second half of fiscal 2006, when net interest income from domestic operations was 1.9 trillion yen for the major banks and 2.1 trillion yen for the regional banks. In the medium term, net interest income for the major banks exceeds the initial level at a relatively early stage, while for the regional banks it does not reach the initial level for a while. This is because the maturity of both lending and bonds is longer for the regional banks than for the major banks, and the negative impact of the regional banks' past lending and bond investment with low interest rates on their future interest income remains longer (Chart 3-4).

The results of the individual scenarios can be summarized as follows. In the baseline scenario for the major and the regional banks, both the present value of bond holdings and net interest income decline in the short term as the yield curve rises gradually. As a result, the sum of net interest income and capital gains/losses from bond holdings decreases, albeit slightly. One and a half years later, however, for the major banks, the sum reaches the initial level of the second half of fiscal 2006. As for the regional banks, since the pace of recovery in interest income from lending and bond holdings is slow, the sum of net interest income and capital gains/losses from bond holdings does not reach the initial level even three years later. In both cases, the impact is marginal relative to the size of net interest income during the second half of fiscal 2006.

Chart 3-3: Impact of Rises in Market Interest Rates on Banks' Profits[1,2]

(1) Baseline Scenario

(2) Parallel Shift Scenario

(3) Steepening Scenario

(4) Flattening Scenario
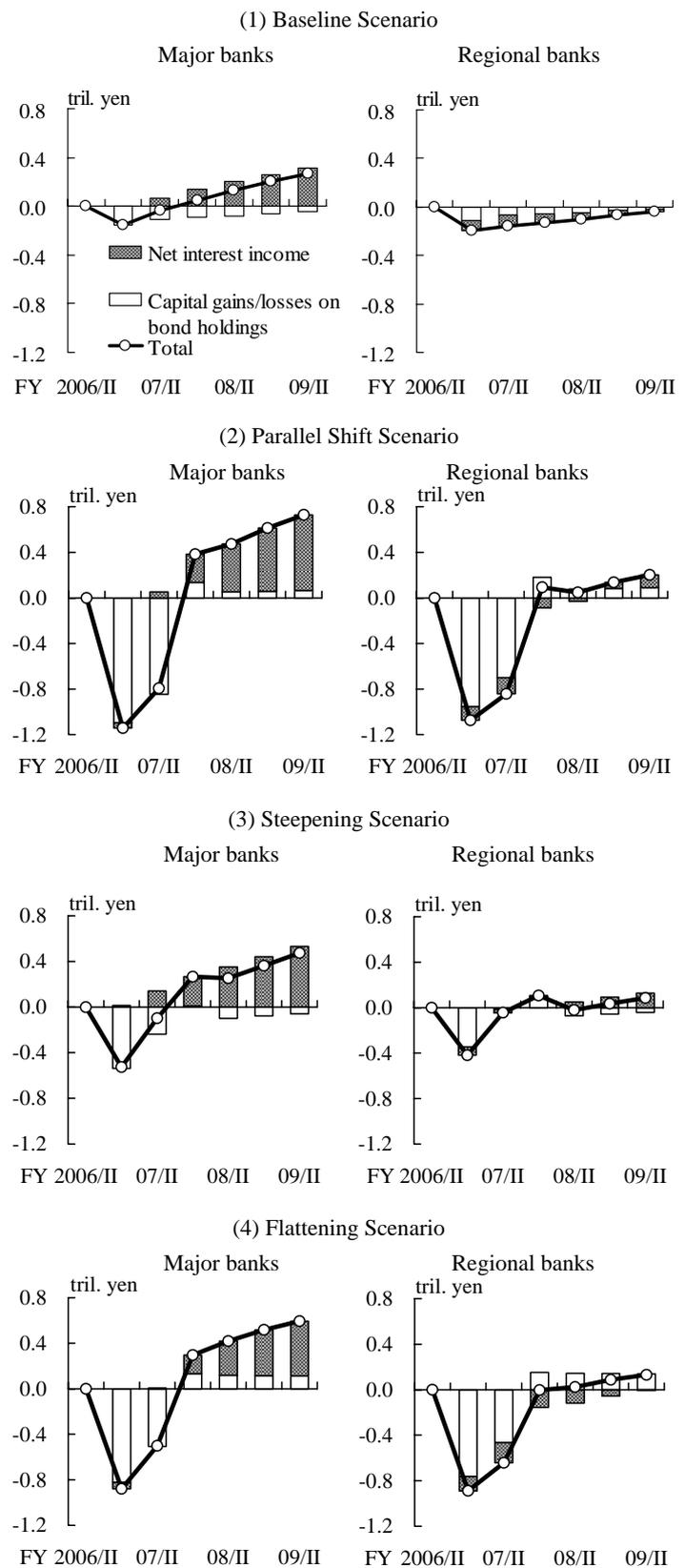
Notes: 1. Bank of Japan estimation. Figures for net interest income are changes from actual results in the second half of fiscal 2006.
2. Net interest income from domestic operations in the second half of fiscal 2006 was 1.9 trillion yen for the major banks, and 2.1 trillion yen for the regional banks.

Chart 3-4: Average Maturities of Banks' Assets and Liabilities[1,2]

Major banks

			years
Interest-earning assets	1.20	Interest-bearing liabilities	0.55
Loans	0.88	Time deposits	0.94
Bonds	2.61	Corporate bonds	2.14

Regional banks

			years
Interest-earning assets	1.74	Interest-bearing liabilities	0.56
Loans	1.40	Time deposits	0.92
Bonds	3.03		

Notes: *1*. Bank of Japan estimation.
   2. As of the end of March 2007.

In the parallel shift scenario, the capital loss from bond holdings both for the major and the regional banks is the largest in the short term among all four scenarios. This loss is, nevertheless, less than the amount of net interest income recorded in the second half of fiscal 2006 both for the major and the regional banks. In addition, net interest income initially declines since the rise in short-term interest rates is larger than that in the steepening scenario described later, and interest payments on short-term debts both for the major and the regional banks are larger in the short term. In the medium term, however, the amount of increase in interest income from lending exceeds that in interest payments on deposits.

In the steepening scenario, significant capital losses from bond holdings occur in the short term both for the major and the regional banks. In the medium term, the increase in interest income from lending gradually exceeds that in interest payments on deposits, as was the case in the parallel shift scenario.

Finally, in the flattening scenario, significant capital losses from bond holdings occur in the short term both for the major and the regional banks. In the medium term, net interest income for the major banks increases, as in the parallel shift and the steepening scenarios, while the downward pressure on the net interest income of the regional banks is large due to the large gap between the maturity of their assets and liabilities.

In summary, when the yield curve shifts upward gradually, as implied in the baseline scenario, the changes in net interest income and net capital gains from bond holdings have only a marginal impact on profits for both the major and the regional banks. Under the alternative three scenarios, in the short term, the capital loss from bond holdings is large. In the medium term, net interest income for the major banks

recovers in all of the three alternative scenarios. Net interest income for the regional banks, however, remains stagnant due to the long maturity of their assets. The negative impact on net interest income in the simulation period becomes particularly large in the flattening scenario.

B. Macro Stress-Testing of Credit Risk

This section assesses the robustness of Japan's financial system against credit risk by using a new framework for macro stress-testing incorporating the relationship between the transition in borrower classifications and the business cycle (see Box 8 for details of the framework).

In order to assess the robustness of Japan's financial system, the March 2007 issue of the *Financial System Report* examined the relationship between the default rates of different types of borrowers and macroeconomic variables, including the GDP growth rate, and estimated credit risk assuming a severe economic downturn lasting for just one year. Once an economic downturn occurs, however, it tends to continue for several years, leading to a deterioration in borrowers' creditworthiness, an increase in default rates, and consequently, drastic increases in credit costs and credit risk for banks. Taking these considerations into account, the new framework in this issue incorporates not only changes in default rates but also the upgrading or downgrading of firms' creditworthiness in the context of a stress scenario that assumes an extended economic downturn lasting several years.

As for the stress scenario, a vector autoregression (VAR) model is constructed using five variables -- real GDP, the CPI (excluding fresh food), the amount

Chart 3-5: GDP Growth Rate Assumed in the Stress Scenario

y/y % chg.

Actual rate	Scenario Assumption				
FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
2.08	-2.31	-2.19	-0.50	0.77	1.52

Chart 3-6: Ratio of the Maximum Loss to Tier I Capital[1]
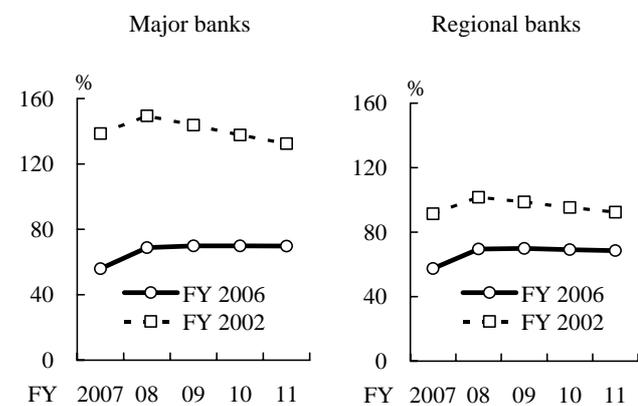
Note: 1. Bank of Japan estimation.

outstanding of bank lending, the nominal effective exchange rate, and the overnight call rate -- to make projections on the future path of the real GDP growth rate under the assumption of an adverse shock to GDP of a size that is likely to occur with a probability of 1 percent. Note that the half-life of the adverse shock on GDP is three quarters. If the adverse shock on GDP occurs at the beginning of fiscal 2007, the real GDP growth rate is projected to stay negative for three consecutive years: minus 2.31 percent in fiscal 2007; minus 2.19 percent in fiscal 2008; and minus 0.50 in fiscal 2009, followed by a gradual recovery (Chart 3-5).

Chart 3-6 shows the estimation of the ratio of the maximum loss to Tier I capital for the major and the regional banks under the stress scenario using data on loan portfolios at the end of fiscal 2002 and 2006.

The estimation highlights two points. First, credit risk, as measured by the ratio of the maximum loss to Tier I capital, increases in response to the decline in the real GDP growth rate with a certain time-lag. The credit risk for the major and the regional banks, estimated using data on loan portfolios at the end of fiscal 2002, initially increases substantially in fiscal 2008, despite the deceleration in the decline of the real GDP growth rate, and then starts to fall gradually in response to the recovery in the real GDP growth rate. This tendency becomes even more evident when credit risk is estimated using data on loan portfolios at the end of fiscal 2006: credit risk remains high even after the recovery in the real GDP growth rate and finally starts to decline after four to five years.

The time-lag in the increase in credit risk in response to the deterioration in the real GDP growth rate arises because of the large-scale downgrading of borrowers in the wake of a severe economic downturn. That is, in

the case of a severe economic downturn, the number of downgrades of borrowers increases and consequently, banks' exposure to borrowers with a higher probability of being downgraded and with a higher default probability increases. As a result, credit risk continues to increase even after the real GDP growth rate picks up, since the increase in the share of loans to borrowers with lower creditworthiness initially offsets the impact of the decline in the probability of borrowers in a particular risk classification being downgraded or defaulting.

It should be noted that credit risk, after reaching its peak, remains at a higher level for a prolonged period when the data for loan portfolios at the end of fiscal 2006, instead of fiscal 2002, are used. While this may appear somewhat paradoxical, it is in fact the result of the considerable improvement in the quality of loan portfolios between these fiscal years. That is, "normal" borrowers are sensitive to changes in business conditions, but borrowers with lower creditworthiness are not so sensitive, as is shown in Chart B8-2. Therefore, relatively many borrowers classified as "normal" experience a decline in their creditworthiness under a severe economic downturn, but it takes longer for borrowers, once they have been downgraded, to improve their creditworthiness again during the economic recovery. As a result, the negative impact of the decline in creditworthiness caused by a severe economic downturn lasts for a longer period of time in a loan portfolio with more "normal" borrowers. In fact, the share of "normal" borrowers is far larger in loan portfolios at the end of fiscal 2006 than fiscal 2002, as is shown in Chart 1-11, and credit risk tends to increase for a longer period of time in the fiscal 2006 loan portfolio due to the cumulative negative impact of the decline in borrowers' creditworthiness.

The second point highlighted by the estimation is that the ratio of the maximum loss to Tier I capital is smaller when using the loan portfolios at the end of fiscal 2006 than fiscal 2002 both for the major and the regional banks. This result demonstrates that the quality of loan portfolios and capital bases have improved, resulting in increased robustness against a significant economic downturn. In addition, the extent of the decrease in the ratio between fiscal 2002 and 2006 is larger for the major banks than for the regional banks. This result also implies that the major banks, as their capital increased, rigorously disposed of NPLs to large borrowers in the period between fiscal 2002 and 2006.

Based on the estimation results in this section, it can be concluded that the quality of loan portfolios both of the major and the regional banks has improved, resulting in greater robustness against a significant increase in credit risk. This result and the assessment are, however, based on the assumption that bank loans to large borrowers do not increase significantly during the economic downturn.

This section focused solely on credit risk to analyze financial system stability. In an economic downturn, however, not only will defaults increase and firms' creditworthiness deteriorate, but stock prices in banks' portfolios are also likely to decline. Market risk associated with stockholdings accounts for a substantial portion of the overall amount of risks held by both the major and the regional banks, as is shown in Chart 1-23. Therefore, close attention has to be paid to the possibility that market risk associated with stockholdings as well as credit risk may manifest in the case of economic downturn.

Box 8: The Framework for Macro Stress-Testing of Credit Risk Incorporating Transition in Borrower Classifications

The March 2007 issue of the *Financial System Report* examined the relationship between changes in default rates across borrower classifications and macroeconomic variables, including the GDP growth rate, assuming a one-year severe recession in order to estimate credit risk and assess the robustness of Japan's banking system.[1] Once an economic downturn occurs, however, it tends to last for several years. Moreover, as Japan's experience during the period from the late 1990s to the early 2000s showed, once such a severe downturn occurs, banks are likely to face deterioration in borrowers' creditworthiness, resulting in a jump in credit downgrading and in rapid increases in credit costs and credit risk when borrowers start to default. Against this background, an analytical framework to assess credit risk is required that incorporates changes not only in default rates but also in the probabilities of upgrades and downgrades in borrowers' ratings by setting a stress scenario that assumes a prolonged economic downturn over several years.

Given these considerations, a new framework for macro stress-testing that incorporates changes in transition matrices for borrower classifications in response to fluctuations in the business cycle is constructed in this issue.[2] The estimation results using this framework are shown in Chart 3-6. The framework for macro stress-testing is comprised of four steps (see Chart B8-1 for a schematic representation).

In the first step, transition matrices for borrower classifications from 1985 onward are constructed by linking two datasets: borrower classification transition matrices for the overall banking sector compiled by the Bank of Japan since 2002, and credit score data for Japanese firms from 1985 onward provided by Teikoku Databank, a large private rating agency.

In the second step, using multifactor model[3] developed by Wei (2003), the common factor component of changes in the transition probabilities for each borrower classification is extracted. Then, the relationship between the common factor component and macroeconomic variables, including the GDP growth rate, is examined.

Concretely, the following specification is used:

$$x_{i,t} = c_i + \alpha_i GDP_t + \beta_i DEBT_t + \varepsilon_{i,t},$$

where subscripts i and t denote the borrower classification and the year. x represents changes in the transition probability for each borrower classification due to common factors, while *GDP* stands for the GDP growth rate and *DEBT* for the ratio of interest-bearing liabilities to cash flow (the estimation results are shown in Chart B8-2).

In the third step, a vector autoregression (VAR) model using five variables -- real GDP, the CPI (excluding fresh food), the amount outstanding of bank lending, the nominal effective exchange rate, and the overnight call rate -- is estimated. The VAR model is employed to project the future path of the real GDP growth rate under the assumption of an adverse shock to GDP of a size the probability of which is 1 percent (Chart 3-5 shows the projection of the VAR model for the future path of the GDP growth rate).

In the fourth step, the future path of the GDP growth rate is inserted into the above estimated equation and the changes in transition matrices during an economic downturn are estimated. Using these results, the ratio of credit risk to Tier I capital is then computed to assess the robustness of Japan's banking system against credit risk.

Notes: 1. See Box 8 in the March 2007 issue of the *Financial System Report* for details.
2. Details of the analytical method are to be published as a working paper.
3. In a multifactor model such as this one, deviations in the transition probabilities of borrower classifications from their long-term averages are assumed to depend on common factors, classification-specific factors, and idiosyncratic factors. Moreover, the parameters on common factors and classification-specific factors are assumed to be identical for all borrower classifications. In a forthcoming working paper, the model will be modified to incorporate the assumption that deviations in the transition probabilities of borrower classifications from their long-term averages are determined by common and idiosyncratic factors and that the parameters on common factors vary across borrower classifications.

Chart B8-1: Steps of Macro Stress-Testing
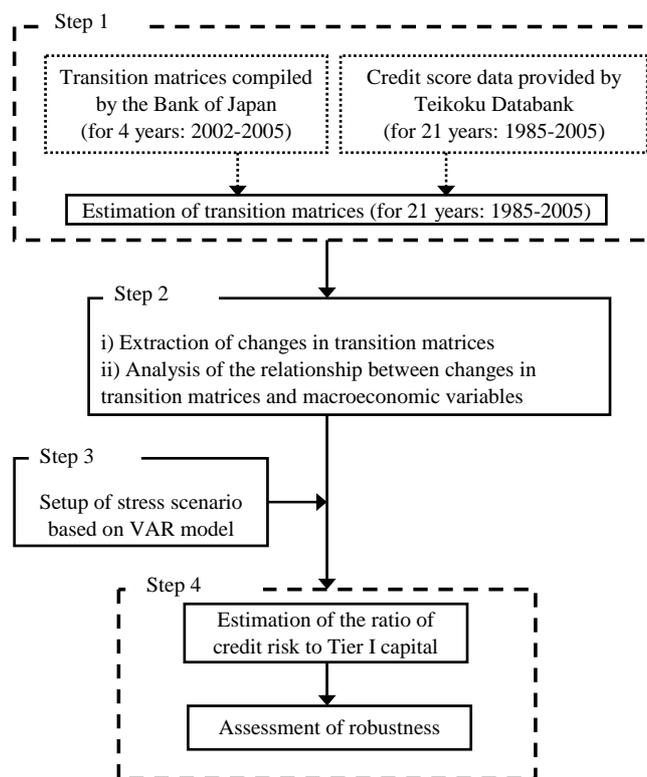
Chart B8-2: Results of Estimation for Changes in Transition Probabilities[1]

	Constant	*GDP*	*DEBT*	*Adj R²*
"Normal" borrowers	-0.47*** (-2.97)	0.09*** (7.28)	0.02** (2.15)	0.69
Borrowers that "need attention"	-0.15* (-1.89)	0.05*** (7.54)	0 (0.64)	0.73
Borrowers requiring "special attention"	0.08 (1.05)	0.02*** (3.99)	-0.01* (-1.92)	0.56
Borrowers "in danger of bankruptcy"	0.31*** (3.46)	0.01 (1.05)	-0.02*** (-4.02)	0.5

Note: 1. The estimation period is from 1985 to 2005 and the figures were estimated using seemingly unrelated regression (SUR), taking account of possible correlation between error terms in each borrower classification. ***, **, and * represent significance levels of 1 percent, 5 percent, and 10 percent, respectively. Figures in parentheses are *t*-statistics.

Reference:
Wei, Jason Z., "A Multi-Factor, Credit Migration Model for Sovereign and Corporate Debts," *Journal of International Money and Finance*, 22, 2003, pp.709-735.

IV. Challenges for the Financial System

Japan's financial system has largely overcome the NPL problem resulting from the bursting of the asset price bubble and has become increasingly stable over time. Nonetheless, it is always possible that unexpected and significant changes in the financial environment will lead to substantial losses in the banking sector. As long as the capital buffer of the banking system is sufficient, however, it should be possible to avoid a sustained and serious malfunctioning of the financial system as observed in the aftermath of the bursting of the asset price bubble in the early 1990s.

In order to ensure the continued stability of the financial system and to reinforce the functioning of financial intermediation, Japan's banking sector needs to raise its profitability, which provides an indispensable source of capital. In this respect, there is a complementarity between the profitability of the banking sector and the stability of the financial system in the long term.

Based on these considerations, this chapter examines the profitability of Japan's banking sector from an international perspective. It then examines possible ways to improve risk-return balances with the aim of raising profitability.

A. Profitability of the Banking Sector

Using time-series data, this section examines the long-term profitability of the banking sectors of Japan and the United States. It then extends the analysis using data for the G10 countries in order to examine the relationship between the profitability and the scale of the banking sector.

1. Profitability of the banking sectors of Japan and the United States

During the late 1990s and early 2000s, when the NPL problem was deepening, returns on assets (ROAs) of Japan's banking sector frequently dropped below zero as a result of the emergence of large credit costs during these periods (Chart 4-1 [1]).

At the same time, banks' asset profitability, i.e., the net interest income ratio minus the general and administrative expense ratio, has hardly fluctuated over the past 20 years. That is, the net interest income ratio and the general and administrative expense ratio have been almost stable at around 1.3 percent and 1.0 percent, respectively. As a result, asset profitability has remained stable at a level of 0.3 percent on average.

The above observations mean that asset profitability after the deduction of credit costs becomes positive only if the credit cost ratio based on total assets remains below 0.3 percent. In other words, the long-term breakeven credit cost ratio is about 0.3 percent. Although the credit cost ratio at present is below that figure (and, hence, asset profitability is positive), it should be noted that the current ratio is significantly pushed down by temporary factors.

In fact, when the credit cost ratio is expressed relative to the balance of loans outstanding rather than total assets, the breakeven credit cost ratio is approximately 0.45 percent rather than 0.3 percent. As seen in Chapter I, however, credit cost ratios at the major banks, which are experiencing an improvement in loan portfolios, are projected to be in the range of 0.2-0.4 percent, while these ratios are likely to be even higher if the regional banks and the *shinkin* banks are included. Thus, at a level of 0.3 percent, asset profitability is barely sufficient to cover credit costs.

Chart 4-1: ROA of the Banking Sector[1,2,3]

(1) Japan
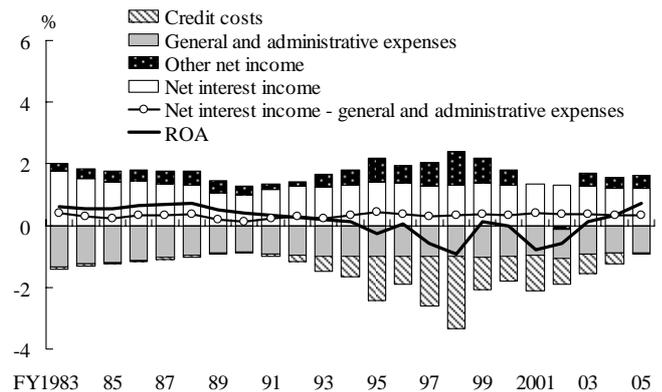
(2) United States
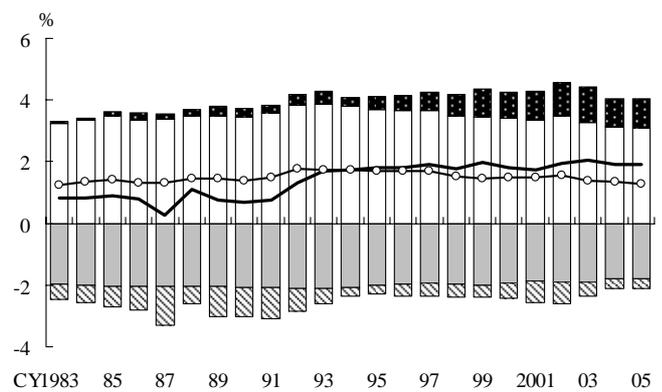
Notes: 1. The figures for Japan are the totals for the major, the regional, and the *shinkin* banks.
2. The figures for the United States are the totals for FDIC-insured commercial banks (all sizes by assets).
3. Net income used in calculation of ROA is before taxes.
Source: FDIC, "Historical Statistics on Banking."

Chart 4-2: Interest Rate Spread between Loans and Deposits[1,2]

(1) Japan
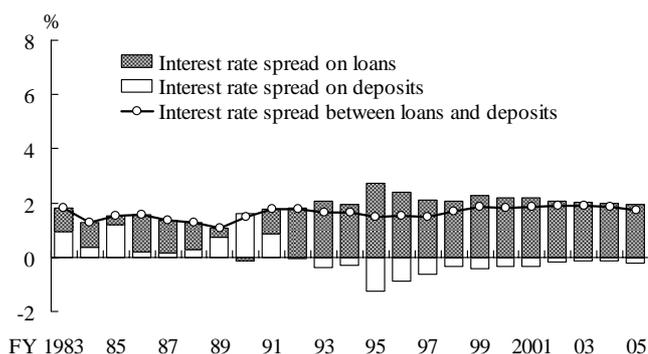
(2) United States
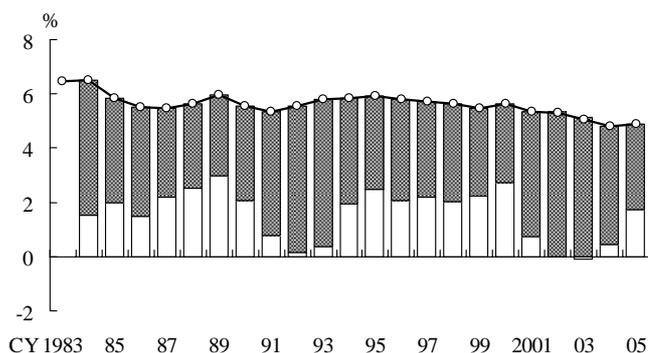
Notes: *1*. Interest rate spread on loans = interest rate on loans - 3-month interest rate on CDs.
     2. Interest rate spread on deposits = 3-month interest rate on CDs - interest rate on deposits.
Sources: FDIC, "Historical Statistics on Banking"; Bloomberg.

Chart 4-3: Ratio of Banks' Total Loans Outstanding to Interest-Earning Assets[1]
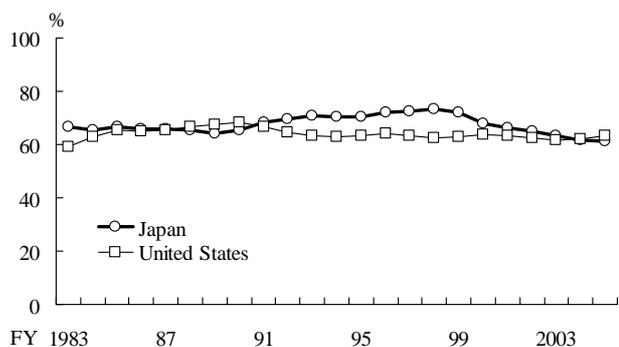
Note: *1*. The U.S. figures are calculated on a calendar-year basis.
Source: FDIC, "Historical Statistics on Banking."

The profitability of Japan's banking sector is much lower than that of its counterpart in the United States (Chart 4-1). Although the ROA of the U.S. banking sector declined substantially during the Latin American debt crisis in the 1980s and the S&L crisis from 1989 to 1991, it never became negative and asset profitability, at about 1.5 percent, is about five times as high as that of Japan's banking sector. Moreover, in terms of other net income, the performance gap between Japan's banking sector and its U.S. counterpart has been widening.

A comparison of interest margins, i.e., interest rate spreads between loans and deposits, reveals the underlying factors behind the net interest income gap between Japan's banking sector and its U.S. counterpart. Interest margins in Japan's banking sector have been at levels somewhat below 2 percent, whereas those in the U.S. banking sector have stayed at around 5-6 percent (Chart 4-2). Given that the share of loans in interest-earning assets is almost the same for Japan's banking sector and its U.S. counterpart, the finding here indicates that the low level of interest income of Japan's banking sector is attributable to the low interest margins in the loan business (Chart 4-3).

Decomposing interest margins using money market rates as a benchmark of both banks' funding costs and the yield of risk-free investments shows that the interest rate spreads on loans (i.e., the spreads between loan interest rates and money market rates) in the United States is much higher than those in Japan (Chart 4-2).

Likewise, the interest rate spreads on deposits (i.e., the spreads between money market rates and deposit interest rates) in Japan have been around zero, while in the United States they have stayed at a level somewhat below 2 percent, accounting for about 30 percent of

interest margins (Chart 4-2). Going forward, as money market rates pick up and interest rate spreads on deposits widen, it is possible that the differentials in interest margins in the loan business between Japan and the United States will narrow.

2. Size and profitability of the banking sector: an international comparison

Next, looking at time-series data for Japan and the United States, the size of Japan's banking sector, measured in terms of the sector's assets relative to nominal GDP, is exceptionally large, despite the contraction since the 1990s (Chart 4-4). This is often seen as an indication of "overbanking" in Japan -- not in terms of the number of banks, but relative to economic activity overall -- which is cited as the main cause for Japanese banks' low profitability.

In order to examine this issue in greater detail, the relationship between the size of the banking sector relative to economic activity and banking sector profitability is examined using data of the G10 countries for the period from 1994 to 2003. First, looking at the relative size of the banking sector across countries, i.e., the ratio of banking sector assets to nominal GDP, a higher asset-to-GDP ratio of the banking sector tends to be associated with a lower net interest income ratio. This suggests that there is a negative correlation between the size and the performance of the banking sector (Chart 4-5 [1]). Second, a higher asset-to-GDP ratio of the banking sector appears to be associated with a lower ROA, again suggesting a negative correlation between the size and the performance of the banking sector (Chart 4-5 [2]). The correlation between asset-to-GDP ratios and ROAs becomes more evident once Japan is excluded from the sample.

Chart 4-4: Ratio of Banks' Interest-Earning Assets to Nominal GDP[1]
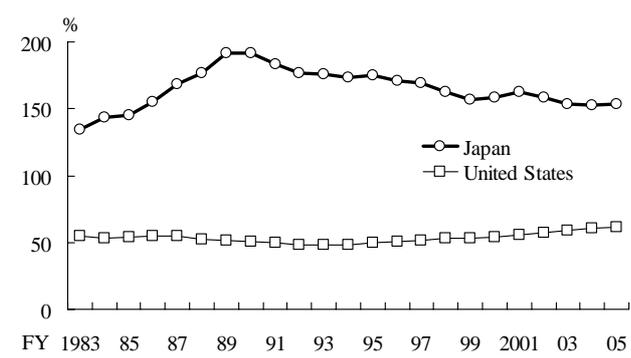
Note: 1. The U.S. figures are calculated on a calendar-year basis.
Source: FDIC, "Historical Statistics on Banking."

Chart 4-5: Size of Assets and Profitability of the Banking Sector in the G10 Countries[1]

(1) Net Interest Income Ratio and Size of Assets[2]

(2) ROA and Size of Assets[3]
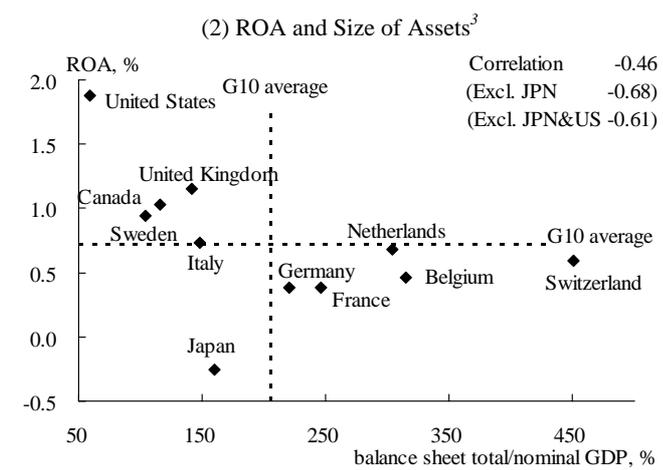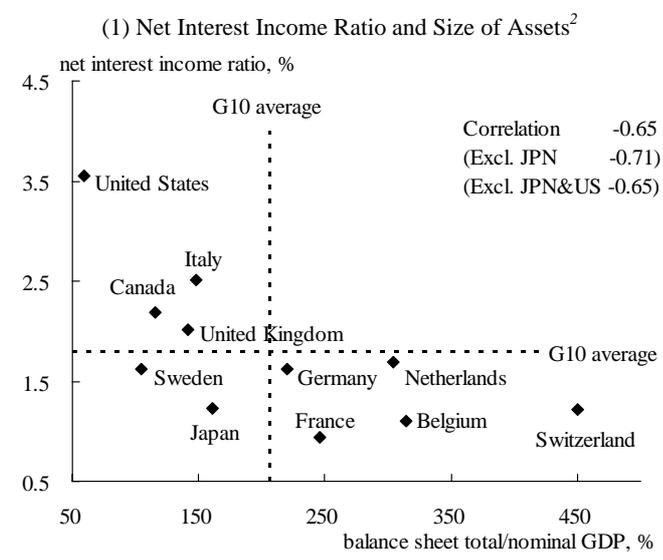
Notes: 1. Average of the ten years from 1994 to 2003.
2. Net interest income ratio = net interest income/balance sheet total.
3. ROA = income before tax/balance sheet total.
Sources: OECD, "Bank Profitability"; IMF, "International Financial Statistics"; Eurostat.

49

Looking at Japan more closely, while the asset-to-GDP ratio of Japan's banking sector is indeed higher than that of its U.S. counterpart, it is somewhat lower than that of the banking sectors of many continental European countries (see the horizontal axis of Chart 4-5). In addition, the net interest income ratio of Japan's banking sector is lower than the G10 average, though it is not significantly different from that of the continental European countries. This, however, is not the case for ROA, which is much lower for Japan's banking sector than for its U.S. and continental European counterparts (see the vertical axis of Chart 4-5). The difference in performance most likely reflects the relatively low level of non-interest income of Japan's banking sector and its high credit costs arising from the disposal of NPLs.

In sum, there appears to be a negative correlation in the G10 countries between the size and the performance of the banking sector. Measured by the ROA, the performance of Japan's banking sector is significantly lower than the G10 average, even after taking account of the relative size of the banking sector.

B. Consolidation and Profitability of Japan's Banking Sector

This section discusses the relationship between the ongoing consolidation of Japan's banking sector and its profitability.

1. Number and size of banks

Consolidation in the banking sector can be examined from two aspects: the number of banks and the size of banks. The number of financial institutions -- both banks and *shinkin* banks -- has continued to decline since the 1990s as part of the ongoing consolidation (Chart 4-6). Moreover, both among the major and the

Chart 4-6: Number of Japanese Banks

Sources: Shinkin Central Bank; Bank of Japan.
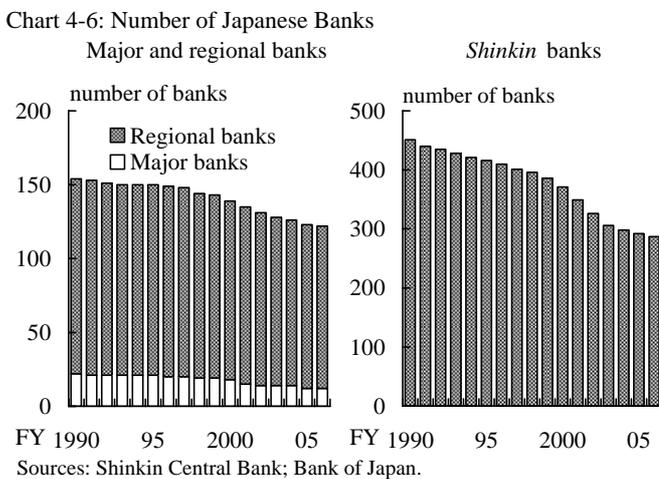
regional banks, the degree of concentration has been increasing, as is reflected in the growing share of assets held by major banks with assets exceeding 70 trillion yen, and regional banks with assets from 2 to 10 trillion yen (Chart 4-7). Against this background, the concentration in loan markets in most prefectures has also increased (Chart 4-8).

The above trends indicate that the consolidation in Japan's banking sector since the 1990s continues at a gradual pace. Up until the early 2000s, the consolidation process largely reflected the need to strengthen banks' operations in order to dispose of NPLs following the bursting of the asset price bubble. It has thus contributed to ensuring the stability of the financial system through a more efficient use of financial institutions' management resources.

2. Size and profitability of banks

Next, using panel data on regional banks that have not been involved in any mergers since the 1990s, it is examined whether increases in banks' assets lead to improvements in their profitability.

Specifically, three specifications of a two-way fixed effects model are estimated. These specifications respectively use (1) the interest margin on loans, (2) the general and administrative expense ratio, and (3) the net return on loans (defined as interest margins on loans minus the credit cost ratio) as the dependent variable, while the log-transformed total assets are used as the explanatory variable. Controlling for bank- and time-specific effects, the estimation measures the marginal effect of an increase in assets on the three dependent variables.

The estimation results show that an increase in a bank's assets reduces with statistical significance both the interest margin on loans and the general and

Chart 4-7: Market Share of Banks by Size of Assets

Banks with assets of:

⬚ 0-2 tril. yen   ◻ 2-10 tril. yen   ◻ 10-70 tril. yen   ■ over 70 tril. yen
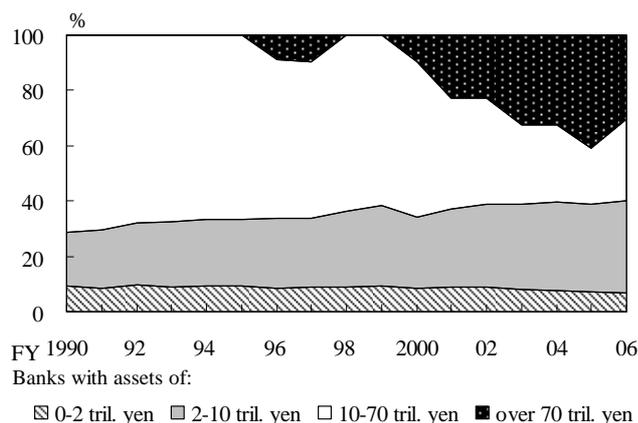
Chart 4-8: Change in the Market Share of the Two Largest Lending Banks in Each Prefecture[1]
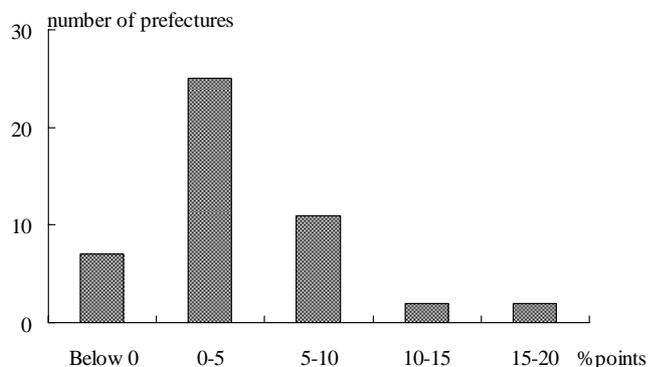
Note: 1. The horizontal axis represents the change in the market share of the two largest lending banks in each prefecture from fiscal 1998 to fiscal 2006.

Source: Bank of Japan, "Table of Deposits, Vault Cash, and Loans and Discounts Outstanding of Domestically Licensed Banks by Prefecture."

Chart 4-9: Size of Assets and Profitability of the Regional Banks[1]

(1) Size of Assets and Interest Rate Spread on Loans

interest rate spread on loans (deviation from the sample mean), %

Coefficient: -0.526
Standard error[2]: 0.054

total assets (in log, deviation from the sample mean)

(2) Size of Assets and General and Administrative Expense Ratio

general and administrative expense ratio (deviation from the sample mean), %

Coefficient: -0.446
Standard error[2]: 0.035

total assets (in log, deviation from the sample mean)

(3) Size of Assets and Net Return on Loans[3]

net return on loans of banks (deviation from the sample mean), %

Coefficient: -0.080
Standard error[2]: 0.062

total assets (in log, deviation from the sample mean)

Notes: 1. Based on fiscal year data for the regional banks for 1990 to 2005.
Data of banks whose total assets changed significantly due to
default or merger are excluded.
2. Heteroscedasticity robust estimates.
3. Net return on loans = interest rate spread on loans - general and
administrative expense ratio.

administrative expense ratio (Chart 4-9 [1] and [2]). The first result suggests that, at the margin, an increase in assets results in a decrease in the interest margin on loans as lending opportunities for individual banks remain almost unchanged. The effects stemming from the first and the second result cancel each other out, and consequently there appears to be no statistically significant effect of an increase in assets on the net return on loans (Chart 4-9 [3]).

The above results suggest the following two things. First, an increase in assets improves the efficiency of individual financial institutions' business operations through the reduction of the general and administrative expense ratio, thereby improving the efficiency of the financial system as a whole. Second, however, the effect of an increase in assets on the profitability of lending business is not found to be statistically significant.

Based on the estimation results shown above, it seems somewhat difficult that the profitability of Japan's banking sector will improve simply by increasing individual banks' assets. It is therefore important for individual financial institutions to instead improve their profitability by developing and delivering higher-value-added financial services in areas where they have a competitive edge.

C. Improving Risk-Return Balances

As it has become clear from the analysis so far in this chapter, Japan's banking sector needs to improve its profitability. To this end, Japan's banking sector needs to map out strategies as to how to enhance its profitability from a long-term perspective.

Each bank needs to seek its own way to expand interest margins. In this context, each bank needs to differentiate its financial services and diversify the

price-quality mix of its services in response to customer needs. In this process, banks are expected to shift their management resources to higher-value-added financial services, such as investment banking and global payment operations. To enable the development of such business, banks need to properly assess risk-return balances and thereby explore new avenues to make use of their capital through the reorganization of existing business lines.

This section considers ways to raise the profitability of Japan's banking sector overall through improving risk-return balances. Specifically, it focuses on three topics: (1) the profitability of corporate financial transactions based on long-term stockholdings; (2) the application of credit portfolio management (CPM) to improve risk-return balances in loan portfolios; and (3) boosting small and medium-sized enterprise (SME) financing.

1. The profitability of corporate financial transactions based on long-term stockholdings

Reflecting the increase in buyouts by PE funds and others in recent years, banks have faced growing requests from firms to purchase their stocks, and some banks have indeed increased their stockholdings (Charts 2-24 and 4-10). At the same time, market risk associated with stockholdings has become the largest among the different risk categories for the banking sector overall (Chart 1-23).

Banks look at stockholdings in client firms from a long-term business perspective: that is, stockholdings not only help banks maintain smooth business relationships with their client firms and yield stock dividends, but also provide other returns, such as loans and fee business. On the other hand, as part of their integrated risk management, banks need to use their

Chart 4-10: Change in the Amounts of Banks' Stockholdings Shown by the Number of Banks[1]
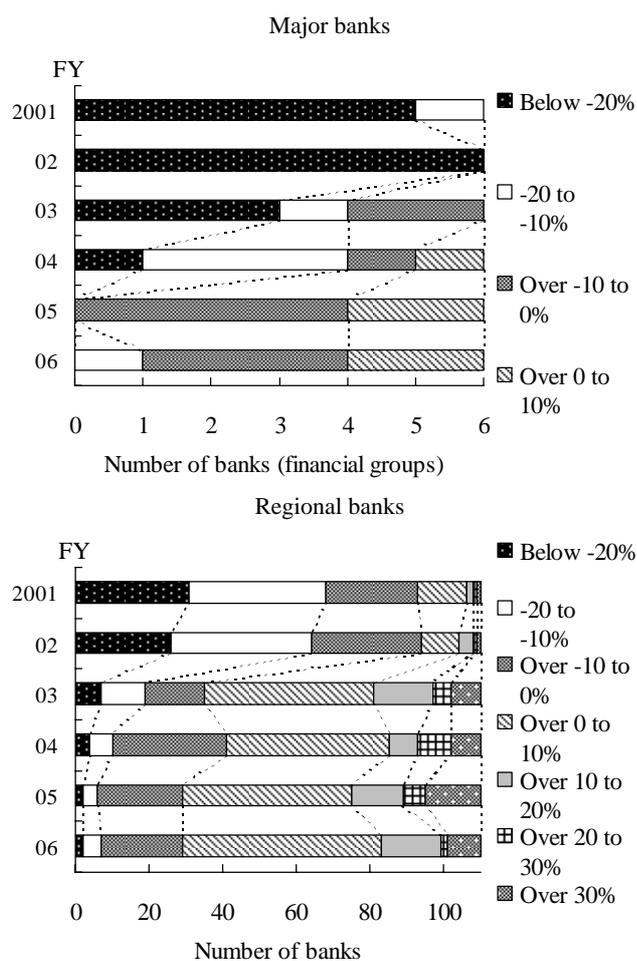
Note: 1. Year-on-year percentage changes in the amount of banks' stockholdings.

Chart 4-11: Method of Estimating the Total Profitability of
Banks' Transactions Based on Stockholdings[1]

Firms		Firms listed on the Tokyo, Osaka, and Nagoya stock exchanges for which external credit ratings at the end of each fiscal year are available.[2] Firms from the electricity, railroad, and financial sectors are not included.[3] Total number of firms for which observations are available: about 500.
Banks		The major and the regional banks
Returns	Dividends	Total dividends paid by company × share held by banks
	Fee income	Fees and commissions from operations including deposit and loan business, funds transfer services, and underwriting and registration of bonds × aggregate loans to firms/total loans to companies excluding those in the financial sector
	Interest income on loans	Loan interest income (interest paid by firms) - financing cost of funds (loans to companies × rate of financing cost)
Costs	Expected loss from a loan	Loans to each company[4] × default rate by credit rating
	Capital cost for stock price volatility risk	Stock price volatility risk (calculated using VaR; based on TOPIX; 99% confidence interval; stockholding period: 1 year; observation term: 5 years) × capital cost ratio (6%)
	Capital cost for unexpected loss on loans	(Maximum losses [99% confidence interval] - expected losses on loans) × capital cost ratio (6%)
	General and administrative expenses	Loans to each company[4] × general and administrative expense ratio[5]

Notes: 1. Details of the estimation method will be published in a forthcoming paper.
2. The credit ratings are obtained from Moody's Investors Service, Standard and Poor's, Rating and Investment Information, and Japan Credit Rating Agency.
3. Firms from these sectors are not included because information on interest expenses on loans is not available.
4. Unsecured exposure. Bank of Japan estimation.
5. General and administrative expense ratio = general and administrative expenses / amount outstanding of total interest-earning assets.

capital as a buffer against the market risk associated with stockholdings. In this context, banks incur capital costs from long-term stockholdings since they need to pay dividends to their shareholders.

Given the considerations above, the total profitability of banks' corporate financial transactions based on long-term stockholdings is estimated. The estimation is carried out based on approximately 500 listed companies for which external ratings are readily available.

In the estimation, the returns of banks' corporate financial transactions are calculated as the sum of dividends from stockholdings, interest income on loans, and fee income, while costs are calculated as the EL for loans, the cost of capital to cover the UL for loans, the cost of capital associated with stockholdings, and general and administrative expenses (Chart 4-11). Note that it is assumed in the analysis that firms only borrow funds from banks which hold their stocks, and banks receive the entire fee income from transactions with firms used in the analysis.

The estimation results show that costs have consistently exceeded returns since fiscal 2000, although the total profitability of banks' corporate financial transactions has improved due to decreases in the EL and UL for loans, reflecting upgrades in firms' credit ratings (Chart 4-12 [1]). The fact that total profitability remains negative despite the continued economic recovery suggests that banks' corporate financial transactions based on long-term stockholdings do not produce sufficient returns to cover costs. Moreover, it should be noted that the estimation results of total profitability are likely to be biased upward since the assumption that banks receive the entire fee income from firms in the analysis is likely to result in overestimation of their total profitability.

The above result remains largely unchanged even if net unrealized gains on stockholdings are considered. On the one hand, banks in fiscal 2005 held substantial unrealized stock gains exceeding the amount of market risk associated with stockholdings, meaning that the capital cost for the risk was zero. As a result, total profitability after considering net unrealized gains on stockholdings in fiscal 2005 becomes slightly positive (Chart 4-12 [2]). On the other hand, however, banks' total profitability is likely to be overestimated as a result of the assumptions. Given that total profitability after considering net unrealized gains on stockholdings is only slightly positive, it seems fair to say that, from a long-term perspective, the returns associated with stockholdings are hardly sufficient to cover the associated costs.

The above estimation procedure is also applied to calculate the profitability of banks' corporate financial transactions at the individual firm level. The results, shown in Chart 4-13, indicate that in fiscal 2005 total profitability was negative in transactions with around 60 percent of the firms covered in the analysis, although this represents a considerable improvement from earlier years and the share of firms with which transactions are profitable increased. It should be noted that because banks' returns are likely to be overestimated, it is possible that transactions which are estimated to be only just profitable here are in fact not profitable and actually generate losses. Looking at the trend in the share of banks' corporate financial transactions with total profitability of 1 percent or above, it has remained almost unchanged at around 8 to 9 percent, implying that the share of banks' corporate financial transactions with significant profitability is fairly limited.

The above results suggest that both overall and on an individual firm-level basis, banks' corporate financial

Chart 4-12: Total Profitability of Banks' Transactions Based on Stockholdings[1]

(1) Excluding Unrealized Gains

(2) Including Unrealized Gains
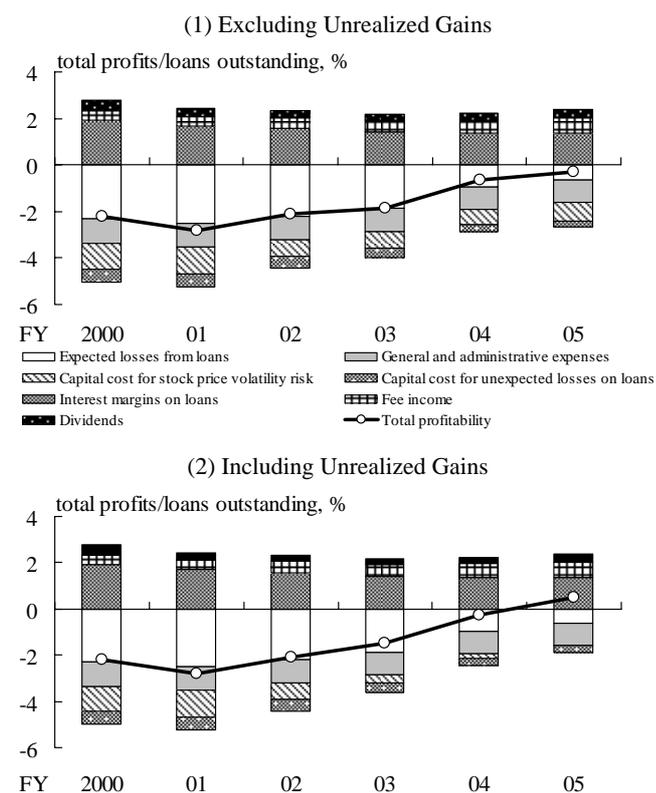
Note: *1*. Bank of Japan estimation.

Chart 4-13: Total Profitability of Banks' Transactions with Individual Firms Based on Stockholdings[1]
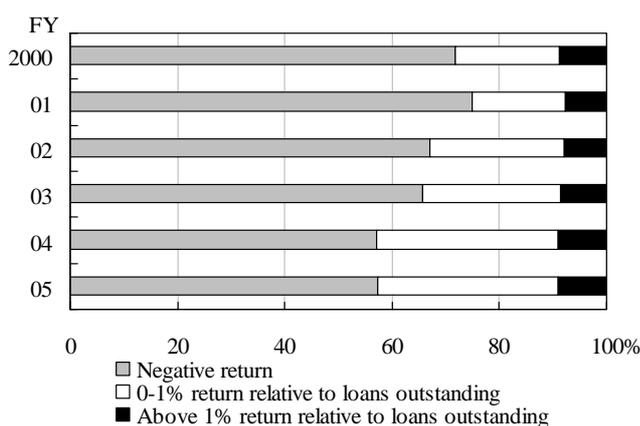
Note: *1*. Bank of Japan estimation.

transactions based on large and long-term stockholdings in general are not sufficiently profitable. Banks need to either increase the returns of such transactions and/or decrease the associated costs through a reduction in stockholdings in order to improve the profitability of transactions with large firms.

In the traditional loan business, interest margins on loans to large firms, which generally have high credit ratings, are narrow, and this makes it difficult for banks to improve returns relative to the associated risks (i.e., the EL and the capital cost of covering the UL). Therefore, banks need to comprehensively reorganize their business with large firms through developing and delivering higher-value-added financial services, such as investment banking and global payment operations.

Moreover, given that banks have already allocated a large amount of capital as a buffer against market risk associated with stockholdings, they need to carefully weigh the costs and benefits of maintaining or increasing their stockholdings for each individual firm.

2. The effects of credit portfolio management

By the application of credit portfolio management (CPM), financial institutions attempt to evaluate the risk-return balances of their loan portfolios and conduct credit risk transfers, thereby enhancing the soundness and profitability of their loan portfolios.

CPM is expected to contribute to improving banks' risk-return balances by reducing loan concentration to large borrowers or particular industries or regions, thereby enhancing their risk-taking capacity. So far, only a few major banks in Japan have introduced CPM (see Box 9 for details). Thus, how effective CPM techniques are and the extent of loans to which they are applicable are still unclear.

The analysis below therefore examines the effects of CPM techniques on reducing industry concentrations in banks' loan portfolios. More precisely, the efficiency indicator of banks' loan portfolios used in the March 2007 issue of the *Financial System Report* is employed to estimate the size of loan portfolios that are potentially transferable between banks and the extent of the resultant improvements in risk-return balances.

The efficiency indicator of banks' loan portfolios is calculated using the mean-variance approach and sums up the absolute values of the difference between the loan share of each industry in a benchmark portfolio that maximizes risk-adjusted returns and the loan share in actual loan portfolios (Chart 4-14). Thus, the estimation of the efficiency indicator of the loan portfolio for each bank reveals whether it lends too much or too little to a particular industry relative to the benchmark portfolio. The loan volume to which CPM is potentially applicable and the effects of CPM on improvement of risk-return balances are then calculated by a simulation exercise in which loans to a particular industry are transferred from a bank that has over-lent to that industry to another bank that has under-lent to that industry.

First, looking at the loan volume to which CPM is potentially applicable, shown in Chart 4-15, indicates that until the turn of the millennium the improvement in the efficiency of loan portfolios through CPM was in the region of 0.02 point, meaning that the loan volume to which CPM was potentially applicable remained at about 2 percent of overall loan portfolios. During the 2000s, in accordance with the improvement in the efficiency indicator of loan portfolios, the effects of CPM on improvement of loan portfolio efficiency increased, rising to around 0.04 point in fiscal 2005. This means that the loan volume to which CPM was potentially applicable became as high as 4 percent of

Chart 4-14: The Effects of CPM[1,2]
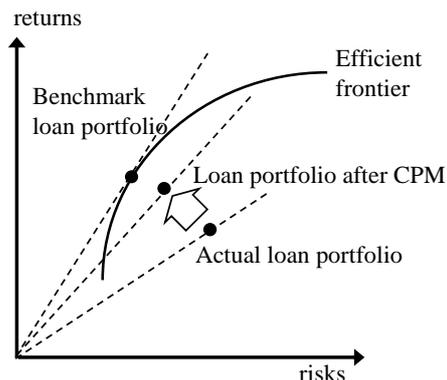
$$Max_{a_1,\cdots,a_n} \frac{\sum_{i=1}^{n} a_{i,k} E[X_i]}{\sqrt{\sum_{i=1}^{n} a_{i,k}^2 Var[X_i] + 2\sum_{i=1}^{n}\sum_{j=i+1}^{n} a_{i,k} a_{j,k} Cov[X_i, X_j]}},$$

$$s.t. \quad \forall i = 1,\cdots,n, \quad \tilde{a}_{i,k}/1.5 \leq a_{i,k} \leq 1.5\tilde{a}_{i,k} \quad \sum_{i=1}^{n} a_{i,k} = 1.$$

$$\delta_k = \sum_i \left| a_{i,k}^* - \tilde{a}_{i,k} \right| \leftarrow \text{Indicator for the efficiency of bank loan portfol}$$

Notes: 1. Data used in the calculation: Risk-adjusted returns from loan portfolios are obtained by subtracting the default rate from lending rates. The correlation matrix is obtained from stock prices by industry.

2. For details on the indicator for the efficiency of bank loan portfolios, see Otani, Akira, Shigenori Shiratsuka, and Takeshi Yamada, "Distortions in Resource Allocation and Bank Lending: The Malfunction of Financial Intermediation," Bank of Japan Working Paper, No.07-E-6, Bank of Japan, 2007.

Chart 4-15: Loan Volume to Which CPM is Potentially Applicable[1,2]
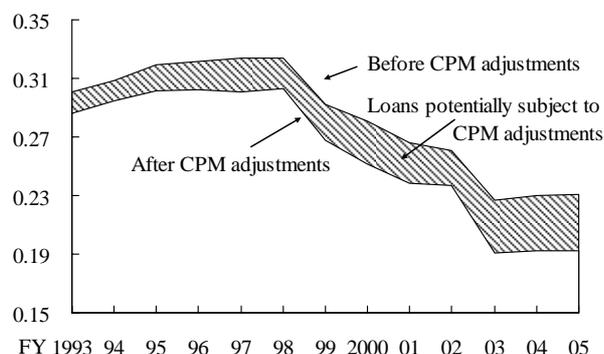
Notes: 1. Bank of Japan estimation.
2. The vertical axis represents the indicator for the efficiency of bank loan portfolios. A lower value indicates a more efficient portfolio.

total loan portfolios.

The above observations indicate that in the past there was little room for improving loan portfolio efficiency through CPM, since most banks over- and under-lent to similar industries. More recently, however, the scope for implementing CPM has increased as lending to unprofitable industries has decreased and loan portfolios have become more diversified.

Next, in order to gauge the effects of CPM on improvement of risk-return balances, the Sharpe ratios (i.e., the ratio of loan portfolio returns to risks) of the actual loan portfolios of the banking sector overall and hypothetical loan portfolios after implementing CPM are compared (Chart 4-16). The results indicate that the loan portfolios after implementing CPM have consistently higher Sharpe ratios than the actual portfolios because they are closer to the benchmark portfolios with the maximum Sharpe ratio. The differences between the two show the effects of CPM on improvement of risk-return balances, and according to the calculations here, the Sharpe ratio of the banking sector overall improves by about 10 percent.

Banks construct their loan portfolios based on their competitive edge and their particular customer base in terms of region, industry, and firm size. However, without any adjustment, such loan portfolios are likely to be distorted in terms of their risk-return balances. The above estimates suggest that the loan volume to which CPM is potentially applicable and the effects of CPM on improvement of risk-return balances are significant. Consequently, the functioning of the banking sector overall in financial intermediation is likely to be strengthened considerably if not only the major banks but also the regional banks proactively implemented CPM.

Chart 4-16: Improvement in the Sharpe Ratio of the Banking Sector Overall through CPM Adjustments[1]
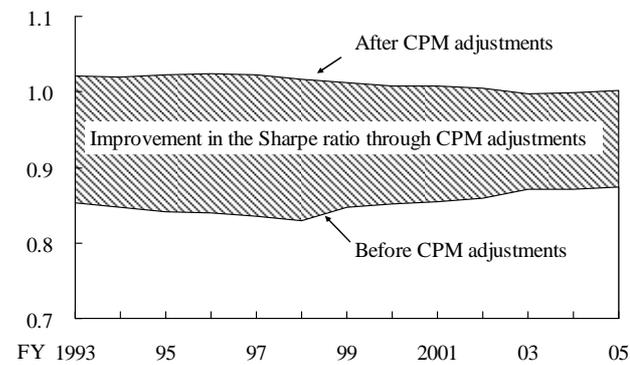

Note: 1. Bank of Japan estimation.

Moreover, as Box 9 shows, for the proper valuation of loans, which is a prerequisite for CPM, banks in Europe and the United States set loan interest rates giving due attention to credit risk premiums determined in credit markets. Such practices facilitate the proper valuation of loans, thereby contributing to the expansion of secondary markets for bank loans and enhancing the profitability of financial institutions' loan business through the more efficient setting of interest rates.

3. Small and medium-sized enterprise financing

In general, lending to small and medium-sized enterprises (SMEs) differs substantially from lending to large firms because "hard" information (i.e., public information) is less readily available, resulting in significant information asymmetries between borrowers and financial institutions. Consequently, banks deem it necessary to accumulate qualitative or "soft" information through long-term relationships in order to assess borrowers' creditworthiness in SME financing. In addition, market assessments on the credit risk premium of SMEs are rarely available, even though such market assessments are a prerequisite for implementing CPM. As a result, it is considered quite difficult to make proper assessments of risks inherent in SME financing and to rigorously examine its profitability.

However, in the United States, large banks have been actively involved in SME financing based on credit scoring. Credit scoring, developed in the 1990s, employs statistical models to quantify the creditworthiness of SMEs based on readily available quantitative information such as firms' financial statement data and business owners' personal credit data. In Japan, credit scoring has been introduced mainly by the major banks since the turn of the

Chart 4-17: Amount of Loans Based on Credit Scoring at Regional Financial Instituions[1]
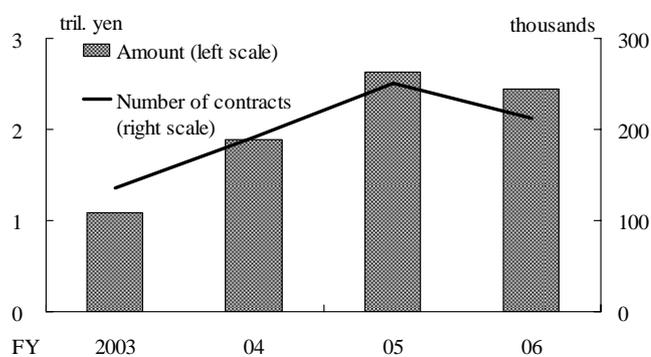
Source: Financial Services Agency.

Chart 4-18: Credit Bureaus in Japan

Name	Members	Number of members (firms)	Number of data held (thousand units)
Federation of Credit Bureaus of Japan	Consumer finance companies	3,406 (March 2006)	22,240 borrowers (March 2006)
Tera Net	Consumer finance companies, credit card companies, and credit companies	148 (July 2007)	31,870 cases (July 2007)
Personal Credit Information Center	Banks and credit card companies	1,476 (March 2006)	79,890 cases (March 2006)
Credit Information Center	Credit card companies and credit companies	746 (June 2006)	404,670 cases (June 2006)
CCB	Consumer finance companies, credit companies and credit card companies	528 (June 2006)	253,580 cases (June 2006)

Sources: Liaison group of consumer finance companies, "*TAPALS Hakusho* (TAPALS White Paper), 2006"; published accounts.

millennium, and has subsequently spread to the regional banks. The amount of loans outstanding based on credit scoring at the regional banks increased from around 1 trillion yen in fiscal 2003 to more than 2 trillion yen in fiscal 2006 (Chart 4-17; see Box 10 for a discussion of challenges in using credit scoring in SME financing in Japan).

A highly reliable credit scoring model enables banks to make a proper assessment of risks inherent in SME financing and its profitability. However, it is becoming increasingly clear that, in many cases, the credit scoring models used by Japanese banks are not sufficiently reliable and observed default rates at some banks exceed the default rates projected by the models.

Possible reasons for the low reliability of credit scoring models in Japan are highlighted by a comparison with the United States, where credit scoring was first introduced.

First, credit scoring models in Japan typically do not incorporate data on the personal credit history of the business owner. In contrast, credit scoring models in the United States typically rely on such data from credit bureaus, which provide personal credit information to a broad range of clients (see Box 11 for details). However, in Japan, membership of a credit bureau in many cases is open only to a very limited range of clients in the same financial service category, such as banks, consumer credit companies, and consumer finance companies (Chart 4-18). As a result, personal credit history data accumulated by non-banks are not readily available to banks, thus making it difficult for Japanese banks to incorporate data on the personal credit history of business owners into their credit scoring models.

Second, the infrastructure to detect fraudulent applications is not well developed in Japan. In fact,

information on consumer and commercial fraud is normally held only by the respective financial institution. In contrast, in the United States, credit bureaus have constructed a nationwide fraud database of consumer and commercial fraud cases and offer services to clients in detecting fraudulent applications.

Third, Japanese banks apply credit scoring to a relatively wide range of SMEs. In the United States, credit scoring is mainly applied only to relatively small SMEs, as the reliability of credit scoring models deteriorates when they are applied to relatively large SMEs. Japanese banks, however, apply credit scoring even to relatively large SMEs and loans of a relatively large size when compared with the United States. This seems to be another factor behind the lower reliability of credit scoring models in Japan.

In this context, some encouraging developments are taking place in Japan. The amendment of the Money-Lending Business Law in 2006, after its enforcement, will enable lenders to exchange information with regard to, for example, clients' debt balances. Some credit bureaus have begun gathering borrower information and making information on borrowers' creditworthiness available to financial institutions across a wide range of financial service categories. Although it is too early to assess the effects of these developments, they indicate that the infrastructure to raise the reliability of credit scoring models is gradually developing.

In extending loans or making investments, banks need to make a proper assessment of associated risks of loans or investments and rigorously examine their profitability. This is also the case for financial transactions with SMEs, in which long-term relationships play a greater role. Banks need to make a proper assessment of risks and returns from long-term

transactions with SMEs, in order to extend loans and provide necessary assistance to their business operations. In this context, once the necessary infrastructure, including mechanisms enabling banks to make use of credit bureaus, is put in place to develop reliable scoring models, credit scoring is expected to make an important contribution, especially with regard to relatively small loans. If methods for the proper assessment of SME financing are improved and such methods become more commonplace, this should provide ample room for banks to improve their profitability. At the same time, SMEs should also benefit, such as through reductions in risk premiums on loan interest rates and in screening and other associated costs with borrowing.

Box 9: Credit Portfolio Management in Japan

The Center for Advanced Financial Technology in Financial Systems and Bank Examination Department of the Bank of Japan, in collaboration with practitioners of credit portfolio management (CPM) at major Japanese banks, organized the Study Group on Credit Portfolio Management in 2006. The Study Group published a report entitled "Credit Portfolio Management at Japanese Financial Institutions -- Current Status and Challenges" in April 2007. The report presents the current state of CPM practices at major Japanese banks. It also discusses issues and challenges in advancing CPM. This box provides a brief discussion of current CPM practices in Japan based on this report.

CPM allows banks to evaluate the risk-return balances of their loan portfolios, thereby enhancing the soundness and profitability of the portfolios via credit risk transfer transactions. CPM generally aims at three objectives: the reduction of credit concentration risk, the reduction of overall credit risk, and the optimization of risk-return balances. The Japanese major banks have introduced CPM mainly with a view to the first objective, that is, to manage credit concentration risk. The reason is that even though banks have made considerable progress in the disposal of nonperforming loans, credit concentrations to certain clients or industries persist as a result of remaining lending practices associated with the main bank system, mergers among the major banks, and business strategies targeting specific segments of the economy.

The major banks have devised loan portfolio management strategies by making use of a number of indicators and carrying out stress-testing exercises. Indicators currently used include risk-related indicators -- such as the expected loss (EL) and the unexpected loss (UL), and risk-adjusted profit indicators, including profit rates adjusted for credit costs -- regarding overall loan portfolios as well as sub-portfolios based on credit ratings, industries, groups, and firms. At present, loan portfolio adjustments are implemented mainly at the time of loan originations by adjusting loan amounts, loan rates, and maturities. Yet, such adjustments tend to take time and lack flexibility. The major banks thus engage in the exchange of loan portfolios with other banks, the purchase of credit default swap (CDS) protection, and the sale and securitization of loan assets. However, CPM through market transactions remains comparatively limited due to various impediments, such as the fact that the process of loan portfolio exchanges, including the preceding negotiations between purchasers and sellers, is often time-consuming. Moreover, credit markets in Japan, including the CDS market, are still relatively small.

The Study Group's report also points out two issues that need to be addressed to make further progress in CPM in Japan: first, the proper assessment of the economic value of loan transactions needs to be further promoted; and second, the liquidity of secondary loan markets needs to be raised. The report then describes measures to respond to these issues.

As for the first issue, in order to increase the reliability of assessments of the economic value of loan transactions, the major banks have already started calculating the overall profitability of credit transactions until maturity (i.e., assumed net profits until maturity minus assumed EL until maturity and assumed capital cost until maturity). In addition, the report refers to the practice of credit transfer pricing, an internal mechanism that

introduces credit market valuations in the loan origination process and is being employed by the most advanced banks in the United States and Europe.

With regard to the second issue, loan assets in Japan are generally regarded as non-transferable. Therefore, adding covenant clauses that signal borrowers' consent to the future transfer of a credit loan would help deepen secondary loan markets.

The implementation of CPM will help banks enhance the efficiency of their business operations. It will also contribute to the development of secondary loan markets, enhance the functioning of the financial market and increase the efficiency of resource allocation in the economy. Furthermore, it will invigorate the operation of individual banks as well as Japan's financial system as a whole.

Reference:
Study Group on Credit Portfolio Management, "Credit Portfolio Management at Japanese Financial Institutions -- Current Status and Challenges," Center for Advanced Financial Technology, Financial Systems and Bank Examination Department, Bank of Japan, April 2007.

Box 10: Credit Scoring in Small and Medium-Sized Enterprise Financing

Credit scoring is an approach that, using statistical methods and readily available quantitative information, estimates credit risk of new customers, thereby helping banks decide whether or not to extend loans to customers without long-term relationships. Credit scoring provides banks with an effective way to acquire new customers and thereby manage their loan portfolios by increasing the number of small loans and diversifying loan portfolios across regions and industries.

Against this background, the major banks have actively introduced credit scoring in their loan business with new customers, while the regional banks have started using it not only in dealing with new customers but also when making loans to existing customers in order to cut the time and cost of loan-screening (Chart B10-1).

However, credit scoring does not necessarily lessen the importance of soft information in small and medium-sized enterprise (SME) financing. On the contrary, the regional banks need to strike a balance between making the most of credit scoring and bolstering their comparative advantage in collecting soft information on customers via long-term business relationships.

In this context, a recent survey shows that the smaller an enterprise is, the less satisfied it tends to be with its main bank relationship (Chart B10-2). This suggests that there is room for improvement in banks' relationships with SMEs through the implementation of new loan practices, which should also help to raise the profitability of SME financing. It is in this context that credit scoring, which by its very nature is only applied to small businesses, can be an effective tool for banks to manage their lending business.

Chart B10-1: Survey of Banks' Credit Scoring[1]

(1) Banks' Use of Credit Scoring by Type of Borrower (New/Existing)

Type of borrower	Share (%)
Only existing borrowers	12
More than 80% are existing borrowers	28
50-79% are existing borrowers	20
Less than 50% are existing borrowers	20
Only new borrowers	12
Borrower type unidentified	8

(2) Objectives/Reasons for Using Credit Scoring

Objectives/reasons	Share (%)
To reduce the time of making a loan	93.9
To reduce the cost of making a loan	75.8
To find potential customers	48.5
To set the interest rates in a proper manner	39.4

Note: 1. Based on the responses of three major banks, 30 regional banks, and four other banks.
Source: Masuda, Yasuyoshi, and Arito Ono, "Credit Scoring no Genjo to Teichaku ni Muketa Kadai (The Current Status of Small Business Credit Scoring in Japan: Based Upon Experience in the United States and Survey Evidence on Its Use by Japanese Banks)," *Mizuho Soken Ronshu* (Mizuho Research Review), No.1, 2005.

Chart B10-2: SMEs' Satisfaction with Their Main Bank
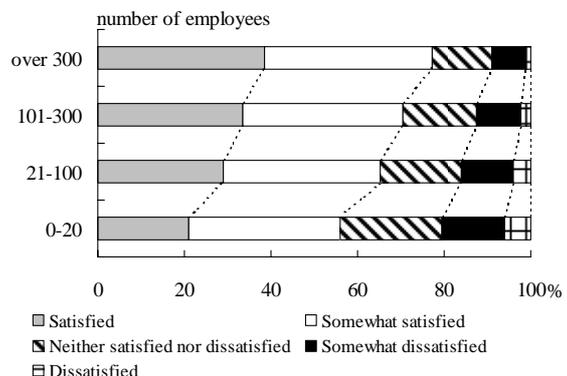
Source: Small and Medium Enterprise Agency, *Chusho Kigyo Hakusho* (White Paper on Small and Medium Enterprises in Japan), June 2007.

In order to achieve sustained growth of Japan's economy, it is important that financial institutions -- and not only the major banks but also the regional financial institutions including the regional banks -- make use of their respective competitive edge to boost the efficient provision of needed funds to SMEs. In this context, it is expected that banks make use of various lending methods, ranging from credit scoring-based lending relying on quantitative information to lending arrangements relying on qualitative information, thereby bolstering the functioning of the banking sector overall in financial intermediation.

Box 11: Credit Bureaus in the United States[1]

Credit bureaus in the United States are commercial firms which gather and provide credit information on borrowers (individuals and firms), and based on this information provide services related to credit assessment and marketing.

In 1970, there were more than 2,000 credit bureaus in the United States, but the following two decades saw a substantial consolidation of the industry through mergers and takeovers aimed at exploiting economies of scale in the construction of databases. At present, there are three major credit bureaus: Experian, Equifax, and TransUnion (Chart B11-1).

Chart B11-1: Major Credit Bureaus in the United States

	Experian	Equifax	TransUnion
Year of establishment	1980	1899	1968
Database (United States only)	15 million businesses, 215 million consumers	50 million businesses, 310 million consumers	More than 200 million consumers and businesses

Two characteristics of credit bureaus in the United States are worth noting. First, they collect and store credit information from all creditors, regardless of their type of business. Second, they provide credit information to clients who are entitled to use such information at their discretion.[2]

Credit bureaus in the United States collect a wide range of credit information on individuals from creditors (i.e., members of the credit bureaus). When creditors furnish credit bureaus with consumer credit data, a standard format, set by the Consumer Data Industry Association (CDIA) -- a trade association representing consumer information companies -- is used. When information is stored in the databases, the Social Security Number is used to identify individuals and collate personal credit information collected from a variety of sources. Databases typically contain information pertaining to an individual's balance of debt, payment history, and credit delinquency. Information on an individual's career history, academic record, whether they have been suspected of fraud, and public records on personal bankruptcies, liens, and court judgments is also held in the databases.

Credit bureaus in the United States provide not only credit information but also develop and sell credit scoring models using their databases.[3] In addition, they provide customer-targeted services by screening information that matches the needs of their clients. Furthermore, they have constructed a nationwide fraud database of consumer and commercial fraud cases and offer services to clients in detecting fraudulent applications.

Notes: *1*. The description in this box relies on "America no credit bureau to wa?" (Credit Bureaus in the United States: What Are They?), *i* (a magazine on consumer credit information), No. 64, Federation of Credit Bureaus of Japan, 2006.
   2. According to Section 604 of the Fair Credit Reporting Act (FCRA), consumer reports can be used for purposes related to:
   (1) credit transactions; (2) account reviews; (3) insurance issues; (4) the granting of various types of licenses; and
   (5) employment-related matters.
   3. Institutions other than credit bureaus, such as Fair Isaac & Company, for example, also develop and sell credit scoring models. Some banks develop their own scoring models using credit bureau data.