BANK OF KOREA

Financial Stability Report

2024. 6

Financial stability refers to a condition in which the financial system works smoothly with all of its key components satisfactorily performing their roles: financial institutions carrying out their financial intermediary functions, market participants maintaining a high level of confidence in the financial market, and the financial infrastructure being well developed.

Financial stability is regarded as one of the policy goals that must be achieved, together with price stability and economic growth, for a sustainable economic development. Policy authorities around the world thus devote great efforts to achieving financial stability.

As part of its conduct of macroprudential policies, the Bank of Korea has been publishing the Financial Stability Report on a biannual basis since 2003, analyzing and assessing the potential risks inherent in the Korean financial system and suggesting related policy challenges.

Notably, under the revised Bank of Korea Act of 2011 (Article 96), the Bank of Korea is obliged to draw up a Financial Stability Report and submit it to the Korean National Assembly at least two times each year.

The Bank of Korea is devoting its best efforts to qualitative improvement of the Financial Stability Report. This report takes the potential risks to financial stability highlighted until May 2024 as the objects of its analysis.

It is hoped that this Financial Stability Report will help financial market participants, regulators and policymakers to recognize the risk factors inherent in the financial system at an early stage, and deal with them appropriately.

This Financial Stability Report is published in accordance with the provisions of Article 96 of the Bank of Korea Act, and upon the resolution of the Monetary Policy Board.

June 2024

Rhee, Chang Yong
Governor
Bank of Korea

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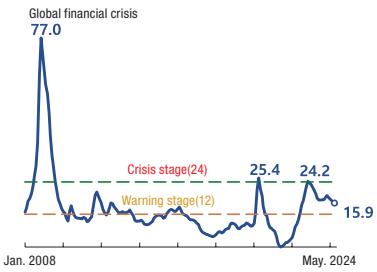
Financial stability report at a glance

Overall Assessment of Financial Stability Situation

Financial Stress Index (FSI)



Overall, Korea's financial system has remained stable.

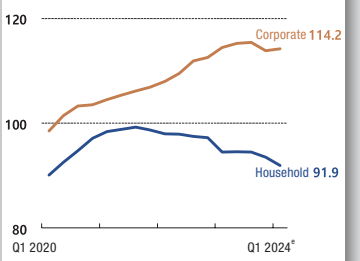
Financial markets have been generally stable amid the recovery of the real economy, and the resilience of financial institutions and the external sector has remained strong. However, concerns about the deteriorating asset quality of financial institutions, such as the rising delinquency rate of non-bank financial institutions due to the ongoing repayment burden on borrowers and the sluggish real estate PF market, remain a potential source of financial instability.

Financial stability situation by sector and Resilience of financial system

Financial Vulnerability Index (FVI)

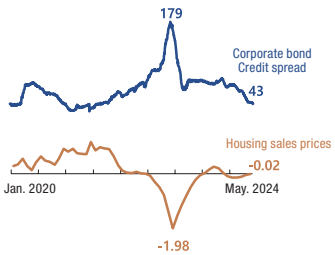
Financial imbalances have eased

Private Credit Leverage (%)



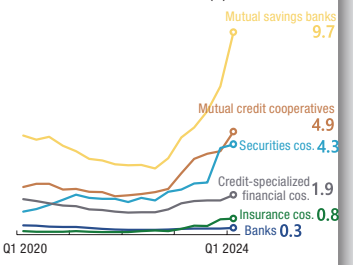
Private credit-to-nominal GDP ratio declined

Asset market (bp, %)



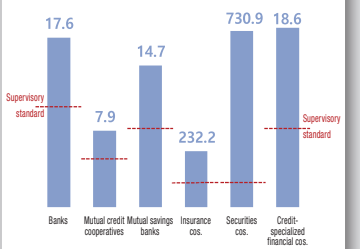
Credit spreads of corporate bonds narrowed
Housing sales prices in certain regions have turned upward

Substandard-or-below loan ratio (%)



Asset quality of non-bank financial institutions has deteriorated

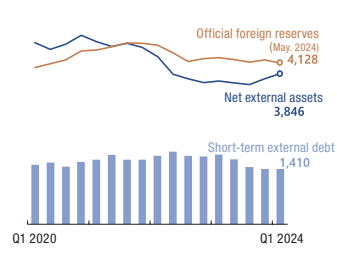
Financial institutions' capital adequacy ratios (%)



Resilience of financial system has remained strong

External payment capacity

(100 million dollars)



Korea's net external assets increased
Short-term external debt decreased

Executive Summary

Overall Assessment of Financial Stability Situation

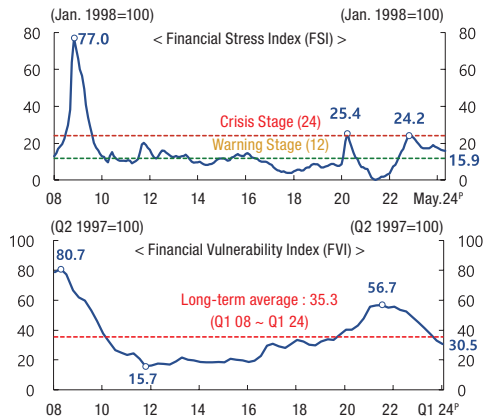
Korea's financial system has remained stable overall, as the resilience of financial institutions and Korea's external payment capacity maintained favorable conditions amid a recovery in the real economy. However, concerns about the asset quality of financial institutions, driven by persistent debt repayment burdens on borrowers and a sluggish real estate project financing (PF) market, remain a potential source of financial instability.

The Financial Stress Index (FSI),[1] which provides a comprehensive measure of short-term instability in the financial system, continued its gradual downward trend, reaching 15.9 in May 2024. Despite this decrease, the index remains at the warning stage, influenced by rising delinquency rates at non-bank financial institutions.

Meanwhile, potential vulnerabilities within the financial system are deemed to be continuing to ease from a medium- to long-term perspective. Financial imbalances have been steadily diminishing, with the housing market remaining stable overall amid a decline in private credit leverage. In addition, the soundness of the external sector has remained favorable despite uncertainties stemming from global geopolitical risks and exchange rate volatility.

In this context, the Financial Vulnerability Index (FVI),[2] a metric for assessing medium- to long-term vulnerabilities in the financial system, stood at 30.5 in the first quarter of 2024, slightly below its long-term average of 35.3 since 2008.

Financial Stress Index (FSI)[1)3)] and Financial Vulnerability Index (FVI)[2)3)]



Notes: 1) A comprehensive index (on a scale of 0-100) is derived by normalizing 20 monthly indicators from the financial and real sectors, representing short-term financial system instability. Thresholds for warning and crisis stages are set at 12 and 24, respectively, based on the 'noise-to-signal ratio' method
2) A comprehensive index (0-100) derived by normalizing 39 indicators related to three assessment factors (asset prices, credit accumulation, and financial system resilience) representing medium to long-term financial vulnerability.
3) The index value may change in the future due to the time-varying nature of the parameters.

Source: Bank of Korea

Financial Stability Situation by Sector

In terms of vulnerabilities for each sector in Korea's financial system, private credit lever-

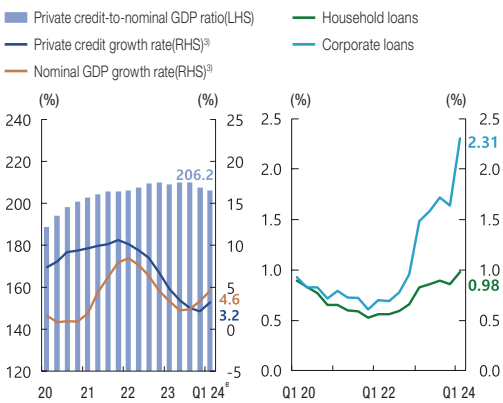
1) The FSI is a comprehensive index (0-100), calculated by normalizing 20 monthly stress indicators of the real economy and financial sectors. The thresholds for the "warning" and "crisis" stages are set at 12 and 24, respectively, based on the noise-to-signal method. For details, refer to Box 7 "Results of Financial Stress Index (FSI) Reform," Financial Stability Report, December 2023.

2) The FVI is a comprehensive index (0-100), calculated by normalizing 39 indicators related to three assessment factors: asset prices, credit accumulation, and financial system resilience.

age continued to hover at a high level in the credit market. However, it has decreased since the third quarter of 2023 as the real economy has recently demonstrated a more favorable growth trend compared to private credit expansion. Household credit maintained subdued growth due to contractions in unsecured loans and merchandise credit, which offset an increase in household debt mainly driven by home mortgage loans extended by banks. Although the household debt repayment burden in terms of income and assets decreased overall, delinquency rates on household loans continued to climb, particularly among vulnerable borrowers. Corporate loans have seen steady growth, albeit at a slower pace, driven by lending to small and medium-sized enterprises (SMEs). Amid a continued increase in the delinquency rates of corporate loans, however, the debt repayment capacity in the corporate sector has weakened due to the sluggish business conditions in major industries and an exacerbated interest burden.

Private Credit[1]-to-nominal GDP[2] ratio

Delinquency rates on household and corporate loans

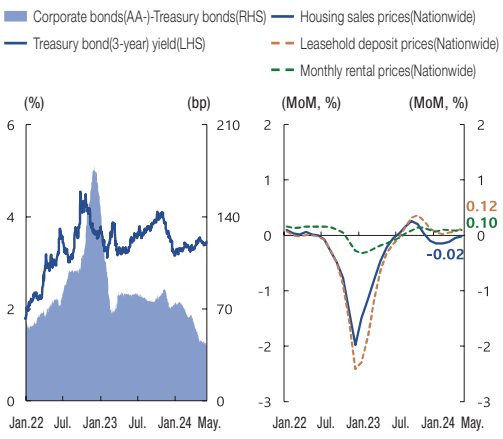


Notes: 1) Based on flow of funds statistics; estimated figure for Q1 2024.
2) Sum of nominal GDPs for the given and three preceding quarters.
3) Year-on-year basis.

Sources: Bank of Korea, Financial institutions' business reports

The asset market remained stable overall, experiencing narrower credit spreads and reduced volatility, despite fluctuations in market interest rates and stock prices, driven by shifting expectations for the monetary policy stances of major economies, geopolitical risks, and inflation and economic trends both at home and abroad. In the housing market, sales prices continued to decline on average across the country as a result of elevated lending rates and the government's tightening of household debt management policies. However, there was a shift to an upward trend in certain areas, particularly in the Seoul metropolitan area. Meanwhile, leasehold deposits and monthly rental prices experienced a continuous upward trend, driven by the growing demand for leasehold and rental housing in line with the shrinking demand for housing purchases. The volume of housing sales transactions remained below its long-term average, while that of unsold new homes showed a modest growth. In the commercial real estate sector, office rental prices maintained an upward trend, whereas retail rental prices remained sluggish.

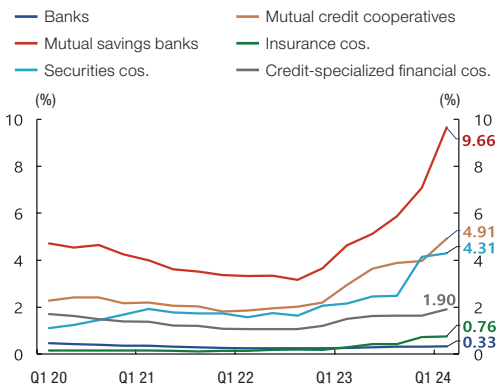
Korea Treasury bond (KTB) yields, corporate bond credit spreads, and rates of increase in housing prices



Sources: Korea Financial Investment Association, Korea Real Estate Board

The soundness of financial institutions varied somewhat across financial sectors. Banks and insurance companies maintained favorable profitability amid expanding asset growth. Conversely, non-bank deposit-taking institutions, such as mutual credit cooperatives and mutual savings banks, experienced a significantly slowed asset growth and deteriorating profitability due to their tightened lending attitudes in response to an increase in non-performing loans. Securities and credit-specialized financial companies exhibited growth in assets but faced a decline in profitability overall. Meanwhile, asset quality deteriorated across all financial sectors. In the banking sector, the increase in the substandard-or-below loan ratio was constrained, in part by banks' proactive efforts to clean up non-performing loans, while the non-banking sector saw a significant rise in the ratio, influenced by continyed depression in the real estate PF market.

Substandard-or-below loan ratio



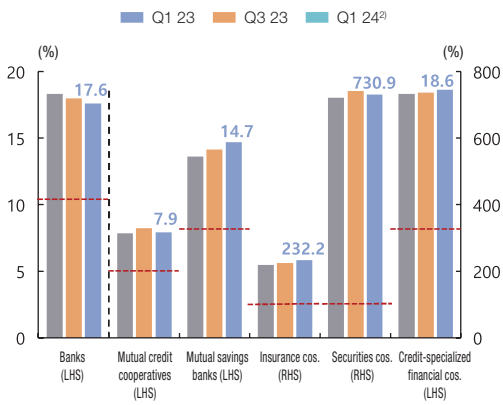
Source: Financial institutions' business reports

Regarding capital flows, domestic portfolio investment by foreigners showed net inflows in both stocks and bonds, boosted by ongoing global preference for risky assets and expectations of improved performance among domestic corporations. As for overseas portfolio investment by residents, there was a net increase in both stocks and bonds, driven by anticipated improvements in business conditions of IT firms and expectations of interest rate cuts by the U.S. Federal Reserve this year. However, it is crucial to note the potential for heightened volatility in capital flows, stemming from changes in major countries' monetary policy stances and developments in geopolitical risks.

Resilience of the Financial System

Examining each sector in terms of resilience, which refers to the financial system's capacity to withstand domestic and external shocks, the resilience of financial institutions was assessed to remain stable. Despite a decline in the provision coverage ratio across most sectors due to an increase in the amount of substandard-or-below loans, each sector's capital adequacy ratios and liquidity ratios significantly exceeded the regulatory standard.

Financial institutions' capital adequacy ratios[1)]



Notes: 1) The red dotted lines represent the regulatory standard for each sector
2) As of end-Q4 2023 for insurance companies
Source: Financial institutions' business reports

Korea's external payment capacity also remained solid. Net external assets shifted to an upward trend, and external soundness indicators improved, evidenced by a decline in the short-term external debt-to-official foreign reserves ratio and the share of short-term external debt in total external debt, attributed to a reduction in short-term external debt.

Meanwhile, payment and settlement systems operated smoothly as part of the financial market infrastructure. Amid the continued increase in the settlement amount on major payment and settlement systems, such as BOK-Wire+, driven mainly by securities settlements by financial institutions and electronic funds transfers by individuals and companies, settlement risks have also been managed at a stable level.

Major Financial Stability Risk Assessment

As discussed above, Korea's financial system remained largely stable. As the real economy recovered, private credit leverage declined and market vigilance in the financial markets eased, as indicated by narrower credit spreads. Financial institutions maintained robust resilience in terms of capital adequacy and liquidity. Moreover, the government, supervisory authorities, and the Bank of Korea made concerted efforts to ensure a smooth transition of the real estate PF market towards a soft landing to alleviate uncertainties, while preventing potential spillover effects of geopolitical risks into the domestic financial markets.

However, short-term risk factors persist, including the accumulation of debt repayment burdens among vulnerable borrowers,[3] concerns regarding the insolvency of real estate PF loans,[4] deterioration of asset quality in financial institutions,[5] and heightened uncertainties in the external sector[6] such as changes in major economies' monetary policy stances. From a medium- to long-term perspective, amid persistently high private credit leverage, there were potential risks of rising financial vulnerability, such as a resurgence in household debt accumulation. Taking into account the aforementioned vulnerabilities identified in Korea's financial system, this financial stability report comprehensively examines the macro leverage landscape and evaluate risks in the system using the recently reestablished Bank of Korea's stress testing model (SAMP 2.0).

First, this report examined the current status of macro leverage, which is defined as the debt within the household, corporate, and government sectors that comprise the macroeconomy. The findings showed that Korea's macro leverage was above the global average, but remained below that of advanced economies. However, credit leverage of private sectors, including the household and corporate sectors,

3) For details, refer to Box 1 "Recent Trends in Loans to Households and SEBOs, and Characteristics of Delinquency Rate Changes."

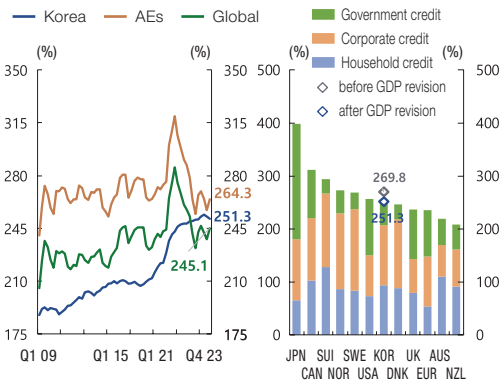
4) For details, refer to Box 2 "Current Status and Risk Assessment of Real Estate PF-Related Financial Exposures."

5) For details, refer to Box 3 "Factors Affecting Banks' Profitability by Interest Rate Phase and Key Future Considerations" and Box 4 "Assessment and Implications of Asset Quality Among Non-bank Deposit-taking Institutions."

6) For details, refer to Box 5 "Comparison of Domestic and International Conditions that Influenced the Exchange Rate Rises in the Second Half of 2022 and the Recent Period."

was higher compared to advanced economies, with credit supply expanding into the real estate-related sectors. In terms of the quality of macro leverage, risks to financial stability were assessed as insignificant at the time, as indebted households demonstrated favorable debt repayment capacities and overall financial positions for businesses remained stable. Nevertheless, it is essential to note the higher household debt repayment burden compared to advanced economies, as well as an increase in the proportion of debt held by companies with relatively weak debt repayment capacities.[7)]

Trends in macro leverage and Comparisons[1)] by country



Note: 1) As of end-Q4 2023
Sources: Bank of Korea, BIS

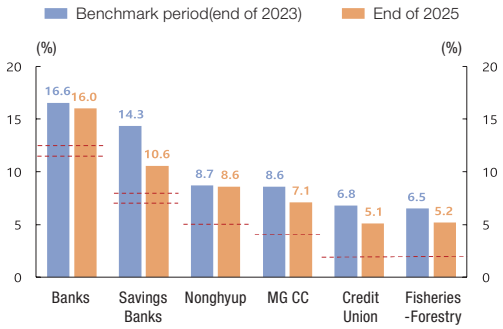
Next, the Bank of Korea reestablished a new version of the Systemic Risk Assessment Model for Macroprudential Policy (SAMP 2.0) in order to more accurately estimate credit risks in financial institutions. This updated version incorporates microdata[8)] into the existing SAMP, a comprehensive model that has been used for stress testing banks and non-bank financial institutions since 2012. Under the stress scenario which reflects recent domestic and external macro-financial and economic conditions, including credit risks associated with real estate PF loans and geopolitical conflicts, stress tests were conducted for each financial institution, taking into account the impact intensity of shocks on vulnerable sectors, using this newly revised model. The results of the stress tests revealed that the capital adequacy ratios of financial institutions generally exceeded the regulatory standard even in the event of macroeconomic shocks. However, it was found that the resilience of some non-bank deposit-taking institutions, particularly vulnerable ones, faced the possibility of significant deterioration. Given their small share and low interconnectedness within the financial system, defaults among these institutions are less likely to lead to systemic risks. Nevertheless, there is a need to strengthen the soundness management for non-bank deposit-taking institutions.[9)]

7) For details, refer to Analysis of Financial Stability Issues 1 “Analysis of Potential Risks in the Financial System Through the Assessment of Macro Leverage.”

8) The Bank of Korea signed an MOU with the Financial Supervisory Service on October 30, 2023 to share financial information on non-bank deposit-taking institutions, reaching a mutual agreement to expand information sharing concerning mutual savings banks, Sinhyup, and Nonghyup, Suhyup, and Forestry Cooperatives, and to reinforce oversight for policy coordination. Subsequently, Bank of Korea’s access to microdata has been enhanced, including borrower-specific information from financial institutions, allowing microdata to be used in reestablishing the stress test model.

9) For details, refer to Analysis of Financial Stability Issues 2 “Reestablishment of the Microdata-based Stress Test Model and Resilience Reviews for Financial Institutions.”

Changes in capital adequacy ratios for banks,[1] savings banks,[2] and mutual credit cooperratives[3] under stress scenarios



Notes: 1) Banks: based on the BIS total capital ratio, supervisory standard (including countercyclical capital buffer) of 11.5% (12.5% for D-SIBs).
2) Savings Banks: based on equity/risk-weighted assets, supervisory standard 7%(8% for assets over KRW 1 trilion)
3) Mutual credit cooperatives: based on the net capital ratio, supervisory standard (5% for National Agricultural Cooperative Federation (NACF, or Nonghyup), 4% for MG Community Credit Cooperatives (MG CC), 2% for Credit Union, Fisheries and Forestry Cooperatives).
Sources: Bank of Korea, Financial institution business reports.

Policy Recommendations

First, the government and supervisory authorities need to mitigate the uncertainties related to the real estate PF by facilitating an orderly restructuring through the effective implementation of the recently announced soft landing measures for the real estate PF sector. In order to prevent unexpected unrest in the financial markets during the implementation process, it is imperative to make continuous efforts to strengthen communication with construction companies and market participants.

Next, financial institutions should continue their proactive efforts to strengthening their loss absorption capacity and improve asset quality by actively pursuing the write-offs and sales of non-performing assets, given the fact that asset quality deteriorates across most financial sectors amid a continuous rise in loan delinquency rates. Some non-banking sectors, including mutual savings banks and mutual credit cooperatives, need to enhance liquidity management, taking into account their limited capacity to respond to liquidity pressures during unexpected stress scenarios.[10]

Furthermore, the policy authorities and financial institutions should persist in their efforts to gradually lower and stabilize private credit leverage. With regard to household credit, it is essential to ensure the policy effectiveness, by monitoring its impacts of the stressed debt service ratio (DSR) introduced in February this year and evaluating the adequacy of DSR coverage, while also striving to improve the quality of household debt. Furthermore, with regard to corporate credit, which has recently been expanding at a rapid pace, financial institutions should rigorously implement industry-specific risk management practices.

The Bank of Korea will closely monitor the development of risk factors at home and abroad to ensure effective policy responses for maintaining financial stability. Also, the Bank will engage in proactive interventions in close collaboration with other policy authorities to implement timely market stabilization measures in the event of unexpected market instability.

10) For details, refer to Box 6 “Liquidity Stress Test Results for Non-bank Financial Institutions.”

Financial stability situation: Stable

Real economy recovery Private credit leverage declines Resilience of financial institutions & external payment capacity remained strong	FSI	Modestly decreased but remained at the warning stage	FVI	Declined substantially, falling below its long-term average

Vulnerability assessment

Credit market	Accumulation of debt servicing burden in vulnerable sectors
Asset market	Concerns about the insolvency of real estate estale PF loans
Financial institutions	Deteriorating of asset quality non-banks

Risk factors

- Uncertainties regarding monetary policy stances in major economies
- Possible unrest in external conditions, including geopolitical risks
- Concerns about market unrest in line with real estate PF restructuring

Policy responses

Easing uncertainties regarding real estate PF and alleviation of market instability

- Supporting an orderly restructuring by facilitating real estate PF soft landing measures
- Strengthening communication with construction firms and market participants regarding concerns about real estate PF restructuring

Enhancing resilience of financial institutions

- Continuous efforts to improve asset quality by facilitating sales and write-offs of non-performing assets
- Strengthening liquidity management in preparation for unexpected market shocks

Strengthening private credit management and supporting vulnerable sectors

- Efforts to gradually lower and stabilize the ratio of private credit to GDP
  - (Household credit) Reviewing the adequacy of DSR coverage and Continuing efforts to improve household debt quality
  - (Corporate credit) Strengthening the management and supervision of concentration risk of exposures, and managing industry-specific risks.
- Stepping up monitoring of borrower financial soundness and maintaining selective support for vulnerable sectors

Bolstering cooperation among policy authorities

- Enhancing monitoring of developments in domestic and external risks and continuous cooperation among authorities

Financial Stability Situation by Sector

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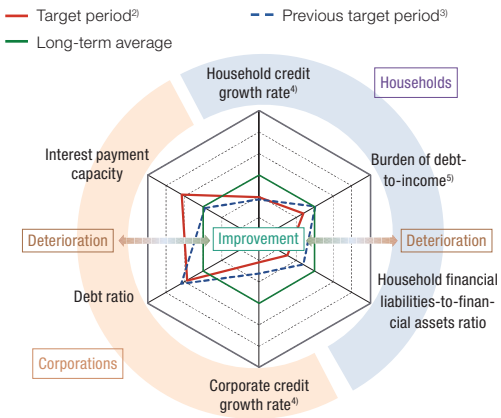
1. Credit Markets

With household credit[1] continuing a moderate increase, the debt repayment burden of households decreased. Meanwhile, the delinquency rate on household loans has maintained its upward trend since the second half of 2022.

Corporate credit experienced a slowdown in its upward movement, centered around corporate loans issued by non-bank financial institutions (NBFIs) and loans to SMEs, whereas the delinquency rate exhibited a continuous upward trend. The financial soundness of corporations witnessed a decline in growth and profitability, alongside deteriorating interest payment capacities.

The private credit-to-nominal GDP ratio[2] decreased, as the growth rate of the nominal GDP exceeded that of private credit.

Figure Ⅰ-1-1. Map of changes in credit market conditions[1]



Notes: 1) Standardized on the basis of the long-term average (5-year) for each index, the relative levels of the target period and the previous target period are shown on the map.
2) As of end-Q1 2024.(As of end of 2023 for debt ratio and interest payment capacity)
3) As of end-Q3 2023.(As of end of 2022 for debt ratio and interest payment capacity)
4) Rates of increase in household and corporate credit-to-nominal GDP ratio.
5) Household credit-to-nominal GDP ratio.
Source: Bank of Korea staff calculation.

(1) Household Credit

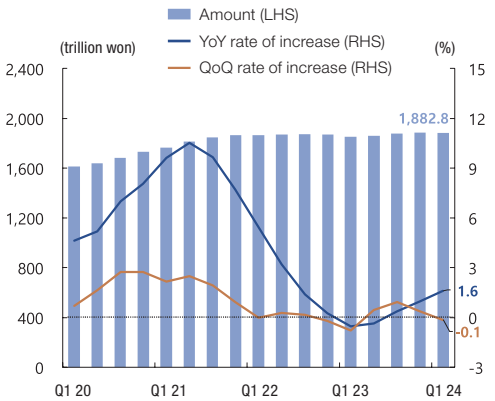
Continued Moderate Increase in Household Credit

Household debt (based on household credit statistics[3]) stood at KRW 1,882.8 trillion at the end of the first quarter of 2024. By item,

1) While both household credit and household debt refer to debt held by households, the term “household credit” is used in relation to financial institutions, and “household debt” is used in relation to households. In this article, household credit and corporate credit are classified as sub-items under private credit.
2) The level of private sector leverage can be assessed using a variety of financial and real economic indicators, such as the private credit growth rate by sector, debt repayment burdens of households and corporations, housing price levels, and bank leverage. In this article, the level of private sector leverage is discussed based primarily on the private credit-to-nominal GDP ratio, which is the common global reference guide recommended by the Basel Committee on Banking Supervision (BCBS, 2010) under the Bank for International Settlements (BIS).
3) It is necessary to note that household credit statistics differ from the flow of funds statistics in terms of the coverage of the financial liabilities of households and non-profit organizations. In household credit statistics, households refer to general households, whereas in the flow of funds statistics, the term includes small-sized sole proprietors, and private non-profit organizations that serve households.

household loans amounted to KRW 1,767.0 trillion (93.8% of household debt), and merchandise credit, which refers to credit offered by providers of goods and services, recorded KRW 115.8 trillion (6.2%). In terms of the growth rate, household debt increased by 1.6% year-on-year. On a quarterly basis, it declined by 0.1%, shifting to a decline(Figure I-1-2).[4]

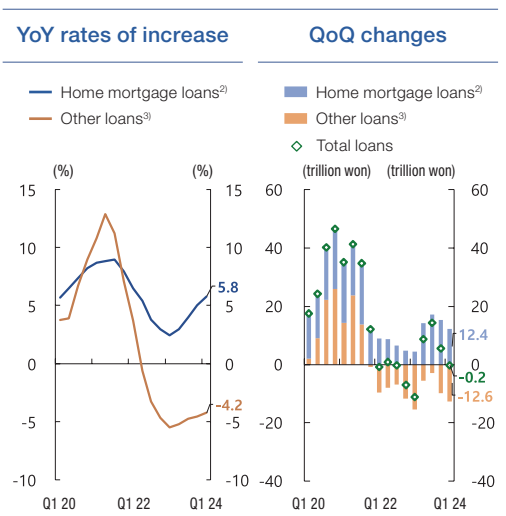
Figure Ⅰ-1-2. Household credit[1]



Note: 1) Based on household credit statistics.
Source: Bank of Korea.

Among loan types, home mortgage loans saw their growth expanding, while other loans witnessed their margin of decline narrow. Home mortgage loans reached KRW 1,076.7 trillion at the end of the first quarter of 2024, up by 5.8% from the same period in the previous year. This is attributed to an increase in policy funding[5] amid the continued demand for funds related to housing purchases.[6] Other loans amounted to KRW 690.4 trillion, down by 4.2% year-on-year. In terms of the value of loans compared with the previous quarter, home mortgage loans saw their growth margin shrink from the fourth quarter of 2023 onward, recording an increase of KRW 12.4 trillion in the first quarter of 2024, while other loans decreased by KRW 12.6 trillion, widening their margin of decline(Figure I-1-3).

Figure Ⅰ-1-3. Household loans,[1] by loan type



Notes: 1) Based on household credit statistics.
2) Home mortgage loans, leasehold deposit fund loans, etc.
3) Secured loans not collateralized by housing, unsecured loans, guaranteed loans, etc.
Source: Bank of Korea.

4) On a monthly basis, household loans (issued by overall financial institutions, based on the Financial Services Commission press release) declined during February and March in 2024 before increasing from April onward (-KRW 1.9 trillion in February 2024 → -KRW 4.9 trillion in March → +KRW 4.1 trillion in April → +KRW 5.4 trillion in May). This is attributed mainly to the widening margin of home mortgage loans issued by banks (+KRW 4.5 trillion in April → +KRW 5.7 trillion in May).

5) According to household credit statistics, home mortgage loans issued by the Korea Housing Finance Corporation (Bogeumjari loan, etc.) and the National Housing and Urban Fund (Didimdol loan, Beotimmok Jeonse deposit loan, etc.) amounted to KRW 234.5 trillion at the end of the first quarter of 2024, up by KRW 24.5 trillion from the end of the first quarter of 2023 (KRW 210.0 trillion). This is equivalent to 41.5% of the increase in home mortgage loans (KRW 59.0 trillion) in the same period.

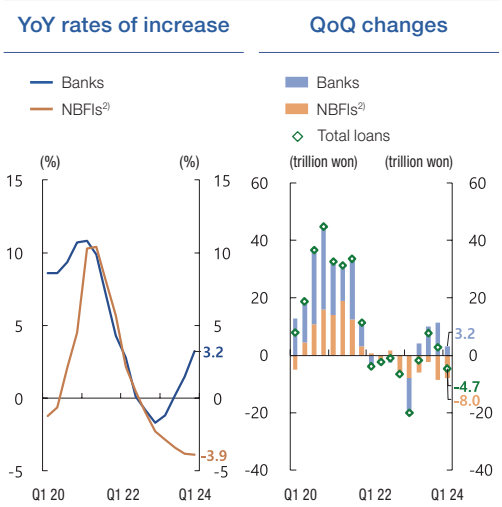
6) The volume of nationwide housing sale transactions (based on contract date, monthly average during the quarter, 10,000 units): 3.8 in the first quarter of 2023 → 4.7 in the second quarter → 4.6 in the third quarter → 3.7 in the fourth quarter → 4.3 in the first quarter of 2024.

By type of financial institution, banks and NBFIs continued to exhibit contrasting movements. At the end of the first quarter of 2024, household loans issued by banks expanded their upward trend with an increase of 3.2% year-on-year, reaching KRW 919.2 trillion. However, household loans extended by NBFIs amounted to KRW 613.4 trillion, down by 3.9% year-on-year, maintaining their downward movement. In terms of the value of loans compared with the previous quarter, loans of banks increased by KRW 3.2 trillion, while loans of NBFIs declined by KRW 8.0 trillion as of the end of the first quarter of 2024(Figure I-1-4).

Decline in Household Debt Burden Against Income and Assets[7)]

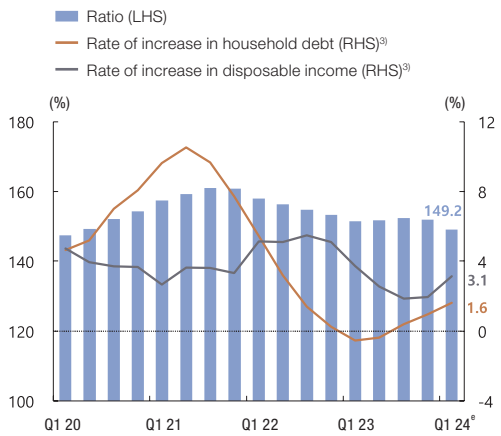
In terms of income, the debt repayment burden across households was on a downward trend. The ratio of household debt to disposable income (based on household credit statistics) decreased by 3.2%p to 149.2% (estimate) at the end of the first quarter of 2024 from the end of the third quarter of 2023 (152.4%). Examining the components, the growth rate of disposable income exceeded that of household debt, which maintained a low level, leading to a gradual improvement in debt repayment capacity in terms of income(Figure I-1-5).

Figure Ⅰ-1-4. Household loans,[1)] by financial sector



Notes: 1) Based on household credit statistics.
2) Non-bank deposit-taking institutions and other financial institutions (excluding Korea Housing Finance Corporation, etc.).
Source: Bank of Korea.

Figure Ⅰ-1-5. Household debt[1)]-to-disposable income[2)] ratio

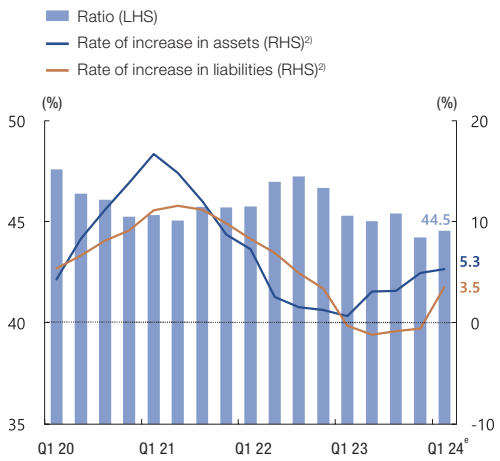


Notes: 1) Based on household credit statistics.
2) Disposable incomes for Q1 2024 are estimated using the average of the household disposable income-to-gross national income ratios for the immediately preceding three years.
3) Year-on-year basis.
Source: Bank of Korea.

7) The ratio of household debt to disposable income and the ratio of financial debt to financial assets represent ratios between debt, income, and assets for entire households, regardless of whether the households hold debt. Generally, these ratios can move differently from the debt service ratio (DSR), which represents the debt repayment burden of households holding debt or borrowers.

Meanwhile, the debt repayment burden in terms of assets also decreased. The ratio of financial debt to financial assets of households (based on flow of funds statistics) declined to 44.5% (estimate) at the end of the first quarter of 2024, down by 0.9%p from the end of the third quarter of 2023 (45.4%). This is because financial assets expanded relatively faster than financial debt due to an increase in the amount of stock valuation(Figure I-1-6).[8)]

Figure Ⅰ-1-6. Financial liabilities-to-financial assets ratio[1)]

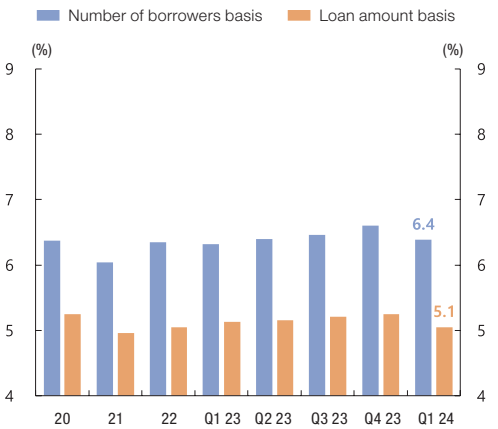


Notes: 1) Based on flow of funds statistics (estimated figure for Q1 2024).
2) Year-on-year basis.
Source: Bank of Korea.

Moderate Decrease in Share of Vulnerable Borrowers

The share of borrowers with comparatively low debt repayment capacities among total household borrowers decreased slightly. The number of borrowers with low income (bottom 30%) or low credit (credit scores of 664 or below)[9)] who also hold multiple household loans, i.e. "vulnerable borrowers," accounted for 6.4% of all borrowers at the end of the first quarter of 2024, down by 0.1%p from the end of third quarter of 2023 (6.5%). In terms of loan value, the share of vulnerable borrowers was 5.1% at the end of the first quarter of 2024, marking a decrease of 0.1%p from the end of the third quarter of 2023 (5.2%)(Figure I-1-7).

Figure Ⅰ-1-7. Proportions of vulnerable borrowers



Source: Bank of Korea calculations, Consumer Credit Panel.

8) The valuations of equity securities and investment funds mainly increased due to the rise in the KOSPI index (from 2,465 at the end of the third quarter of 2023 to 2,747 at the end of the first quarter of 2024).

9) In 2021, the rating system for consumer creditworthiness was changed from a grade-based system to a score-based system. In this report, scores of 840 and above (based on credit scores given by the NICE Credit Information Service) are considered high, scores between 665 and 839 are in the middle, and scores of 664 and below are low. The share of "potential vulnerable borrowers" who are approaching vulnerable borrower status (borrowers with multiple loans and a medium income or a medium credit score / borrowers with two loans and a low income or a low credit score) was 17.4% at the end of the first quarter of 2024, up by 0.1%p from 17.3% at the end of the third quarter of 2023.

By borrower profile (based on loan amount), the proportions of borrowers with a high credit rating and high income increased slightly overall to demonstrate a high level. At the end of the first quarter of 2024, the proportion of borrowers with a high credit rating stood at 78.6%, up by 1.3%p from the end of the third quarter of 2023 (77.3%). The proportion of high-income borrowers reached 62.6%, showing an increase of 0.5%p from the end of the third quarter of 2023 (62.1%)(Figure I-1-8).

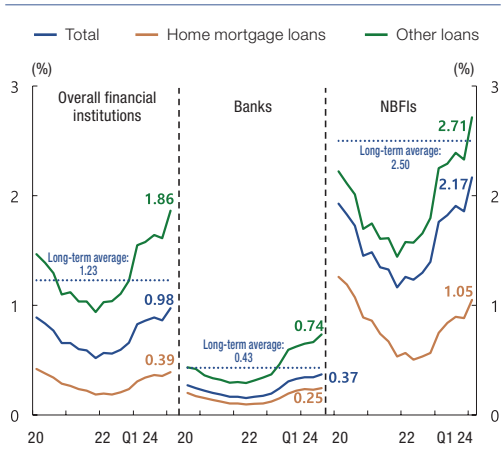
Figure Ⅰ-1-8. Share[1] of household loans, by borrower credit score and income level

Notes: 1) Loan amount basis.
2) High-credit (scores greater than or equal to 840), medium-credit (scores 665-839), low-credit (scores less than or equal to 664).
3) High-income (top 30%), medium-income (30-70%), low-income (bottom 30%).
Source: Bank of Korea calculations, Consumer Credit Panel.

Continuing Upward Trend in Delinquency Rate on Household Loans

The delinquency rate on household loans has been on the rise since the second half of 2022. At the end of the first quarter of 2024, the delinquency rate on household loans reached 0.98%, up by 0.09%p from the end of the third quarter of 2023. By loan type, the delinquency rate on home mortgage loans increased by 0.03%p to 0.39%, while the delinquency rate on other loans rose by 0.22%p to 1.86%. Such increases in delinquency rates have been observed primarily in vulnerable segments where the burden of debt repayment has relatively increased further due to persistent high interest rates(Figure I-1-9).[10]

Figure Ⅰ-1-9. Delinquency rates[1] of household loans extended by banks and NBFIs[2][3]



Notes: 1) Mutual savings banks, mutual credit cooperatives, insurance companies (excluding insurance contract loans), credit-specialized financial companies, etc.
2) Based on delinquencies of one month and longer (for mutual credit cooperatives and mutual savings banks, principal delinquencies of one day and longer or interest delinquencies of one month and longer).
3) The long-term average refers to the average from Q1 2009 to Q1 2024.
Source: Financial institution business reports.

10 For further details, refer to Box 1 "Recent Trends in Loans to Households and SEBOs, and Characteristics of Delinquency Rate Changes."

(2) Corporate Credit

Slowdown in Corporate Credit Growth

At the end of the first quarter of 2024, corporate loans from financial institutions stood at KRW 1,866.4 trillion, recording an increase of 5.2% year-on-year. Corporate loans witnessed their growth slowing, centered on loans extended by NBFIs and on loans issued to SMEs, under the influence of the continued debt repayment burden of borrowers and the tightened lending attitude of NBFIs.

By financial sector, corporate loans from banks amounted to KRW 1,273.5 trillion at the end of the first quarter of 2024 (KRW 748.0 trillion from commercial banks, KRW 498.7 trillion from specialized banks, and KRW 26.8 trillion from branches of foreign banks), showing an increase of 6.4% year-on-year (8.3% at commercial banks and 4.2% at specialized banks). Due to the eased lending attitudes[11] of domestic banks in 2024 and the increased demand for funds among enterprises, corporate loans from banks continued to rise, although their growth rate has slowed. Meanwhile, corporate loans from NBFIs[12] amounted to KRW 592.9 trillion,[13] up by 2.7% year-on-year. As the tightened lending attitudes persisted[14] in response to rising delinquency rates of corporate loans, the growth of corporate loans across the entire non-banking sector significantly decelerated. In particular, insurance companies and mutual savings banks saw the balance of their corporate loans decline[15] year-on-year(Figure I-1-10).

11) The survey on the lending attitude of financial institutions found that domestic banks were expected to somewhat ease their lending attitude toward enterprises (large enterprises: -6 in the fourth quarter of 2023 → 6 in the first quarter of 2024 → 3 in the second quarter of 2024 (predicted); SMEs: 0 → 6 → 3) with a strategy to strengthen their lending operations with the primary focus on outstanding enterprises. For details, refer to "Loan Officer Survey on Financial Institution Lending" (Bank of Korea press release, April 19, 2024).

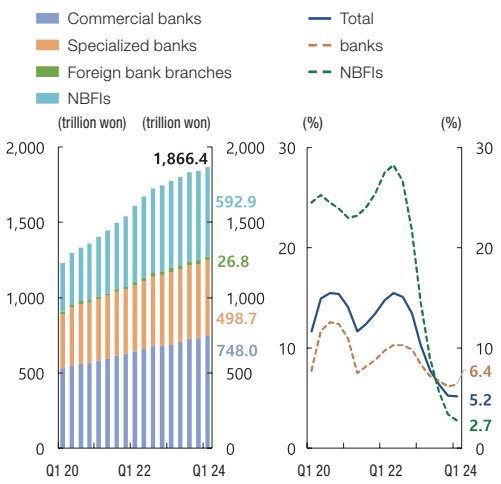
12 The data for NBFIs are based on mutual savings banks, mutual credit cooperatives (Nonghyup, Suhyup, Forestry Cooperatives, Sinhyup, and MG Community Credit Cooperatives), insurance companies (life insurance companies and general insurance companies), and credit-specialized financial companies. However, due to limited data availability, some sectors' data include loans to financial and insurance companies.

13) In the non-banking sector, mutual credit cooperatives accounted for KRW 375.3 trillion (63.3% of corporate loans offered by NBFIs), followed by insurance companies at KRW 96.8 trillion (16.3%), credit-specialized financial companies at KRW 71.9 trillion (12.1%), and mutual savings banks at KRW 48.9 trillion (8.3%).

14) The survey on the lending attitude of financial institutions found that all NBFIs that participated in the survey were expected to continue to tighten their lending attitude: mutual savings banks (-32 in the fourth quarter of 2023 →-21 in the first quarter of 2024 → -21 in the second quarter of 2024 (predicted); mutual credit cooperatives (-31 → -26 → -27); credit card companies (-38 → 6 → -6); and life insurance companies (-10 → -11 → -10). For details, refer to "Loan Officer Survey on Financial Institution Lending" (Bank of Korea press release, April 19, 2024).

15) Changes in growth rates of corporate loans by NBFIs for each sector (year-on-year) at the end of first quarter of 2024: 7.0% for mutual credit cooperatives; 3.5% for credit-specialized financial companies; -3.4% for insurance companies; and -13.8% for mutual savings banks.

Figure Ⅰ-1-10. Corporate loans from financial institutions[1)]

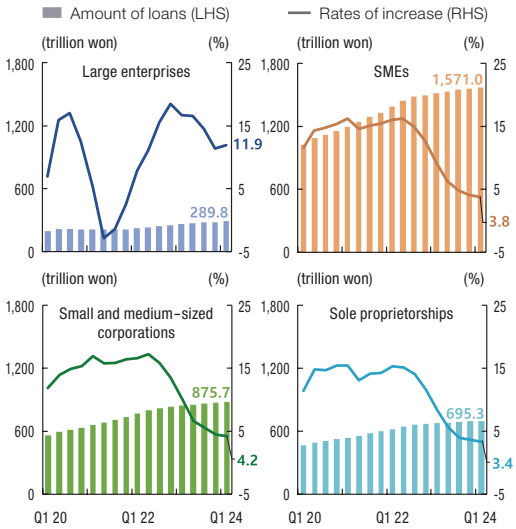


Notes: 1) Banks include commercial banks, specialized banks, and foreign bank branches. NBFIs include mutual savings banks, mutual credit cooperatives, insurance companies, and credit-specialized financial companies.
2) End-period basis. Excluding financial and insurance loans.
3) Year-on-year basis.

Source: Financial institution business reports.

By company size,[16)] loans to large enterprises (KRW 289.8 trillion, a year-on-year increase of 11.9%) sustained a relatively high growth rate due to intensified lending operations by banks and increased demand for facility funds. On the other hand, loans to SMEs (KRW 1,571.0 trillion, 3.8%) saw their growth slow due to high credit risk and the sluggishness of the real estate sector, as reflected in loans to small- and medium-sized corporations (KRW 875.7 trillion, 4.2%) and loans to sole proprietors (KRW 695.3 trillion, 3.4%)(Figure I-1-11). Meanwhile, loans issued to self-employed business owners (SEBOs),[17)] including household loans to borrowers with sole proprietor loans, amounted to KRW 1,055.9 trillion at the end of the first quarter of 2024, up by 2.1% year-on-year.

Figure Ⅰ-1-11. Corporate loans,[1)2)3)] by company size



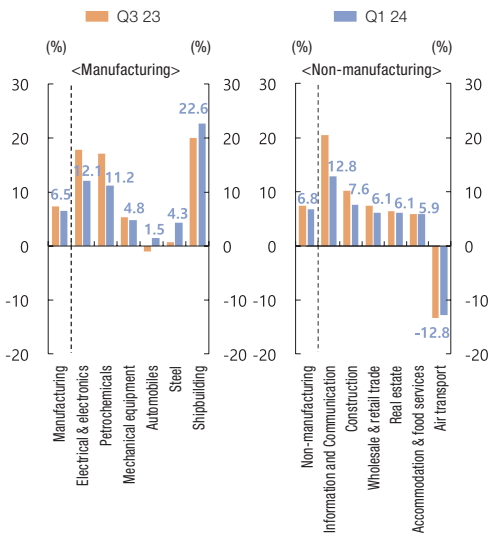
Notes: 1) Based on sum of banks and NBFIs. In the case of NBFIs, financial and insurance loans are included in some business sectors and periods due to data constraints.
2) End-period basis. Rates of increase are year-on-year basis.
3) "Small and medium-sized corporations" refers to SMEs other than sole proprietorships.

Source: Financial institution business reports.

By industry,[18)] corporate loans to the manufacturing sector showed slower growth (6.5%), driven by major industries such as electrical and electronics, petrochemicals, and mechanical equipment. In the non-manufacturing sector, several segments such as real estate and wholesale and retail trade exhibited lower growth rates than the average loan growth of the sector (6.8%)(Figure I-1-12).

16) In the analysis of loans by company size, some loans from credit-specialized financial companies, which do not differentiate by company size, were excluded due to data limitations.
17) For more information about trends in loans issued to SEBOs, refer to Box 1 "Recent Trends in Loans to Households and SEBOs, and Characteristics of Delinquency Rate Changes."
18) Corporate loans from some NBFIs were excluded from the analysis because they were not classified by industry.

Figure Ⅰ-1-12. Growth rates[1] of financial institutions' corporate loans,[2] by industry

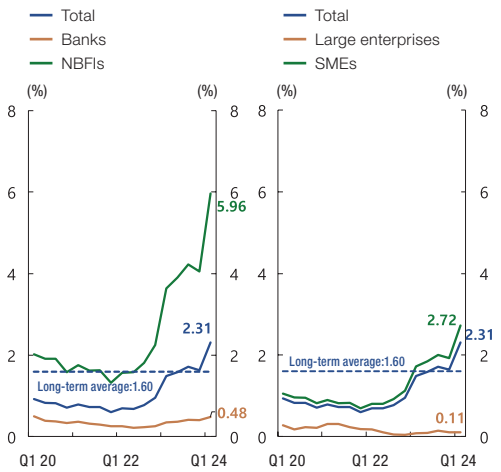


Notes: 1) Year-on-year basis.
2) Sum of banks and some NBFIs that can be classified on an industry basis.
Source: Financial institution business reports.

Continued Increase in Delinquency Rates of Corporate Loans

At the end of the first quarter of 2024, the delinquency rate of corporate loans recorded 2.31%, up by 0.59%p from the end of the third quarter of 2023 (1.72%). By financial sector, the delinquency rate of corporate loans from banks rose to 0.48%, an increase of 0.06%p from the end of the third quarter of 2023 (0.42%). The delinquency rate faced by NBFIs climbed to 5.96%, up by 1.73%p from the end of the third quarter of 2023 (4.23%), exhibiting steep growth, led by mutual savings banks and mutual credit cooperatives. By company size, the delinquency rate of loans to large enterprises remained low (0.15% at the end of the third quarter of 2023 → 0.11% at the end of the first quarter of 2024), while the delinquency rate of loans to SMEs grew significantly (2.00% → 2.72%)(Figure I-1-13).

Figure Ⅰ-1-13. Delinquency rates[1][2] of corporate loans by financial sector[3] and company size[4]

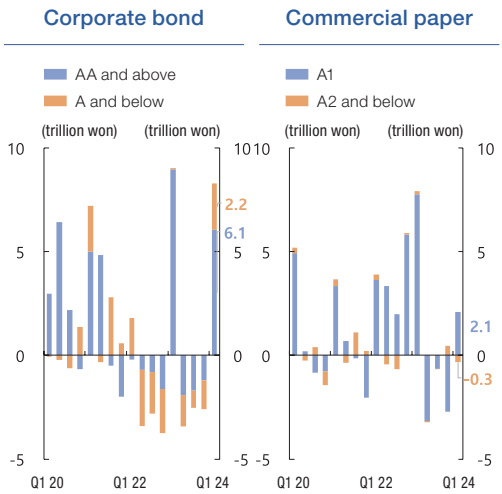


Notes: 1) Based on delinquencies of one month and longer (for mutual credit cooperatives and mutual savings banks, principal delinquencies of one day and longer or interest delinquencies of one month and longer).
2) The long-term average is the average from Q1 2009 to Q1 2024.
3) Banks based on domestic banks, NBFI weighted average based on total assets of mutual savings banks, mutual credit cooperatives, insurance companies (excluding insurance contract loans), and credit-specialized financial companies.
4) Weighted average based on banks and certain NBFIs that can be classified by size.
Source: Financial institution business reports.

Net Issuance of Corporate Bonds and CPs

Regarding corporate funding in the direct financial market, corporate bonds saw significant net issuance of both prime and subprime bonds during the first quarter of 2024.[19] This was driven by concentrated demand among enterprises for corporate bond issuance at the beginning of the year, along with the continued robust investment demand from institutions. Similarly, commercial papers (CPs) also experienced net issuance during the same period, primarily driven by prime CPs and CPs issued by private companies(Figure I-1-14).

Figure I-1-14. Corporate bond and commercial paper (CP) issuance[1]



Note: 1) Excluding issuances by financial holding companies and special purpose companies (SPCs). Net-issuance basis.
Sources: Bank of Korea, Korea Securities Depository, Korea Credit Information Services.

Decrease in Debt Ratio

The corporate debt ratio (debt / equity), which indicates the stability of companies,[20] recorded 84.6% at the end of 2023, slightly down from the end of 2022 (85.8%). This decrease is attributable to last year's higher increase in corporate equity (+4.4% year-on-year) compared to their debt (+3.0%), driven by retained earnings. By company size, both large enterprises (87.3% at the end of 2022 → 86.0% at the end of 2023) and SMEs (59.0% → 54.9%) experienced a decrease in their debt ratios.

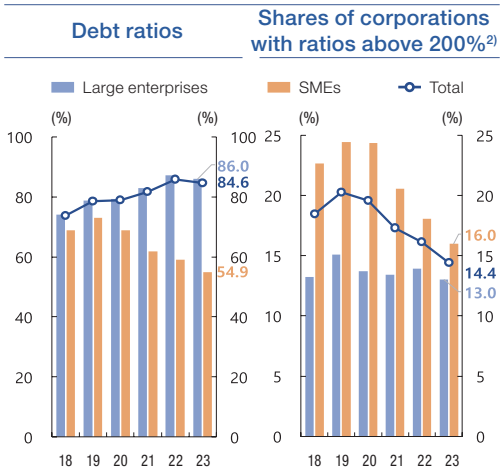
Meanwhile, the proportion of companies with a debt ratio exceeding 200% (excessively-indebted firms) was 14.4% at the end of 2023, down from the end of the previous year (16.1%).[21] By company size, SMEs showed a steeper decline (18.1% at the end of 2022 → 16.0% at the end of 2023) compared to large enterprises (13.9% → 13.0%)(Figure I-1-15).

19) However, corporate bonds experienced a net redemption in April and May due to the large-scale pre-issuance of corporate bonds by companies during the first quarter of this year.

20) The analysis was carried out for a total of 2,588 companies (1,374 large enterprises and 1,214 SMEs), including listed companies that had to file a business report at the end of the fourth quarter of 2023, pursuant to the Financial Investment Services and Capital Markets Act, and some unlisted companies (excluding those in the financial and insurance industries). It is necessary to note that, for the sake of speed, the analysis was conducted primarily on listed companies, and thus the results of the analysis of the financial soundness of SMEs may differ from those conducted based on larger samples that include private firms subject to external audits.

21) This is interpreted as a consequence of excessively-indebted firms cutting down on debt in response to their heightened debt repayment burdens caused by decreased profitability and high interest rates.

Figure Ⅰ-1-15. Corporate debt ratios,[1] by company size



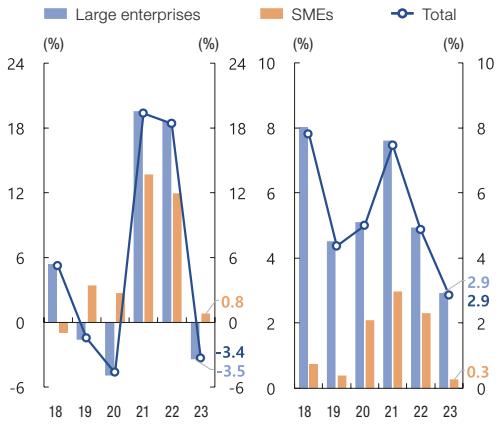
Notes: 1) Debt/equity, end-period basis.
2) Including corporations with capital erosion.
Source: VALUE Search.

Decline in Sales Growth Rate and Operating Income-to-sales Ratio

The growth rate of corporate sales (from the previous year), representing a company's growth, was -3.4% in 2023, showing a significant decline from 18.4% in 2022. This decline is attributable to the sluggish business conditions in key manufacturing sectors including the electrical and electronics sector and the petrochemicals sector.[22] By company size, the rate of growth in sales among large enterprises (18.6% in 2022 → -3.5% in 2023) exhibited a greater decline than that of SMEs (11.9% → 0.8%).

The operating income-to-sales ratio (operating income / sales), which represents a company's profitability, fell to 2.9% in 2023 from 4.9% in the previous year due to a decline in operating income.[23] By company size, both large enterprises and SMEs showed a decrease in profitability(Figure I-1-16).[24]

Figure Ⅰ-1-16. Sales growth rate[1] and operating income-to-sales ratio,[2] by company size



Notes: 1) Year-on-year basis.
2) Operating income/sales.
Source: VALUE Search.

22) Sales experienced a decrease in key manufacturing sectors, including electrical and electronics (-11.2% in 2023), petrochemicals (-13.1%), and metal products (-8.1%). On the other hand, some sectors demonstrated robust growth in sales, such as automobiles (17.9%), other transport equipment (36.0%), and construction (11.1%).

23) By industry, the electrical and electronics sector turned to an operating loss in 2023 (8.8% at the end of 2022 → -3.2% at the end of 2023), and the electricity and gas supply sector has also continued to experience operating losses (-13.9% → -0.5%). However, the operating income-to-sales ratios were high in sectors such as information and communication (9.6% at the end of 2023) and automobiles (7.4%).

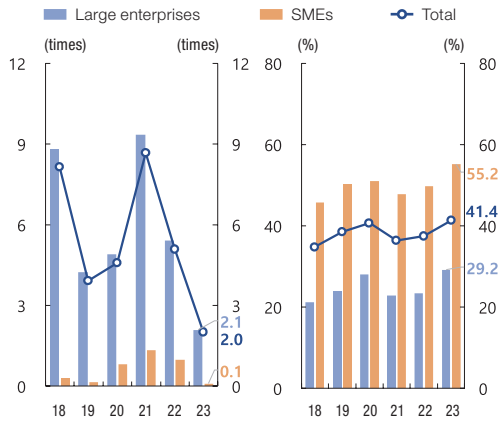
24) However, in the first quarter of this year, the profitability of private firms subject to external audits improved year-on-year (operating income-to-sales ratio of 2.8% in the first quarter of 2023 → 5.4% in the first quarter of 2024), driven by large enterprises (according to the results of the Financial Statement Analysis for the first quarter of 2024).

Decline in Interest Payment Ability

The interest coverage ratio (operating income / total interest expenses), which indicates a company's ability to make interest payments,[25] was 2.0 in 2023, dropping from 5.1 in 2022, due to the sluggish business conditions in major industries[26] and the rising borrowing interest rates.[27] By company size, both large enterprises (5.4 in 2022 → 2.1 in 2023) and SMEs (1.0 → 0.1) experienced a decline in their interest coverage ratios.

The proportion of companies with an interest coverage ratio of less than 1 increased to 41.4% at the end of 2023 from 37.5% at the end of 2022. By company size, both large enterprises (23.3% at the end of 2022 → 29.2% at the end of 2023) and SMEs (49.8% → 55.2%) showed a rise(Figure I-1-17).

Figure I-1-17. Corporate interest coverage ratios,[1] by company size



Notes: 1) Operating income/total interest expenses.
2) Including corporations recording operating losses.
Source: VALUE Search.

25) When calculating the interest coverage ratio, the numerator is the operating income, and the denominator is the total interest expenses, including interest on corporate bonds.

26) By sector, the interest coverage ratio declined significantly, mainly driven by electrical and electronics (18.8 in 2022 → -3.2 in 2023), petrochemicals (9.2 → 2.5) and construction (4.7 → 1.2). On the other hand, automobiles (9.6 → 17.9) exhibited a significant increase in the interest coverage ratio due to favorable operating performances.

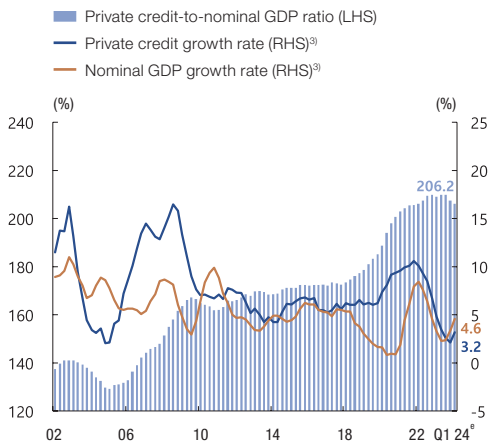
27) The long-term average interest coverage ratio (from 2009 to 2023) marked 5.1 overall, with 5.4 for large enterprises and 0.9 for SMEs.

(3) Credit Leverage

Decrease in Private Credit Leverage

At the end of the first quarter of 2024, private credit[28] leverage[29] (private credit-to-nominal GDP ratio) stood at 206.2% (estimate),[30] a decrease of 3.8%p and 1.2%p respectively, compared to the end of the third quarter (210.0%) and the fourth quarter (207.4%).[31] The decrease is mainly due to the modest increase in private credit growth (year-on-year) from 2.6% at the end of the third quarter of 2023 to 3.2% at the end of the first quarter of 2024, remaining below nominal GDP growth[32] (4.6%) (Figure I-1-18).

Figure I-1-18. Private credit[1]-to-nominal GDP[2] ratio



Notes: 1) Based on flow of funds statistics. Estimated figure for Q1 2024.
2) Sum of nominal GDPs in quarter concerned and immediately preceding three quarters.
3) Year-on-year basis.
Sources: Bank of Korea.

28) The BCBS (2010) broadly defines private credit as "all types of debt funds provided to households and non-financial corporations." In accordance with this definition, private credit indicators here are based on the sum of household debt (borrowings from financial institutions and government loans) and corporate debt (borrowings from financial institutions, government loans, and issuance of securities other than shares) as reported in the flow of funds statistics.

29) Following the update of the GDP base year to 2020, the private credit leverage statistic has been completely revised.

30) This is based on household and corporate credit in the flow of funds statistics for the first quarter of 2024, which were separately estimated using a linear regression model with the growth rate of household credit (based on household credit statistics) and growth rate of corporate credit of deposit-taking institutions as explanatory variables, respectively.

31) However, it is important to note that Korea's private credit leverage level still remains high compared to that of advanced economies (160.6%, estimated by the BIS as of the end of the fourth quarter of 2023). For further details on the recent private credit leverage and government credit leverage (macro leverage) of Korea, refer to "1. Analysis of Potential Risks in the Financial System Through the Assessment of Macro Leverage," Analysis of Financial Stability Issues.

32) This is the growth rate of the sum of nominal GDP for the given and three preceding quarters. It is different from the nominal GDP growth rate for the given quarter.

Slight Decrease in Household Credit Leverage and Corporate Credit Leverage

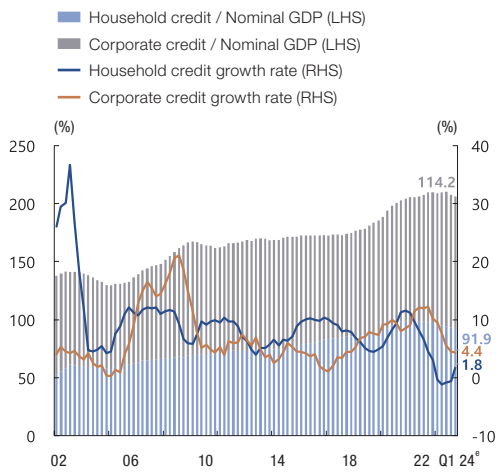
By sector, both household credit leverage and corporate credit leverage exhibited a slight decrease. At the end of the first quarter of 2024, the household credit-to-nominal GDP ratio stood at 91.9% (estimate), a decline of 2.6%p from the end of the third quarter of 2023 (94.5%), while the corporate credit-to-nominal GDP ratio decreased by 1.3%p from 115.5% to 114.2% (estimate) during the same period.

The growth rate of household credit (year-on-year) shifted upward due to an increase in home mortgage loans by banks, while corporate credit continued to grow, albeit at a slower pace due to the tightening lending attitude of non-bank financial institutions(Figure I-1-19).

Expansion of Household Credit Leverage Remaining Below the Long-term Trend

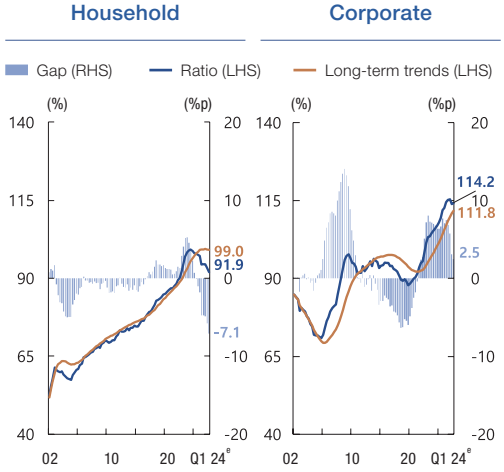
While household credit leverage has expanded below its long-term trend,[33] corporate credit leverage remains at a higher level than its long-term trend. After shifting to a decline at the end of the third quarter of 2022 (-1.0%p), the household credit-to-nominal GDP gap is estimated to have widened further from -5.7%p at the end of the fourth quarter of 2023 to -7.1%p at the end of the first quarter of 2024. Meanwhile, the corporate credit-to-nominal GDP gap was +2.5%p at the end of the first quarter of 2024, staying at a higher level than its long-term trend, but its growth margin appears to have diminished compared to the end of the third quarter of 2023 (+5.8%p) (Figure I-1-20).

Figure Ⅰ-1-19. Credit leverage and credit growth rates,[1)2)] by sector



Notes: 1) Based on flow of funds statistics. Estimated figure for Q1 2024.
2) Year-on-year basis.
Sources: Bank of Korea.

Figure Ⅰ-1-20. Private credit-to-nominal GDP ratios and gaps,[1)] by sector



Notes: 1) Differences between credit-to-nominal GDP ratio and long-term trend value. Estimation period: Q4 2000 to Q1 2024. λ=25,000. Based on HP filter, by sector.
Sources: Bank of Korea.

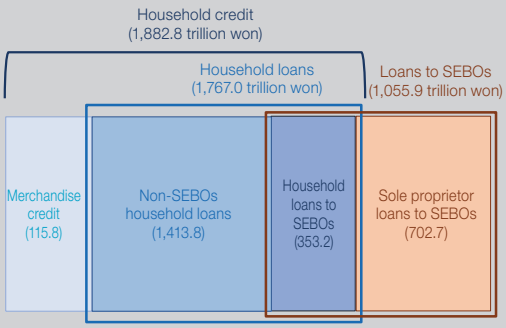
33) As the household or corporate credit-to-nominal GDP ratio tends to rise over the long run as a result of financial deepening, the gap between this ratio and its long-term trend is used as a common indicator for measuring systemic risk in time series. Although the BCBS (2010) recommends a smoothing parameter of 400,000 when calculating long-term trend values using an HP filter (one-sided), this article opted for a significantly smaller smoothing parameter (25,000), given that the financial cycle in Korea is much shorter than in other OECD economies.

Box 1.

Recent Trends in Loans to Households and SEBOs, and Characteristics of Delinquency Rate Changes[1)]

The recent growth of loans to households and SEBOs[2)] has remained moderate, while delinquency rates have continued to rise due to the ongoing financial tightening and economic slowdown. As such, this article uses micro data from the Household Debt Database to examine recent trends of loans to households and SEBOs, as well as the characteristics of delinquency rate fluctuations, subsequently presenting policy implications related to these issues(Box 1-1).

Box 1-1. Status of Loans to Household and SEBOs[1)2)3)]



Notes: 1) End of Q1 2024 basis
2) Household Credit and Household Loans are based on Household Credit Statistics
3) Loans to SEBOs are based on the combined amount of household loans and sole proprietor loans as calculated in the Consumer Credit panel.
Source : Bank of Korea(Household Credit Statistics), Bank of Korea calculations(Consumer Credit Panel)

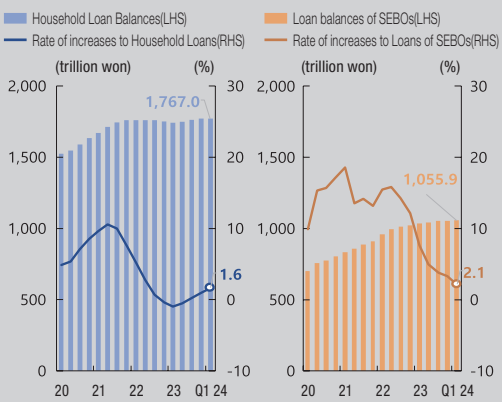
Trends in Loans to Households and SEBOs

At the end of the first quarter of 2024, the balance of loans to households reached KRW 1,767.0 trillion, up 1.6% year-on-year, a significantly lower growth rate than in previous years. Meanwhile, loans to SEBOs (based on Household Debt Database) amounted to KRW 1,055.9 trillion (KRW 702.7 trillion for sole proprietor loans and KRW 353.2 trillion for household loans), up 2.1% year-on-year, maintaining a slowdown pace in growth from the second half of 2022(Box 1-2).

1) This article was authored by Kim Jae-young and Lee Hae-in (Financial Stability Affairs Team) and Pyoun Do-hoon and Kim Woo-seob (Financial Stability Analysis Team) and was reviewed by Seo Pyoung-seok (director of the Financial Stability Strategy & Coordination Division), Lim Kwang-kyu (head of the Financial Stability Affairs Team) and Kim Jeong-ho (head of the Financial Stability Analysis Team).

2) In this article, household loans are defined as total household debt minus merchandise credit (including credit card installments), and the loans to SEBOs as the sum of household loans and sole proprietor loans of borrowers with sole proprietor loans. Accordingly, total volume indicators (loan balance, delinquency rate, etc.) for household loans were sourced from the Bank of Korea's household credit statistics and financial institution business reports, while borrower-specific indicators (the number of delinquent borrowers, vulnerable borrowers, etc.) for household loans and all indicators for loans to SEBOs were estimated from the Household Debt Database (a panel database composed of approx. 1 million borrowers).

Box 1-2. Rate of increases in Loans to Household and SEBOs[1)]



Note: 1) Year-on-year basis.

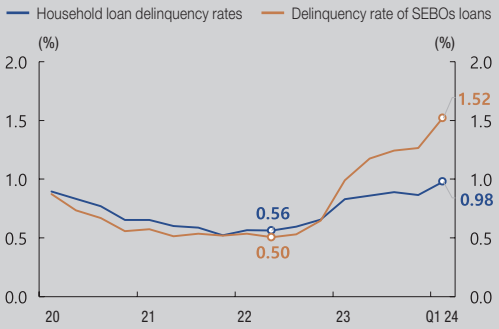
Source : Bank of Korea(Household Credit Statistics), Bank of Korea calculations(Consumer Credit Panel).

Characteristics of Recent Changes in the Delinquency Rates of Household and SEBO Loans

Sharper Increase in Delinquency Rate of Loans to SEBOs than Households, Especially Among Vulnerable Borrowers

The delinquency rates of both household loans (based on the Financial Institution Business Report) and SEBO loans (based on the Household Debt Database) have been rising since the second half of 2022, but the delinquency rate of SEBO loans has been rising at a faster pace than that of household loans. While household loans' delinquency rate climbed from 0.56% at the end of the second quarter of 2022 to 0.98% at the end of the first quarter of 2024, SEBO loans' delinquency rate nearly tripled from 0.50% to 1.52% over the same period(Box 1-3).

Box 1-3. Household and SEBOs loan delinquency rates



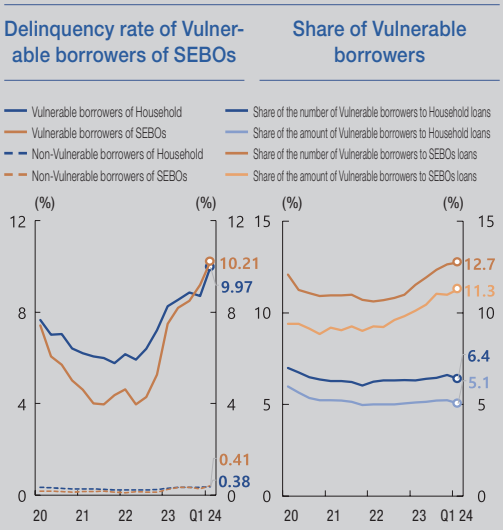
Source : Bank of Korea calculations(Consumer Credit Panel), Financial Institutions' Business Reports.

In particular, the delinquency rate of vulnerable borrowers[3)] with comparatively low debt repayment capacities among total borrowers, the rate faced by vulnerable borrowers among SEBOs exhibited a steeper increase than that of household vulnerable borrowers, reaching 10.21% at the end of the first quarter of 2024, outpacing the delinquency rate of household vulnerable borrowers (9.97%). Meanwhile, the share of vulnerable borrowers (to the total number of borrowers) is also rising, at a higher rate among SEBOs than households. As of the end of the first quarter of 2024, the share of vulnerable borrowers among households and SEBOs stood at 6.4% and 12.7%, respectively, with a larger increase in the share of vulnerable borrowers for SEBO loans (+2.0%p) than household loans (+0.1%p) compared to the end of the second quarter of 2022(Box 1-4).[4)]

3) Borrowers with multiple loans (from three or more lenders) and low income (bottom 30%) or low credit (credit score of 664 or less) are categorized as vulnerable borrowers. However, due to data constraints, SEBOs with multiple loans are defined as borrowers who have taken out more than three or more household loans from different lenders and business loans in total.

4) The share of loans to vulnerable borrowers (in total borrowers' loan balances) also increased more for SEBOs (9.2% at the end of the second quarter of 2022 → 11.3%, +2.1 %p at the end of the first quarter of 2024) than households (5.0% → 5.1%, +0.1 %p) during the same period.

Box 1-4. Delinquency rate[2] and Share of Vulnerable SEBOs[1]



Notes: 1) Low income or low credit SEBO borrowers with multiple loans(the total number of household loan Institutions and sole proprietor loan products is 3 or more)
2) Based on Bank of Korea calculation by Consumer Credit Panel for compare to SEBOs.

Source : Bank of Korea calculation(Consumer Credit Panel).

Recent Increase in Delinquency Rates of Sole Proprietor Loans at a Sharp Rate,[5] Even Compared to Previous Interest Rate Hike Periods

Compared to the two periods of interest rate hikes[6] since the global financial crisis (first lasting from the third quarter of 2010 to the third quarter of 2011, and the second from the first quarter of 2017 to the first quarter of 2019), the upward trend in the delinquency rate of sole proprietor loans issued by domestic banks was steeper during the third and most recent period of interest rate hikes (from the third quarter of 2021 to the fourth quarter of 2023) (Box 1-5).

The delinquency rate of household loans increased slowly in the early stages of the recent period of interest rate hikes, and then exhibited an upward trend from the second half of 2022. On the other hand, despite the relatively narrow margin of increase in the interest rates on household loans[7] during the first rate hike period, the delinquency rate saw its growth expanding as the high interest rate level remained for a considerable period of time, and even after the end of the rate hike, the upward trend in delinquency rates continued due to the sluggish housing economy.[8]

Meanwhile, the delinquency rate of sole proprietor loans remained at a low level for a considerable period of time due to policy support in response to the COVID-19 crisis during the recent interest rate hikes, and then showed a steep rise from the second half of 2022, contradicting past trends. In the previous interest rate hike periods, the delinquency rate for sole proprietor loans saw a moderate upward trend as the impact of rising interest rates was largely cushioned by

5) As the Household Debt Database used to estimate delinquency rates of SEBO loans has a limited time horizon of 2012 and later, this article compares the changes in delinquency rates by period of interest rate hikes based on sole proprietor loans issued by domestic banks, for which data is available from the period during the global financial crisis.

6) Periods where the lending rate for households and SMEs (weighted average of deposit-taking banks, by balance) increased for more than one year were defined as periods of interest rate hikes, comprising three of such periods since 2009 (The first period from the third quarter of 2010 to the third quarter of 2011, the second period from the first quarter of 2017 to the first quarter of 2019, and the third period from the third quarter of 2021 to the fourth quarter of 2023).

7) Cumulative increase in household loan rates by interest rate hike period: +64 bp in the first period, +47 bp in the second period, and +234 bp in the third period.

8) Growth rate of national home sales prices (year-on-year): 6.1% in the third quarter of 2011 → 2.2% in the second quarter of 2012 → -2.2% in the first quarter of 2013.

the slight increase in lending rates[9] and the favorable performance of the service industry.[10] In addition, the relatively moderate average growth in sole proprietor loans[11] during the period also contributed to limiting the increase in the delinquency rate of sole proprietor loans.

In contrast, during the recent interest rate hike period, the delinquency rate of sole proprietor loans has risen significantly due to the relatively large increase in lending rates and the contraction in the service industry since the second half of 2022, which has significantly exacerbated the debt repayment capacities of SEBOs. Furthermore, considering that the proportion of loans secured by collateral other than housing among sole proprietor loans[12] reached 61.8% as of the end of the first quarter of 2024, and the main collateral for sole proprietor loans is commercial real estate, such as retail stores, the sluggishness in the commercial real estate market[13] since the third quarter of 2022 may also have somewhat contributed to the rise in the delinquency rate.

9) Cumulative increase in SME loan rates by interest rate hike period: +30 bp in the first period, +31 bp in the second period, and +254 bp in the third period.

10) The growth rate of the output indices of service industries (year-on-year, based on current prices):
   i) 1st period: 4.3% in the third quarter of 2010 → 5.8% in the second quarter of 2011 → 7.4% in the third quarter of 2011
   ii) 2nd period: 4.4% in the first quarter of 2017 → 4.3% in the first quarter of 2018 → 4.5% in the fourth quarter of 2018
   iii) 3rd period: 12.2% in the second quarter of 2022 → 10.0% in the fourth quarter of 2022 → 3.0% in the fourth quarter of 2023.

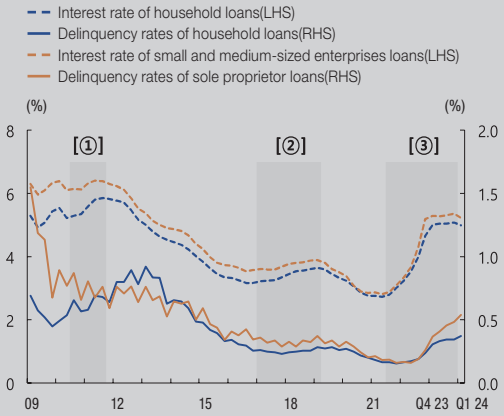
11) The delinquency rate may vary depending on the relative size of the increase in delinquencies (numerator) and loans (denominator), and the quarterly average growth rate of delinquencies and loans for sole proprietor loans by domestic banks by rate hike period shows that the first period (3.1% and 1.6%, respectively) and the second period (3.8% and 2.2%) demonstrated fairly similar growth rates, but in the third period (12.3% and 1.1%), the increase in delinquencies was significantly larger compared to the increase in loans.

12) At the end of the first quarter of 2024, the share of sole proprietor loans by loan-type across all financial institutions (based on Financial Institutions' Business Reports) showed 61.8% for loans secured by collateral other than housing, 13.9% for home mortgage loans, 10.3% for unsecured loans, 10.5% for guaranteed loans, and 3.5% for other loans.

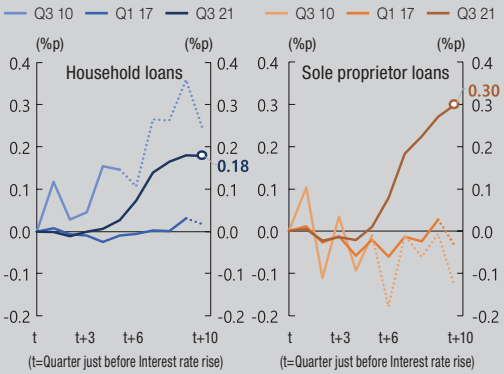
13) The average sales price per unit area (m2) of commercial real estate (based on the actual transaction price by the Ministry of Land, Infrastructure, and Transport) has continued to decline since reaching approximately KRW 6.21 million in the second quarter of 2022, dropping to KRW 5.6 million in the fourth quarter of 2023. For details, refer to Box 3 "Recent Trends and Risk Assessment of Commercial Real Estate Collateralized Loans," Analysis of Financial Stability Issues of Financial Stability Report, December 2023.

Box 1-5. Comparison of interest rate on loans[2] and Delinquency Rate[3] by Interest Rate Rise Period[1]

Trends of the interest rate of loans



Comparison[4] of cumulative change in Delinquency Rate by Interest Rate Rise Period



Notes: 1) From the quarter when the interest rise began to the quarter just before the interest rate drop
(① Q3 2010~Q3 2011, ② Q1 2017~Q1 2019, ③ Q3 2021~Q4 2023)
2) Weighted average of interest rates on loans to households and SMEs by deposit-taking banks(based on loan balance)
3) Based on delinquency rate of domestic banks due to data constraints
4) Solid line (the period of interest rate rise), dotted line (the period after the interest rate rise ends)

Source : Bank of Korea, Financial Instituion Business Report

Recent Rise in Delinquency Rates of Household and SEBO Loans Mainly Caused by an Increase in the Number of Delinquent Borrowers Rather than the Average Delinquency Amount

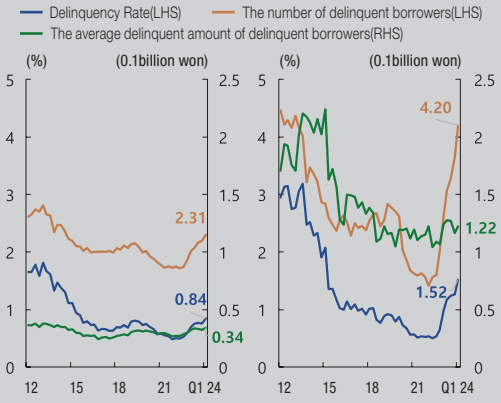
The factors that contribute to the changes in the delinquency rate of household and SEBO loans were analyzed into the share of delinquent borrowers and the average delinquent amount incurred by delinquent borrowers.[14] The results showed that the recent increase in the delinquency rate of household and SEBO loans was mainly due to the increase in the share of delinquent borrowers, namely because the number of delinquent borrowers grew faster than the total number of borrowers. As of the end of the first quarter of 2024, the average delinquent amount per capita delinquent borrower for household and SEBO loans was KRW 34 million and KRW 122 million, respectively, similar levels to those at the end of the second quarter of 2022 (KRW 27 million and KRW 104 million, respectively), shortly before the rise in delinquency rates began in earnest.[15] Conversely, the ratio of delinquent borrowers to total borrowers (the number of delinquent borrowers/total number of borrowers) for households and SEBOs was 2.31% and 4.20%, respectively, at the end of the first quarter of 2024, up significantly from 1.72% and 1.57% at the end of the second quarter of 2022(Box 1-6).

14) $$\text{Delinquency rate} = \frac{\text{Amount of delinquent loans}}{\text{Total amount of loans}} = \frac{\text{Number of delinquent borrowers}}{\text{Number of total borrowers}} \times \frac{\text{Average amount of delinquent loans}}{\text{Average amount of loans}}$$
$$= \frac{\text{Number of delinquent borrowers}}{\text{Number of total borrowers}} \times \text{Average amount of delinquent loans} \times \frac{1}{\text{Average amount of loans}}$$

15) Meanwhile, the average loan size of all household and SEBO borrowers (KRW 94 million and KRW 338 million, respectively, at the end of the first quarter of 2024) remained at a similar level to the end of the second quarter of 2022 (KRW 94 million and KRW 324 million, respectively).

Box 1-6. Share of the number of delinquency borrowers and Average delinquency amount of households[1] and SEBOs

Household loans | Loans to SEBOs



Note: 1) Delinquency rate based on Bank of Korea calculation by Consumer Credit Panel for comparision with SEBOs.
Source: Bank of Korea calculation(Consumer Credit Panel)

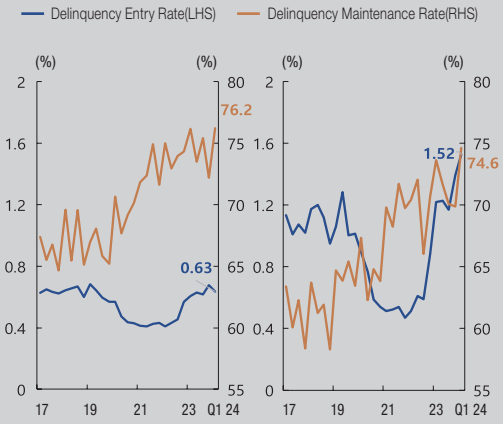
In particular, the share of delinquent SEBO borrowers (+2.63%p) grew faster than households (+0.59%p) during the same period, contributing to a larger increase in the delinquency rate of SEBO loans than that of household loans. In addition, for SEBOs, the growth margin of the share of delinquent borrowers (+2.63%p) exceeded that of the delinquency rate (+1.01%p).

Growing Number of New Delinquent Borrowers in Persistent Delinquency for Household and SEBO Loans

In order to analyze the characteristics of the recently increased delinquent borrowers, each quarter's delinquent borrowers were categorized by their delinquency status in the previous quarter, and the results showed that, for both households and SEBOs, the new delinquency entry rate (the ratio of borrowers who transitioned to delinquent borrowers in the current quarter among those who were non-delinquent in the previous quarter) has increased since 2022. As of the end of the first quarter of 2024, the new delinquency entry rate for household and SEBO borrowers amounted to 0.63% and 1.52%, respectively, compared to the end of the fourth quarter of 2021 (0.43% and 0.47%). Meanwhile, the persistence rate of delinquent borrowers (the ratio of borrowers who remain in delinquency in the current quarter among those who were delinquent in the previous quarter) showed a continued upward trend for both households and SEBOs(Box 1-7). In particular, it is estimated that the total number of delinquent borrowers has increased significantly since the second half of 2022, as tight lending rates have persisted for a considerable period of time, resulting in a large number of new borrowers entering into delinquency each quarter and adding to the aggregate number of delinquent borrowers unable to resolve their delinquencies. This accumulation of borrowers in persistent delinquency is expected to increase the upward pressure on the delinquency rate in the meantime.

Box 1-7. Delinquency Entry Rate[1] and Delinquency Maintenance Rate[2]

Household loans | Loans to SEBOs



Notes: 1) The ratio of borrowers who were not delinquent in the previous quarter but transitioned to delinquency in the current quarter
2) The ratio of borrowers who were delinquent in the previous quarter and remained delinquent in the current quarter
Source: Bank of Korea calculation(Consumer Credit Panel)

Assessment and Implications

While the recent upward trend in household and SEBO loans has slowed down compared to the past, the delinquency rate has continued to rise. In particular, the delinquency rate of SEBO loans has been rising sharply compared to that of household loans. Unlike the previous rate hike periods, the delinquency rate of SEBO loans has been rising at a faster pace during the current rate hike period due to the large increase in lending rates and the deterioration of the service industry.

Currently, the share of vulnerable borrowers who are likely to enter into delinquency due to relatively low debt repayment capacities has been on the rise, mainly among SEBOs. In particular, as the number of new delinquent borrowers has increased sharply since the second half of 2022, and many of them have been delinquent for a considerable period of time, upward pressure on the delinquency rate is likely to continue, centered on SEBOs.

Thus, to prevent a rapid increase in SEBO delinquencies, the financial authorities should actively promote debt restructuring through the New Start Fund[16] for SEBOs whose debt repayment capacities have declined significantly due to prolonged sluggishness in sales or whose recovery is unviable. The financial authorities must also strengthen the monitoring of the impact exerted on financial institutions by changes in the financial soundness of household and SEBO borrowers, including their income and interest payment burdens.

16) The government has been operating a debt restructuring program (the New Start Fund) worth KRW 30 trillion for up to three years since October 4, 2022 for small business owners and SEBOs affected by the COVID-19 pandemic, and the cumulative amount of debt restructuring applications increased to KRW 11.1 trillion as of the end of May (KRW 7.4 trillion at the end of 2023) due to the expansion of support targets (abolition of the COVID-19 damage requirement as of February 1) and shortened registration period for debt restructuring information (two years →one year, as of March 12).

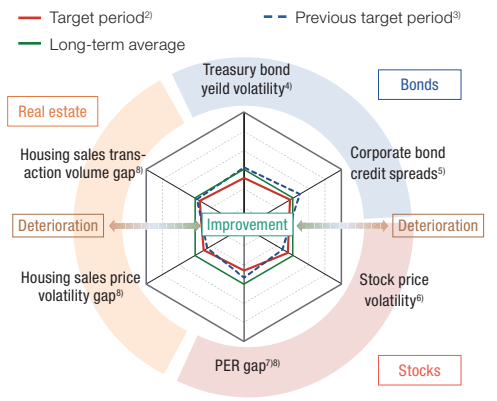
2. Asset Markets

The bond market remained stable overall, with credit spreads narrowing as Korea Treasury bond (KTB) yields fluctuated, following a sharp decline in the second half of last year, in response to expectations of monetary policy easing in major countries, including by the US Federal Reserve, and changes in domestic and international inflation and economic indicators.

Stock prices fluctuated due to geopolitical risks and expectations on U.S. monetary policy, but generally increased due to the improved performance of domestic enterprises and expectations of government policy.

Housing sales prices continued to decline, but turned upward in some regions, mainly in the Seoul metropolitan area. Meanwhile, in terms of commercial real estate, office rental fees continued to rise, while rental prices for retail stores remained sluggish.

Figure Ⅰ-2-1. Map of changes in asset market conditions[1)]



Notes: 1) Standardized on the basis of the long-term average (5-year) for each index, the relative levels of the target period and the previous target period are shown on the map.
2) During January to May 2024.(housing sales transaction volume gap being from January to April 2024)
3) During July to December 2023.
4) Monthly average volatility of Treasury bond yield (3-yr).
5) Corporate bond yield (A-) - Treasury bond yield (3-yr).
6) Daily average V-KOSPI
7) MSCI (12-month forward PER)
8) The gap refers to the deviation from the long-term average of each indicator.
Source: Bank of Korea staff calculation.

(1) Bond Markets

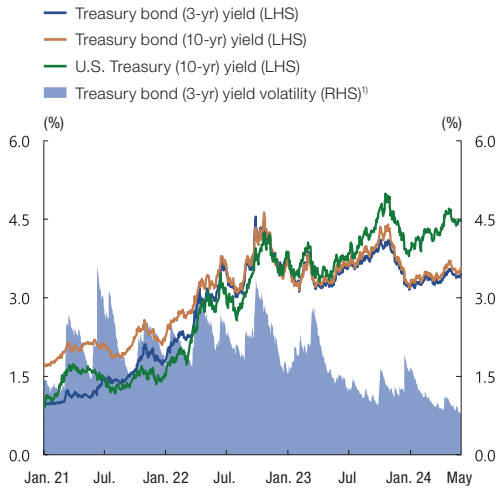
Increase in Long-term Market Interest Rates Fluctuating Within a Narrow Range

KTB yields experienced upward fluctuations this year, influenced by shifting expectations of monetary policy easing by the US Federal Reserve and other major economies, as well as domestic and international inflation and economic indicators. By period, since late January, KTB yields have climbed along with major government bond yields as solid US economic and employment data reversed expectations of an early Fed rate cut. In April, KTB yields continued to rise[34)] as higher-than-expected

34) KTB yields surged to reach their highest for the year at the end of April, marking 3.55% for 3-year bonds (April 29) and 3.71% for 10-year bonds (April 25).

U.S. inflation data and solid economic and employment data heightened market vigilance against the prolonged continuation of the Fed's tightening stance compared to initial expectations, amid the possibility of oil price instability due to the Israel-Iran conflict. However, in May, KTB yields declined along with the U.S. Treasury bonds due to the FOMC meeting results being less hawkish than expected and a slowdown in the US employment and inflation indicators.[35] Meanwhile, KTB yields volatility continued to decline this year(Figure I-2-2).

Figure Ⅰ-2-2. Korean and US Treasury bond yields

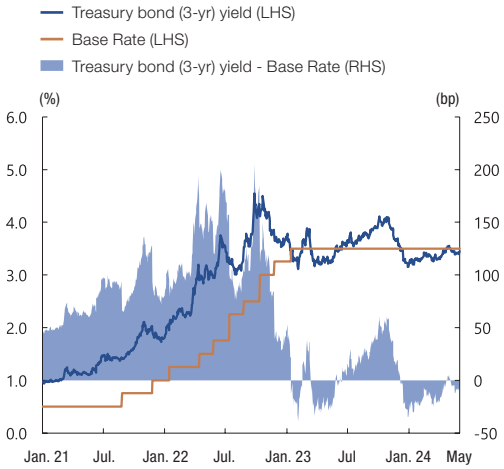


Note: 1) Daily volatility calculated using exponential weighted moving average (EWMA) method.

Sources: Korea Financial Investment Association, Bloomberg.

The spread between the three-year KTB yield rate and the benchmark rate narrowed, reflecting the rise in KTB yields(Figure I-2-3).

Figure Ⅰ-2-3. Base Rate and Treasury bond yield



Sources: Bank of Korea, Korea Financial Investment Association.

Narrowing Credit Spread of Corporate Bonds

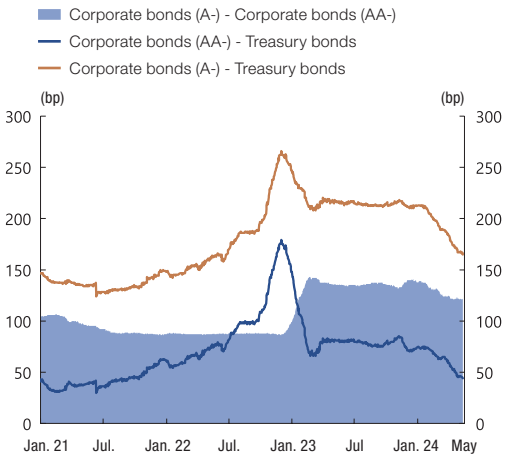
Credit spreads of corporate bonds narrowed substantially[36] from January, driven by improved supply and demand conditions, including institutional investors' investment capital allocations at the beginning of the year, and large-scale net redemptions of bank bonds. In particular, the narrowing of spreads on subprime bonds was particularly pronounced due to continued demand for high yield products from major investment institutions, as well as investment demand for high yield bond funds (high return, high risk bond funds). However, after the end of April, the narrowing trend weakened somewhat due to the burden of high interest rate levels by the bullish trend since the beginning of the year. Meanwhile,

35) Meanwhile, KTB yields declined significantly in June, mainly due to the continued slowdown in domestic and foreign inflation indicators and the expansion of foreign net purchases of government bond futures.

36) A narrowing trend continued this year for credit spreads of bonds issued by credit-specialized financial companies (AA0 basis), supported by favorable supply and demand conditions in the overall credit bond market, despite concerns over high real estate PF exposures. (75 at the end of 2023 → 72 at the end of January 2024 → 51 at the end of March → 41 at the end of May).

the spread between credit ratings (based on AA- and A-) narrowed significantly compared to the end of 2023, reflecting a larger narrowing of subprime bonds (A-) spread(Figure I-2-4).[37)]

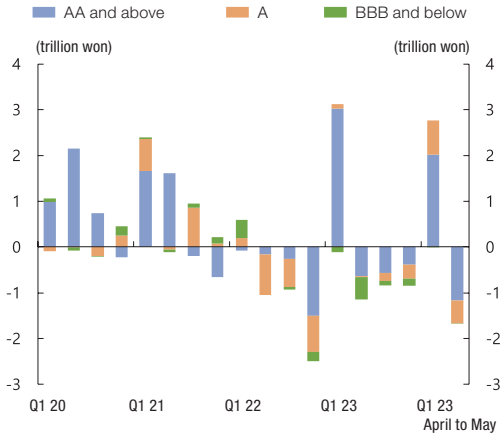
Figure Ⅰ-2-4. Corporate bond credit spreads[1)] and spreads across credit ratings



Note: 1) Three-year maturity basis.
Source: Korea Financial Investment Association.

Regarding corporate bond issuance during the first half of the year, issuance demand deferred by companies due to book closing became concentrated at the beginning of the year, followed by large-scale refunding demand in preparation for maturity, leading to a large net issuance in the first quarter of 2024. However, in April and May, a net redemption occurred due to the impact of large-scale corporate bond issuance at the beginning of the year(Figure I-2-5).

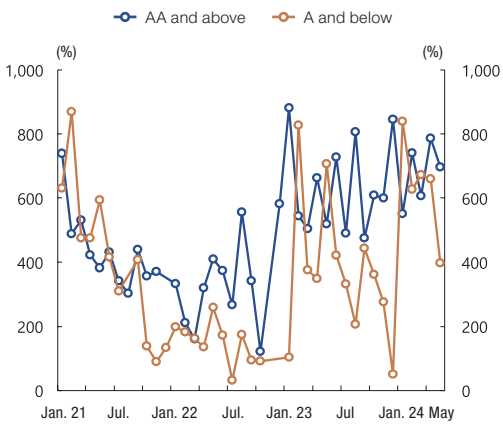
Figure Ⅰ-2-5. Net corporate bond[1)] issuance[2)]



Notes: 1) Public offer basis. Excluding issuances by financial companies.
2) Monthly average basis.
Sources: Bank of Korea, Korea Securities Depository.

Meanwhile, the volume of issued corporate bonds was effectively absorbed by the market, showing a favorable market participation to corporate bond demand survey(Figure I-2-6).[38)]

Figure Ⅰ-2-6. Rate of participation[1)] in book-building for corporate bonds[2)]



Notes: 1) Participation amount in book-building/ expected issuance amount.
2) Public offer basis. Excluding issuances by financial companies.
Sources: Bank of Korea, Financial Supervisory Service.

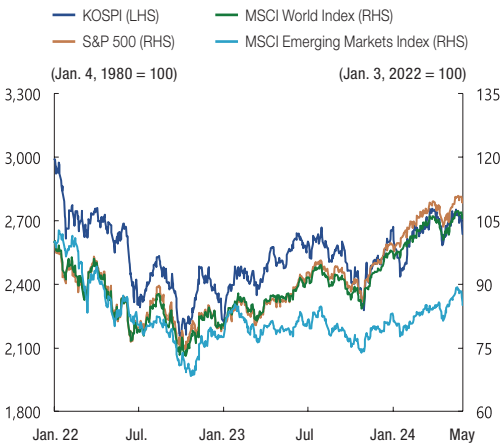
37) The spread (in basis points) between corporate bond credit ratings (from A- to AA-): 138 at the end of 2023 → 133 at the end of January 2024 → 130 at the end of February → 125 at the end of March → 121 at the end of April.
38) Out of 128 companies that conducted demand forecasting from January to May (270 cases, KRW 17.7 trillion), only 9 companies had unsold issues (10 cases, KRW 0.9 trillion).

(2) Stock Markets

Significant Fluctuations in Stock Prices

Stock prices fell sharply at the beginning of the year due to concerns about the slowdown of China's economy and geopolitical risks, but regained ground since mid-January due to an improvement in the semiconductor industry, favorable export performance, and expectations of government policies to increase corporate value. In April, the market experienced a major correction along with major economies as risk aversion sentiments intensified in light of the Israel-Iran conflict and concerns over the Fed's delayed rate cut. In May, the market experienced an upward trend due to improved corporate earnings, government policy expectations, and the prospect of improvement in the semiconductor industry driven by the growth of the AI industry, in addition to the slight moderation of the Middle East crisis, but since late May, it has declined due to foreign selling centered on the electrical and electronics sector(Figure I-2-7).

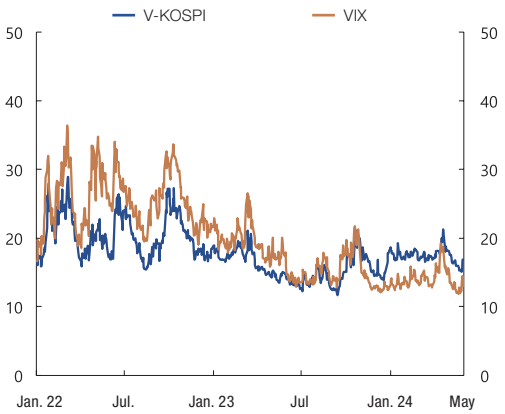
Figure Ⅰ-2-7. KOSPI and global stock prices[1)]



Note: 1) The U.S. is based on the S&P 500 index. Developed and emerging market countries are based on the MSCI.
Sources: KOSCOM, Bloomberg.

The KOSPI 200 Volatility Index (V-KOSPI) increased in April as market participants expressed increased caution over conflicts in the Middle East, but quickly declined as tensions in the region eased, with fears of escalating conflicts somewhat abated(Figure I-2-8).

Figure Ⅰ-2-8. Stock price volatility indices[1)]

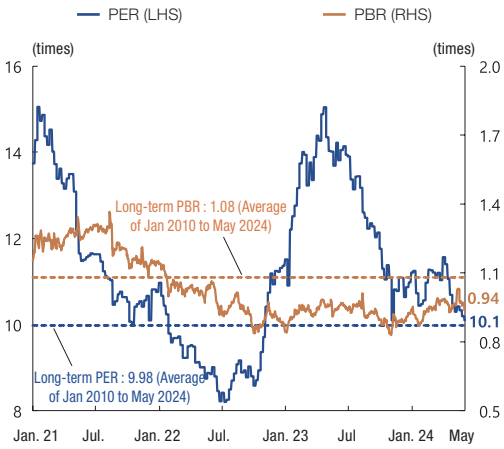


Note: 1) The volatility indices are calculated using prices for options on the KOSPI 200 and S&P 500 indices.
Sources: KOSCOM, Bloomberg.

Decline in PER and Increase in PBR

The average price-to-earnings ratio (PER)[39)] rose to 11.6 at the end of March, as stock prices increased, but declined to 10.1 at the end of May, which is slightly above the long-term average (9.98, since 2010), as the prices declined due to geopolitical risks and earnings forecasts were upgraded due to strong corporate earnings in April. Meanwhile, the average price-to-book value ratio (PBR) stood at 0.94 at the end of May, the same level as the end of last year(Figure I-2-9).

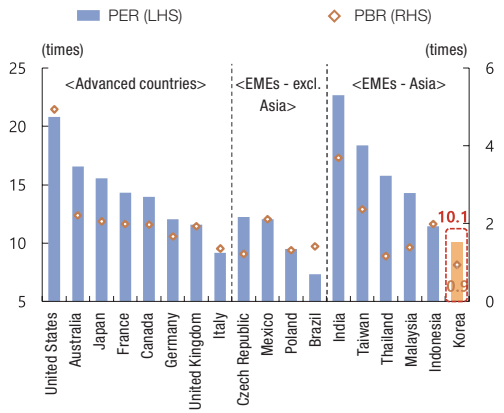
Figure Ⅰ-2-9. PER[1] and PBR[2]



Notes: 1) MSCI basis (12-month forward).
2) KOSPI basis.
Sources: Bloomberg, Refinitiv.

Compared to other countries, the PER and PBR of Korea's domestic market were lower than those of advanced economies and major emerging economies as of the end of May(Figure Ⅰ-2-10).

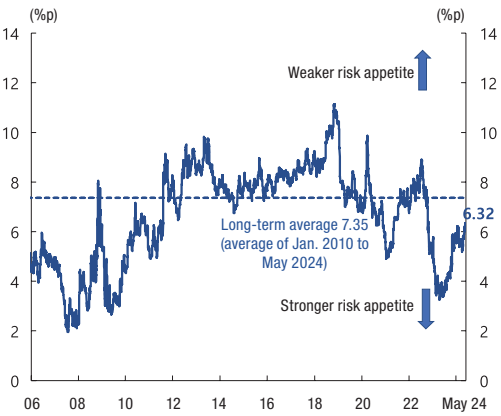
Figure Ⅰ-2-10. PERs[1][2] and PBRs[1] of major countries



Notes: 1) May 2024 basis.
2) MSCI basis (12-month forward).
Sources: Bloomberg, Refinitiv.

Meanwhile, the stock risk premium[40] rose as investors' risk appetite weakened, but remained at 6.32%p as of the end of May, lower than its long-term average (7.35%p since 2010) (Figure Ⅰ-2-11).

Figure Ⅰ-2-11. Stock risk premium[1]



Note: 1) Treasury bond (10-year) yield subtracted from the earnings-to-price ratio (reciprocal of the 12-month forward MSCI PER).
Sources: Bloomberg, Refinitiv.

39) Based on the 12-month forward MSCI PER, the ratio is calculated by dividing the sum of stock market capitalizations of companies included in the MSCI index by the sum of their expected net profits (values forecast by Korean and foreign securities companies) for the following one-year period.

40) The equity risk premium is calculated by subtracting the Treasury yield (10-year) from the earnings-to-price ratio (reciprocal of MSCI-based 12-month leading PER). The fact that investors hold stock even when the excess return relative to the risk-free rate is lower than in the past means a higher risk appetite.

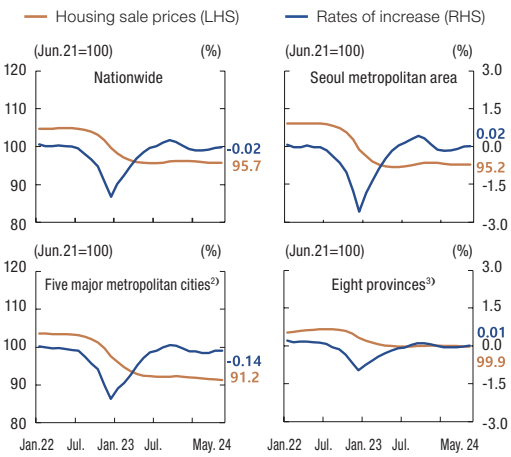
(3) Real Estate Markets

Shift to Upward Movement in Housing Sale Prices in Some Regions

Housing sale prices have continued their downward trend[41] since December 2023 due to downward pressure resulting from the prolonged tightening of monetary policy and the government's stringent management of household loans.[42] However, in May 2024, the prices turned upward in some regions, mainly in the Seoul metropolitan area.

In the Seoul metropolitan area, housing prices continued the downward trend from December 2023, before switching to an increase[43] of +0.02% in May 2024 compared to the previous month. For the non-Seoul metropolitan areas, a decline centered oround the five metropolitan cities (-0.14%) has continued (-0.06%), which was differentiated from the Seoul metropolitan area(Figure I-2-12).

Figure Ⅰ-2-12. Trends and rate of increase[1] in housing sale prices



Notes: 1) Total of House Sale Price Index, compared to previous months.
2) Busan, Daegu, Gwangju, Daejeon, and Ulsan.
3) Gangwon, Chungbuk, Chungnam, Jeonbuk, Jeonnam, Gyeongbuk, Gyeongnam, and Jeju.

Source: Korea Real Estate Board.

The price-to-income ratio (PIR), which compares housing prices with income, continued to decline before rebounding in the fourth quarter of 2023, but the price-to-rent ratio (PRR), which compares housing prices with rent, continued to decline.

During the first quarter of 2024, the PIR (nationwide) remained 4.2, the same level as the previous quarter.[44] The PRR (nationwide) has

41) Growth rate in the multi-family housing sale prices (month-on-month, unit: %, source: Korea Real Estate Board): 0.36 in January 2024 → -0.04 in February → 0.27 in March → -0.11 in April.
Growth rate in the housing sale prices (month-on-month, unit: %, source: KB Real Estate): -0.12 in January 2024 → -0.08 in February → -0.11 in March → -0.03 in April → -0.08 in May.

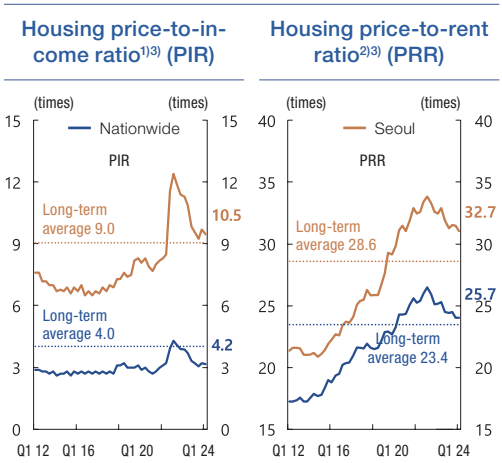
42) On September 13, 2023, the government announced measures to manage household debt, including tightening the standards for 50-year maturity mortgage loans and suspending the supply of general-type special mortgage loans, aka Bogeumjari loan. Also, as of February 26, 2024, a stressed DSR was phased in for home mortgage loans from banks, reflecting the risk of future interest rate changes in the DSR.

43) Housing sale prices in Seoul rose 0.09% in April 2024, the first increase in five months, followed by an expansion of the growth margin in May (0.14%). In Incheon, prices rose 0.07% in May 2024, shifting to an increase in seven months. However, Gyeonggi continued its downward trend in May with a decrease of -0.08%.

44) The PIR (third quintile, unit: multiple, source: KB Real Estate):
Nationwide: 4.9 in the first quarter of 2023 → 4.6 in the third quarter → 4.8 in the fourth quarter → 4.7 in the first quarter of 2024.
Seoul: 10.8 in the first quarter of 2023 → 10.0 in the third quarter → 10.4 in the fourth quarter → 10.2 in the first quarter of 2024.

been on the downward trend since it reached a peak in the fourth quarter of 2021 (28.2) and decreased to 25.7 in the first quarter of 2024. Both the PIR and the PRR remain above their long-term averages of 4.0 and 23.4, respectively(Figure I-2-13).

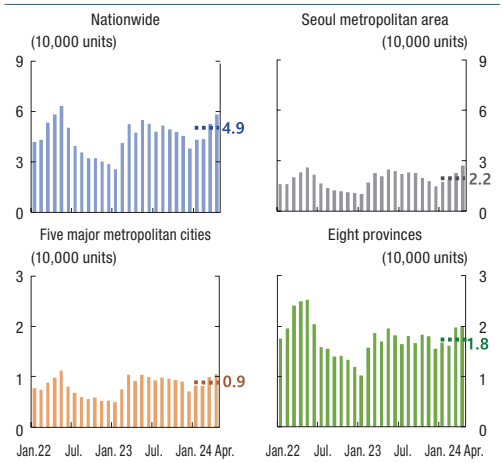
Figure I-2-13. Price-to-income ratio and price-to-rent ratio



Notes: 1) Housing price (third quintile) / Annual household income (third quintile).
2) Housing price / Annual rent.
3) Long-term average is the average from Q1 2012 to Q1 2024.
Sources: Bank of Korea, Korea Real Estate Board.

From January to April 2024, the volume of housing sales transactions increased by 18.4% to a monthly average of 49,000 units from the same period of the previous year (42,000 units), but has remained significantly below the long-term average of 74,000 units since 2010.[45] By region, the transaction volume increased across all regions. In the Seoul metropolitan area, the volume of housing sales transactions averaged 22,000 units, up 21.5% from 18,000 units in the same period in the previous year. In the five metropolitan cities, the average increased by 15.3% to 9,000 units from 8,000 units year-on-year. The eight provinces showed an increase of 17.5% to reach 18,000 units from the same period in the previous year (15,000 units) (Figure I-2-14).

Figure I-2-14. Housing sale transaction volumes



Source: Ministry of Land, Infrastructure, and Transport.

Increase in Leasehold Deposits and Monthly Rental Prices

In the housing rental market, there has been a continuous upward trend in leasehold deposits (jeonse) and in monthly rental prices, in particular around the Seoul metropolitan area.[46] [47]

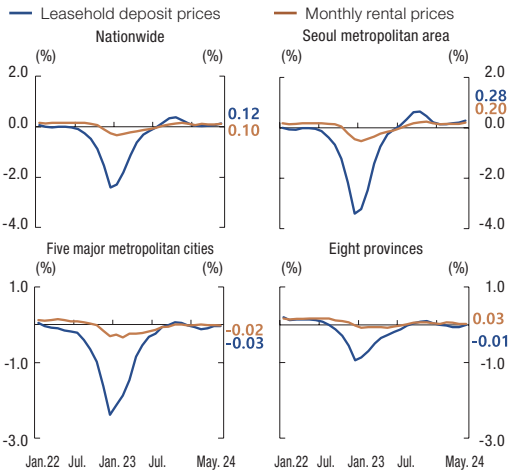
45) Purchase sentiment has been on the rise since February and is picking up, but remains significantly depressed. Buyer Superiority Index (source: KB Kookmin Bank): 17.9 in January 2023 → 29.8 in July → 21.2 in January 2024 → 23.6 in May (Below 100 indicates that sellers outnumber buyers, while above 100 means buyers outnumber sellers. The long-term average between the first quarter of 2009 and the first quarter of 2024 was 50.9).

46) Growth rate of leasehold deposit prices (month-on-month, unit: %, source: Korea Real Estate Board): -2.29 in January 2023 → -0.04 in July → 0.12 in December → 0.05 in March 2024 → 0.07 in April → 0.12 in May.
Growth rate of monthly rental prices (month-on-month, unit: %, source: Korea Real Estate Board): -0.33 in January 2023 → -0.05 in July → 0.12 in December → 0.09 in March 2024 → 0.08 in April → 0.10 in May.

47) Growth rate of home leasehold deposit prices (month-on-month, unit:%, source: KB Real Estate): -1.98 in January 2023 → -0.24 in July → 0.09 in December → 0.12 in March 2024 → 0.00 in April → 0.07 in May.

In the Seoul metropolitan area, leasehold deposit prices and monthly rental prices have been rising after turning to an upward trend during July and August of 2023, while the growth margin of leasehold deposit prices has been relatively large. Meanwhile, the five metropolitan cities and the eight provinces saw the said prices fluctuating within a narrow margin(Figure I-2-15).

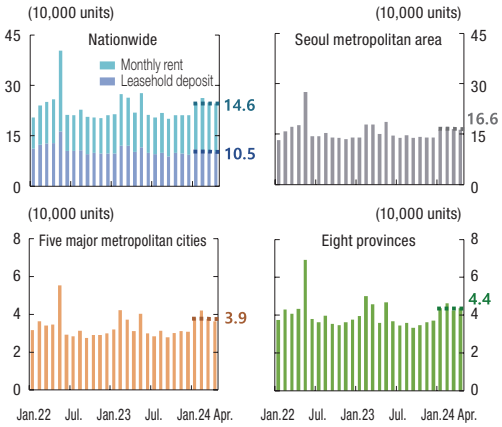
Figure Ⅰ-2-15. Rates of increase[1] in leasehold deposits and monthly rental prices



Note: 1) Compared to previous months.
Source: Korea Real Estate Board.

The transaction volume of leasehold deposits and monthly rentals amounted to a monthly average of 251,000 housing units from January to April of 2024, a slight increase of 3.3% from the same period of the previous year (243,000 units). By rental type, the volume of leasehold deposit transactions showed a monthly average of 105,000 units, down by 4.6% from the same period of the previous year (110,000 units), while that of monthly rentals averaged 146,000 units, up by 9.9% from the same period of the previous year (132,000 units). As a result, the proportion of monthly rentals out of the sum of leasehold deposits and monthly rentals rose by 3.5%p to 58.0% from January to April, compared with the same period of the previous year (54.5%)(Figure I-2-16).

Figure Ⅰ-2-16. Monthly house leasehold deposits and rental transaction volumes[1)2)3)]

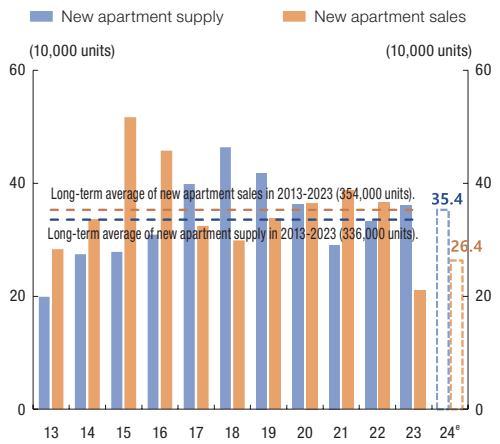


Notes: 1) Since June 2021, the scope of calculation has been expanded from registered fixed date data from housing rental transaction reports.
2) During May 2022, the number of reports temporarily increased due to the expiration of the guidance period for reporting rental transactions.
3) Due to data limitations, the differentiation between the number of key money deposit leaseholds and monthly rental transactions is exclusively conducted at a nationwide level.
Source: Ministry of Land, Infrastructure, and Transport.

Decrease in New Apartment Supply and Increase in New Apartment Sales

In 2024, the supply of new apartments reached 354,000 units, slightly lower (-2.2%) than the previous year's level (362,000 units), but is expected to surpass the average level in previous years (an annual average of 336,000 units from 2013 to 2023). Meanwhile, the new apartment sales volume for 2024 is expected to reach 264,000 units, showing a significant increase of 24.8% from the previous year (212,000 units), although it is forecast to remain well below the previous level (an annual average of 354,000 units during 2013-2023)(Figure I-2-17).

Figure Ⅰ-2-17. New apartment supply and new apartment sales[1)]



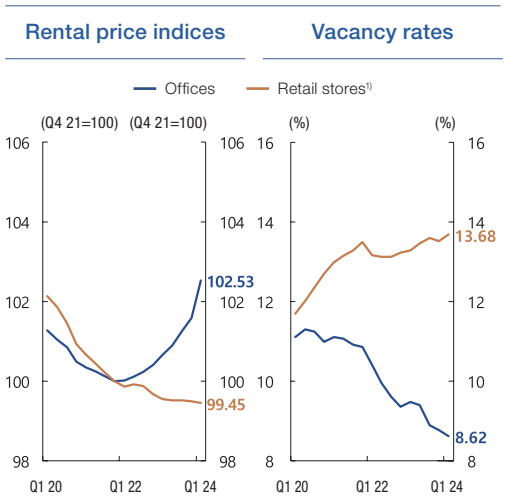
Note: 1) As of June 3, 2024. Based on sum of monthly planned amount for 2024.
Source: Real Estate 114.

On the other hand, the volume of unsold homes showed a decline and then has been on the increase since the end of November 2023 (58,000 units), reaching 72,000 units as of the end of April 2024 (15,000 units in the Seoul metropolitan area and 57,000 units in the non-Seoul metropolitan areas).[48)] In addition, the number of finished-yet-unsold new homes continues to show a gradual upward.[49)]

Rise in Rent for Offices and Continued Slump in Rent for Retail Stores

At the end of the first quarter of 2024, office rental prices increased by 1.27% to 102.53 compared to the third quarter of 2023 (101.25), driven by increased rental demand from the IT industry and limited new supply. However, retail rental prices continued to decline, influenced by factors such as shifts in consumption patterns in favor of online shopping. As a result, the vacancy rate for offices stood at 8.62% as of the end of the first quarter of 2024, down 0.27%p from the third quarter of 2023 (8.89%), while the vacancy rate for retail stores was 13.68%, up 0.08%p from the third quarter of 2023 (13.60%)(Figure I-2-18).

Figure Ⅰ-2-18. Commercial real estate rental price indices and vacancy rates



Note: 1) Based on medium- to large-sized units.
Source: Korea Real Estate Board.

Rise in Returns on Capital for Offices and Retail Stores

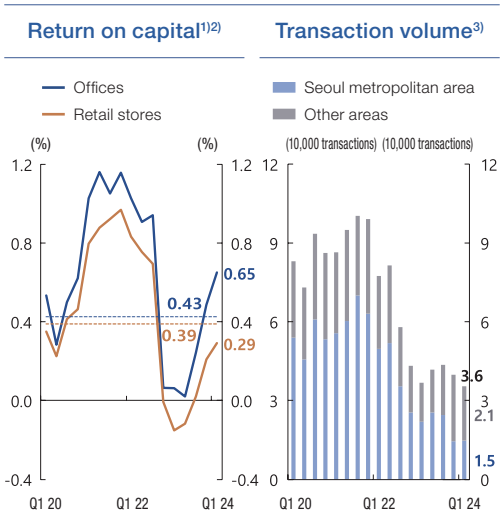
The return on capital for commercial real estate including offices and retail stores has been improving since the rebound in 2023.

During the first quarter of 2024, the capital return for offices stood at 0.65%, an increase of

48) Stock of unsold new housing units (based on month-end): 75,000 units in January 2023 → 63,000 units in July → 64,000 units in January 2024 → 72,000 units in April.
49) Stock of unsold new housing units after construction completion (based on month-end): 8,000 units in January 2023 → 9,000 units in July → 11,000 units in January 2024 → 13,000 units in April.

0.41%p from the third quarter of 2023 (0.24%), elevated to a level above the long-term average. Meanwhile, the capital return for retail stores stood at 0.29%, up 0.27%p from the third quarter of 2023 (0.02%), but remains below its long-term average. The volume of commercial real estate transactions during the first quarter of 2024 was 36,000, a decrease of 2.9%, compared to the 37,000 transactions from the same period in the previous year(Figure I-2-19).

Figure Ⅰ-2-19. Return on capital and transaction volume of commercial real estate



Notes: 1) The quarter-over-quarter growth rate of the current quarter's asset value, reflecting price changes in land and buildings, defined as (current quarter's asset value - previous quarter's asset value)/previous quarter's asset value. Retail stores are based on medium and large-sized.

2) The dashed line represents the average from Q1 2009 to Q1 2024.

3) Based on buildings used for commercial purposes, including so-called "officetels," dual-purpose one-room studios used for both commercial and residential purposes. Including transactions other than sales, such as allotments of new apartments, gifts, or exchanges.

Sources: Korea Real Estate Board, Ministry of Land, Infrastructure, and Transport.

Box 2.

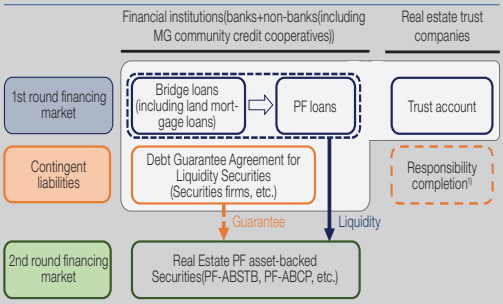
Current Status and Risk Assessment of Real Estate PF-related Finantial Exposures[1)]

Since the mid-2010s, Korea's real estate PF-related exposures have increased significantly due to low interest rates and a booming real estate market. However, concerns about their soundness have been growing as the real estate and construction industries have been sluggish since 2022. As real estate PFs are engaged in various sectors, including financial institutions, construction companies, and real estate developers, while also being connected to the capital market through the securitization of PF loans, their failure could affect the financial system as a whole. As such, this article examines the current status and potential risks of PF-related finantial exposures, which are currently considered to be a major source of financial instability in Korea.

Current Status of Real Estate PF-Related Exposures Across the Financial Sector

Real estate PF-related finantial exposures[2)] can be divided into PF loans (bridge loans and main PF loans) directly funded by financial institutions, guarantees on real estate PF asset-backed securities, and exposures of real estate trusts. Real estate PF-related exposures of banks and non-bank financial institutions (including MG Community Credit Cooperatives) account for the majority, alongside some real estate PF-related exposures of real estate trust companies(Box 2-1).[3)]

Box 2-1. Real Estate PF - related Financial Exposures



Note: 1) When contingent liabilities are fulfilled, PF loans to financial institutions are reduced(Exposure transfer).

Real Estate PF Loans

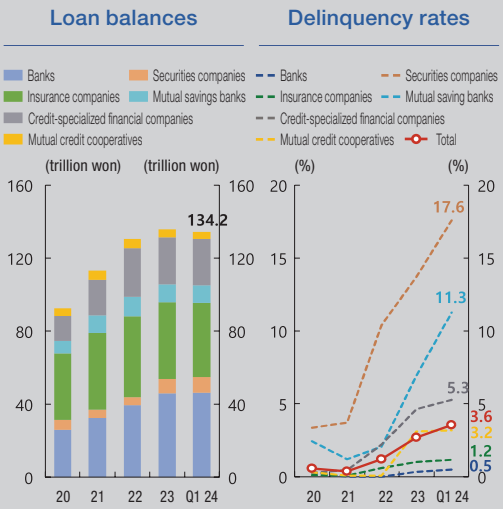
The balance of real estate PF loans by financial companies[4)] (KRW 134.2 trillion, as of the end of the first quarter of 2024) increased rapidly from 2020 to 2022, mainly among non-bank financial institutions, but the growth rate has slowed significantly since 2023. This is mainly attributed to

1) This article was authored by Kwon Yoon-jeong and Shin Jung-hoo (Financial Stability Analysis Team) and was reviewed by Seo Pyoung-seok (director of the Financial Stability Strategy & Coordination Division) and Kim Jeong-ho (head of the Financial Stability Analysis Team).
2) According to the financial authorities, real estate PF-related finantial exposures (including PF loans and guarantees of real estate PF asset-backed securities) totaled approximately KRW 230 trillion at the end of 2023 (The Financial Services Commission and the Financial Supervisory Service's Press Release, "FSC and FSS Announce Measures to Seek an Orderly Soft-landing in the Real Estate Project Finance Market," May 14, 2024).
3) Real estate trust companies have direct exposures as well as contingent liabilities related to completion guarantee agreements.
4) The analysis of delinquency rates among PF loans included bridge loans (excluding land mortgages) and main project finance loans (excluding MG Community Credit Cooperatives).

the fact that financial institutions have refrained from issuing new loans to real estate PFs in order to strengthen their asset quality management amid a sluggish real estate market with declining home sales prices since the second half of 2022.

Meanwhile, the delinquency rate of real estate PF loans was 3.55% at the end of the first quarter of 2024, and has been steadily rising since 2021. Securities companies, mutual savings banks, and credit-specialized financial companies are exhibiting higher levels of delinquency rates than other business sectors, particularly with mutual savings banks demonstrating relatively rapid growth. The delinquency rate is likely to continue to increase for some time due to the impact of the sluggish real estate market, and it is likely to rise further if financial institutions fail to resolve non-performing PF loans through auctions and public sales. However, when compared to the crisis of mutual savings banks insolvency in the past,[5] the delinquency rate of PF loans is considerably lower(Box 2-2).

Box 2-2. Trends in PF loans



Sources: Financial Supervisory Services.

Guarantee of PF Asset-backed Securities by Securities Companies

The volume of guarantees for PF asset-backed securities by securities companies[6] amounted to KRW 18.2 trillion at the end of the first quarter of 2024, accounting for around half of the total PF asset-backed securities outstanding (KRW 39.2 trillion). Guarantees for PF debt by securities companies decreased in the fourth quarter of 2022 as a consequence of the volatility in the PF-ABCP market and the sluggish real estate market, and then decreased significantly from

5) The historical peak of PF loan delinquency rate was 13.6% (at the end of 2012) for the entire financial sector, whereas by sector, the rate for banks stood at 4.8% (at the end of 2013), securities companies at 36.6% (at the end of 2015), insurance companies at 8.3% (at the end of 2010), mutual savings banks at 62.0% (at the end of 2013), credit-specialized financial companies at 17.7% (at the end of 2010), and mutual credit cooperatives at 37.5% (at the end of 2011) (Financial Supervisory Service press release, March 21, 2024).

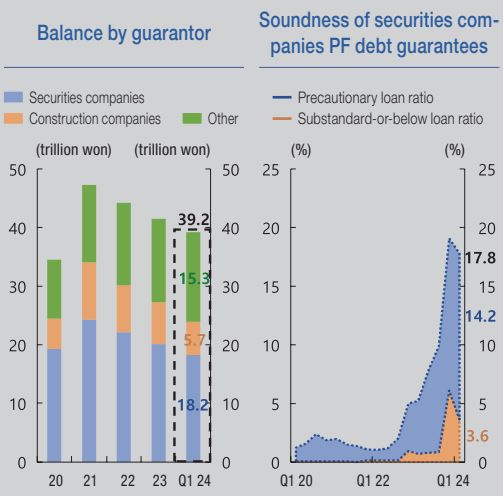
6) In addition to securities companies, banks and credit-specialized financial companies also provide debt guarantees for PF asset-backed securities, but on a relatively modest scale.

7) The total PF exposure of securities companies, which comprise debt guarantees on PF asset-backed securities and PF loan balances, was KRW 26.9 trillion at the end of the first quarter of 2024, similar to the level at the end of 2022 (KRW 26.7 trillion). Securities companies' PF exposure to capital stood at 34.0% at the end of the first quarter of 2024, lower than that of other non-bank financial institutions (64.0% for mutual savings banks, 60.7% for mutual credit cooperatives, and 51.7% for credit-specialized financial companies).

2023 onwards as some securities companies converted debt guarantees for securitized securities into loans.[7)]

Meanwhile, the soundness of securities companies' PF debt guarantees is deteriorating. The precautionary loan ratio, as an indicator of potential distress, has been rising rapidly since 2022, while the substandard-or-below loan ratio has also risen sharply due to recommendations from the Financial Supervisory Service[8)] to strengthen asset quality classification(Box 2-3).

Box 2-3. Real Estate PF asset-backed Securities



Notes: 1) Financial institutions and municipalities other than securities companies

Sources: Korea Financial Investment Association, Korea Credit Information Services, Financial institution business reports.

Real Estate Trust Companies' Loans to Trust Accounts

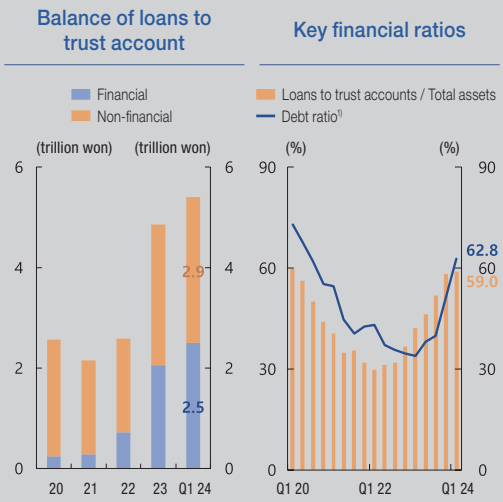
Among the land trusts conducted by real estate trust companies,[9)] funds of real estate trust companies (loans to trust accounts)[10)] invested in loan-type land trusts and management-type land trusts involving completion guarantees also constitute real estate PF-related exposures of financial institutions. Loans to trust accounts mainly occur in loan-type land trusts with poor sales performance, but have also recently increased in management-type land trusts involving completion guarantees. This is due to an increase in the number of cases where real estate trust companies are forced to fulfill their completion guarantee obligations in the event of lower-than-planned completion rates or the bankruptcy of the construction company concerned. At the end of the first quarter of 2024, real estate trust companies' balance of loans to trust accounts stood at KRW 5.4 trillion, marking rapid growth since 2022, mainly among financial trust companies. As a result, the proportion of loans to trust accounts in total assets is growing, and the debt ratio is also rising due to the increase in external borrowing, adding to the financial burden on real estate trust companies(Box 2-4).

8) During meetings with financial institutions, the financial supervisory authorities recommended that asset quality classification standards should be strictly applied to the year-end 2023 balance sheet to strengthen the risk management of real estate PF-related exposures and proactively accumulate loan loss provisions (including January 24, 2024).

9) A land trust is a specific type of trust related to the development, sales, and leases of apartments, etc. by trusting land, and can be broadly categorized into a loan-type land trust, a management-type land trust involving completion guarantees, and a general management-type land trust. Under a loan-type land trust, a real estate trust company directly finances a real estate development project, while under a management-type land trust involving completion guarantees, the cost of the development project is borne by a third party, such as a construction company, while the real estate trust company additionally guarantees the commitment to completion. In the case of a general management-type land trust, no additional obligations arise other than the management of the trust property.

10) Loans to trust accounts refer to the accounting for loans transferred by real estate trust companies from a specific account into a trust account in order to expend payments including construction costs.

Box 2-4. Real Estate trust companies' balance of loans to trust accounts

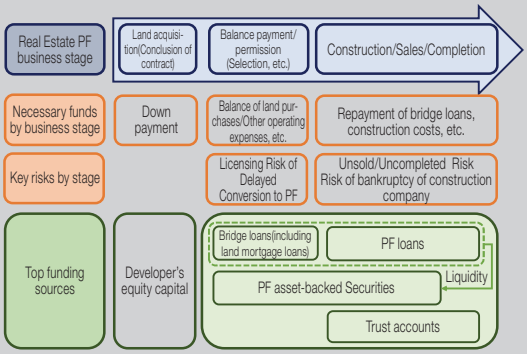


Note: 1) Total Debt / Total Asset
Sources: Financial institution business reports.

Risk Analysis for Real Estate PF-related Exposures

As real estate PFs undergo project stages such as land acquisition, sales, construction, and completion, various interests and risk factors arise in the process. In particular, they are linked to the financial sector in the course of securing financing from financial institutions in each stage, and their connectedness expands to the capital market, real estate trust companies, and real estate and construction companies through the securitization of PF loan bonds, land trusts, and commitment to completion guarantee. Accordingly, this article examines the risks of real estate PF-related finantial exposures based on the stages of the real estate PF business and the process of its expanding connections(Box 2-5).

Box 2-5. Funding and key risks of real estate PF projects by phase

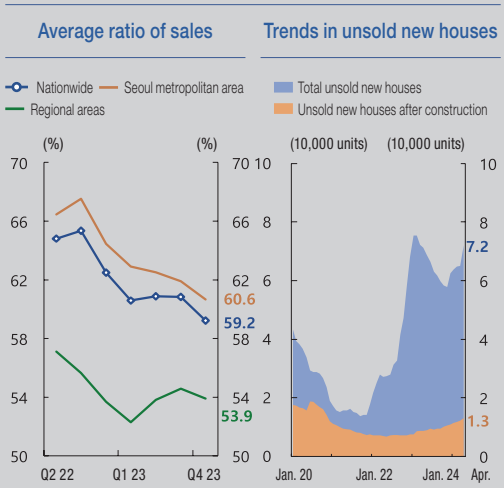


Deterioration in the Quality of Real Estate PF Loans

Real estate PF loans are divided into bridge loans to raise funds for land purchases before obtaining a business license, and main PF loans to repay bridge loans and fund the cost of the construction phase from the acquisition of business licenses until construction is complete. Of the two loans, the bridge loan is relatively risky due to the uncertainty of land purchases, business license acquisition, and conversion to the main PF loans. An analysis of real estate PF loans by dividing them into bridge loans and main PF loans shows that the quality of real estate loans has deteriorated somewhat. Regarding bridge loans, due to the sluggish real estate economy and the spread of market vigilance related to real estate PFs, the maturity of bridge loans was extended as more loans failed to be converted into main PF loans, leading to a prolonged loan period and higher interest rates. Such prolonged loan periods and rising interest rates can contribute to the deterioration of PFs' performance through accumulation of business and financial expenses, thereby increasing the likelihood of non-performance of related loans.

Meanwhile, once the loans are converted to main PF loans, the risk is somewhat reduced in terms of project feasibility compared to the bridge loan stage. However, main PF loans may also be at risk of becoming insolvent if the project is not completed due to construction interruptions or delays caused by the bankruptcy of the construction company or the developer, or if the sales rate is low. The recent increase in the number of bankruptcies and closures in the general construction industry, as well as the number of applications for rehabilitation,[11] has raised concerns about risks posed by general construction companies. Meanwhile, the risk of unsold properties is also increasing as the average sales rate of projects is declining due to the overall sluggish real estate market and rising sales prices[12] resulting from increased construction costs.[13] In particular, the sales rate of properties in regional areas is significantly lower than that of the Seoul metropolitan area. The recent sales market conditions show that the number of unsold new houses nationwide decreased after peaking in February 2023, but has increased again since November 2023 in both regional areas and the Seoul metropolitan area, and the number of unsold post-construction new houses has reached its highest level since June 2020(Box 2-6).[14] As a result, the risks arising from unsold units may increase for projects with unfavorable location conditions.

Box 2-6. PF loan risks in real estate PF loans



Note: 1) Based on business for sale

Sources: Financial institution business reports, Ministry of Land, Infrastructure, and Transport.

Deterioration in the Soundness of PF Debt Guarantees by Small and Medium-sized Securities Companies

The issuance of PF asset-backed securities increases the connectedness between the real estate PF business and the capital market, thus serving as a channel for short-term capital

11) The number of bankruptcies declared by general construction companies (unit: case): 1 in 2021 → 5 in 2022 → 9 in 2023 → 0 in the first quarter of 2024
Files for closure (unit: case): 169 → 261 → 418 → 104
Files for rehabilitation (unit: case): none → none → 9 (December 2023) → 18 (January-April 2024)

12) National sales price of apartment unit per m2 (unit: KRW million, Korea Housing & Urban Guarantee Corporation, figures in the parentheses are for the prices in Seoul): 4.685 (9.024) in December 2022 → 5.261 (10.590) in December 2023 → 5.683 (11.770) in April 2024.

13) Construction Intermediate Goods Price Index (2020=100): 102.1 in December 2020 → 130.0 in December 2021 → 138.1 in December 2022 → 140.9 in March 2024

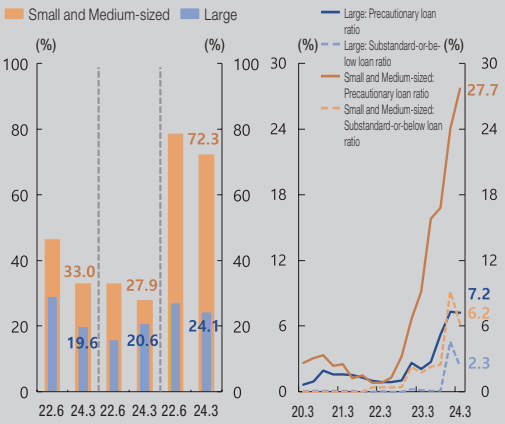
14) In addition, the number of apartment units for sale in 2024 is expected to be 264,000 units (121,000 units in regional areas), which is expected to be slightly higher than the previous year (212,000 units, 86,000 units in regional areas) due to the partial deferral of the planned sales in 2023.

market shocks to affect PF lending. In terms of securities companies' debt guarantees[15] for PF asset-backed securities, by the size of security companies,[16] the ratio of debt guarantees to the equity capital of small and medium-sized securities companies was [17].0% at the end of the first quarter of 2024, a substantial decrease from the end of June 2022 (46.5%),33 while the proportion of bridge loans (33.0% → 27.9%) and subordinated debts (78.6% → 72.3%) in total PF debt guarantees also decreased. However, compared to large securities companies, the share of risky bridge loans and subordinated loans is still significantly higher, and the deterioration of PF debt guarantees is continuing at a fast pace(Box 2-7). Therefore, it is necessary to continuously monitor the liquidity situation of small and medium-sized securities companies as liquidity risks faced by securities companies are likely to expand in the occurrence of a general liquidity crunch in the short-term financial market due to unexpected external shocks.

However, given that securities companies that hold PF debt guarantees generally have sufficient liquid assets[18] such as cash, and a significant portion of PF guarantees (65.1% as of the end of the first quarter of 2024) is held by large securities companies with robust loss absorption capacities, the impact of the realization of PF guarantees by securities companies is expected to be limited.

Box 2-7. PF debt guarantee risks of small and mid-sized securities companies

Risk factors by the size of securities companies



Asset soundness

Notes: 1) Large companies: Comprehensive financial investment companies / Small and Medium-sized companies: Other securities companies
2) Ratio to PF debt guarantees

Sources: Financial institution business reports.

Concerns over the Realization of Contingent Liabilities of Real Estate Trust Companies

Under a loan-type land trust, a type of land trusts conducted by the real estate trust companies themselves, the company acts as the developer by directly financing development costs, and bears the risks caused by incompletion or unsold properties up to the extent of the

15) Other guaranteed amounts of approximately KRW 21.0 trillion from construction companies and local governments were excluded from the analysis as they are not included in the exposure to the financial sector.

16) Comprehensive financial investment companies are categorized as large securities companies and other securities companies as small and medium-sized ones.

17) The ratio of PF exposures (sum of PF loans and debt guarantees) to equity for small and medium-sized securities companies was 41.0% at the end of 2023, down from 50.3% at the end of June 2022.

18) The liquidity ratio of securities firms with PF debt guarantees was 118.8% (116.9% for large companies and 124.5% for small and medium-sized ones) at the end of the first quarter of 2024, and the ratio is estimated to decline to 113.2% (112.1% for large companies and 116.6% for small and medium-sized ones) even if they fulfill their debt guarantee liability for the full amount of PF asset-backed securities, but the ratio of all securities firms is estimated to be above the regulatory ratio (100%).

balance of loans to the trust accounts, including construction costs invested in the PF project. However, in the case of a loan-type land trust, the scale of possible losses is relatively limited, as the amount of sales revenue is generally secured through pre-sales.

In the case of management-type land trusts involving completion guarantees,[19] real estate trust companies are obliged to complete the PF project if the PF project construction companies fail to meet the completion deadline. The real estate trust company must complete the construction by selecting an alternative construction company within a certain period of time (typically the construction company's completion duration plus six months). Otherwise, the contingent liability of the real estate trust company may be materialized as the company would be held liable for the finance under the completion guarantee agreement between them. Management-type land trusts involving completion guarantees are riskier[20] than loan-type land trusts as the participants are often construction companies with low credit ratings and difficulties in committing to completion guarantee agreements,[21] while a high proportion of the properties to be funded consists of facilities that are relatively sensitive to the real estate market, such as non-apartment residential and commercial facilities. As such, it is necessary to note the possibility of the realization of contingent liabilities for real estate companies in case they fail to comply with the terms of the completion guarantee agreements.

Deterioration in the Financial Soundness of Construction Companies

As the main operator of real estate PF projects and a credit provider guaranteeing PF loans and PF asset-backed securities, construction companies can serve as key mediators in the transmission of real estate PF-related risks. The default of a construction company due to its excessive debt guarantees and weakening financial soundness can lead to the disruption of other PF projects that the company is involved in, which in turn can deteriorate the overall soundness of the real estate PF-related finantial exposures.

The amount of PF debt guarantees of major construction companies[22] amounted to KRW 40.5 trillion at the end of 2023, which increases significantly to KRW 126.0 trillion when including completion guarantee agreements. The major financial indicators for construction companies showed a decline in the interest coverage ratio and liquidity ratio in 2023, coupled with increasing debt ratios, indicating a deterioration in fi-

19) At the end of the first quarter of 2024, the Assets Under Management related to management-type land trusts involving completion guarantees stood at KRW 16.8 trillion, approximately 3 times more than the equity of real estate trust companies (KRW 5.6 trillion).

20) For the current status of construction companies participating in management-type land trusts involving completion guarantees and loan-type land trusts by the credit rating and facility type, please refer to Korea Credit Rating's "Risk Levels and Response Capacity to Default Risks Shifted to Real Estate Trust Companies" (February 16, 2023).

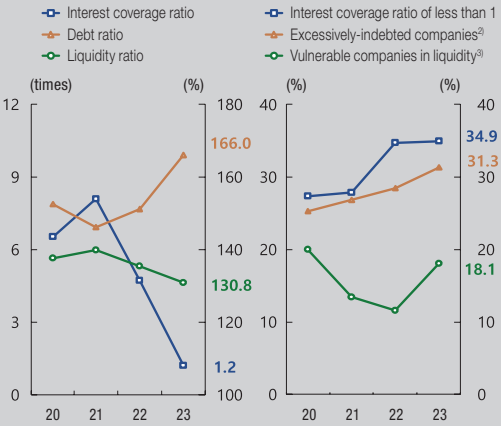
21) Only construction companies that meet the requirements recognized by finance lenders, such as a corporate bond rating of A- or higher and the Ministry of Land, Infrastructure, and Transport's Construction Capacity Evaluation rankings, are eligible to make completion guarantee agreements.

22) The analysis is based on 24 construction companies among the top 40 in the Construction Capacity Evaluation rankings, that have published their business performance in accordance with the Financial Supervisory Service's "Best practices for publishing notes on contingent liabilities related to completion guarantee."

nancial soundness in terms of interest payment capacities, liquidity, and stability. In particular, the proportion of construction companies with vulnerable financial soundness[23] increased year-on-year, reflecting the weakening of the overall financial condition of the construction industry(Box 2-8). In addition, the sluggish profitability[24] of construction companies is expected to continue for the time being as the impact of the contraction in new orders and permits[25] begins to take hold. Under these circumstances, if real estate PF projects do not proceed smoothly due to the sluggish real estate market and rising construction costs, the liquidity of construction companies may decrease due to the realization of contingent liabilities, which therefore necessitates particular caution from small and medium-sized construction companies and those based in regional areas.

Box 2-8. Financial soundness indicators of construction companies

Key financial indicators[1] | Share of vulnerable companies



Notes: 1) Based on the average value of listed companies by year
2) Corporations with debt ratios above 200%(Including companies with capital erosion)
3) Liquidity ratio less than 100%
Sources: Bank of Korea staff calculation(VALUE Search)

Assessment and Implications

Real estate PF-related finantial exposures are currently assessed as one of the major risk factors faced by the Korean financial system. Despite the recent slowdown in growth, the amount of exposures is still significant at KRW 230 trillion, and the risk of insolvency has increased somewhat amid the continued sluggishness in the real estate market, while the business performance of PFs has declined due to rising construction costs.

As such, it is important to note that the risks are likely to expand to other financial sectors as the

23) These are companies with an interest coverage ratio of less than 1.0, a current ratio of less than 100%, or a debt ratio of more than 200%.

24) Operating income-to-sales ratios of construction companies (%): 5.9 in 2020 → 6.0 in 2021 → 4.0 in 2022 → 1.7 in 2023.

25) Construction orders (year-on-year, %) : 9.2 in 2021 → 10.0 in 2022 → -18.5 in 2023 → -18.8 in the first quarter of 2024.

contingent liabilities of securities companies, real estate trust companies, and construction companies materialize as major credit guarantors in the PF business, amid the deterioration of the quality of PF loans by financial institutions. In particular, liquidity shortages or deterioration in the soundness of these companies may lead to losses for financial institutions that hold related exposures, and the subsequent dampening of investor sentiment may affect the entire financial market.

However, given that financial institutions' loss absorbing capacity has been enhanced by the financial authorities' continuous strengthening of their management and supervision, such as expanding loan loss provisions and raising capital, in addition to financial institutions' efforts to secure liquidity, it is believed that the potential risk of PF businesses materializing and expanding into systemic risks is low.[26] In addition, the recent soft landing measures for the real estate PF sector[27] announced by the financial supervisory authority is also expected to mitigate uncertainties and risks in the PF-related market by objectively classifying the asset quality of financial institutions' PF-related exposures and promoting the restructuring or liquidation of distressed projects. Moving forward, financial institutions will need to further strengthen their loss absorbing capacity and secure sufficient liquidity in case of unexpected shocks. Furthermore, in the case of some non-bank financial institutions, where delinquency rates are rising rapidly, it will be necessary to actively manage risks through auctions of non-performing assets.

26) For the impact of PF business risks on the financial system, refer to Issue 1 "Review and Implications of Risks Related to Real Estate PF and Construction," Financial Stability Situation, March 2024.

27) On May 14, 2024, the financial authorities announced a policy direction for real estate PFs, with measures to "provide funding support to the development projects that are considered to be financially viable, while encouraging the restructuring or liquidation of projects that are deemed to be unviable." The measures include the improvement of the evaluation criteria for the viability of PF projects to clearly screen good projects from the bad, expanding the finance supply to sound and viable projects by expanding PF guarantees, and encouraging voluntary sell-offs, write-offs, and auctions for underperforming PF projects. In particular, in order to provide financing for the auction of non-performing PF projects, the banking and insurance sectors will jointly set up a syndicated loan (worth of KRW 1-5 trillion) and provide funding for the normalization of PFs. For more details, refer to Financial Services Commission and Financial Supervisory Service Press Release, "FSC and FSS Announce Measures to Seek an Orderly Soft-landing in the Real Estate Project Finance Market," May 14, 2024.

3. Financial Institutions

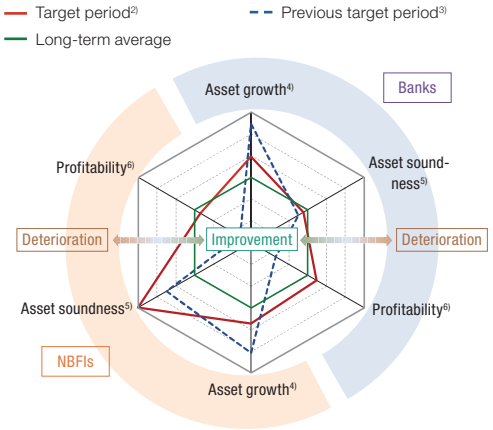
While the growth and profitability of financial institutions varied by sector, their asset quality decreased across all sectors.

Banks[50] saw their growth rate of assets expanding, whereas their profitability declined.

The asset quality of NBFIs deteriorated more swiftly compared to banks, accompanied by an overall decline in profitability.

Mutual transactions among financial institutions experienced an expansion in growth, and their share in total financial sector assets increased slightly.

Figure Ⅰ-3-1. Map of changes in financial soundness conditions at financial institutions[1]



Notes: 1) The standardized level of the current and the previous target periods relative to the long-term average.
2) End of Q1 2024.
3) End of Q3 2023. For profitability, end of Q1 2023.
4) Rate of increase in total assets.
5) Substandard-or-below loan ratio.
6) Return on assets (ROA).
Sources: Bank of Korea, Financial institution business reports.

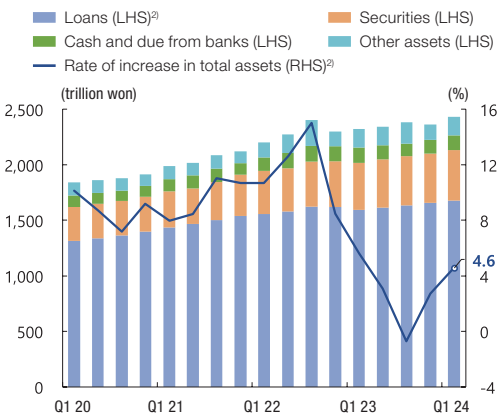
(1) Banks

Expansion in Asset Growth

The total assets of commercial banks stood at KRW 2,431.7 trillion at the end of the first quarter of 2024, up by 4.6% year-on-year, exhibiting an expanding margin of growth since the third quarter of the previous year (-0.7%).

By asset type, loans rose by 5.2% year-on-year, with a continued increase in corporate loans. Securities increased by 8.0% year-on-year, though their margin of growth narrowed compared to the third quarter of the previous year (10.1%). On the other hand, as the high interest rates reduced the incentive to hold cash assets, cash and cash equivalents showed a decline (-4.2%) from the first half of the previous year onward, though with a significantly narrower margin of reduction than -22.4% in the third quarter of 2023(Figure I-3-2).

Figure Ⅰ-3-2. Commercial bank total assets[1]



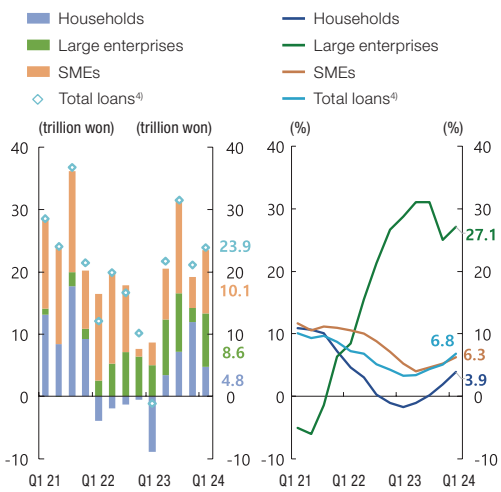
Notes: 1) End-period bank account balances.
2) Balances after deduction of loan loss provisions against won-denominated loans, foreign currency loans, bonds purchased under resale agreement, etc.
3) Year-on-year basis.
Sources: Commercial bank business reports.

50) In this report, the banking sector analysis only includes commercial banks (nationwide, regional, and Internet-only banks), while excluding specialized banks (Korea Development Bank, Industrial Bank of Korea, Korea Eximbank, Nonghyup Bank, and Suhyup Bank) due to the difference in business model.

In terms of loans by type of borrower (Korean won-denominated loan basis), household loans increased by KRW 4.8 trillion in the first quarter of 2024, while corporate loans rose by KRW 18.7 trillion (KRW 8.6 trillion for large enterprises and KRW 10.1 trillion for SMEs).

Household loans saw their growth rate slightly increase (up by 3.9% year-on-year) compared to the third quarter of the previous year (0.2%), driven by factors including a recovery in the demand for housing purchases.[51] Corporate loans increased for both large enterprises and SMEs, as supply factors such as strengthened lending operations by banks, coincided with increased demand among businesses for working and facility funds. In particular, loans issued to large enterprises increased by 27.1% year-on-year, continuing their steep upward trend(Figure I-3-3).

Figure Ⅰ-3-3. Scale of change[1] and rate of increase[2] in commercial bank loans[3]



Notes: 1) Compared to previous quarters.
2) Year-on-year basis.
3) Bank account won-denominated loans.
4) Including household, corporate, public purpose loans, and other types of loans.
Sources: Commercial bank business reports.

Slight Deterioration in Asset Quality

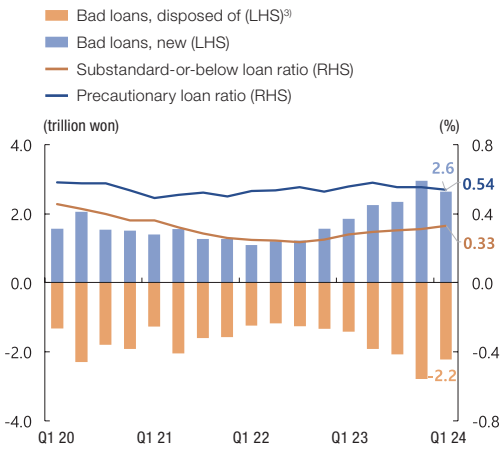
The substandard-or-below loan ratio, which is an indicator of the asset quality of commercial banks, stood at 0.33% at the end of the first quarter of 2024, showing a gradual increase from the third quarter of 2023. Despite an increase in newly issued substandard-or-below loans, the rise in the substandard-or-below loan ratio was constrained by banks' efforts to clean up bad loans.[52]In the first quarter of 2024, commercial banks'newly issued substandard-or-below loans and non-performing

51) In the first quarter of 2024, the monthly average of housing sale transactionswas 46 thousand units, up by 16.8% year-on-year.

52) The size of newly issued substandard-or-below loans (KRW trillion): 1.1 in the first quarter of 2022 → 1.2 in the third quarter → 1.8 in the first quarter of 2023 → 2.3 in the third quarter → 2.6 in the first quarter of 2024.
The size of substandard-or-below loan cleanups (KRW trillion): 1.2 in the first quarter of 2022 → 1.3 in the third quarter → 1.4 in the first quarter of 2023 → 2.1 in the third quarter → 2.2 in the first quarter of 2024.

loan cleanups amounted to KRW 2.6 trillion and KRW 2.2 trillion, respectively, a moderate increase from the third quarter of the previous year (KRW 2.3 trillion and KRW 2.1 trillion, respectively)(Figure I-3-4).

Figure Ⅰ-3-4. Commercial bank bad loans[1] and substandard-or-below loan ratio[2]

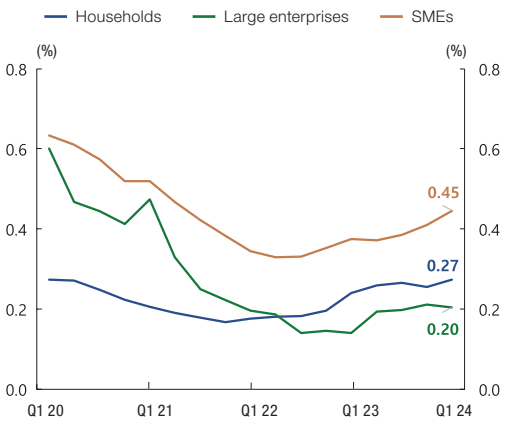


Notes: 1) During the period.
2) End-period basis.
3) Including those disposed of through loan withdrawals, loan loss write-offs, loan sales, soundness reclassifications, debt restructurings, etc.

Sources: Commercial bank business reports.

By type of borrower, the substandard-or-below loan ratios of households and SMEs registered 0.27% and 0.45%, respectively, at the end of the first quarter of 2024, up by 0.01%p and 0.06%p from the third quarter of the previous year. In the case of large enterprises, the substandard-or-below loan ratio stood at the relatively low level of 0.20%(Figure I-3-5).

Figure Ⅰ-3-5. Commercial bank substandard-or-below loan ratios, by borrower type

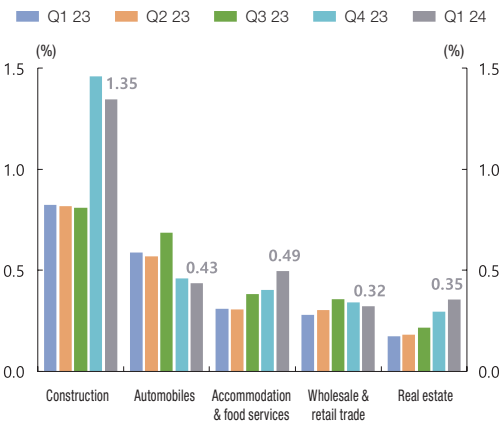


Sources: Commercial bank business reports.

In terms of the substandard-or-below loan ratio by industry, construction saw a slight decline to 1.35% in the first quarter of 2024 from 1.46% in the fourth quarter of 2023, though still higher than 0.81% in the third quarter of 2023. In the same period, a continued upward trend was observed in accommodation& food services (0.38% in the third quarter of 2023 → 0.49% in the first quarter of 2024) and real estate (0.22% → 0.35%), while wholesale & retail trade (0.36% → 0.32%), and automobiles (0.68% → 0.43%) exhibited a downward movement. Particularly in automobiles, the substandard-or-below loan ratio declined significantly as the favorable business environment led to a drastic improvement in the repayment capacities of companies in the industry(Figure I-3-6).[53]

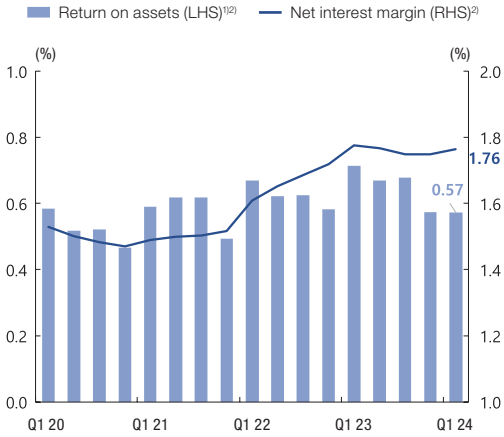
53) In 2023, revenue in the automotive industry increased by 18.0% year-on-year, and the interest coverage ratio (operating income / total interest expenses) was 17.9, a significant increase from the end of 2022 (9.6). Meanwhile, the substandard-or-below loan ratio in the industry declined due to the resolution of temporary negative factors including defaults by some companies.

Figure Ⅰ-3-6. Commercial bank substandard-or-below loan ratios in major industries



Sources: Commercial bank business reports.

Figure Ⅰ-3-7. Commercial bank profitability



Notes: 1) Loan loss reserves excluded.
2) Accumulated quarterly incomes, annualized.
Sources: Commercial bank business reports.

Deteriorating Profitability

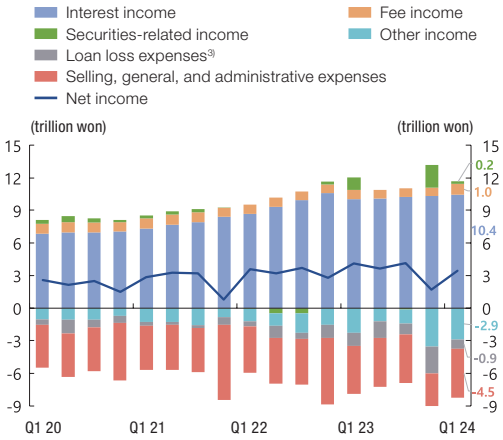
The profitability of commercial banks declined compared to the previous year.[54] Return on assets (ROA) of banks decreased to 0.57% (annualized basis) in the first quarter of 2024 from 0.71% in the same period of the previous year due to one-time losses. The net interest margin (NIM) reached 1.76% in the first quarter of 2024, registering a high level driven by continued high interest rates(Figure I-3-7).[55]

The net income of commercial banks amounted to KRW 3.4 trillion in the first quarter of 2024, down by KRW 0.7 trillion from the same period of the previous year. This is attributable to a decline of KRW 0.9 trillion in valuation gain from securities, despite a slight increase in interest income (+KRW 0.4 trillion). Other losses including ELS compensations increased by KRW 1.5 trillion, contributing to the decline in net income(Figure I-3-8).

54) For further details on changes in profitability from the long-term perspective, refer to Box 3 “Factors Affecting Banks’ Profitability by Interest Rate Phase and Key Future Considerations.”

55) Domestic commercial banks have a high proportion of floating-rate loans among their loan assets and a high proportion of low-cost deposits among their deposits, which leads to a rapid increase in interest income during periods of rising interest rates, while the increase in interest expense is relatively limited, thus expanding the net interest margin. The proportion of floating-rate household loans issued by deposit-taking banks was 56.2%, exceeding half of the newly issued loans as of December 2023, while the proportion of demand deposits and corporate free savings deposits, classified as low-cost deposits, among total Korean won-denominated deposits accounted for 28.0% in commercial banks in the first quarter of 2024.

Figure Ⅰ-3-8. Commercial bank net income composition[1) 2)]



Notes: 1) Loan loss reserves excluded.
2) During the period basis.
3) Including bad debt expenses, net provisions transferred, and profits and losses from loan sales and purchases.

Sources: Commercial bank business reports.

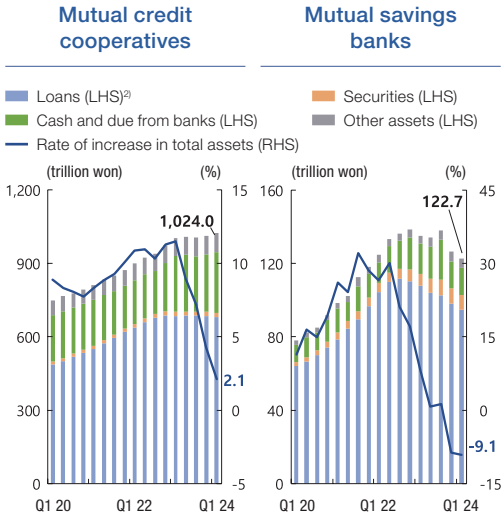
(2) Non-bank Financial Institutions

A. Non-bank Deposit-taking Institutions

Continued Slowdown of Asset Growth

Asset growth among non-bank deposit-taking institutions (NBDIs)[56] has slowed sharply since 2022. The total asset growth rate of mutual credit cooperatives (year-on-year) was 2.1% at the end of the first quarter of 2024, significantly lower than 7.2% at the end of the third quarter of 2023. The rate for mutual savings banks decreased by 9.1% compared to the same period of the previous year. Such a slowdown in asset growth is attributed mainly to a decline in loans due to NBDIs' tightened lending attitude driven by a rise in non-performing loans(Figure I-3-9).

Figure I-3-9. Deposit-taking institution total assets, growth rates[1]



Notes: 1) Year-on-year basis.
2) Balances after deduction of loan loss provisions.
Sources: Financial institution business reports.

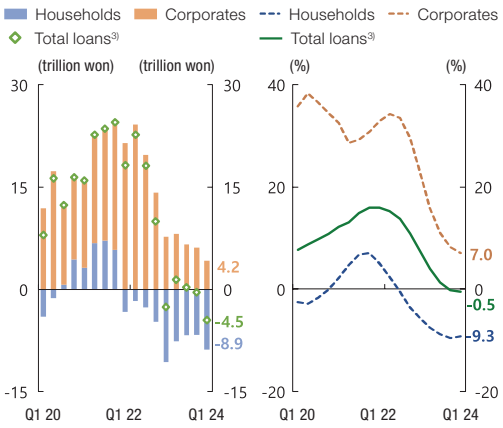
Looking at loans from mutual credit cooperatives by type of borrower, during the first quarter of 2024, corporate loans increased by KRW 4.2 trillion, while household loans decreased by KRW 8.9 trillion. This led to a decrease in total loans[57] of KRW 4.5 trillion, widening the margin of reduction compared to the previous quarter (-KRW 0.5 trillion). As of the end of the first quarter of 2024, total loans (year-on-year) registered a negative growth rate (-0.5%) for the second consecutive quarter from the previous quarter (-0.2%) due to sluggish growth in corporate loans, along-

56) NBDIs refer to mutual credit cooperatives (Nonghyup, Suhyup, Forestry Cooperatives, Sinhyup, and MG Community Credit Cooperatives) and mutual savings banks that are similar to commercial banks in terms of deposit- and loan-oriented funding and operating practices. NBDIs are distinct from other NBFIs in terms of funding, as securities and credit-specialized financial companies primarily raise marketable funds and insurance companies receive premiums. NBDIs also differ in terms of their fund operation from NBFIs, which tend to have a higher concentration in financial instruments such as bonds and equities. As a result, the risk factors they face include large-scale deposit withdrawals and concerns about loan asset distress, which are significantly different from those encountered by other NBFIs.

57) The total loans include other loans such as policy loans besides household and corporate loans, and other loans increased by KRW 0.1 trillion in the first quarter of 2024.

side a significant decline in household loans (Figure I-3-10).

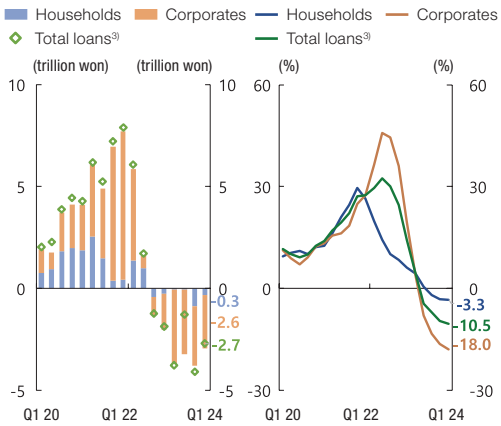
Figure Ⅰ-3-10. Scale of change[1] and rate of increase[2] in mutual credit cooperative loans



Notes: 1) Compared to previous quarters.
2) Year-on-year basis.
3) Including policy loans and other types of loans.
Sources: Financial institution business reports.

In terms of loans from mutual savings banks by type of borrower, household and corporate loans decreased by KRW 0.3 trillion and KRW 2.6 trillion, respectively, in the first quarter of 2024. Accordingly, total loans declined by KRW 2.7 trillion, maintaining their downward movement from the fourth quarter of 2022 onward. At the end of the first quarter of 2024, the growth rate of total loans stood at -10.5%, as household loans decreased by 3.3% and corporate loans also dropped by 18.0% year-on-year due to the management of non-performing loans(Figure I-3-11).

Figure Ⅰ-3-11. Scale of change[1] and rate of increase[2] in mutual savings bank loans



Notes: 1) Compared to previous quarters.
2) Year-on-year basis.
3) Including policy loans and other types of loans.
Sources: Financial institution business reports.

Deterioration in Asset Quality

The asset quality of NBDIs deteriorated due to an increase in non-performing real estate PF loans and the escalated debt repayment burdens of borrowers.[58]

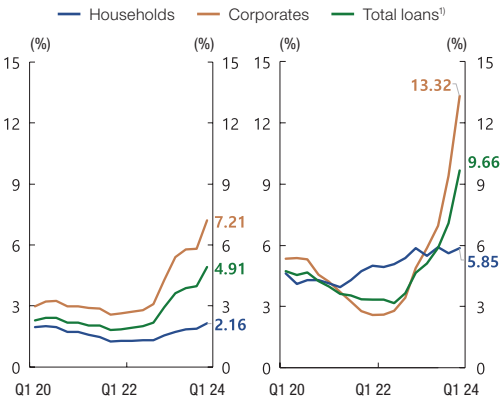
The substandard-or-below loan ratio of mutual credit cooperatives stood at 4.91% at the end of the first quarter of 2024, up 1.01%p from the third quarter of 2023. By type of borrower, household loans increased to 2.16%, up a mere 0.30%p from the third quarter of 2023, while corporate loans increased to 7.21%, up 1.43%p over the same period.

The substandard-or-below loan ratio of mutual savings banks was 9.66% at the end of the first quarter of 2024, up 3.78%p from the third quarter of 2023. By type of borrower, household loans registered 5.85%, maintaining a

58) For further details, refer to Box 4 “Assessment and Implications of Asset Quality Among Non-bank Deposit-taking Institutions.”

similar level to the end of the third quarter of 2023 (5.90%), while corporate loans stood at 13.32%, up 6.36%p over the same period(Figure I-3-12).

Figure Ⅰ-3-12. Deposit-taking institution sub-standard-or-below loan ratios, by borrower type



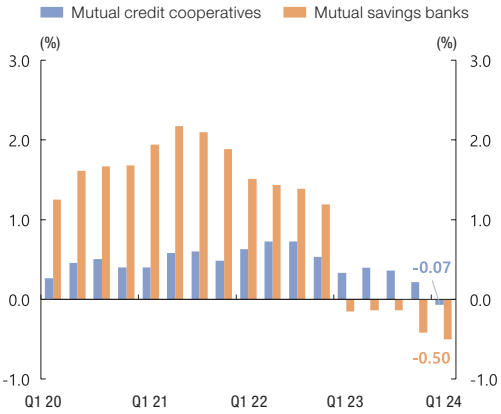
Note: 1) Including policy loans and other types of loans.
Sources: Financial institution business reports.

Continued Deterioration in Profitability

The profitability of NBDIs continued to deteriorate.

The ROA of mutual credit cooperatives stood at -0.07% in the first quarter of 2024, down 0.40%p from 0.34% in the same period of the previous year, thereby shifting to a decline. Meanwhile, the ROA among mutual savings banks was -0.50%, extending its margin of decline compared to the same period of the previous year (-0.15%)(Figure I-3-13).

Figure Ⅰ-3-13. Deposit-taking institution ROAs1)



Note: 1) Accumulated quarterly incomes, annualized.
Sources: Financial institution business reports.

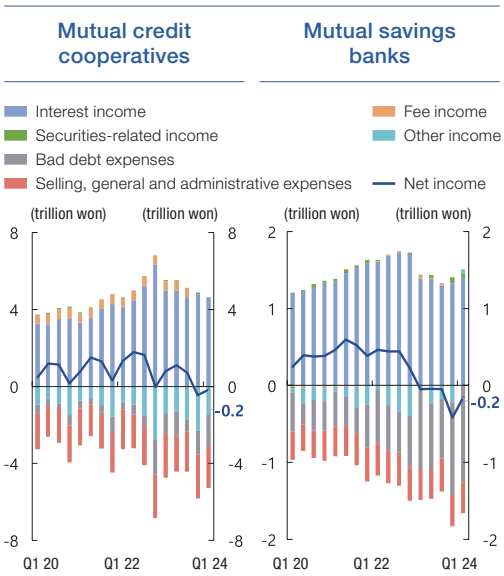
In the first quarter of 2024, mutual credit cooperatives recorded a net loss of KRW 0.2 trillion, leading to a decline in their net income of KRW 1.0 trillion from the same period of the previous year (net income of KRW 0.8 trillion). This is attributable to a decrease in interest income of KRW 0.4 trillion to KRW 4.6 trillion in the first quarter of 2024 from KRW 5.0 trillion in the same period of the previous year, driven by the shift to a decline in loan assets, along with an increase in bad debt expenses of KRW 0.5 trillion to KRW 1.6 trillion from KRW 1.1 trillion in the same period of the previous year, due to an increase in non-performing loans.[59)]

The net loss of mutual savings banks stood at KRW 0.2 trillion in the first quarter of 2024, widening its margin of loss compared to the same period of the previous year (net loss of KRW 0.1 trillion). This is driven mainly by an increase in bad debt expenses to KRW 1.3

59) At the end of the first quarter of 2024, the substandard-or-below loans (balance) of mutual credit cooperatives amounted to KRW 34.1 trillion, up 66.4% from the end of the first quarter of 2023 (KRW 20.5 trillion).

trillion, up by KRW 0.3 trillion from KRW 1.0 trillion in the same period of the previous year due to an increase in non-performing loans(-Figure I-3-14).[60]

Figure I-3-14. Composition of net income at deposit-taking institutions[1]



Note: 1) During the period basis.

Sources: Financial institution business reports.

B. Insurance, Securities, and Credit-specialized Financial Companies

Gradual Upward Trend in Asset

The total assets held by insurance, securities, and credit-specialized financial companies increased by 4.7% year-on-year to KRW 2,369.7 trillion at the end of the first quarter of 2024. The growth rate of total assets (year-on-year) showed a declining trend through the third quarter of 2023 before turning to an increase(-Figure I-3-15).

By sector, the total assets of insurance companies increased by 3.8% at the end of the first quarter of 2024, compared to the same period of the previous year. The total assets continued to decline[61] from the first quarter of 2023 onward, due to the application of new insurance accounting standards effective from 2023, and then switched to an increase from the fourth quarter of 2023.[62] The total assets of securities companies showed a high growth rate of 7.6%, driven by the expansion of securities under management from the third quarter of 2023.[63] As for credit-specialized financial companies, the growth rate of total assets was 4.0% year-on-year, as card loans from credit card companies saw their growth margin widening (7.1%) despite a significant

60) At the end of the first quarter of 2024, the substandard-or-below loans (balance) of mutual savings banks amounted to KRW 10.5 trillion, up 80.6% from the end of the first quarter of 2023 (KRW 5.8 trillion).

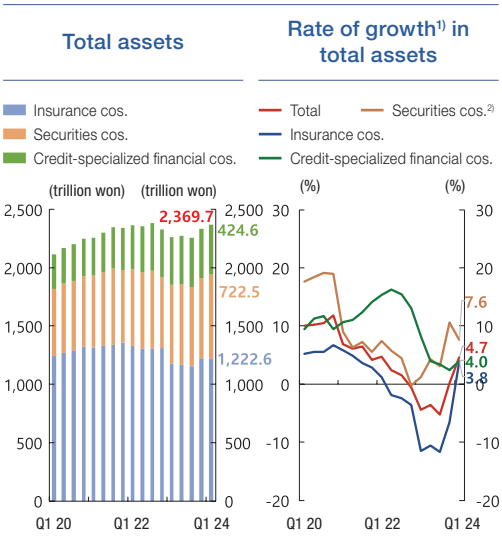
61) Since 2023, the classification and measurement standards for financial assets have transitioned from IAS 39 to IFRS 9. As a result, some financial assets that were previously measured at cost have been reclassified according to market-to-market accounting, which reflects the decline in asset values resulting from the rise in interest rates.

62) The value of securities held by insurance companies decreased by KRW 18.7 trillion during the second and third quarters of 2023, while it increased by KRW 60.5 trillion from the fourth quarter of 2023 to the first quarter of 2024.

63) However, as banks' sale of ELS products was suspended in February 2024, securities companies' balance of derivative-linked securities sold decreased by 8.6% year-on-year, leading to a decline in the volume of ELS-related bonds under management.

decrease in household loans issued by capital companies (-8.3%).[64]

Figure Ⅰ-3-15. Total assets and growth rate

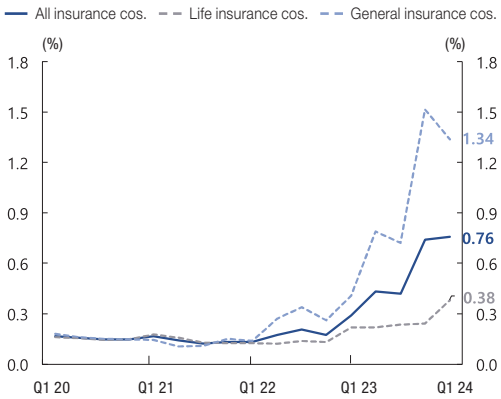


Notes: 1) Year-on-year basis.
2) Excluding accounts receivable.
Source: Financial institution business reports.

Deterioration of Asset Quality

The substandard-or-below loan ratio for insurance companies was 0.76% at the end of the first quarter of 2024, continuing its upward trend since the third quarter of 2023. By sector, the ratio for general insurance companies slightly decreased at the end of the first quarter of 2024, but still maintained a significantly higher level than that of life insurance companies, which exhibited a steady increase(Figure Ⅰ-3-16).

Figure Ⅰ-3-16. Insurance companies, substandard-or-below loan ratios



Source: Financial institution business reports.

Securities companies[65] witnessed their substandard-or-below loan ratio stand at 4.31% at the end of the first quarter of 2024, up 1.83%p from the end of the third quarter of 2023. This was driven mainly by the deterioration in the soundness of real estate PF-related loans and the private placement bond underwriting[66] to fulfill real estate PF debt guarantees.[67] In

64) The growth rate of card loans from credit card companies (year-on-year) has risen since the third quarter of 2023 (2.0% in the first quarter of 2023 → 1.1% in the second quarter → 2.4% in the third quarter → 6.5% in the fourth quarter → 7.1% in the first quarter of 2024), whereas the growth rate of household loans from capital companies remained negative throughout the first quarter of 2024 (-8.3%), following its switch to a decline (-2.8%) year-on-year at the end of the third quarter of 2022.

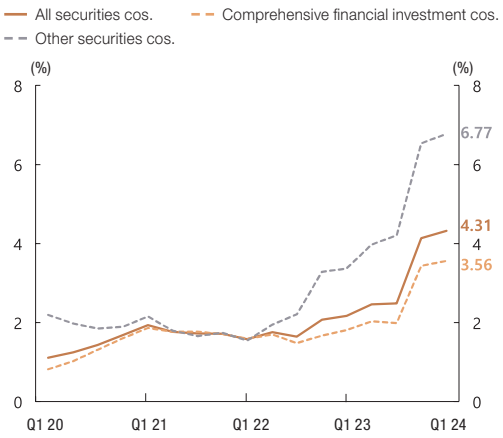
65) The types of assets subject to the asset quality classification of securities companies consist of loans and debt guarantees, among which loans consist of credit facilities (loans on margin account, loans for stock subscription, loans for securities purchase), loans, and private placement bonds, etc. As of the end of the first quarter of 2024, the proportion of assets subject to the asset quality classification is approximately 19.3% out of the total assets held by securities companies.

66) Securities companies' real estate PF-related debt guarantee is provided in such forms as an underwriting commitment of private placement bonds, a purchase commitment of loans, etc. Most of the private placement bonds and loans acquired through the execution of debt guarantees are reevaluated and classified as precautionary or substandard-or-below loans.

67) As of the end of the first quarter of 2024, securities companies' real estate finantial exposures including PF-related loans and private placement bonds increased their substandard-or-below loan ratio by 3.2%p.

particular, the substandard-or-below loan ratio showed a higher level among most securities companies other than comprehensive financial investment companies[68] than that of comprehensive financial investment companies(Figure I-3-17).[69]

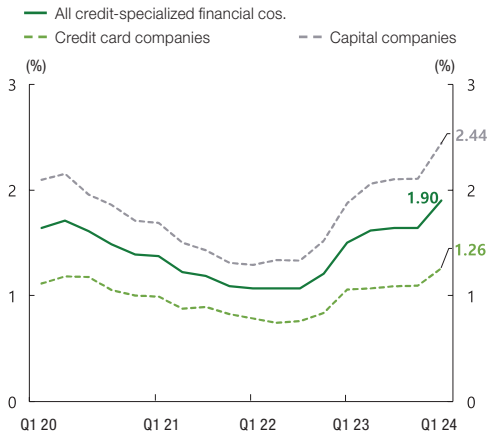
Figure Ⅰ-3-17. Securities companies, substandard-or-below loan ratios[1]



Note: 1) Excluding accounts receivable.
Source: Financial institution business reports.

The substandard-or-below loan ratio of credit-specialized financial companies increased to 1.90% at the end of the first quarter of 2024, up 0.26%p from the end of the third quarter of 2023. The ratio for credit card companies stood at 1.26% at the end of the first quarter of 2024, up 0.17%p from the end of the third quarter of 2023, due to the deterioration of the asset quality of household loans such as card loans.[70] Capital companies saw the ratio rise to 2.44% from 2.10% over the same period as their loan soundness deteriorated mainly in corporate loans(Figure I-3-18).[71]

Figure Ⅰ-3-18. Credit-specialized financial cos. substandard-or-below loan ratios



Source: Financial institutions' business reports.

Varying Profitability by Sector

In the first quarter of 2024, the ROA of insurance companies was 1.58%, a slight decrease from 1.73% during the same period of the

68) As of the end of the first quarter of 2024, the proportion of real estate PF-related exposures (loans and debt guarantees) in total loans was 21.8% for securities companies excluding comprehensive financial investment companies, higher than 17.5% for comprehensive financial investment companies.

69) In May 2013, the comprehensive financial investment business entity scheme was introduced to foster the expansion of the securities industry and enhance the capabilities of investment banks. Securities Comparies designated as comprehensive financial investment business entities by meeting the capital requirement of KRW 3 trillion have been granted access to new businesses such as corporate loans and prime brokerage. Currently, nine securities companies (KB, NH, Meritz, Mirae Asset, Samsung, Shinhan, Kiwoom, Hana, and Korea Investment & Securities) are designated as comprehensive financial investment business entities.

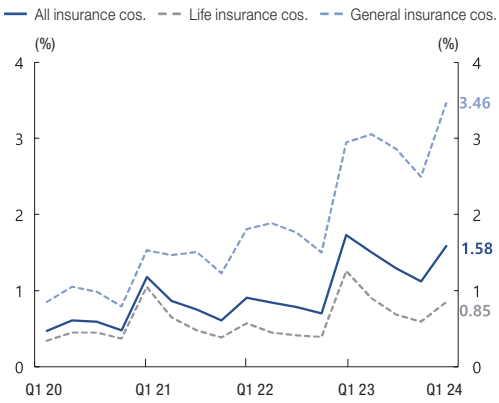
70) The substandard-or-below loan ratio of card loans from credit card companies has exhibited an upward trend since the fourth quarter of 2023 (2.23% in the second quarter of 2023 → 2.21% in the third quarter → 2.26% in the fourth quarter → 2.54% in the first quarter of 2024).

71) At the end of the first quarter of 2024, the substandard-or-below loan ratio of real estate PF-related loans issued by capital companies was 5.98%, a significant increase from 4.14% at the end of the third quarter of 2023.

previous year. Depending on the type of insurance companies, profitability showed varying movements. General insurance companies (3.46%) saw on improvement in profitability as insurance profits related to insurance contracts increased compared to the same period of the previous year, whereas the ROA of life insurance companies (0.85%) declined compared to the same period of the previous year, due to a decrease in investment profits[72] driven primarily by valuation losses on securities(Figure I-3-19).

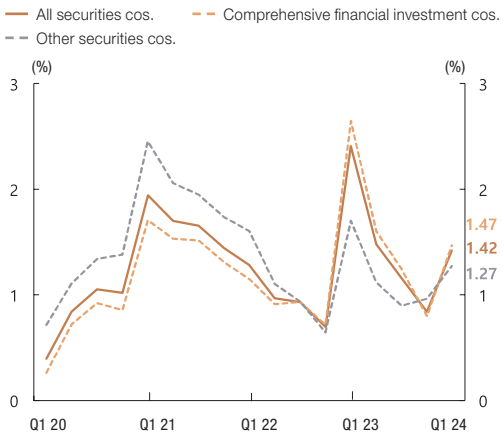
The ROA of securities companies was 1.42% in the first quarter of 2024, down 0.99%p from the same period of the previous year. This year-on-year decline is attributable to a deceleration in proprietary trading gains[73] in bond and fund trading, despite an increase in revenue from commissions[74] owing to the expansion of stock trading value(Figure I-3-20). However, the ROA showed an improvement compared to the previous quarter, when the net profit decreased significantly due to a surge in bad debt expenses.

Figure Ⅰ-3-19. Insurance companies ROA[1]



Note: 1) Accumulated quarterly incomes, annualized.
Source: Financial institution business reports.

Figure Ⅰ-3-20. Securities companies ROA[1]



Note: 1) Accumulated quarterly incomes, annualized.
Source: Financial institution business reports.

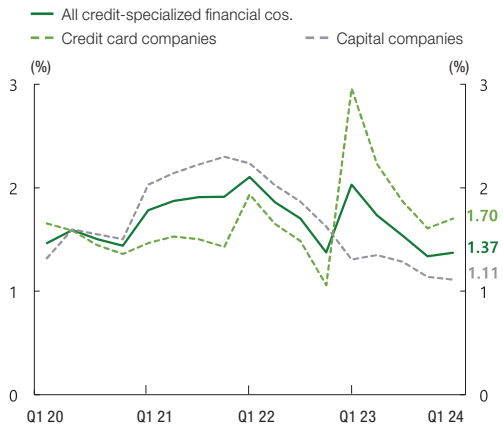
72) In the first quarter of 2024, the insurance profits of general insurance companies increased by KRW 0.7 trillion year-on-year, while those of life insurance companies marked a marginal increase. Meanwhile, the investment profits of life insurance companies declined by KRW 1.3 trillion.

73) In the first quarter of 2024, gains from proprietary trading amounted to KRW 3.4 trillion, a slight increase year-on-year (KRW 3.2 trillion), resulting in a decline in their proportion to total assets. When comparing the first quarter of 2024 to the first quarter of 2023, it is noteworthy that some securities companies gained significant income from one-time dividends (KRW 1.7 trillion) in the first quarter of 2023.

74) In the first quarter of 2024, the revenue from commissions was KRW 3.2 trillion, a slight increase from KRW 2.8 trillion in the same period of the previous year due to a rise in brokerage commissions.

The ROA of credit-specialized financial companies declined to 1.37% in the first quarter of 2024, down 0.66%p from 2.03% in the same period of the previous year[75] due to base effects.[76] For both credit card and capital companies, higher financing costs[77] driven by rising interest rates were the main factors contributing to the decline in profitability(Figure I-3-21).

Figure Ⅰ-3-21. Credit-specialized financial cos. ROA[1]



Note: 1) Accumulated quarterly incomes, annualized.
Source: Financial institutions' business reports.

75) Meanwhile, in the first quarter of 2024, the ROA of credit-specialized financial companies slightly increased by 0.03%p compared to the previous quarter. The ROA of capital companies declined, while that of credit card companies increased by 0.10%p from the previous quarter due to a significant decrease in selling, general and administrative expenses, despite an increase in interest expenses.

76) In particular, the ROA of credit card companies among credit-specialized financial companies was 2.96% in the first quarter of 2023, up by 1.90%p from 2022 (1.06%), driven by the reversal of loan loss reserves (contributing to an increase in net income) as the credit conversion factor for balances of unused credit lines was adjusted down (50% → 40%) according to the revision of the Regulation on Supervision of Specialized Credit Finance Business (effective as of January 1, 2023).

77) During the first quarter of 2024, the interest expenses (borrowings, corporate bonds, etc.) of credit card companies and capital companies increased by 18.6% and 24.0% year-on-year, respectively.

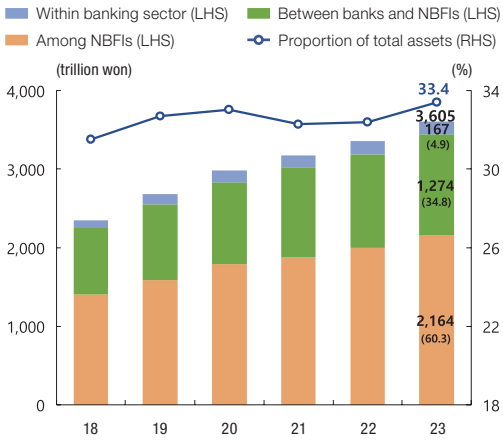
(3) Interconnectedness

Increased Growth in Mutual Transactions

Mutual transactions between financial institutions[78] reached KRW 3,605 trillion at the end of 2023, up by 7.4%[79] year-on-year. This is attributable to an increase in mutual transactions between banks and NBFIs, despite a slight decline in transactions between banks, along with growing mutual transactions in the non-banking sector, centered on trusts and investment funds. Accordingly, the share of mutual transactions in the total assets of the financial sector (KRW 10,793 trillion, based on flow of funds statistics) was 33.4% at the end of 2023, up from 32.4% at the end of 2022.

As for mutual transactions between financial institutions by sector, transactions between banks[80] amounted to KRW 167 trillion, down by 0.4% year-on-year, mainly in bond trading. Transactions in the non-banking sector were KRW 2,164 trillion, up by 8.2% year-on-year, mainly owing to an increase in the amount of securities companies' repo operated by trusts and the amount of investment funds managed by securities and insurance companies. Mutual transactions between banks and NBFIs stood at KRW 1,274 trillion, up by 7.1%, reflecting an increase in the amount of bank's funds operated by trusts and other financial institutions and the amount of investment funds managed by banks(Figure I-3-22).

Figure I-3-22. Mutual transactions among financial institutions and across sectors[1)2)]



Notes: 1) Mutual transaction amounts are on an end-period basis (flow of funds statistics).
2) Figures in parentheses are the proportion of the total amount of mutual transactions.
Source: Bank of Korea.

By financial sector, domestic banks, securities companies, trusts, and investment funds continued to play central roles in mutual transactions between sectors. As for the size of mutual transactions between financial sectors at the end of 2023, mutual transactions between domestic banks and trusts were the largest (KRW 298.9 trillion), followed by transactions between investment funds and insurance

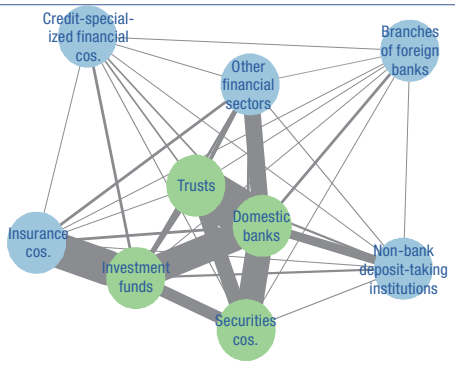
78) Based on detailed data about financial assets and liabilities, cash and deposits, borrowings, securities, and other details in the flow of funds statistics, the degree of interconnectedness among financial institutions is analyzed for financial products, including deposits, loans, and derivative products, and financial sectors. For details, refer to "III. Analysis of Banking System Interconnectedness, and Measurement of Cross-sectional Systemic Risk," Analysis of Financial Stability Issues of Financial Stability Report, December 2016.

79) The year-on-year growth rate of mutual transactions between financial institutions was 6.5% at the end of 2021, 5.8% at the end of 2022, and 7.4% at the end of 2023.

80) "Banks" refers to domestic banks, including commercial banks and specialized banks. Branches of foreign banks were included in the non-banking sector for analysis.

companies (KRW 262.4 trillion), and between domestic banks and investment funds (KRW 233.8 trillion)(Figure I-3-23, Table I-3-1).

Figure Ⅰ-3-23. Map of Financial sector interconnectedness[1)2)3)4)5)6)]



Notes: 1) The green dot (●) indicates the four highest-ranked financial sectors in terms of their mutual transaction volumes.
2) Using a network visualization analysis, line thicknesses are all proportional to the mutual transaction volumes.
3) Non-bank deposit-taking institutions include savings banks, mutual credit cooperatives, community credit cooperatives, etc.
4) Other financial sectors include financial support institutions, such as fund brokerage companies, future trading companies, asset management companies, as well as financial holding companies, SPCs, private money lenders, etc.
5) Non-bank deposit-taking institutions include federations previously classified as other financial sectors.
6) End of Q4 2023 basis.
Source: Bank of Korea.

Table Ⅰ-3-1. Volume of mutual transactions across financial sectors[1)]

(trillion won)

Sectors	Domestic banks	Branches of foreign banks	Trusts	Investment funds	Insurance cos.	Securities cos.	Other[2)]	Total(amount of fundraising)
Domestic banks	166.9	43.6	278.4	141.5	65.0	171.3	213.7	1,080.3
Branches of foreign banks	29.0	25.3	8.2	8.5	3.2	10.2	10.1	94.4
Trusts	20.5	8.1	71.4	16.4	16.4	19.9	76.8	229.4
Investment funds	92.3	2.7	81.6	51.7	255.9	84.6	75.9	644.7
Insurance cos.	10.9	4.1	9.0	6.4	16.7	5.3	16.7	69.2
Securities cos.	52.4	18.2	152.8	66.5	22.5	122.9	47.1	482.3
Other[2)]	155.9	12.4	123.7	133.3	85.7	103.3	390.7	1,005.1
Total (amount of funds management)	527.9	114.4	725.1	424.3	465.4	517.5	831.0	3,605.4

Notes: 1) The horizontal axis represents fundraising, while the vertical axis represents funds management.
2) Credit-specialized financial companies and non-bank deposit-taking institutions, etc.
Source: Bank of Korea.

Looking at mutual transactions by product, mutual transactions increased primarily in stocks, bonds and repos. In particular, the volume of stock transactions increased significantly (KRW 706.0 trillion → KRW 810.2 trillion) in line with the surge in equity operations by other financial institutions, insurance companies, and securities companies.[81)] The volume of bond transactions rose with a focus on other financial institutions, while the expansion of repo transaction volume was led primarily by trusts(Table I-3-2).

81) The value of equity operations by other financial institutions, insurance companies, and securities companies increased from KRW 155.6 trillion at the end of 2022 to KRW 188.7 trillion at the end of 2023, from KRW 245.4 trillion to KRW 267.9 trillion, and from KRW 62.0 trillion to KRW 86.4 trillion, respectively.

Table Ⅰ-3-2. Volume of mutual transactions across financial sectors, by product

(trillion won, %)

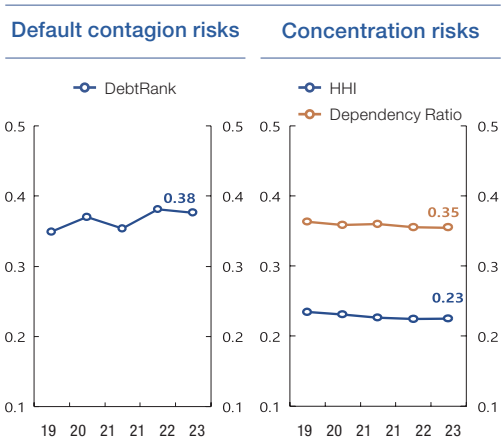
Product	End of Q4 2022		End of Q4 2023		B-A
	Amount (A)	Share	Amount (B)	Share	
Deposits	803.0	23.9	833.2	23.1	30.2
Bonds	709.6	21.1	760.6	21.1	51.0
Stocks[1)]	706.0	21.0	810.2	22.5	104.3
Loans	195.4	5.8	191.2	5.3	-4.2
RP Repos	178.4	5.3	200.2	5.6	21.8
Derivatives	131.0	3.9	93.4	2.6	-37.6

Note: 1) Including investment fund shares, and equity-linked securities (ELSs), etc.
Source: Bank of Korea.

Default Contagion Risk at Similar Levels to the Previous Year

Default contagion and concentration risks maintained similar levels to those of the previous year overall. The index between the financial sectors of DebtRank,[82)] an indicator of default contagion risk, moderated slightly year-on-year due to the decrease in derivative transactions by branches of foreign banks and deposits held by non-bank deposit-taking institutions,[83)] despite growing mutual transactions between financial sectors. The Herfindahl-Hirschman Index (HHI)[84)] and the dependency ratio[85)] which indicate the concentration risk in mutual transactions between financial sectors remained at levels generally similar to those of the same period of the previous year(Figure I-3-24).

Figure Ⅰ-3-24. Default contagion and concentration risk among financial sectors[1)]



Note: 1) End-period basis.
Source: Bank of Korea.

82) As the simple average of the ratio of aggregate losses incurred when a shock from the insolvency of an individual sector (a bank) spreads to its transaction counterparties through their mutual exposure, relative to total financial (banking) sector capital, a DebtRank of 0.1 means that losses following the insolvency of an individual sector (banking) will, on average, give rise to a loss of 10% of total financial (banking) sector capital (Battiston et al. “DebtRank: Too Central to Fail ? Financial Networks, the Fed, and Systemic Risk,” 2012).

83) The scale of derivatives transactions conducted by branches of foreign banks decreased to KRW 23.0 trillion at the end of 2023, down by KRW 6.9 trillion from KRW 29.9 trillion at the end of 2022. The volume of deposits in Non-bank deposit-taking institutionsdeclined to KRW 30.4 trillion at the end of 2023, down by KRW 5.7 trillion from KRW 36.2 trillion at the end of 2022 (based on the amount of net funding from other sectors). Accordingly, DebtRanks for branches of foreign banks andNon-bank deposit-taking institutions decreased from 0.19 to 0.17, and 0.18 to 0.15, respectively.

84) The HHI is the weighted average value of the summed squares of the proportions of individual sector transactions with other sectors and indicates the level of dependence on a small number of transaction counterparties. The shares of transactions and weight in relation to transaction counterparties are calculated based on the size of the funding transactions.

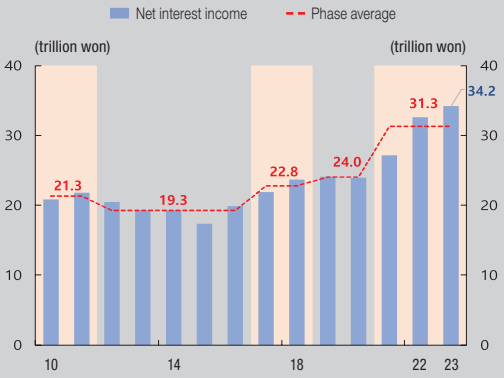
85) The dependency ratio is the weighted average value of the proportion of individual sector transactions with the single sector with which they have the largest transaction values and signifies the level of dependence on a single transaction counterparty. The shares of transactions and weight in relation to transaction counterparties are calculated based on the size of the funding transactions.

Box 3.

Factors Affecting Banks' Profitability by Interest Rate Phase and Key Future Considerations[1)2)]

The volume of banks' net interest income (profits minus expenses) amounted to KRW 34.2 trillion in 2023, recording the highest level amid a period of rising interest rates since 2010(Box 3-1). As a result, in the most recent period of interest rate hikes starting from 2021, interest income accounted for 93.0% of total income (interest income plus non-interest income), exceeding the long-term average of 87.8% since 2010. The scale of net interest income varies by interest rate phase, which is influenced by various factors such as asset compositions and the net interest spread in addition to the primary impact of shifts in assets. This article explored banks' loan asset compositions and changes in interest income observed in each interest rate phase, and examined major considerations that could affect their profits in the future.

Box 3-1. The trend of net interest income (revenues - expenses) of commercial banks by different interest rate phases[1)2)]



Notes: 1) Shaded area represents periods of rising base rate
2) If the base rate fluctuated during the year, the period up to the previous year is classified as an interest rate phase
Source: Bank of Korea, Financial institution business reports.

Characteristics for Each Interest Rate Phase

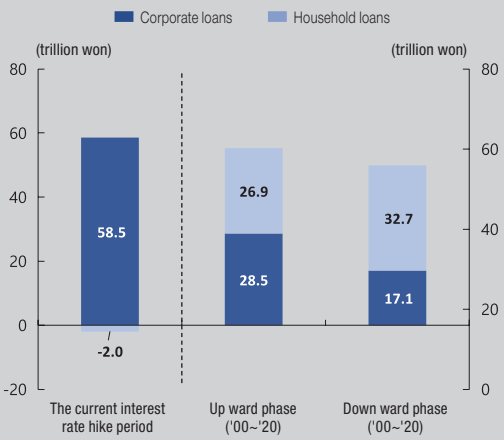
Expanded Corporate Loans and Diminished Household Loans in Periods of Rising Interest Rates

Looking at fluctuations in banks' loan balances (12-month annualized basis[3)]) by interest rate phase, loans have increased by an annual average of KRW 56.6 trillion during periods of rising interest rates since 2000 (excluding the recent period of interest rate hikes), exhibiting a relatively substantial increase compared to KRW 49.7 trillion during periods of declining interest rates. By type of borrower, during periods of interest rate hikes when the demand for corporate funds in-

1) This article was authored by Park Jae-hyun and Ahn Jun-ki (Bank Analysis Team), and was reviewed by Shin Jun-young (director of the Financial Institution Analysis Division) and Song Kil-sung (head of the Bank Analysis Team).
2) This article analyzed commercial banks excluding Internet-only banks, as the business practices of Internet-only banks are different from those of other commercial banks in that they are restricted from issuing corporate loans.
3) To compare loan balances by interest rate phase, the fluctuations in the volume of loans by phase were converted into a 12-month basis. The 12-month value was estimated based on the following formula: (fluctuations in the volume of loans by interest rate phase / duration of the phase (months) x 12 (months).

creased due to economic factors, the increase of corporate loans (an annual average of KRW 28.5 trillion) was slightly larger than that of household loans (KRW 26.9 trillion). During periods of declining rates, on the other hand, household loans, which are heavily influenced by asset markets, increased by KRW 32.7 trillion, a greater increase than corporate loans (an annual average of KRW 17.1 trillion). This trend became more pronounced during the recent period of interest rate hikes, as the demand for operating funds among businesses increased following COVID-19, and the bond market contracted due to high interest rates, leading to an expanded demand for bank loans(Box 3-2).[4)]

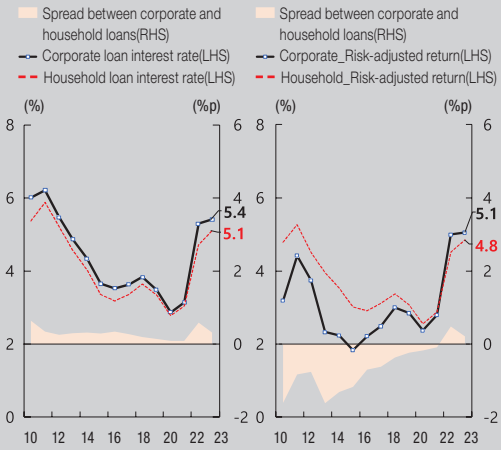
Box 3-2. Increase in commercial banks[1)] loans by borrower type and interest rate phases



Notes: 1) Based on 12-month annualized change amount
Source: Financial institution business reports.

During the recent period of rising interest rates, the expansion of corporate loans issued by banks had a positive influence on their profitability. The interest rate on corporate loans is relatively higher than that on household loans,[5)] but their impact on banks' profitability can vary depending on the extent of loan default. During the recent period of interest rate hikes, the level of loan defaults was modest despite high interest rates, leading to the first positive turn since 2022 in the risk-adjusted return[6)] differentials between corporate loans and household loans(Box 3-3).

Box 3-3. Trends in commercial bank loan interest rates and risk-adjusted return by borrower type



Notes: 1) Based on commercial banks balances
2) Interest margin ratio(interest income/loan) - substandard-or-below loan ratio
Source: Financial institution business reports, Bank of Korea calculations.

4) Since the COVID-19 pandemic, multiple policies have been implemented to facilitate the supply of corporate funds, such as the adoption of calculation methods for risk-weighted assets under Basel III including a lower risk weight for loans issued to SMEs, loan maturity extension, and easing of the loan-deposit ratio.
5) From 2010 onward, the average interest rate on corporate loans (based on balances) from commercial banks is 4.43%, slightly higher than 4.15% of household loans (based on balances).
6) A risk-adjusted return refers to the return ratio that reflects the level of risk, which is obtained by deducting the loan loss ratio (loan loss expenses / loan balances) from the interest income ratio (interest income / loan balances). Due to data limitations, this article used the substandard-or-below loan ratio by type of borrower instead of the loan loss ratio by type of borrower.

Expanded Net interest spread in Periods of Interest Rate Hikes

The net interest spread is a key determining factor behind net interest income for banks. As domestic banks have a high proportion of floating-rate loans, as well as a high proportion of low-cost deposits including demand deposits, it is common for the net interest spread to widen (narrow) in line with rising (declining) interest rates. In the recent period of rising interest rates when the Base Rate soared sharply (+300 bp), net interest spread has expanded to its widest extent (+38 bp) since 2010(Box 3-4).

Box 3-4. Changes[1] in base rate and net interest spread by interest rate phases

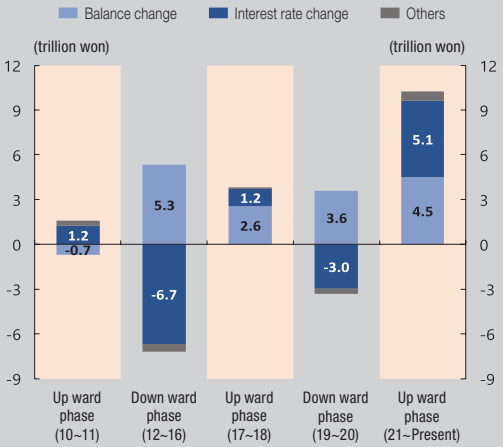
(bp)

	10.9 ~12.6	12.9 ~17.9	17.12 ~19.6	19.9 ~21.7	21.9~
Base rate	+125	-200	+50	-125	+300
Net interest spread	+22	-56	+0	-16	+38

Note: 1) Net interest spread is based on deposit-taking banks balances
Source: Bank of Korea.

The significant widening of the net interest spread resulted in its increasing influence on banks' revenue, which became evident upon estimating the net interest income by interest rate phase[7] based on main factors decomposed into loan balances and interest rate fluctuations.[8] In the past, an increase in loan balances served as a main factor contributing to an increase in net interest income, while interest rate fluctuations acted as a factor promoting an increase (a decline) in income in the period of rising (declining) interest rates. During the recent period of interest rate hikes, the contribution of interest rate fluctuations (+5.1 trillion KRW) to net interest income expanded significantly compared to previous periods of rate increases, while the loan balance change factor due to loan growth (+4.5 trillion KRW) also played a role. (Box 3-5).

Box 3-5. Decomposition of factors contributing to changes in net interest income (revenues - expenses) by interest rate phases and years



Note: 1) Shaded area represents periods of rising interest rate
Source: Financial institution business reports, Bank of Korea calculations.

7) The analysis for factor decomposition was conducted on an annual basis. When the Base Rate changed during a given year, the period up to the preceding year was classified as one interest rate phase. For instance, when the Base Rate switched to an increase in 2017, the period up to 2016 was classified as a declining interest rate phase.

8) Based on factor decomposition, the interest income was estimated as follows, by using balances of won-denominated deposits and loans, as well as interest income and interest expenses on the balance sheet.

$$\Delta\text{changes in interest income} = \Delta(\text{balance} \times \text{interest rate})$$

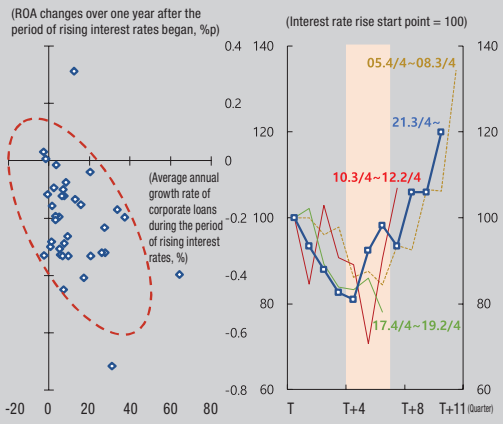
$$= \underbrace{\Delta(\text{balance}) \times \text{interest rate}}_{\text{balance fluctuation factors}} + \underbrace{\text{balance} \times \Delta(\text{interest rate})}_{\text{interest rate flunctuation factors}} + \underbrace{\Delta(\text{balance}) \times \Delta(\text{interest rate})}_{\text{others}}$$

Major Considerations Affecting Future Profitability

Increase in Loan Loss Expenses

The significant expansion of corporate loans during the recent period of rising interest rates can act as a factor contributing to an increase in banks' expenses in the future. Examining past interest rate phases, the greater the increase in corporate loans during periods of rising interest rates, the more significantly profitability declined after the rate hike period. This decline in profitability appears to have been driven not only by the decrease in loan interest rates but also by increased costs associated with factors such as loan defaults. Looking at trends in non-performing loans,[9] which generate no interest income, during periods of interest rate hikes, such loans decreased overall amid the immediate onset of interest rate hikes, but then surged rapidly around four to six quarters after the beginning of rising rates(Box 3-6). This suggests that corporate loan defaults may expand with a time lag after rising interest rates, leading to an increase in loan loss expenses in the future and eventually lowering banks' profitability.

Box 3-6. Relationship between corporate loans and bank profitability, and non-performing corporate loans



Source: Financial institution business reports, Bank of Korea calculations.

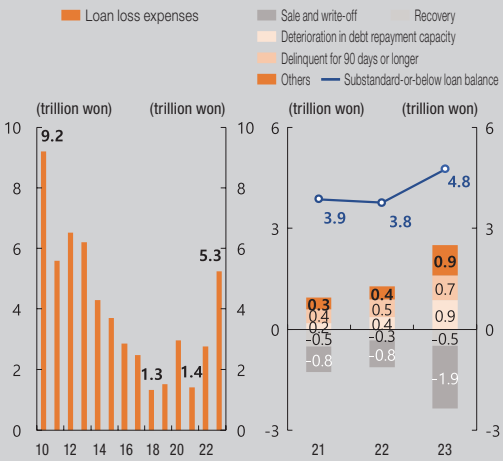
As high interest rates have persisted for longer than expected in the recent period of rising interest rates, it is becoming apparent that a growing burden of interest expenses is being imposed on companies, resulting in weakened debt repayment capacities. In March 2024, corporate loans with lending rates of 5% or higher exceeded half (58.3%) of the loans issued to SMEs, thereby significantly increasing the burden of interest expenses on companies. Accordingly, the delinquency rate on corporate loans has continued its upward trend,[10] though remaining low at 0.59% as of February 2024. Corporate bankruptcies (based on court filings) increased significantly in 2023, with 1,657 cases reported, marking a substantial rise of 65.0% compared to the previous year. With the corporate credit risk escalating, loan loss expenses[11] also increased at a rapid pace from KRW 1.4 trillion in 2021 to KRW 5.3 trillion in 2023. In particular, among factors af-

10) The delinquency rate of corporate loans issued by domestic banks against total number of companies (based on principal and interest overdue for one month or longer, %): 0.26 in 2021 → 0.27 in 2022 → 0.41 in 2023 → 0.59 in February 2024.

11) Loan loss expenses refer to the amount recognized as an expense, estimated based on the anticipated scale of defaults and allocated proactively in anticipation of potential future defaults.

fecting shifts in banks' substandard-or-below loans, there has been a noticeable increase in the exacerbation of companies' debt repayment capacities[12] caused by higher default risks(Box 3-7).[13]

Box 3-7. Trends in loan loss expenses of commercial banks and changes in substandard-or-below loan by factor

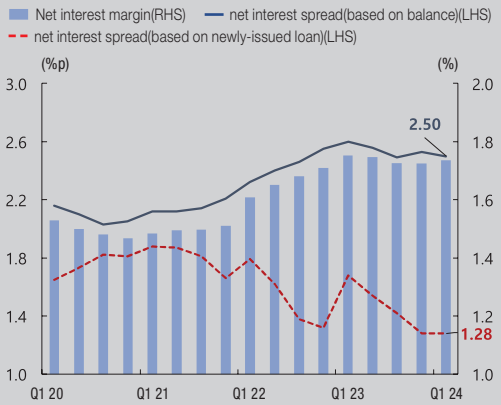


Source: Financial institution business reports.

Narrowing Net interest spread

As deposit rates have fallen more rapidly than lending rates recently, the net interest spread and the net interest margin have shown a downward movement. In particular, given the decline in the net interest spread between new deposits and loans, which is an indicator used to estimate banks' future profitability, centered around household loans since the first quarter of 2023,[14] the contribution of the net interest spread to banks' profitability seems likely to diminish in the future(Box 3-8). In addition, financial institutions' recent move of reducing leverage for risk management purposes may limit the quantitative effect such as asset expansion compared to the past.

Box 3-8. Trends in net interest margin and net interest spread



Note : 1) Net interest margin is based on commercial bank(excluding internet-only banks), and the net interest spread is based on deposit-taking banks(domesit banks excluding The Export-Import Bank of Korea)

Source: Bank of Korea.

12) This refers to loans issued to counterparties with significantly deteriorating debt repayment capacities in consideration of their financial status and future cash flows, which are therefore assessed to pose a serious risk associated with debt recovery (doubtful counterparties), or loans extended to counterparties with seriously deteriorating debt repayment capacities whose loans are therefore certain to be irrecoverable and inevitably recognized as losses (estimated loss counterparties), excluding loans held by insolvent companies and those subject to debt restructuring.

13) As of 2023, an increase in the substandard-or-below loan ratio, driven by deteriorating debt repayment capacities, amounted to approximately KRW 0.9 trillion, a more than twofold increase year-on-year (KRW 0.4 trillion).

14) **Trends in interest rates for new deposits and loans(based on deposit-taking banks, %)**

	Q1 23	Q2	Q3	Q4	Q1 24
Deposit interest rate	3.64	3.56	3.71	3.93	3.63
Loan interest rate	5.32	5.10	5.13	5.20	4.91
Corporate	5.36	5.20	5.24	5.33	5.07
Household	5.22	4.82	4.84	4.97	4.56

Notes : 1) Deposit-taking banks are domestic banks excluding The Export-Import Bank of Korea

Source : Bank of Korea.

Implications

The recent period of interest rate hikes has seen a significant increase in corporate loans compared to the past, which has led to an overall growth in total loans. This increase, coupled with a modest level of corporate loan defaults, has had a favorable influence on banks' profitability. In addition, during the same period, the net interest spread has widened by the largest margin (+38 bp) since 2010, allowing the interest income rate to maintain a high level.

However, the size of loan loss expenses incurred in vulnerable sectors in the future, as well as the extent of the net interest spread reduction, appears likely to have an effect on banks' profitability. Recently, the delinquency rate of corporate loans has been on the rise, centered on loans to SMEs, and the size of substandard-or-below loans is rapidly expanding compared to previous periods of interest rate hikes, thereby leading to a gradual elevation of credit risks.

An increase in loan loss expenses in vulnerable sectors could lead to a contraction in loan supply due to the strengthening of banks' risk management. Therefore, it is necessary to flatten the profit structure over time by proactively reflecting potential future defaults, such as by setting aside loan loss provisions. Additionally, while the expansion of corporate lending by banks is necessary to support the real economy, it is crucial to thoroughly manage the industry-specific risks during this process.

Box 4.

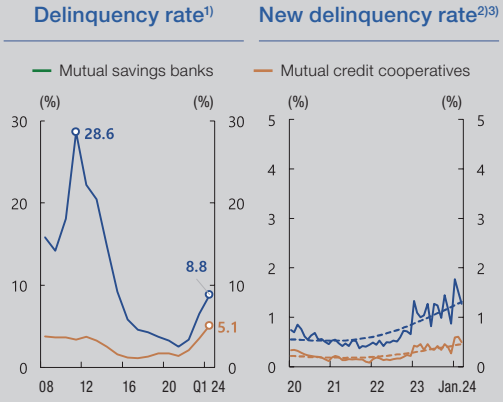
Assessment and Implications of Asset Quality Among Non-bank Deposit-taking Institutions[1)]

The deterioration of asset quality among financial institutions is recently being identified as a risk factor for the stability of the domestic financial system. Furthermore, multiple indicators of NBDIs' asset quality have recently deteriorated at a faster pace than those of banks or other non-banking sectors, which is thereby heightening vigilance with a particular focus on this sector. Thisarticle aims to draw implications for enhancing the stability of the financial system by exploring the asset quality of NBDIs to assess financial institutions' response capacities, while estimating the effects of improving the asset quality and loss absorption capacities of NBDIs through the active disposal of non-performing assets.

Current Status of Asset Quality for NBDIs

Looking at loan delinquency rates by type of NBDIs, as of the end of the first quarter of 2024, the delinquency rates faced by mutual savings banks and mutual credit cooperatives stood at 8.8% and 5.1%, respectively, both showing an upward trend since 2022. As for newly-issued loans, the delinquency rates have exhibited a similar movement to those of existing loans, but the delinquency rates for new loans by mutual savings banks are increasing more sharply than those of mutual credit cooperatives(Box 4-1).

Box 4-1. Trend of loan delinquency rates by financial sector



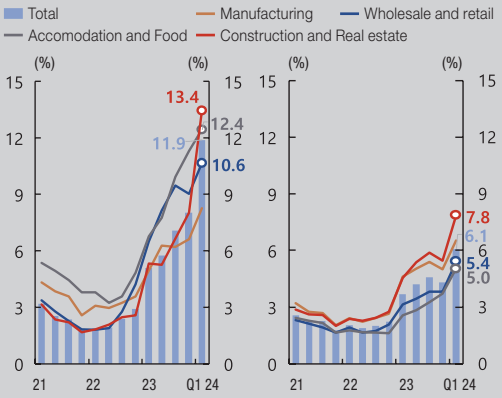
Notes: 1) Before 2023, as of the end of the year.
2) Amount of new delinquencies during the month / Loan balance at the end of the previous month.
3) The dotted line is the trend line extracted using the HP filter(λ=14,400)

Source: Financial institutions' business reports, MG Community Credit Cooperatives.

As for the delinquency rates on corporate loans by industry, all industries have recently seen a noticeable increase in their delinquency rates on loans extended by both mutual savings banks and mutual credit cooperatives. In construction and real estate, the rates showed a steep upward trend, especially due to real estate PF loan defaults. In addition, accommodation & food services, as well as wholesale & retail trade, exhibited a soaring increase due to elevated debt repayment burdens on SEBOs driven by high interest rates(Box 4-2).

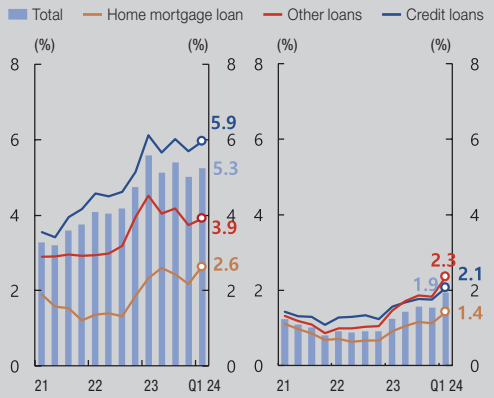
1) This article was authored by Kang Jung-mi, Song Su-hyeok, and Bang Nu-ri (Small and Medium-sized Financing Analysis Team), and was reviewed by Shin Jun-young (director of the Financial Institution Analysis Division) and Mun Yong-pil (head of the Small and Medium-sized Financing Analysis Team).

Box 4-2. Delinquency rates of corporate loans by industry



Note: 1) Excluding MG Community Credit Cooperatives.
Source: Financial institutions' business reports.

Box 4-3. Delinquency rates of household loans by collateral type



Note: 1) Excluding MG Community Credit Cooperatives.
Source: Financial institutions' business reports.

Meanwhile, in terms of household loans by type of collateral, the delinquency rates faced by mutual savings banks are maintaining a higher level centered on unsecured loans compared to the past, while those of mutual credit cooperatives are increasing across all secured loans(Box 4-3).

Assessment of Response Capacity Against Deteriorating Asset Quality

With the rapid deterioration of asset quality, there are growing concerns over the response capacities of NBDIs. Taking this situation into account, this article analyzed the effects on loss absorption capacities (capital ratio) of all sectors under the extreme scenario whereby all substandard-or-below loans[2] in each sector were classified as estimated losses.[3] According to the analysis results, despite the assumption that loan defaults had been exacerbated rapidly, the average capital ratio of each sector exceeded the supervisory standard,[4] with 11.6% for mutual

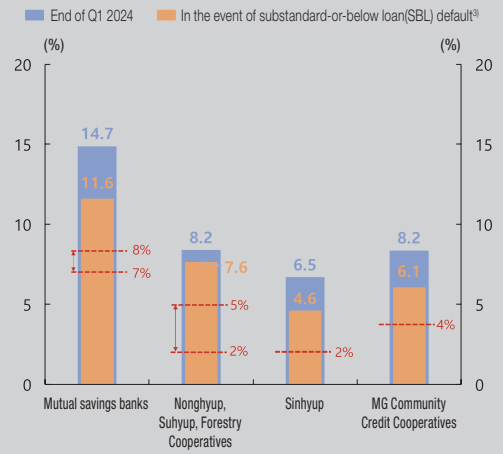
2) The proportions of substandard-or-below loans in total loans extended by mutual savings banks and mutual credit cooperatives were 9.7% (6.5% for substandard, 2.3% for doubtful, and 0.9% for estimated loss) and 4.9% (4.7% for substandard, 0.1% for doubtful, and 0.1% for estimated loss), respectively, as of the end of the first quarter of 2024.

3) It was assumed that additional losses and the additional accumulation of loan loss provisions were only incurred for the amount exceeding the existing accumulated amount out of the required reserves for loan losses when classifying all substandard-or-below loans as estimated losses, with the excess then reflected on capital and risk-weighted assets. From a conservative stance, however, this analysis discounted profit recovery through write-offs and disposals. Meanwhile, the required reserves for loan losses are equivalent to 20-30% of substandard loans, 50-75% of doubtful loans, and 100% of estimated-loss loans depending on type of NBDIs, type of loans, and the level of soundness.

4) The standard level for mutual savings banks is set at 8% for those with assets of KRW 1 trillion or more and 7% for the others. As for mutual credit cooperatives, the levels are 5% for Nonghyup, 2% for Sinhyup, Suhyup, and Forestry Cooperatives, and 4% for MG Community Credit Cooperatives.

savings banks, 7.6% for Nonghyup,Suhyup, and Forestry Cooperatives, 6.1% for MG Community Credit Cooperatives, and 4.6% for Sinhyup. This is presumably attributable to consistent efforts in each sector to secure capital in light of past experiences such as the crisis of mutual savings banks insolvency(Box 4-4).

Box 4-4. Changes in capital ratio by financial sector[1)2)]



Notes: 1) As of the end of Q1 2024
2) Red line is based on supervisory standard(7~8% for Mutual savings banks, 5% for Nonghyup, 2% for Suhyup·Forestry Cooperatives·Sinhyup, 4% for MG Community Credit Cooperatives)
3) Assuming that 100% of NPLs are classified as estimated losses.

Source: Bank of Korea, Financial institutions' business reports, MG Community Credit Cooperatives

Need for Active Disposal of Non-performing Assets

As mentioned above, it was analyzed that each sector could maintain an adequatelevel of loss absorption capacity overall, even if the asset quality of NBDIs further declined sharply. In addition, if NBDIs effectively manage their non-performing assets, it is deemed possible that they will be able to improve their asset quality and further enhance loss absorption capacities. Generally, financial institutions manage their non-performing assets through write-offs or disposals, since such methods allow them to reduce the scale of their delinquent loans and to recover profits, albeit partially.[5)]

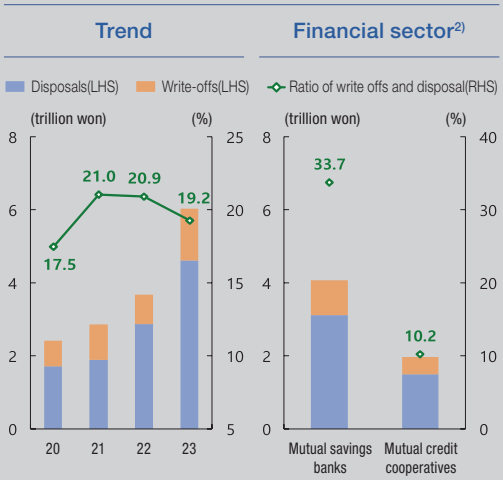
Examining the status of non-performing asset management by NBDIs during 2023, 19.2% of all non-performing assets was written off or disposed of. The value of write-offs and disposals increased significantly compared to the previous year, but the volume of defaulted loans surged by a greater margin, which led to a decline in the ratio of write-offs and disposals to non-performing loans[6)] compared to the previous year (20.9%). As for the ratio of write-offs and disposals by type of NBDIs, mutual savings banks recorded 33.7%, while mutual credit cooperatives[7)] stood at a somewhat lower level of 10.2%(Box 4-5).

5) It is estimated that, in 2023, write-offs and disposals to non-performing loans contributed to reducing the substandard-or-below loan ratio by 3.1%p for mutual savings banks (10.3% estimated before write-offs and disposals → 7.2% as of the end of 2023) and 0.4%p for mutual credit cooperatives (3.8% → 3.4%).

6) The ratio of write-offs and disposals to non-performing loans was calculated according to the following formula: amount of write-offs and disposals during the given period / (balances of non-performing loans at the end of the previous quarter + net amount of new non-performing loans during the given period).

7) The analysis targeted Nonghyup, Suhyup, Forestry Cooperatives, and Sinhyup, whose disposal and write-off data are publicly available. However, the analysis of bad loan disposals was limited to Nonghyup, which was the only one to allow the aggregation of relevant data.

Box 4-5 . Scale and ratio[1] of write-offs and disposals of non-performing loans(NPLs)



Notes: 1) Scale of write-offs and disposals/(End of the previous year NPLs balance and net incurred amount)
2) As of 2023
Source: Financial institutions' business reports, Financial institutions' survey

Meanwhile, in terms of write-offs and disposals for non-performing loans, NBDIs significantly-underperform banks.[8] This is largely due to the characteristics of non-performing loans and the associated regulatory framework, which dampen active disposals of such loans by NBDIs.[9] As investors in the domestic non-performing loan marketsprefer prime secured debts with a relatively low level of risk, NBDIs, which have a high proportion of subprime secured debts and unsecured loans, usually demonstrate poor performance in selling their non-performing assets due to a lower sale price rate of their bad loans or an insufficient number of buyers.[10] In addition, institutional limitations hinder the sale of non-performing loans, such as restrictions on potential buyers based on the type of loans[11] and the inadequacy of dedicated disposal entities[12].

If sales of non-performing loans are boosted and thus the ratio of write-offs and disposals increases, it is expected that asset quality and loss absorption capacities will be further enhanced among NBDIs. Based on the assumption that the ratios of write-offs and disposals among mutual savings banks and mutual credit cooperatives will rise to the level of banks (42.3%), the

8) In 2023, the ratio of write-offs and disposals to non-performing loans for banks was 42.3%, surpassing twice the ratio of NBDIs.

9) As for the ratio of disposals (amount of disposals / (balances of non-performing loans at the end of the previous quarter + net amount of new non-performing loans)), banks stood at 22.7%, while NBDIs at 14.7%. Meanwhile, write-offs by financial institutions are limited to assets that have been permitted for each sector according to supervisory regulations and classified as "estimated losses" with approval required by the financial authorities (however, some exceptional assets including small loans can be written off independently). This has been a cause of wide disparities between sectors.

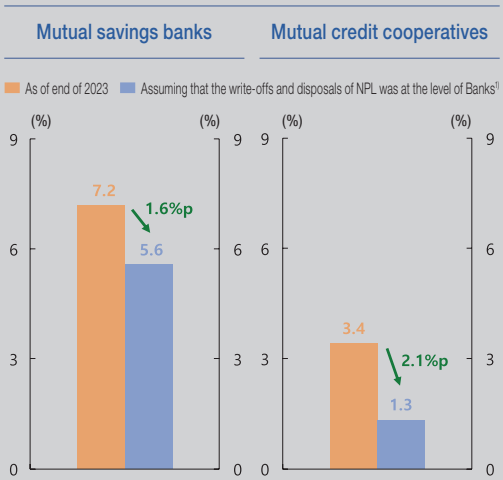
10) In 2023, the financial authorities raised the Real Estate PF Normalization Fund worth KRW 1.1 trillion (invested by Korea Asset Management Corporation (KAMCO) and asset management companies) to purchase non-performing loans from mutual savings banks and MG Community Credit Cooperatives.

11) The sales of unsecured personal delinquent loans held by financial companies including mutual savings banks were allowed only through the Personal Debt Purchase Fund operated by KAMCO in order to prevent overly aggressive collection and ensure debt restructuring opportunities. With the revision and implementation of the Personal Debt Purchase Fund agreement (effective as of June 16, 2023), the relevant regulations were eased to allow for the sale of these loans to special purpose companies.

12) Unlike Nonghyup or MG Community Credit Cooperatives, which operate subsidiaries that collectively manage non-performing loans from their respective cooperatives, Sinhyup and other mutual credit cooperatives are responsible for the disposal of their non-performing loans at the level of each cooperative, resulting in poor performance in managing their bad loans. To address this issue, Sinhyup is currently working on the establishment of a subsidiary that will collectively manage its non-performing loans, as Nonghyup does.

substandard-or-below loan ratios of the aforementioned sectors are presumed to decrease by 1.6%p and 2.1%p, respectively, from their current levels. In particular, if NBDIs manage their distressed assets through disposals, rather than write-offs, thereby recovering some profits, it is anticipated that their absorption capacities will be improved, with their capital ratio rising(Box 4-6).[13)]

Box 4-6 . Change in the ratio of SBL with an increase in the write-offs and disposals



Note: 1) Assuming that the write-offs and disposals ratio of NPL was at the level of 42.3% in 2023.

Source: Financial institutions' business reports, Financial institutions' survey

Implications

The asset quality of NBDIs has deteriorated at a rapid pace, as demonstrated by trends such as the sharp rise in their substandard-or-below loan ratio. However, their average capital ratio is assessed to have surpassed the supervisory standard, even when classifying all of their current substandard-or-below loans as estimated losses. Based on these analysis findings, it is estimated that the overall loss absorption capacities of each type of NBDIs are sufficient to respond to such impacts. However, given that a rapid growth in non-performing assets is likely to stir anxiety in the market and thus trigger liquidity risks, greater efforts need to be made to improve financial soundness indicators and expand loss absorption capacities among financial institutions through effective management of their non-performing assets.

From this perspective, the financial authorities' recent soft landing measures for the real estate PF sector[14)] are deemed to present a desirable policy direction in that they establish the standard for the follow-up management of PF business entities, in which the non-performing assets of NBDIs are concentrated, to restructure and swiftly manage such entities. In addition, various system reforms are being implemented, including the expansion of the pool of buyers and establishment of non-performing loan disposal entities, with the aim to ensure the active disposal of non-performing assets in the non-banking sector.For these efforts to translate into tangible outcomes, close-knit discussions and cooperation should continue among relevant organizations and market participants.

13) The effects of capital ratio improvement through disposal can vary depending on the quality of target assets (the level of loan loss reserves) and the recovery rates. On the assumption that 50% of the value of bad loans is recovered through their sale, thereby resulting in profit recovery, the capital ratio (as of the end of 2023) is estimated to increase by 0.48%p for mutual savings banks and 0.06%p for mutual credit cooperatives. Meanwhile, if the scale of profit recovery is expanded due to higher recovery rates, the capital ratio can increase significantly. Conversely, if the disposal of bad loans incurs additional losses due to a decline in recovery rates, the capital ratio can rather decrease.

14) For furtherdetails, refer tothe Financial Services Commission and the Financial Supervisory Service's Press Releases, "FSC and FSSAnnounce Measures to Seek an Orderly Soft-landing in the Real Estate Project Finance Market," May 14, 2024.

4. Capital Flows

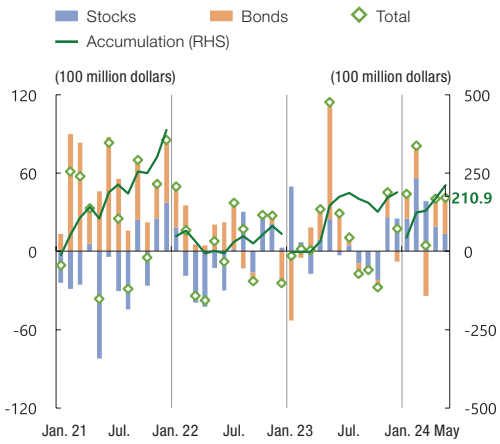
From January to May 2024, domestic portfolio investment by foreigners recorded a net inflow due to the sustained global appetite for risky assets and expectations for the improved performance of domestic companies.

Overseas portfolio investment by residents saw a net increase driven by expanded investment in both stocks and bonds due to the prospect of improved business conditions for IT companies and expectations for an interest rate cut by the U.S. Federal Reserve within the year.

Net Inflow of Foreign Portfolio Investment in Domestic Securities, Driven by Investments in Both Stocks and Bonds

From January to May 2024, portfolio investment in domestic securities by foreigners[86] recorded a net inflow of USD 21.09 billion (USD 15.18 billion in stocks, USD 5.90 billion in bonds). Stock investment has continued to register a net inflow (USD 2.91 billion on a monthly average) since November 2023. Bond investment has also registered a net inflow this year, except in March when a massive amount of bonds reached maturity(Figure I-4-1).

Figure I-4-1. Change in foreigners' domestic portfolio investments[1]



Note: 1) A plus sign means a net inflow and a minus sign means a net ouflow.

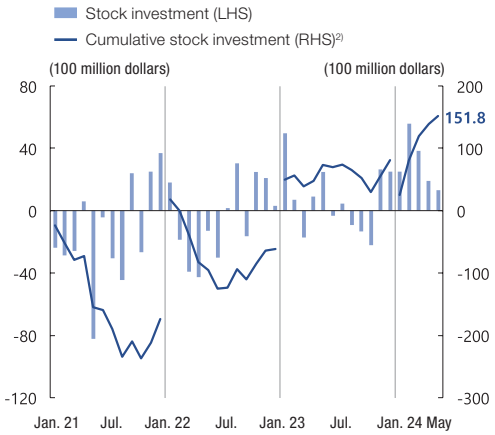
Source: Bank of Korea.

Stock investment by foreigners recorded a net inflow of USD 15.18 billion from January to May 2024, seeing a 108% increase from the same period in the previous year(USD 7.32 billion from January to May 2023). Although concerns over the delay in a policy rate cut by the U.S. Federal Reserve emerged this year, expectations for the recovery of the global semiconductor industry and the government's Corporate Value-up Program worked as factors for recording a net inflow of foreign investment in stocks. Such a net inflow is particularly attributed to the growing investment centered on the electrical and electronic industry following the better-than-expected performances of major Korean semiconductor companies in the first quarter of 2024 as announced in and after April, and increased purchases of stocks with a low price-to-book ratio (PBR) based on expectations for the

86) In this section, stock investment includes exchange and OTC transactions of both KOSPI- and KOSDAQ-listed equity as well as initial public offerings (IPOs, excluding ETFs, ELWs, ETNs, etc.), while bond investment is based on exchange and OTC transactions of listed bonds (with repo transactions and amounts reaching maturity taken into consideration).

government's Corporate Value-up Program to boost the undervalued Korean stock market. Meanwhile, by month, the volume of net inflow increased sharply in February,[87] when the expectations for the Value-up Program were boosted substantially and saw a modest decrease afterward(Figure I-4-2).

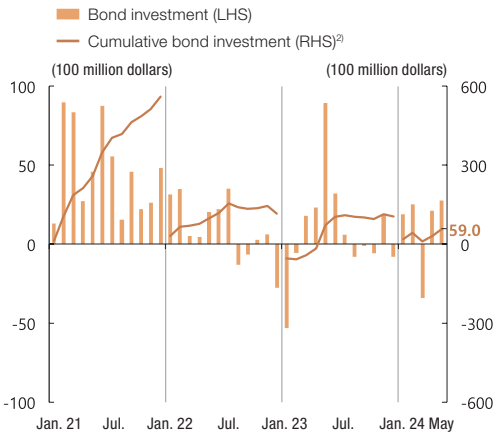
Figure I-4-2. Foreigners' net stock investment inflows[1]



Notes: 1) A plus sign means a net inflow and a minus sign means a net ouflow.
2) Cumulative sums of monthly net inflows since January, by year.
Source: Bank of Korea.

Bond investment by foreigners recorded a net inflow of USD 5.90 billion from January to May 2024, seeing a 19% decrease from the same period in the previous year (USD 7.28 billion from January to May 2023). Investment in bonds by foreigners observed a net decrease from the previous year because the healthy liquidity condition of the foreign exchange market maintained the incentive for short-term arbitrage at a very low level,[88] sharply driving down the net buying of short-term bonds (excluding matured bonds) from January to May 2024 compared with the same period in the previous year (USD 9.67 billion → USD 0.51 billion). Meanwhile, by month, investment in bonds by foreigners temporarily switched to a net outflow in March due to the massive amount of Korea Treasury bonds (KTBs) reaching maturity and portfolio adjustments by some investors, but the rest of the period has seen a net inflow, mainly in long-term bonds(Figure I-4-3).

Figure I-4-3. Foreigners' net bond investment inflows[1]



Notes: 1) A plus sign means a net inflow and a minus sign means a net ouflow.
2) Cumulative sums of monthly net inflows since January, by year.
Source: Bank of Korea.

87) At the beginning of the year, market participants' expectations for the Value-up Program were heightened ahead of the government's announcement to implement the Corporate Value-up Program and the first seminar on the program (held on February 26, 2024).

88) The incentive for short-term arbitrage (three-month) remained high in the first half of 2023due to the incidents involving SVB and CS, but healthy liquidity condition of foreign exchange market lowered it again in the second half of the same year (40bp in the second half of 2022 → 38bp in the first half of 2023 [64bp in March 2023] → 29bp in the second half of 2023 → 10bp in January-May 2024, three-month, average over the period).

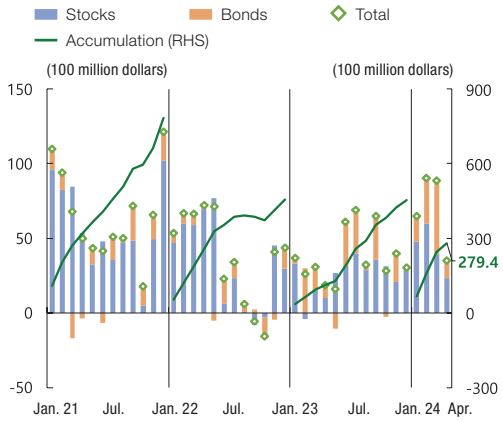
In May 2024, the balance of stock investment by foreigners reached KRW 785 trillion, accounting for 30.7%[89] of market capitalization[90], up 1.9%p from the end of the previous year (28.8%). The balance of bond investment by foreigners represented 9.8% of the balance of the total listed bonds, remaining the same as the end of the previous year (9.8%).

Going forward, foreigners' domestic portfolio investment is projected to see a continued net inflow, mainly in stock investment, due to policy rate cuts in major economies, expectations for the improved performance of domestic companies, and the government's continued policy implementation to boost the Korean stock market. However, it is necessary to remain mindful toward the possibility of increased volatility in capital flows following certain developments in geopolitical risks, the global economic cycle, and changes in price forecasts.

Increase in Net Investment in Overseas Securities by Korean Residents

From January to April 2024, net investment in overseas securities by Korean residents stood at USD 27.94 billion (USD 17.02 billion in stocks, USD 10.92 billion in bonds), showing a significant increase from the same period in the previous year (total of USD 11.19 billion, with USD 5.43 billion in stocks and USD 5.76 billion in bonds)(Figure I-4-4). This is attributed to an increased net investment in both stocks and bonds, mainly by non-financial corporations (including individuals), due to expectations for improved business conditions among IT companies and an interest rate cut by the U.S. Federal Reserve this year.

Figure I-4-4. Change in residents' overseas portfolio investment[1]

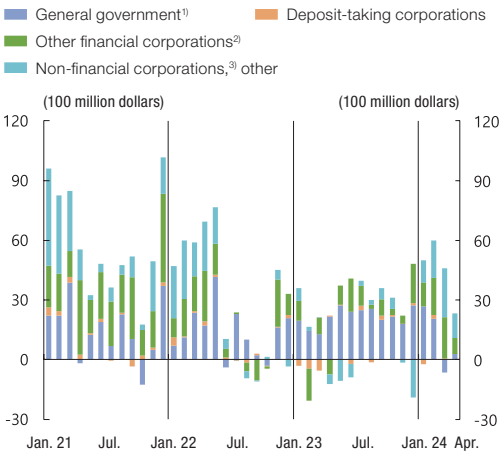


Note: 1) A plus sign means a net investment, and a minus sign means a net withdrawal.
Source: Bank of Korea.

With regard to stocks, expectations for the stable growth of AI and semiconductor companies improved investment sentiment, expanding the net investment by non-financial corporations (including individuals) and other financial institutions (including asset management companies) while the net investment by the general government (including the National Pension Service) saw a decrease(Figure I-4-5).

89) Based on the balance of stocks listed on the KOSPI and KOSDAQ, excluding ETFs, out of the balance of stock investment by foreigners.
90) Sum of the total market capitalizations of the KOSPI and KOSDAQ markets.

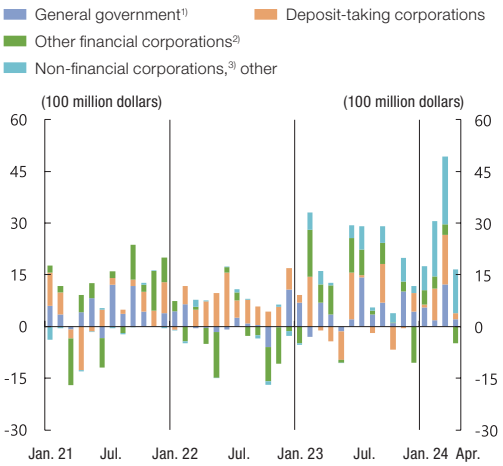
Figure Ⅰ-4-5. Residents' net overseas stock investment outflows, by investor type



Notes: 1) National Pension Service (NPS), Korea Investment Corporation (KIC), etc.
2) Insurance companies, asset management companies, etc.
3) Including individual investors.

Source: Bank of Korea.

Figure Ⅰ-4-6. Residents' net overseas bond investment outflows, by investor type



Notes: 1) National Pension Service (NPS), Korea Investment Corporation (KIC), etc.
2) Insurance companies, asset management companies, etc.
3) Including individual investors.

Source: Bank of Korea.

With regard to bonds, the amount of net investment observed a significant increase due to the pursuit of capital gains in response to a possible rate cut and growing appetite for investment in overseas bonds following the widened yield spread between domestic and overseas bonds. In particular, the amount of net investment by non-financial corporations (including individuals) exceeded the previous year's figure(Figure I-4-6).

Going forward, there is a possibility that overseas portfolio investment by Korean residents will increase on the back of continued expectations of declining interest rates in major countries. However, it is also possible that there will be a high level of volatility in response to developments in geopolitical risks, the global economic cycle, and changes in price forecasts.

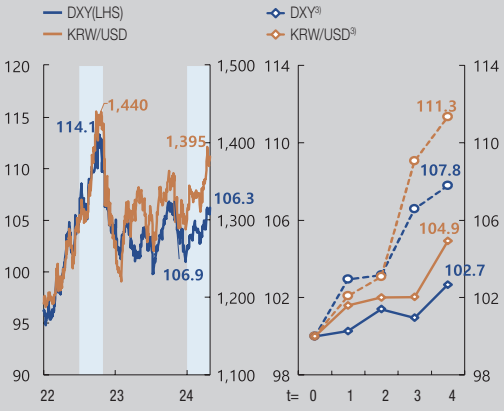
Box 5.

Comparison of Domestic and International Conditions that Influenced the Exchange Rate Rises in the Second Half of 2022 and the Recent Period[1)]

The surging won/dollar exchange rate in April this year hit the KRW 1,400 mark during trading on April 16, the highest level since October 21, 2022 (KRW 1,440, closing price), raising concerns over the repetition of exchange rate rises similar to the second half of 2022. The U.S. dollar index (DXY) also reached the 106 level (the highest since 106.9 on November 1, 2023) again in April 2024. However, there are also some differences between the two periods. The won/dollar exchange rate (on a monthly average) and the DXY from January to April 2024 rose by 4.9% and 2.7% respectively, much less than the won/dollar exchange rate and the DXY from July to October 2022 (11.3% and 7.8% respectively). The gap between the rises of the won/dollar exchange rate and the DXY in 2024 was 2.3%p, lower than the 3.6%p in 2022. In particular, the exchange rate remained high for a considerable time in the period of exchange rate rise in 2022, surpassing KRW 1,400, unlike this year.

Box 5-1. Trends in KRW/USD Exchange Rate and DXY

KRW/USD Exchange Rate and DXY[1)2)] | KRW/USD Exchange Rate and DXY[2)] in 2022 and 2024



Notes: 1) Daily data (based on closing prices)
2) A "+" indicatrs a depreciation of the Korean won against the US dollar (Note that DXY indicates appreciation)
3) Based on monthly average exchange rates (doshed line for June 2022=100, solid line for December 2023=100)

Source: Bank of Korea, Bloomberg

This article examines major domestic and international conditions that influenced the won/dollar exchange rate rises from July to October 2022 and January to April 2024 to draw implications about the exchange rate in the future. The major international conditions include: (1) monetary policy divergence in major economies; (2) risk sentiment; (3) geopolitical risks; and (4) weakening yen and yuan. The domestic conditions include: (1) economic growth and current account balance; (2) anxiety in the domestic financial market; and (3) residents' overseas investment. This article compared and analyzed the above seven factors.

1) This article was authored by Kwon Yong-o, Jo Yu-jeong, Lee Song-hui, and Seo Soo Kyung (International Finance Affairs Team) and was reviewed by Shin Jae-hyuk (director of the International Finance Division) and Nam Sunwoo (head of the International Finance Affairs Team).

Box 5-2. Similarities and Differences in Major Domestic and External Conditions during the Exchange Rate Surges in 2022 and 2024

		Similarities and Differences
External Conditions	① Divergence in Major Countries' Monetary Policies	Similarity: Divergence between the United States and other advanced economies (▲)
	② Risk Asset Investment Sentiment	Difference: (July-October 2022): Investment sentiment deteriorated (▲) (January-April 2024): Investment sentiment remained stable (▽)
	③ Geopolitical Risk	Difference: (July-October 2022): Significantly highlighted (▲) (January-April 2024): Not significant (△)
	④ Weakening of JPY and CNY	Similarity: Sharp depreciation of JPY (▲) Difference: (July-October 2022): CNY depreciation (▲) (January-April 2024): CNY stability (△)
Domestic Conditions:	① Economic Growth and Current Account	Difference: (July-October 2022): Deterioration in growth and current account (▲) (January-April 2024): Improvement in growth and current account (▽)
	② Domestic Financial Market Instability	Difference: (July-October 2022): Instability in PF-related bond market (▲) (January-April 2024): Limited impact from real estate PF-related risks (△)
	③ Resident Overseas Investment	Difference: (July-October 2022): Reduction in net investment (▽) (January-April 2024): Increase in net investment (△)

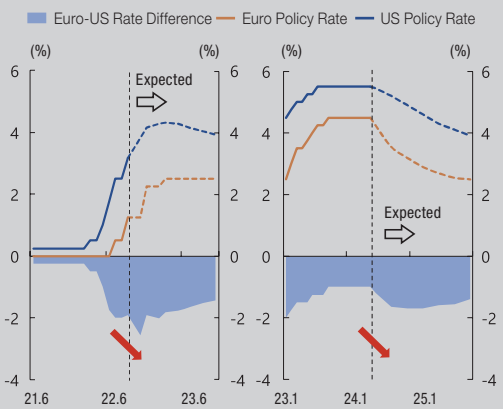
Note: 1) The upward arrows indicate the impact on the strength of the US dollar (or the weakness of the Korean won), and that ▲ had a greater impact than △.

Comparison of Domestic and International Conditions that Influenced the Won/Dollar Exchange Rate

International Condition (1): Monetary Policy Divergence in Major Economies

During both periods of exchange rate rises in 2022 and 2024, the U.S. dollar was stronger than other major currencies due to the divergence of monetary policies between the United States and other major economies, which was the main factor driving the rise of the won/dollar exchange rate. The U.S. dollar was strengthened on the back of widened gaps between the interest rates of the United States and other major economies, which are attributed to the U.S. Federal Reserve's interest rate hikes in 2022 and the delay in the expected interest rate cut by the U.S. Federal Reserve in 2024.

Box 5-3 . Expected Path[1)] of Policy Rates by the Federal Reserve and ECB



Note: 1) The dotted line represents the median forecast of major investment banks (IB) as of September 2022 and the end of April 2024.

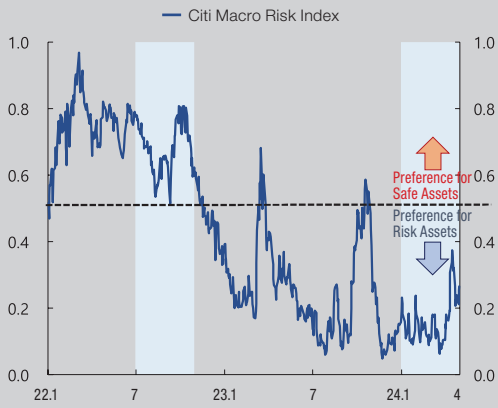
Source: Bloomberg

International Condition (2): Risk Sentiment

In cases where interest rate gaps widen between the United States and other major economies, global risk-off sentiment may make the U.S. dollar stronger as a safe asset, while global

risk-on sentiment may conversely weaken the U.S. dollar by alleviating concerns over capital outflows from countries other than the United States. Such cases were clearly demonstrated in the second half of 2022 and early 2024. The U.S. Federal Reserve's expeditious rate hike in response to the steep inflation in 2022 deteriorated global financial conditions and investment sentiment significantly amid growing concerns over an economic slowdown. In contrast, the interest rate is expected to remain high this year due to the delayed rate cut by the U.S. Federal Reserve, but global financial conditions and risk appetite remained solid because the said delay was based on the prospect of solid growth in the United States.[2)]

Box 5-4. Citi Macro Risk Index[1)]



Note: 1) The Risk Asset Preference Index (0~1) is calculated based on the movements of asset prices sensitive to risk preference, such as interest rates, stocks, exchange rates, emerging market bond spreads, and corporate bond CDS.

Source: Bloomberg

International Condition (3): Geopolitical Risks

Russia's invasion of Ukraine in 2022 contributed to the strength of the U.S. dollar by raising concerns over an economic slowdown in response to sharp rises in crude oil and commodity prices, along with growing risk-off sentiment to avoid geopolitical risks. As the full escalation of the Russia-Ukraine war dampened global investment sentiment significantly, the eurozone's high dependency[3)] on Russian crude oil and natural gas fueled concerns over an economic slowdown in the eurozone, weakening the euro significantly and strengthening the U.S. dollar. In contrast, the recent conflict in the Middle East did not escalate, exerting much less of an impact on energy prices and investment sentiment compared with 2022.

International Condition (4): Weakening Yen and Yuan

Amid the won's movement in closer alignment with the yen and yuan[4)] in recent years, it is estimated that the weak yen and yuan had a considerable impact on the rise of the won/dollar exchange rate in 2022 and 2024. However, 2022 saw a sharp decline in both the yen and yuan while 2024 saw a significant depreciation of the yen only. In 2022, the prospect of the Bank of Japan (BOJ)'s adherence to its negative interest rate policy drove up the yen/dollar exchange rate to a great extent (9.7%) from July to October

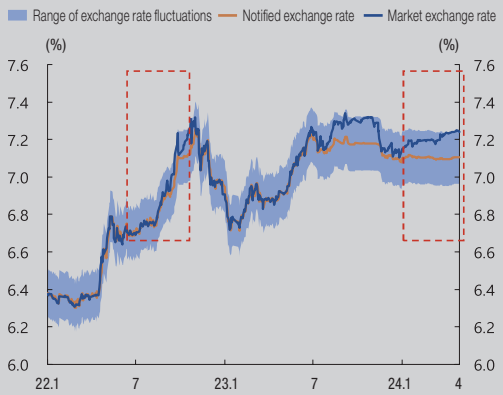
2) The recent report by the U.S. Federal Reserve analyzed that growing risk-aversion sentiment played a significant role in strengtheningthe U.S. dollar in 2022, but the same sentimentstabilized, albeit slightly, the exchange rate in the recent period. (FEDS Notes, May 2024).

3) Russian crude oil and natural gas respectively account for 24.8% and 39.3% of the crude oil and natural gas imported by the eurozone as of 2021.

4) The won/dollar exchange rate shows a high correlation with the yuan's exchange rate because of Korea's high trade dependency on China (24.6% as of 2020) and the won's position as a proxy hedge for investment in yuan. The yen's exchange rate also shows a high correlation with the won/dollar exchange rate because of Korea and Japan's competitive relationship regarding exports to the global market. According to Deutsche Bank analysis, the won is the Asian currency most affected by the depreciation of the yuan and yen (April 2024).

2022. During the same period, the yuan/dollar exchange rate also rose substantially (7.9%), approaching 7.3 yuan per dollar, which is largely attributable to the sluggish economy in China. The expectations that the policy rate gap between the U.S. Federal Reserve and the BOJ will continue during the period of exchange rate rise in 2024 are assessed to be having an impact on the sharp depreciation of the yen and the rise of the won/dollar exchange rate. In contrast, the yuan remains more stable when compared with 2022, despite weakening factors including the prolonged slump in China's real estate market and foreign capital outflows, as the Chinese authorities kept the yuan's official reference rate around 7.1 yuan per dollar.

Box 5-5. Chinese Yuan(CNY) exchange rate



Source: Bloomberg

Domestic Condition (1): Economic Growth and Current Account Balance

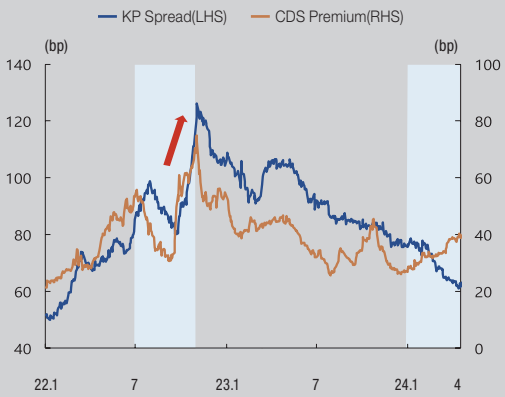
In 2022, declines in economic growth and the current account balance weakened the won. Factors such as the sluggish semiconductor industry slowed economic growth in the second half of the year (3.2% in the third quarter of 2022 → 1.4% in the fourth quarter), along with the current account balance registering a deficit. In contrast, domestic economic conditions worked as a factor for the stronger won this year. Continued increases in exports on the back of the recovery in the global semiconductor industry were followed by the prospect of economic growth recovery to a 2% level and an increased current account surplus[5] from 2024 to 2025.

Domestic Condition (2): Anxiety in the Domestic Financial Market

Anxiety in the domestic financial market worked as a factor that drove up the won/dollar exchange rate by alarming foreign investors in 2022, but the same factor had a comparatively limited impact in 2024. In 2022, the won was weakened amid heightened market vigilance in response to anxiety in the PF-related bond market and deteriorated the supply-and-demand imbalance in the bond market subsequent to massive bond issuance by the Korea Electric Power Corporation and banks. Korean Paper (KP)spread and credit default swap (CDS) premium also soared, deteriorating foreign currency funding conditions.

5) The Bank of Korea forecast that the current account surplus will grow to USD 60 billion by 2024 and USD 61 billion by 2025 from USD 35.5 billion in 2023 (May 2024).

Box 5-6. KP Spread[1] and CDS Premium



Note: 1) Spread between corporate and quasi-government bonds versus U.S. Treasury bonds
Source: Bloomberg

In contrast, despite the remaining real estate PF risk, indicators including KP spread and CDS premium remain at a favorable level this year. The active and preemptive response of the foreign exchange authority based on the experience of 2022 seems to have prevented turmoil in the financial market.

Domestic Condition (3): Residents' Overseas Investment

The amount of net investment in overseas securities by Korean residents saw a decrease in 2022, while 2024 has seen a massive amount of net investment, mainly by the National Pension Service and retail investors. In 2022, the fall of stock prices in the global market rapidly reduced the growth of overseas investment by residents, which rebounded in October. In contrast, in 2024, expectations for a soft landing of the U.S. economy lifted the stock market, leading to a surge of overseas securities investment by retail investors,[6] which worked as a pressure to weaken the won. However, the foreign exchange swap agreement signed by the National Pension Service and the foreign exchange authority in September 2022 seems to have partially met the National Pension Service's demand for the dollar in the spot market, thereby easing the upward pressure on the won/dollar exchange rate.

Assessment and Forecast

When comparing the recent period of the won/dollar exchange rate rise with 2022, similarities were observed in factors including monetary policy divergence among advanced economies and dramatic depreciation of the yen, but differences were also observed in risk sentiment, geopolitical risks, and domestic conditions. Along with the monetary policy divergence, dampened global investment sentiment, and energy prices surge in response to geopolitical risks that strengthened the U.S. dollar in 2022, the deterioration of domestic conditions saw a significant decline in the won, exceeding the rise of the dollar. However, current expectations for monetary policy divergence are comparatively lower[7] than in 2022 and the global investment sentiment remains favorable amid the decreased prominence of geopolitical risks, along with improved domestic conditions compared with 2022. Consequently, the DXY and the won/dollar exchange rose more steadily compared

6) The balance of overseas securities investment by retail investorsrose sharply from USD 57.6 billion (Retail investors account for 16.7% of the balance of overseas securities investment in the private sector.) at the end of 2022 to USD 88.3 billion (21.9%) atthe end of March 2024.
7) Under the stance of rapid interest rate hikes in 2022, the prospective policy rates gap between the U.S. Federal Reserve and the European Central Bank (ECB) widened to 2.6%p, later narrowing to approximately 1.7%p under the expectations for an interest rate cut in 2024.

with the second half of 2022.

Meanwhile, despite the recent improvement in domestic and international conditions, the rise of the won/dollar exchange rate has surpassed the rise of the DXY, which was a common phenomenon among most Asian currencies.[8] This is deemed to be attributable to those Asian countries' high dependency[9] on energy from the Middle East and the slower-than-expected normalization of Japan's monetary policy in the midst of ongoing uncertainty over China's economy and lingering concerns over energy prices rise and geopolitical risks from the conflict in the Middle East.[10]

The won/dollar exchange rate is now largely steady after temporarily reaching KRW 1,400 in April and slipping from there. Major investment banks forecast that the won/dollar exchange rate will further drop[11] and stabilize by the end of the year, given the relative improvement of domestic and international conditions. However, it is difficult to completely exclude the possibility of a resurgence in won-weakening factors, such as a continued delay in interest rate cuts by the U.S. Federal Reserve, cooling investment sentiment due to a reignition of the conflict in the Middle East, and additional depreciations of the yen and yuan.

8) From January to April 2024, the declines in Asian currencies?Japan (7.1%), Thailand (5.1%), Indonesia (3.6%), and Taiwan (3.5%)?were higher than the increase in the value of 9) Over 70% of the crude oil and over 20% of the LNG importedby Korea pass through the Strait of Hormuz.

10) Some believe that ongoing concerns over non-performing real estate PF loans are one of the domestic conditions that explain why the won is weaker than other currencies.

11) Forecast of won/dollar exchange rate by major investment banks (end-of-quarter basis, May 13, Bloomberg): 1,347 in the first quarter of 2024 → 1,370ein the second quarter → 1,349ein the third quarter → 1,331e in the fourth quarter.

Resilience of Financial System

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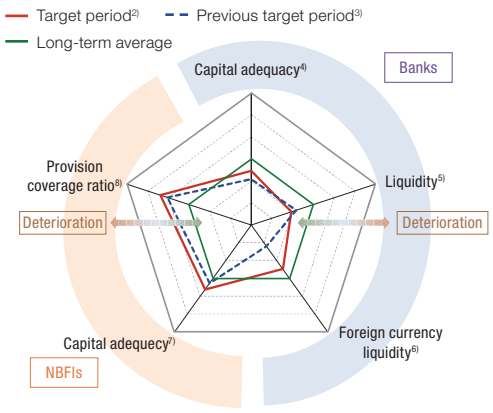
1. Financial Institutions

The resilience of commercial banks[1] remained strong. The capital adequacy ratio, which is a gauge of banks' loss absorption capacity, significantly exceeded the supervisory standard, while the provision coverage ratio and loan loss reserves, which are designed to supplement loss absorption capacity, remained high. The liquidity coverage ratio, measuring the ability of banks to withstand capital outflows, was above the supervisory standard for all institutions.

As for NBFIs, despite a decline in the provision coverage ratio due to the rise in the amount of substandard-or-below loans at most institutions, their resilience remained at an adequate level, with their capital adequacy ratios exceeding the supervisory standard.

Figure Ⅱ-1-1. Map of changes in financial institution resilience[1]



Notes: 1) The indices of current and previous target periods are standardized based on the long-term (5-year) average.
2) End-Q1 2024. End-April 2024 for bank liquidity and foreign currency liquidity, end-Q4 2023 for insurance company capital ratios.
3) End-Q3 2023.
4) Total capital ratio under Basel III.
5) Liquidity coverage ratio (LCR).
6) Foreign currency LCR.
7) Weighted average of NBFI sectors' capital adequacy ratios by total assets.
8) Weighted average of NBFI sectors' (excluding securities companies) provision coverage ratio by total assets.
Source: Bank of Korea calculations.

(1) Banks

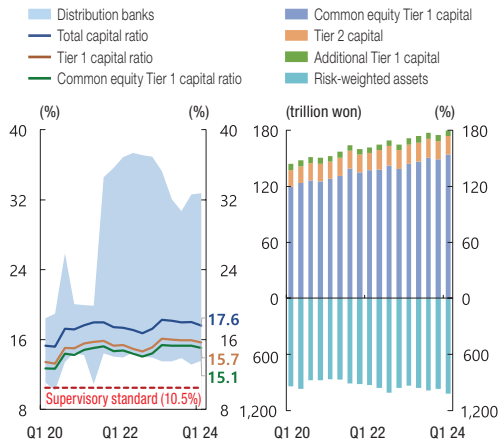
Maintenance of Loss Absorption Capacity at a Favorable Level

Commercial banks' capital adequacy ratio (BIS ratio) and Common Equity Tier 1 capital ratio stood at 17.6% and 15.1%, respectively, at the end of the first quarter of 2024,[2] inching down from 18.0% and 15.3% at the end of the third quarter of 2023. This is mainly attributable to the reduction in net income due to one-off losses (associated with ELS product-related

1) In this report, the banking sector analysis only includes commercial banks (nationwide, regional, and internet-only banks), while excluding specialized banks (Korea Development Bank, Industrial Bank of Korea, Korea Eximbank, Suhyup Bank, and Nonghyup Bank) due to the difference in business model.
2) Toss Bank has become subject to Basel III standards starting from the first quarter of 2024.

compensation). In terms of bank types, all banks saw their total capital ratios significantly exceeding the supervisory minimum standard (10.5% and 11.5% for domestic systemically important banks (D-SIBs)[3]) (Figure II-1-2).

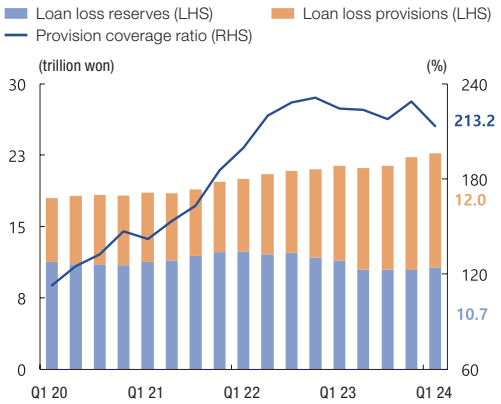
Figure II-1-2. Commercial bank[1] Basel III capital ratios[2][3][4] and capital ratio decomposition[2]



Notes: 1) Effective Q1 2024, including Toss Bank.
2) End-period basis.
3) Regulatory standard: Common equity Tier 1 capital ratio 7%, Tier 1 capital ratio 8.5%, and total capital ratio 10.5% (8%, 9.5%, and 11.5% for D-SIBs, respectively).
4) Effective May 2024, the countercyclical capital buffer (1%) will be incorporated into the regulatory standards.
Source: Commercial bank business reports.

The provision coverage ratio (loan loss provisions to substandard-or-below loans), reflecting banks' ability to absorb expected losses, fell by 4.5%p from 217.7% at the end of the third quarter of 2023 to 213.2% at the end of the first quarter of 2024. This decline came as a result of the increase in substandard-or-below loans (+KRW 0.6 trillion), despite an additional accumulationof loan loss provisions (+KRW 1.1 trillion) to address the rise in delinquency rates. Loan loss reserves, which are based on loan classifications stipulated under supervisory regulations to supplement loss absorption capacities, maintained a high level at KRW 10.7 trillion as of the end of the first quarter of 2024, in line with the financial supervisory authorities' continued efforts to reform the system(Figure II-1-3).[4]

Figure II-1-3. Commercial bank provision coverage ratio[1][2]



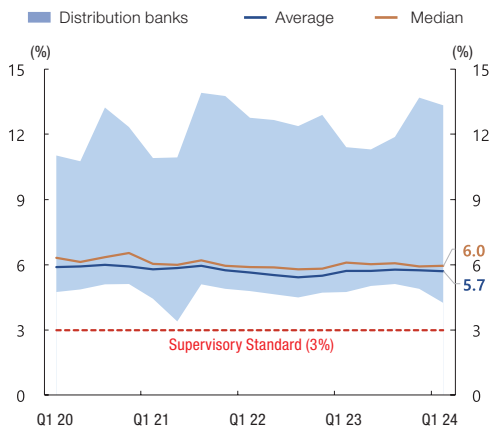
Notes: 1) End-period basis.
2) Provision coverage ratio= Loan loss provisions/ Substandard-or-below loans.
Soucre: Commercial bank business reports.

3) In 2024, D-SIBs include Shinhan Bank (Shinhan Financial Group), Hana Bank (Hana Financial Group), Kookmin Bank (KB Financial Group), Nonghyup Bank (Nonghyup Financial Group), and Woori Bank (Woori Financial Group), maintaining the same composition as in 2023.

4) The loan loss reserves refer to funds additionally built up according to the loan qualityclassification criteria, along with loan loss provisions under accounting standards. The current minimum coverage ratio of loan loss reserves for corporate loans are 0.85% for normal, 7% for precautionary, 20% for substandard, 50% for doubtful, and 100% for estimated loss. In November 2023, the financial supervisory authorities established the supervisory regulations regarding the right to request the accumulation of special loan loss reserves, which enables the additional accumulation of reserves upon request when the levels of loan loss provisions and reserves are deemed insufficient in light of economic conditions.

At the end of the first quarter of 2024, commercial banks' simple Tier 1 capital ratio[5] stood at 5.7%, maintaining a similar level as the end of the third quarter of 2023 (5.8%) and above the minimum regulatory requirements (3%) for all institutions(Figure II-1-4).

Figure II-1-4. Commercial bank[1] leverage ratios[2]



Notes: 1) Effective Q1 2024, including Toss Bank.
2) Tier 1 capital(Common equity Tier 1 capital + Additional Tier 1 capital)/ Total exposure. End-period basis.
Source: Commercial bank business reports.

Overall Soundness of Liquidity Coverage

Banks' liquidity coverage ratio (LCR)[6] rose 1.6%p from 110.9% in September 2023 to 112.4% in April 2024. This was chiefly due to an increase in high-quality liquid assets (HQLA) as banks strove to hold more government bonds[7] ahead of the normalization of the LCR requirement. Most banks' LCR exceeded the existing regular supervisory standard (100%) prior to its reduction.[8] The foreign currency LCR,[9] indicating banks' capacity to respond to foreign currency liquidity risks, dropped 18.0%p from 149.1% in September 2023 to 131.1% in April 2024. This was mainly due to the rise in the total net cash outflows driven by a reduction in foreign currency deposits held in other banks. The foreign currency LCR was comfortably above the supervisory minimum requirement (80%) for all banks(Figure II-1-5).

5) The simple Tier 1 capital ratio under the Banking Business Supervision Regulations was introduced to limit excessive leverage in the banking sector to prevent abrupt deleveraging in times of crisis and the resulting amplification of shocks to the financial system. Calculated based on total exposures, the ratio aims to supplement the minimum capital adequacy requirements based on risk-weighted assets. In Korea, it was first introduced as a supplementary indicator during the first quarter of 2015 and was later officially adopted as a regulatory measure in 2018. Starting in January 2020, the ratio is also applied to internet-only banks.

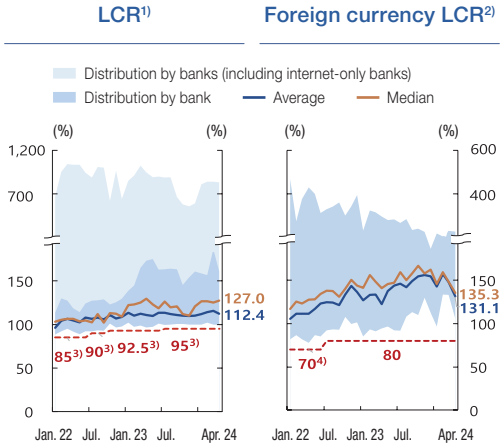
6) The LCR is calculated as the ratio of HQLA to total expected net cash outflows over the next 30 calendar days, using the intra-month average balance of HQLA.

7) The amount of government bonds held by commercial banks increased by approximately KRW 15.6 trillion from KRW 119.0 trillion in September 2023 to KRW 134.6 trillion in April 2024.

8) The current supervisory standard for LCR is 95% until June 2024. The financial supervisory authorities have decided to raise this regulatory ratio to 97.5%, which will be applied from July to December 2024. The normalization of the ratio will be determined in the fourth quarter of 2024.

9) Although the foreign currency LCR is not a Basel III ratio, it was adopted as an official regulatory indicator in Korea (average monthly regulatory standard 80%), effective as of January 2017, to ensure banks' steady supply of foreign currencies to the real economy sector even under stress conditions. The foreign currency LCR is a requirement for most domestic banks with the exception of Korea Eximbank, internet-only banks, and some regional banks (Kwangju Bank and Jeju Bank) with only small amounts of foreign currency liabilities.

Figure Ⅱ-1-5. Commercial bank liquidity coverage ratio



Notes: 1) High-quality liquid assets (monthly average balance)/Total net cash outflows over next 30 calendar days.
2) High-quality liquid foreign currency assets (monthly average balance)/Total net cash outflow of foreign currency over next 30 calendar days.
3) April 2020 to June 2022: 85%. July to September 2022: 90%. October 2022 to June 2023: 92.5%. July 2023 to June 2024: 95%.
4) Temporary application from April 2020 to June 2022.
Source: Commercial bank business reports.

At the end of the first quarter of 2024, the net stable funding ratio (NSFR),[10] indicating the long-term stability of banks' funding structure, stood at 117.2%. All banks met or exceeded the supervisory NSFR requirement (100%) during this period(Table II-1-1).

Table Ⅱ-1-1. Commercial bank[1] net stable funding ratio[2][3]

(%)

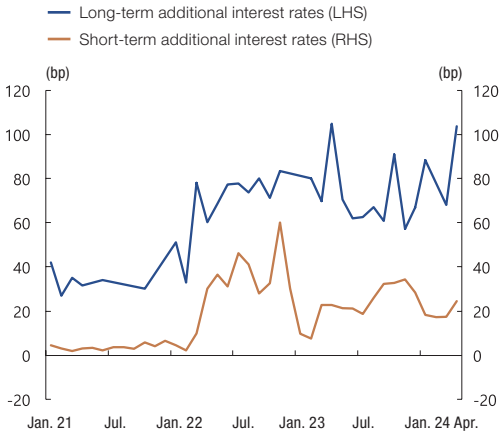
	2022			2023				2024
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Average	108.2	108.2	111.9	112.2	114.6	114.5	116.2	117.2
Median	107.7	106.6	109.7	108.6	111.6	111.3	114.3	112.6

Notes: 1) Effective Q1 2024, including Toss Bank.
2) Available Stable Funding/Required Stable Funding. End-period basis.
3) The supervisory standard is 100%.
Source: Commercial bank business reports.

Overall Soundness of Foreign Currency Funding Conditions

Commercial banks' foreign currency funding conditions were generally favorable. Their short-term foreign currency borrowing spreads decreased at the beginning of this year and have since remained at a stable level. Despite the relatively significant margin of increase in their medium- to long-term foreign currency borrowing spreads in April 2024, the rise was mainly due to the extended maturity of bank borrowings, and in light of past instances, banks' external currency funding conditions appear to be stable(Figure II-1-6).

Figure Ⅱ-1-6. Commercial bank short- and long-term foreign currency borrowing spreads[1][2]

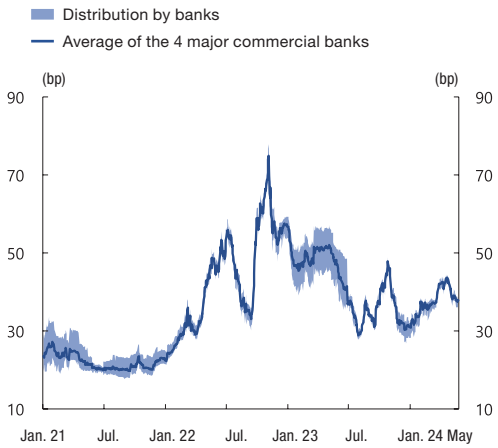


Notes: 1) Based on LIBOR before March 2022, and on SOFR after April 2022. Weighted average of U.S. dollar borrowings by Kookmin, Shinhan, Woori, and Hana banks.
2) Excluding borrowings between domestic financial institutions, inter-office borrowings (between head office and foreign branches), and overnight (O/N) borrowings.
Source: Bank of Korea.

10) The NSFR limits banks' overreliance on short-term wholesale funding by requiring them to fund a certain portion of their long-term assets under management with stable debt and capital.

Commercial banks' CDS premium has shown a slight uptick since January 2024, but it remains below the average level in 2023. In April, the margin of increase in the CDS premium temporarily widened due to heightened geopolitical risks in the Middle East(Figure II-1-7).

Figure Ⅱ-1-7. Commercial bank[1] CDS premiums[2]



Notes: 1) Kookmin, Shinhan, Woori, and Hana banks.
2) 5-year maturity basis.
Source: Markit.

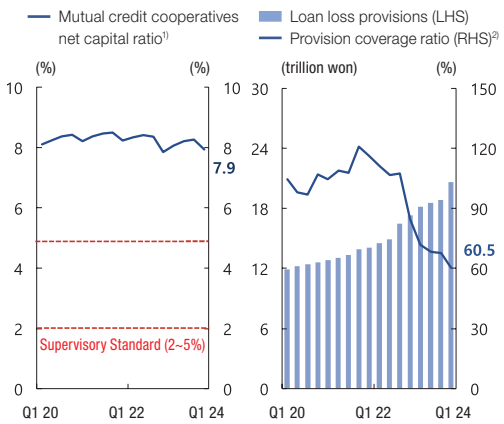
(2) Non-bank Financial Institutions

A. Non-bank Deposit-taking Institutions

Slight Decline in Loss Absorption Capacities

Mutual credit cooperatives' net capital ratio[11] fell by 0.3%p from 8.2% at the end of the third quarter of 2023 to 7.9% at the end of the first quarter of 2024. The decline is mainly attributable to a reduction in capital due the net loss incurred. The provision coverage ratio (loan loss provisions[12] to substandard-or-below loans) declined by 7.8%p from 68.3% to 60.5% during the same period due to a significant increase in substandard-or-below loans(Figure II-1-8).[13]

Figure Ⅱ-1-8. Mutual credit cooperatives loss absorption capacities indicators



Notes: 1) Supervisory standard 5% for Nonghyup, 2% for Suhyup·Sinhyup·Forestry Cooperatives, 4% for MG community credit cooperatives.
2) Loan loss provisions/Substandard-or-below loans.
Source: Financial institution business reports.

Mutual savings banks' BIS capital ratio rose by 0.6%p from 14.1% at the end of the third quarter of 2023 to 14.7% at the end of the first quarter of 2024. This is attributable to a significant decline in risk-weighted assets prompted by decreasing loans, despite a reduction in equity capital resulting from deteriorating profitability.[14] The provision coverage ratio declined by 22.1%p from 86.3% at the end of the third quarter of 2023 to 64.2% at the end of the first quarter of 2024, driven by a significant in-

11) Net capital ratio = (total assets - total liabilities - investment money + subordinated borrowings + loan loss provisions) / (total assets + loan loss provisions) × 100. However, the investment money herein solely refers to funds guaranteed to be refunded to a member upon withdrawal from the cooperative.

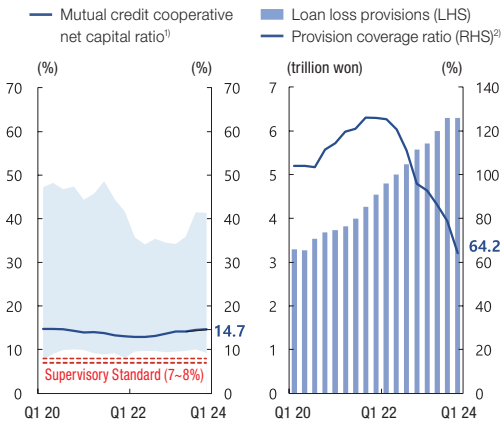
12) The ratio of loan loss provisions (the balance of loan loss provisions to the required reserves for assets subject to loan loss provisions such as loans) pursuant to Article 12 of the Regulation on Supervision of Mutual Financial Business reached 116.8% (excluding MG Community Credit Cooperatives) at the end of the first quarter of 2024, exceeding the supervisory standard of 100%.

13) For mutual credit cooperatives, substandard-or-below loans increased 25.6% at the end of the first quarter of 2024, compared to the end of the third quarter of 2023, while loan loss provisions rose 11.2% during the same period, indicating a relatively smaller margin of increase.

14) Mutual savings banks experienced a decrease in equity capital of KRW 0.7 trillion (-4.3%) and a reduction in risk-weighted assets of KRW 8.9 trillion (-7.8%) at the end of the first quarter of 2024, compared to the end of the third quarter of 2023.

crease in substandard-or-below loans (+KRW 3.5 trillion), which outpaced the additional reserves for loan loss provisions[15] (+KRW 0.7 trillion) (Figure II-1-9).

Figure II-1-9. Mutual savings bank loss absorption capacities indicators

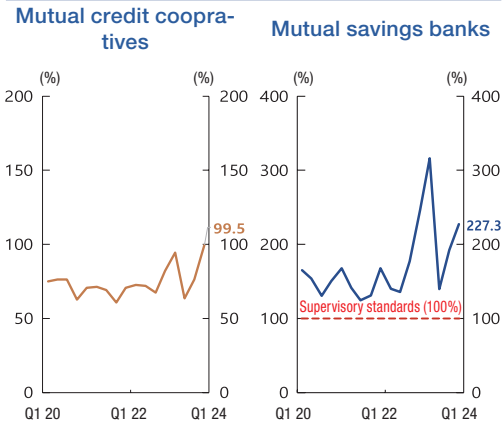


Notes: 1) Capital/Risk-weighted assets. Supervisory standard 7% (8% for institutions with assets of more than 1 trillion won).
2) Loan loss provisions/Substandard-or-below loans.
Source: Financial institution business reports.

Improvement of Liquidity Response Capacity

Mutual credit cooperatives' liquidity ratio rose by 35.9%p from 63.6% at the end of the third quarter of 2023 to 99.5% at the end of the first quarter of 2024. The said ratio of mutual savings banks also witnessed a significant increase of 88.0%p from 139.3% to 227.3% during the same period, substantially exceeding the supervisory standard of 100%. The substantial rise in liquidity ratio among non-bank deposit-taking institutions primarily resulted from a sharp decrease in liquidity liabilities[16] caused by the maturity of a substantial portion of deposits by the fourth quarter of 2023, following the sizeable increase during the fourth quarter of 2022(Figure II-1-10).

Figure II-1-10. Deposit-taking institutions liquidity ratio1)2)



Notes: 1) Liquid assets with remaining maturity less than three months/ liquid liabilities with remaining maturity less than three months.
2) Mutual savings banks apply 100% of the regulatory ratio in accordance with the supervisory regulations (Ariticle 40-4), and Mutual credit cooperatives reflect the results of management evaluation.
Source: Financial institution business reports.

15) The ratio of loan loss provisions (the balance of loan loss provisions to the required reserves for assets subject to loan loss provisions such as loans) pursuant to Article 38 of the Regulation on Supervision of Mutual Savings Bank Business reached 113.2% at the end of the first quarter of 2024, exceeding the supervisory standard of 100%.

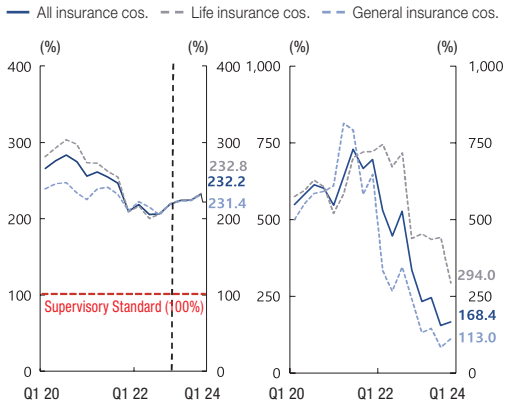
16) Liquidity liabilities of mutual credit cooperatives recorded KRW 228.1 trillion at the end of the first quarter of 2024, down by 28.2% from KRW 317.8 trillion at the end of the third quarter of 2023. Mutual savings banks' liquidity liabilities also declined by 54.5% from KRW 30.7 trillion at the end of the third quarter of 2023 to KRW 14.0 trillion at the end of the first quarter of 2024.

B. Insurance, Securities, and Credit-specialized Financial Companies

Generally Favorable Loss Absorption Capacities

Insurance companies' K-ICS ratio[17] (standard with transitional measures applied), a new standard for capital requirements adopted in 2023, showed a gradual improvement throughout the previous year, reaching 232.2% by the end of 2023.[18] [19] On the other hand, their provision coverage ratio stood at 168.4% at the end of the first quarter of 2024, down by 77.7%p from the end of the third quarter of 2023 due to an increase in substandard-or-below loans(Figure II-1-11).

Figure Ⅱ-1-11. Insurance companies loss absorption capacities indicators



Notes: 1) Amount of available capital/Amount of required capital. Based on RBC ratio until 2022 and on K-ICS ratio starting in 2023.
2) (Loan loss provisions + Loan loss reserves)/Substandard-or-below loans.

Source: Financial institution business reports.

Securities companies' net capital ratio stood at 730.9% at the end of the first quarter of 2024, showing a moderate decrease from the end of the third quarter of 2023 for both comprehensive financial investment companies

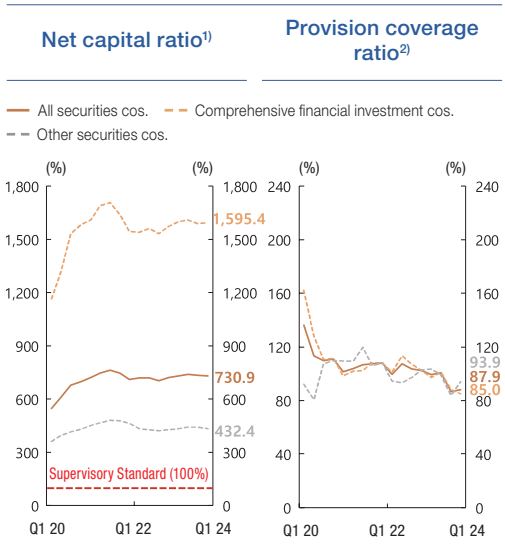
17) With the introduction of new accounting standards (IFRS17 and IFRS9) for insurance companies in 2023, the Korean Insurance Capital Standard (K-ICS) was adopted as a new standard to replace the existing risk-based capital (RBC) standard. Under the K-ICS, the method of calculating capital ratios was completely revised, such as the calculation of available capital through the assessment of assets and liabilities based on their market values, the addition of new risks (longevity, lapse, expense, catastrophe, and asset concentration risks) to the calculation of required capital, higher risk confidence level (99% → 99.5%), and the elaboration of risk measurement (risk factors → stress scenarios). However, to facilitate the soft-landing of the new standard, transitional measures are applied to its key changes for up to ten years with a total of 19 insurance companies (12 life insurance companies and 7 general insurance companies) currently under such measures.

18) In conjunction with changes in insurance companies' reserve standard, the disclosure deadline related to capital adequacy was temporarily extended, by one month, to three months from the quarter-end (four months from the year-end for annual book closing). As a result, the latest available data is as of the end of 2023.

19) This is mainly attributable to a reduction in the lapse risk charge affecting required capital, resulting from changes in the calculation standard for the mass lapse risk charge (effective from December 2023). Previously, it was assumed an immediate surrender of 30% of insurance policies. However, following the revision of the Detailed Regulations on Supervision of Insurance Business, the reduction in net asset value is now calculated based on the assumption that 35% of savings insurance policies and 25% of coverage insurance policies would be surrendered immediately

(1,595.4%) and other securities companies (432.4%), significantly exceeding the supervisory standard. Meanwhile, their provision coverage ratio marked 87.9% at the end of the first quarter of 2024, down from 100.5% at the end of the third quarter of 2023. The decline is partially driven by an increase in substandard-or-below loans during the fourth quarter of 2023, stemming from the reclassification of asset quality[20] in anticipation of credit losses related to real estate PF loans(Figure II-1-12).

Figure II-1-12. Securities companies loss absorption capacities indicators

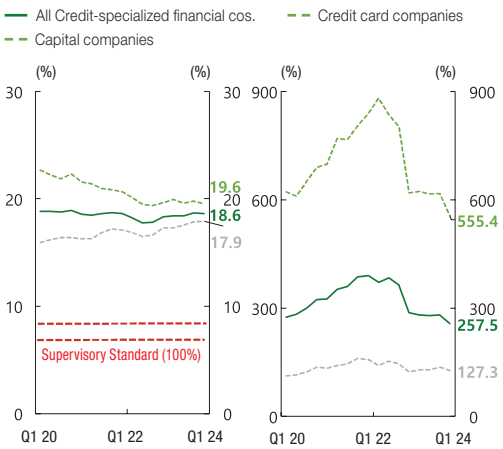


Notes: 1) (Net operating capital - Total risk)/Required capital to maintain each business unit's license.
2) (Loan loss provision + Loan loss reserves)/Substandard-or-below loans.

Source: Financial institution business reports.

The adjusted capital ratio of credit-specialized financial companies was 18.6% at the end of the first quarter of 2024, staying similar to the level of the previous year. Their provision coverage ratio dropped to 257.5% at the end of the first quarter of 2024 from 280.8% at the end of the third quarter of 2023, due to a significant increase in substandard-or-below loans by both credit card and capital companies(Figure II-1-13).[21]

Figure II-1-13. Credit-specialized financial cos. loss absorption capacity indicators



Notes: 1) Adjusted capital/Adjusted total assets. Supervisory standard 7% (credit card companies 8%).
2) (Loan loss provision + Loan loss reserves)/Substandard-or-below loans.

Source: Financial institution business reports.

20) Securities companies reclassified the asset quality of their loan portfolios as substandard, particularly centering on real estate PF-related loans, resulting in additional reserves for loan loss provisions (including loan loss reserves) of KRW 1.6 trillion in the fourth quarter of 2023. This amount exceeds the KRW 1.1 trillion in loan loss provisions accumulated during the first three quarters of 2023. According to the Regulations on Financial Investment Business, the assets related to real estate PF loans classified as substandard, doubtful, and estimated loss are required to set aside provisions equivalent to 30%, 75% and 100% of their value, respectively.

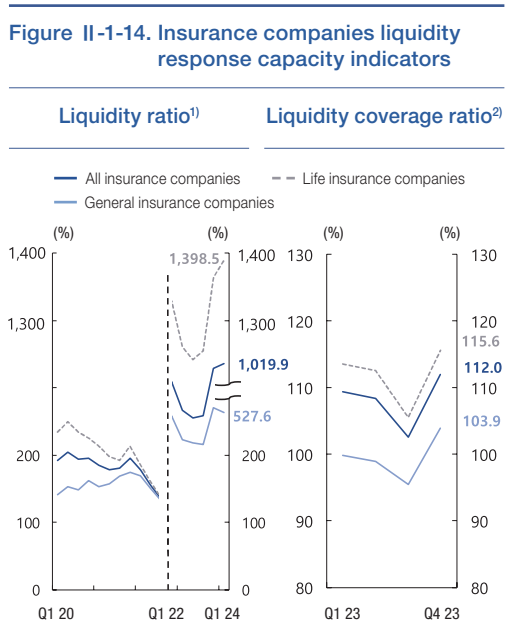
21) As of the end of the first quarter of 2024, capital companies experienced a marginal decrease of -2.0%p compared to credit card companies, which saw a decline of -61.2% from the end of the third quarter of 2023, as capital companies' loan loss provisions significantly exceeded the required reserves (1.4 times the required reserves).

Differences in Liquidity Response Capacity by Sector

Insurance companies' liquidity ratio[22] stood at 1,019.9% at the end of the first quarter of 2024, marking an increase of 235.6%p from the end of the third quarter of 2023, due to the increased inclusion of high-liquidity government bonds into their portfolio investments. The LCR,[23] which aims to assess companies' ability to respond to liquidity stress, showed a declining trend for a certain period before turning upward to 112.0% at the end of the fourth quarter of 2023(Figure II-1-14).[24]

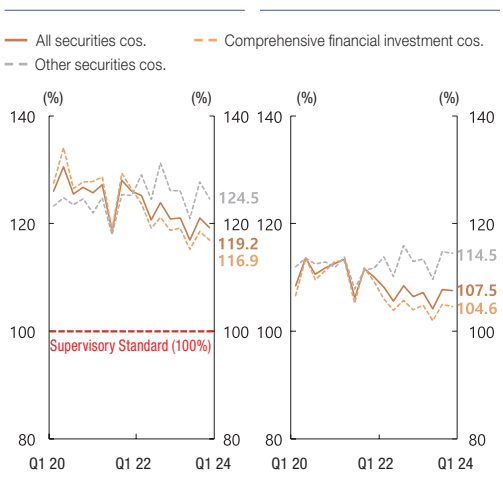
Securities companies' liquidity ratio showed a slight decline to 119.2% at the end of the first quarter of 2024, following a rebound observed at the end of the fourth quarter of 2023.[25] The adjusted liquidity ratio,[26] which takes account of debt guarantees as part of contingent liabilities, stood at 107.5% at the end of the first quarter of 2024, slightly lower than the average of previous years (109.1% from the first quarter of 2020 to the fourth quarter of 2023) (Figure II-1-15).

Figure II-1-14. Insurance companies liquidity response capacity indicators



Notes: 1) Liquidity assets/Average insurance payment over three months.
2) Under liquidity stress, available liquidity/Required funding.
Source: Financial institution business reports.

Figure II-1-15. Securities companies liquidity response capacity indicators



Notes: 1) Liquid assets with remaining maturity within three months/Liquid liabilities with remaining maturity within three months.
2) Liquid assets with remaining maturity within three months/(Liquid liabilities with remaining maturity within three months + debt guarantees).
Source: Financial institution business reports.

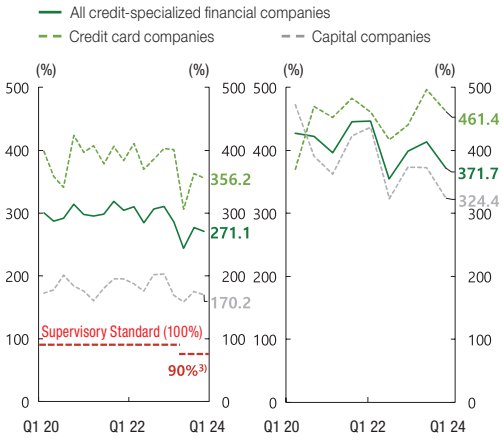
22) To alleviate insurance companies' burden of holding current assets, the supervisory authorities broadened the definition of liquidity assets (assets with a maturity of three months or less → assets with a maturity of three months or less and assets easily converted into cash, such as debt securities with a maturity of three months or more, which are tradable in an active market). As a result, the liquidity ratio increased significantly since the fourth quarter of 2022.

23) In order to supplement the drawbacks of existing liquidity ratios (required liquidity is calculated only using the insurance claims paid by insurance companies without taking into account the securitization possibilities of liquidity assets), the supervisory authorities introduced a new liquidity coverage ratio(LCR) in 2023, which reflects the securitization possibilities of different assets and required liquidity levels of debts other than insurance claims paid in the calculation of required liquidity.

24) During the first three quarters of 2023, the liquidity requirements increased due to payouts of surrender values on

The liquidity ratio of credit-specialized financial companies rose to 271.1% at the end of the first quarter of 2024, up from 243.5% at the end of the third quarter of 2023.[27] This is attributable to a decline in the amount of commercial paper (CP) with a remaining maturity of less than three months and other liabilities. The immediately available liquidity ratio,[28] indicating companies' capacity to respond to liquidity risks under a one-month stress scenario, stood at 371.7%, down from 398.3% at the end of the third quarter of 2023, due to an increase in the amount of bonds issued by capital companies with a remaining maturity of less than one month(Figure II-1-16).

Figure II-1-16. Credit-specialized financial cos. liquidity coverage



Notes: 1) Liquid assets maturing in less than 90 days/ Liquid liabilities maturing in less than 90 days.
2) Immediately available liquid assets/ Liablities maturing in less than a month.
3) Temporary adjustment in place from December 2022 to June 2024.

Source: Financial institution business reports.

savings insurance policies and arrivals of long-term borrowings with maturity. Consequently, the LCR exhibited a downward trend during the same period. In the fourth quarter of 2023, however, this ratio rebounded as available liquidity increased, bolstered by government bonds.

25) As the maturity date of equity-linked bonds (ELBs) issued by securities companies is concentrated in the fourth quarter of each year, during the quarter preceding the maturity date (typically the third quarter), the remaining maturity of ELBs becomes less than three months, leading to an increase in liquidity liabilities. As a result, the liquidity ratio exhibits seasonality characterized by a significant decline, in the third quarter of each year followed by a subsequent rebound.

26) This indicator is used as a quantitative measure for assessing management performance, without a specific regulatory threshold set at 100%.

27) However, as the maturities of CPs with a maturity of two years or more were concentrated in the second quarter of 2024, following their expanded issuance from 2021 to 2022, the amount of CPs with a remaining maturity of less than three months increased from KRW 4.3 trillion at the end of the fourth quarter of 2023 to KRW 6.7 trillion at the end of the first quarter of 2024, which contributed to a slight decrease of -5.7%p in the liquidity ratio from the end of the previous quarter.

28) The supervisory authorities introduced the immediately available liquidity ratio in 2022 as part of the expansion and reorganization of liquidity monitoring indicators for credit-specialized financial companies, which was implemented in February 2020. The immediately available liquidity ratio is calculated by dividing immediately available liquidity assets (the sum of cash and deposits, immediately marketable securities, and unused credit lines) by borrowings maturing within one month.

Box 6.

Liquidity Stress Test Results for Non-bank Financial Institutions[1)]

Concerns over liquidity risk faced by financial institutions have risen, stemming from persistently high interest rates in the financial markets,[2)] heightened volatility in global financial markets, and the potential default of real estate PF loans. Under these circumstances, this article examines the liquidity status of NBFIs in preparation for potential liquidity shortfalls in financial institutions,[3)] while also conducting a liquidity stress test based on the end of 2023.

Liquidity Status of NBFIs

The liquidity ratio of non-bank deposit-taking institutions increased in the first quarter of 2024.[4)] Despite funding challenges resulting from the narrowing or reversal of the interest rate differential on deposits compared to banks,[5)] mutual savings banks and mutual credit cooperatives saw their liquidity ratios increasequarter-on-quarter, due to a reduction in liquidity liabilities.[6)] As of the first quarter of 2024, the liquidity ratio of mutual savings banks stood at 227.3%, well above the supervisory standard of 100%, while mutual credit cooperatives reported a relatively lower ratio of 99.5%.[7)]

Securities and credit-specialized financial companies experienced fluctuating liquidity ratios within a specific range, with a slight decline in the first quarter of 2024 compared to the previous quarter.[8)] The liquidity ratio of insurance companies fell to 134.2% in the third quarter of 2022, but subsequently saw a significant increase by the end of the year due to the supervisory authorities' measures to broaden the definition of liquidity assets.[9)] In particular, life insurance

1) This article was authored by Minsu Kim, Byung Ho Lee, and Dong NyeokKim(Systemic Risk Analysis Team), and was reviewed by Jong Han Lee(Director of the Financial System Analysis Division) and Byoungo Choi(Head of the Systemic Risk AnalysisTeam).

2) Although the yields on 3-year Treasury bonds were 1.39% (annual average) in 2021, they increased to 3.20% in 2022 following the onset of rate hikes and furtherclimbed to 3.57% in 2023.

3) For the liquidity status and key risks of NBFIs in the second half of 2022, refer to Box 5 "ChangingExternal and Domestic Conditions and Their Impact on the Liquidity Risk of Non-Bank Financial Institutions,"Financial Stability Report, December 2022.

4) Mutual savings banks: 192.1% in the fourth quarter of 2023 → 227.3% in the first quarter of 2024; Mutual credit cooperatives: 76.2% → 99.5%.

5) The deposit rate differentials between mutual savings banks and commercial banks, as well as between mutual credit cooperatives and commercial banks (for one-year fixed or time deposits), were respectively 0.77%p and 0.16%p in 2020 and 0.85%p and 0.05%p in 2021, subsequently narrowing or reversing to 0.5%p and -0.04%p in 2022 and 0.13%p and -0.05%p in the third quarter of 2023.

6) A significant proportion of deposits, which significantly increased in the fourth quarter of 2022, matured in the second half of 2023, leading to an increase in early withdrawals and the redepositing of existing deposits. This resulted in an extended maturity profile of deposits and subsequently reduced liquidityliabilities. For more detailed information, refer to the press release on financial stability status (March 2024, Chapter 1.2).

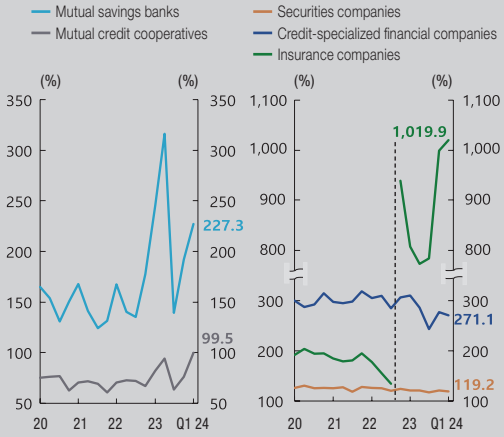
7) Following the government's revision of the Regulation on Supervision of Mutual FinancialBusiness and Standards on Supervision of Community Credit Cooperatives, the liquidity ratio regulation for mutual credit cooperatives is scheduled to take effect by the end of this year, which is expected to lead to a significant increase in the liquidity ratio.

8) Securities companies: 121.0% in the fourth quarter of 2023 → 119.2% in the first quarter of 2024;Credit-specialized financial companies: 276.7% → 271.1%.

9) In December 2022, the financial authorities decided to broaden the definition of liquidity assets for insurance companies, thus including "assets easily converted into cash, such as debt securities with a maturity of three months or more, which are tradable in an active market," in addition to assets previously limited to "those with a maturity of three months or less."

companies exhibited a significantly heightened liquidity ratio(Box 6-1).

Box 6-1. Liquidity ratio of non-bank financial institutions(NBFI).[1)]



Note: 1) Liquidity assets/Liquidity liabilities, or Liquidity assets/3 month average payment of insurance

Source: Financial institutions' business report.

Stress Test Methods and Scenarios

The liquidity stress test is conducted by estimating and comparing two key components: expected cash outflows over a three-month period, which encompass short-term debt obligations that may arise in crisis situations, such as deposit withdrawals and debt repayment, and available cash inflows within the same period, including proceeds from maturing loans and asset sales.

The liquidity provision ratio (lr), a term coined for this analysis, is calculated as the ratio of available cash inflows (I) to expected cash outflows (O) for each sector of NBFIs in order to evaluate their ability to respond to liquidity stress.

Securable cash	$I = \sum_i A_i(1-l_i)$
Estimated cash outflow	$O = \sum_j L_j r_j$
Liquidity provision ratio	$lr = \frac{I}{O} = \frac{\sum_i A_i(1-l_i)}{\sum_j L_j r_j}$

A_i : Asset number, i $\quad$ l_i : Disposal loss rate of, A_i

L_j : Liability number, j $\quad$ r_j : Outflow rate of L_j

In the case of mutual savings banks and mutual credit cooperatives as deposit-taking institutions, expected cash outflows were estimated based on the level of deposit withdrawals observed during past crises.[10)]Their available cash inflows were estimated by calculating cash proceeds expected to be recovered from maturing assets. In the case of securities and credit-specialized financial companies which do not handle deposit instruments, expected cash outflows were estimated based on the projected size of maturing debt repayments.[11)]It was assumed for insurance companies that the insurance claims paid in the previous year[12)] would be disbursed in the short term. The available cash inflows for insurance and securities companies were determined based on disposal loss rates derived from

10) In reference to deposit withdrawals observed during the crisis of mutual savings banks insolvency in 2011, an outflow rate was applied based on the deposit amount: 20% for deposits of KRW 50 million or less and 50% for deposits exceeding KRW 50 million. However, for mutual credit cooperatives, the outflow rate was applied only to deposits made by non-cooperative members, taking into account the tax exemption benefit for deposits made by cooperative members.

11) For securities and credit-specialized financial companies, the scale of cash outflows was estimated by assuming a rollover rate of 65% for maturing debts, referencing stress test cases from the Global Financial Crisis (IMF, Global Financial Stability Report, April 2009).

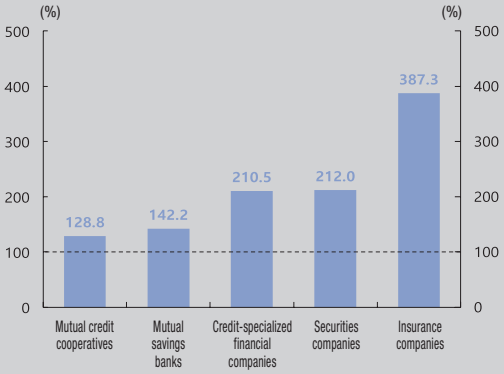
12) For insurance companies, which have not experienced past liquidity crises, this article assumes a more stringent scenario than the current liquidity ratio regulation, which anticipates outflows equivalent to three months of insurance claims paid. Insurance claims paid include insurance payouts for insured events, surrender values for policy cancellations, and dividends.

sales of current assets they hold. Meanwhile, for credit-specialized financial companies, available cash inflows were calculated by estimating the volume of asset securitization in the event of crisis situations.[13)]

Stress Test Results

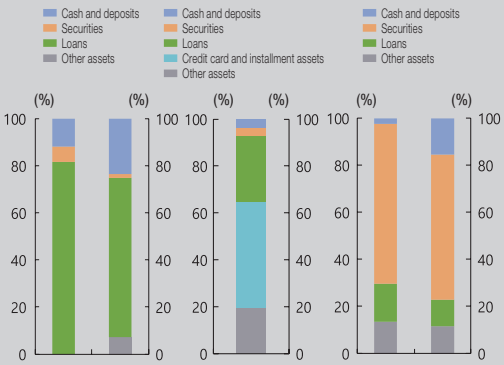
The results of estimating the liquidity provision ratios for NBFIs showed ratios above 100% across all sectors, demonstrating strong liquidity response capacities. Across different business sectors, however, the liquidity provision ratios varied significantly: insurance companies reported the highest at 387.3%, followed by securities companies at 212.0%, credit-specialized financial companies at 210.5%, mutual savings banks at 142.2%, and mutual credit cooperatives at 128.8%. Insurance and securities companies hold substantial amounts of marketable current assets available in the event of liquidity crises, while credit-specialized financial companies possess assets such as credit card assets and installment finance assets, which are liquidatable in the securitization market. As a result, these sectors demonstrate liquidity provision ratios exceeding 200%. However, mutual savings banks and mutual credit cooperatives predominantly hold their assets in the form of loans, with a substantial portion of these assets managed from a long-term perspective, thereby constraining the availability of liquidity assets in the short term(Box 6-2, 6-3). Consequently, their liquidity provision ratios are relatively lower than those of securities, insurance, and credit-specialized financial companies.

Box 6-2. Liquidity provision ratio of non-bank financial institutions



Source: Bank of Korea staff calculation.

Box 6-3. Asset composition of non-bank financial institutions[1)]



Note: 1) End of Q1 2024 basis

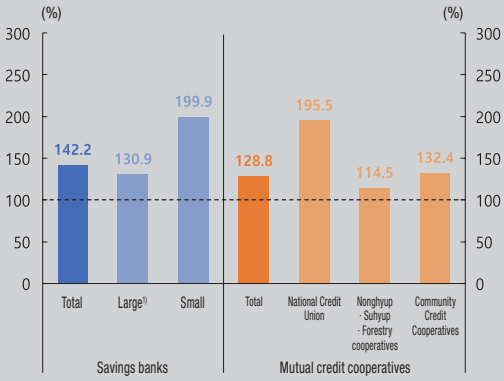
Sources: Financial institutions' business reports.

In terms of subcategories within each sector, the liquidity provision ratios of mutual savings banks varied depending on size: small- and medium-sized savings banks reported the ratio of

13) The disposal loss rates for assets held by securities and insurance companies were applied differentially by asset type (0% for government bonds, 15% for financial bonds, 20% for stocks, and 40% for corporate bonds), referencing the Basel III LCR regulations and loss rate data from the Global Financial Crisis (IMF, Global Financial Stability Report, October 2008). For credit-specialized financial companies, the available cash inflows were calculated based on the short-term asset securitization performance observed during the 2003 credit card crisis (10% for assets subject to securitization).

199.9%, which is relatively favorable compared to the 130.9% of large savings banks. Within the mutual credit cooperative sector, Sinhyupreported the highest at 195.5%, followed by MG Community Credit Cooperatives at 132.4% and Nonghyup, Suhyup, and Forestry Cooperatives at 114.5%(Box 6-4).[14]

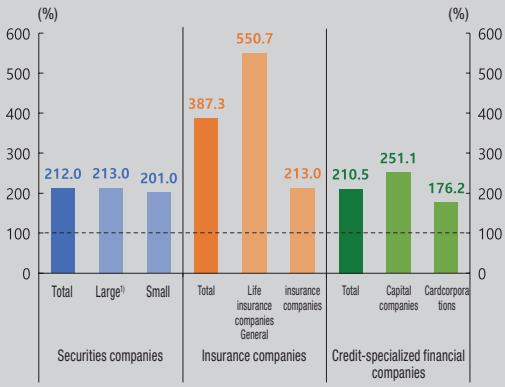
Box 6-4. Liquiditiy provision ratio : savings banks and mutual credit cooperatives



Note: 1) At least KRW 1 trillion in assets
Source: Bank of Korea staff calculation.

Among securities companies, larger institutions (including comprehensive financial investment companies) had a slightly higher liquidity provision ratio of 213.0%, due to a greater proportion of easily liquidatable assets in their portfolios, compared to 201.0% for small- and medium-sized companies.[15] In terms of insurance companies, life insurers record Liquidity provision ratio of 550.7%, significantly higher than the 213.0% for general insurers. This is likely because the current assets of life insurers include a higher proportion of government, agency, and special-purpose bonds, which are easily liquidated and have lower disposal loss rates, in comparison to general insurers.[16] Among credit-specialized financial companies, capital companies, which are relatively less exposed to rollover risks,[17] had a higher liquidity provision ratio of 251.1%, compared to 176.2% for credit card companies(Box 6-5).

Box 6-5. Liquiditiy provision ratio : Securities companies - Insurance companies - Credit-specialized financial companies



Note: 1) At least KRW 1 trillion in equity, including mega-invesetment banks
Source: Bank of Korea staff calculation.

14) When calculating the ratio of assets to deposit liabilities (with a remaining maturity less than three months), mutual savings banks showed 131%, Sinhyup 103%, and Nonghyup, Suhyup, and Forestry Cooperatives 73%. This indicates that Nonghyup, Suhyup, and Forestry Cooperatives exhibit relatively severe mismatches in maturities compared to other institutions. Among mutual savings banks, small- and medium-sized institutions showed a higher ratio of assets to deposit liabilities (with a remaining maturity less than three months) at 184.8%, compared to larger institutions at 122.8%.

15) The proportion of securitized assets is 48.7% for larger securities companies and 35.8% for small- and medium-sized ones.

16) The proportion of government, agency, and special purpose bonds in current assets is 35.9% for life insurers and 25.3% for general insurers.

17) The current liability ratio for capital companies stands at 12.2%, which is lower than the 19.3% for credit card companies.

Assessment and Implications

The stress test results indicated favorable liquidity conditions across all sectors, with available cash inflows exceeding expected cash outflows. However, the liquidity provision ratios for mutual savings banks and mutual credit cooperatives were over 100% under stress situations, yet relatively lower than those of securities, insurance, andcredit-specialized financial companies. This highlights the need for mutual savings banks and mutual credit cooperatives to further enhance their liquidity response capacities. In particular, as these institutions are characterized as deposit-taking entities, they inevitably face significant maturity mismatches between funding and fund operations, which therefore necessitates added caution in the management of liquidity risks. Reflecting these circumstances, the government plans to introduce regulations on liquidity ratio management for mutual credit cooperatives by the end of the year[18] with the aim to strengthen liquidity risk management.

It is essential to make continued efforts to assess the capability of financial institutions to respond to liquidity crises and identify their vulnerabilities through regular liquidity stress tests. In this regard, the financial authorities should continuously undertake tasks such as reviewing the contingency funding plans of financial institutions, broadening the scope of liquidity indicators, and developing advanced metrics for monitoring liquidity conditions. Moreover, financial institutions need to further develop their liquidity risk management frameworks and expand credit facilities to ensure emergency liquidity, thereby strengthening their ability to address liquidity challenges effectively.[19] These efforts should be complemented by refining liquidity stress test models with a focus on improving the realism of stress condition assumptions and ensuring model consistency.

18) The government plans to implement liquidity ratio regulations (requiring a minimum 3-month liquidity ratio of 100%) by the end of this year (January 1, 2025 for MG Community Credit Cooperatives), through the revision of the Regulation on Supervision of Mutual Financial Business and Standards on Supervision of Community Credit Cooperatives. The regulations will introduce different liquidity ratios based on the total assets at the end of the previous fiscal year: 100% or more for cooperatives with assets totaling KRW 100 billion or more; 90% or more for those with assets between KRW 30 billion and KRW 100 billion; and 80% or more for those with assets less than KRW 30 billion. For cooperatives with assets exceeding KRW 100 billion, a grace period of one year will apply, with a ratio requirement of 90%.

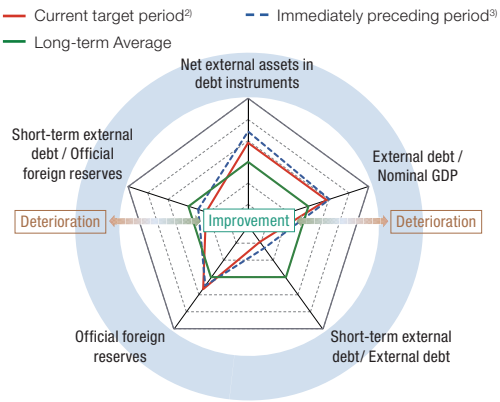
19) This is expected to expand available liquidity by establishing credit lines with financial affiliates and other financial institutions.

2. External Payment Capacity

Korea's external payment capacity has remained strong.

Net external assets shifted to an increase, and there was an improvement in external soundness indicators, including short-term external debt-to-official foreign reserves ratio and the share of short-term external debt in total external debt, attributed to a reduction in short-term external debt.

Figure Ⅱ-2-1. Map of changes in external payment capacity indicators[1)]

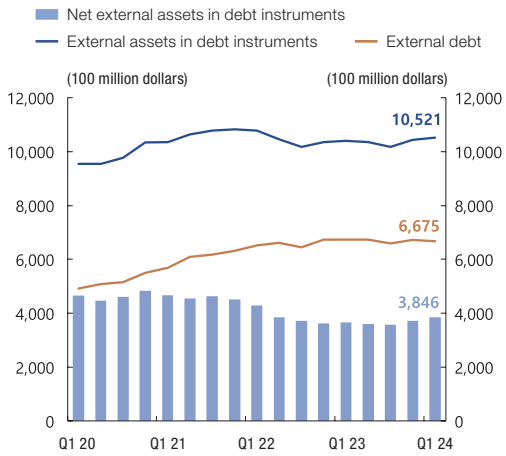


Notes : 1) Standardized based on the long-term average (five years) for each indicator. The relative level of the indicator for this target period and the previous target period is shown on the map.
2) As of the end of Q1 2024 (as of the end of May 2024 for official foreign reserves).
3) As of the end of Q3 2023.
Source: Bank of Korea.

Net External Assets Shifting to an Increase

At the end of the first quarter of 2024, Korea's net external assets (external assets - external debts) increased by USD 27 billion, compared with the end of the third quarter of the previous year, to USD 384.6 billion. This shifted net external assets, which have declined since 2021, to an increase(Figure II-2-2).

Figure Ⅱ-2-2. Net external assets in debt instruments[1)]



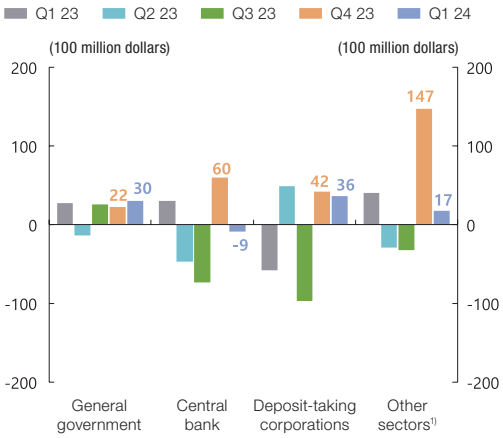
Note: 1) End-quarter balance basis.
Source: Bank of Korea.

External assets stood at USD 1.0521 trillion as of the end of the first quarter of 2024, representing an increase of USD 34.6 billion compared with the end of the third quarter of the previous year. The external assets of the general government, including the National Pension Service, and the central bank rose by USD 5.3 billion and USD 5.1 billion, respectively, boosted by increases in portfolio investment in overseas securities and official foreign reserves.[29)] The external assets of deposit-tak-

29) After the end of September 2023 (end of the third quarter), official foreign reserves increased by USD 5.13 billion by the end of March 2024 (end of the first quarter), followed by a decrease of USD 6.42 billion from April to May 2024.

ing institutions increased by USD 7.8 billion, mainly in borrowings from head offices of domestic banks and overseas deposits of foreign banks' branches. The external assets of other sectors rose by USD 16.4 billion, attributed to expanded portfolio investments and direct investments in overseas securities(Figure II-2-3).

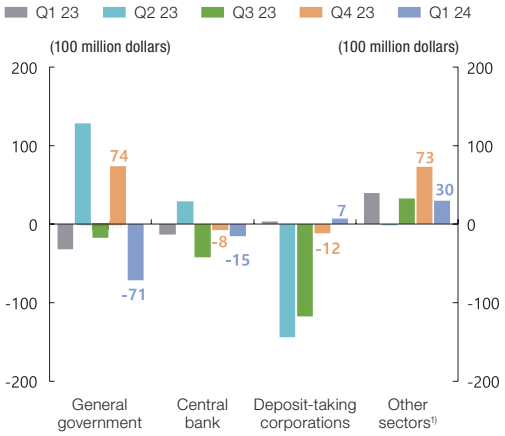
Figure II-2-3. Changes in external assets in debt instruments, by sector



Note: 1) Including other financial corporations (securities companies, asset management companies, and insurance companies, etc.) and NBFIs.
Source: Bank of Korea.

As of the end of the first quarter of 2024, Korea's external debt totaled USD 667.5 billion, reflecting an increase of USD 7.7 billion compared with the third quarter of the previous year. The external debt of other sectors rose by USD 10.3 billion, driven by the increased issuance of overseas securities and foreign direct investments, and the general government witnessed an increase of USD 0.2 billion in its external debt. In contrast, the external debt of the central bank fell by USD 2.3 billion, attributed to decreased foreign investment in Monetary Stabilization Bonds (MSBs), and deposit-taking institutions also experienced a decrease of USD 0.5 billion in their external debt due to reduced borrowings from head offices of foreign bank branches, despite increased issuance of overseas securities by domestic banks(Figure II-2-4).

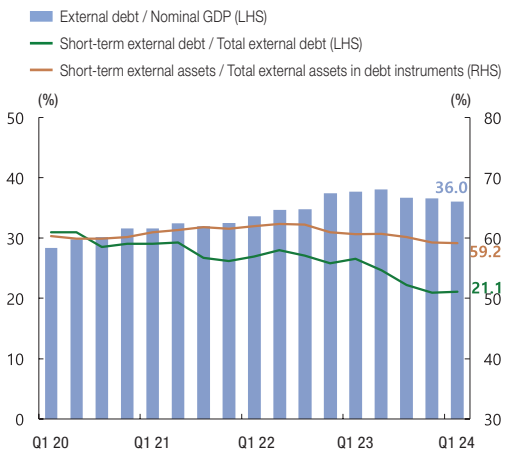
Figure II-2-4. Changes in external debt, by sector



Note: 1) Including other financial corporations (securities companies, asset management companies, and insurance companies, etc.) and NBFIs.
Source: Bank of Korea.

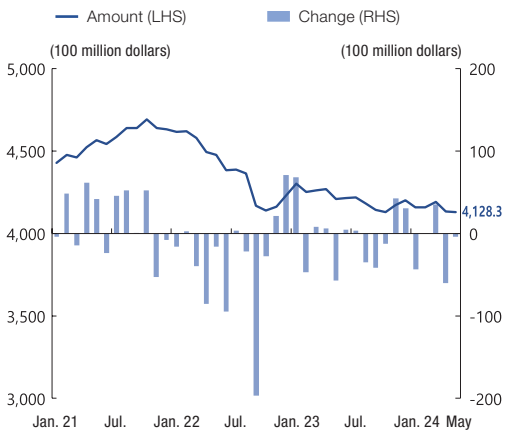
At the end of the first quarter of 2024, the ratio of external debt to nominal GDP was 36.0%, showing a decline from 36.6% in the third quarter of the previous year. The share of short-term external debt in the total external debt diminished to 21.1%, down from 22.1% in the third quarter of the previous year. The share of short-term credit in the total external assets also fell to 59.2% from 60.2% in the third quarter of the previous year(Figure II-2-5).

Figure II-2-5. Proportion of short-term external debt and assets in debt instruments[1)]



Note: 1) End-quarter basis.
Source: Bank of Korea.

Figure II-2-6. Balance of and changes in official foreign reserves[1)]



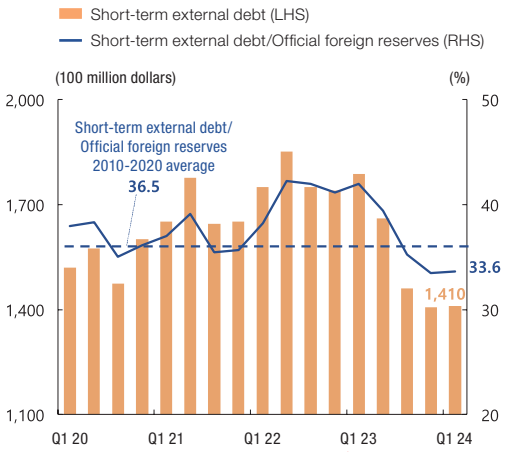
Note: 1) Amounts at month-ends, changes during the months.
Source: Bank of Korea.

Declining Foreign Exchange Reserves

As of the end of May 2024, Korea's foreign exchange reserves totaled USD 412.83 billion, indicating a decrease of USD 4.25 billion compared with the figure recorded at the end of November in the previous year (USD 417.08 billion). This is attributed to temporary factors including market stabilization efforts, such as a foreign currency swap with the National Pension Service, and the decreased USD-converted value of non-USD assets due to a strong U.S. dollar, despite the increased return on foreign assets(Figure II-2-6).

Meanwhile, the ratio of short-term external debt to foreign exchange reserves stood at 33.6% at the end of the first quarter of 2024, representing a decrease of 1.6%p from 35.3% at the end of the third quarter of 2023 due to a reduction in short-term external debt(Figure II-2-7).

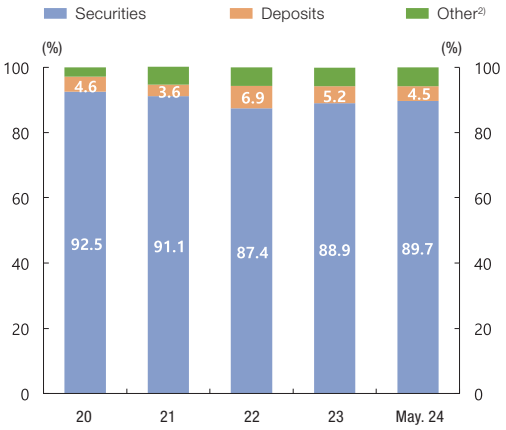
Figure II-2-7. Short-term external debt-to-official foreign reserves ratio[1)]



Note: 1) End-quarter basis.
Source: Bank of Korea.

As of the end of May 2024, marketable securities (89.7%) and deposits (4.5%) made up the bulk of foreign exchange reserves. Marketable securities were composed mainly of highly liquid safe assets, including government bonds, government institution bonds, and asset-backed securities(Figure II-2-8).

Figure II-2-8. Composition[1] of official foreign reserves



Notes: 1) End-period basis.
2) Gold, SDRs, etc.
Source: Bank of Korea.

3. Financial Market Infrastructures

The value of settlement in BOK-Wire+ and other major payment and settlement systems has continuously increased, driven by the steady rise in securities settlements by financial institutions and electronic funds transfers by individuals and businesses. Settlement risk was managed appropriately, remaining at a stable level.

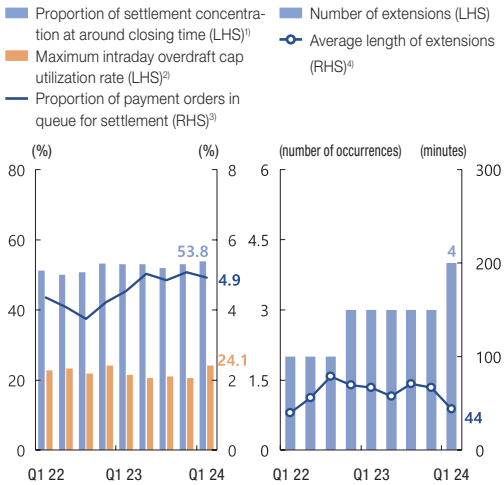
BOK-Wire+

During the first quarter of 2024, the average-daily value settled over BOK-Wire+, providingfinal settlement of obligations between financia linstitutions, reached KRW 596.9 trillion, continuing on an upward trend from the previous year of KRW 554.6 trillion. Settlement risk associated with these transactions was managed at a stable level.

The maximum intraday overdraft cap utilizationrate and the proportion of payment orders in queue for settlement, which are two indicators of the level of settlement liquidity among BOK-Wire+ participants, remained generally stable level at 24.1% and 4.9%, respectively, in the first quarter of 2024. Of the total settlement value, the portion that was settled near the closing time (16:00-17:30) increased slightly from 53.0% in the same period of the previous year to 53.8%.

Meanwhile, the closing time of BOK-Wire+ was extended on four occasions in the first quarter of 2024, mostly due to the Bank of Korea's tasks related to open market operations (Figure II-3-1).

Figure II-3-1. Risk indicators related to BOK-Wire+ and Extension of BOK-Wire+ operating hours



Notes: 1) Amount of settlements processed after 16:00 / Total settlement amount during the period.
2) Average ratio of the daily maximum utilization out of the intraday overdraft cap (only for banks).
3) Total value of payment in queue relative to gross settlement value (excluding payments processed through multilateral netting for liquidity savings).
4) Total length of extension/Number of extensions during the quarter.

Source: Bank of Korea.

Retail Payment Systems[30)]

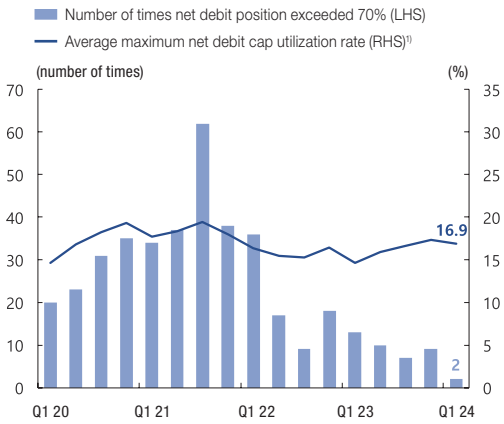
During the first quarter of 2024, the average daily value settled over the retail payment systems, operated by the Korean Financial Telecommunications and Clearings Institute(KFTC), increased to KRW 106.9 trillion, higher than KRW 100.1 trillion in the previous

30) Retail payment systems process funds transfer orders from individuals and businesses either in real time or on a batch processing basis through the KFTC, and the final settlement of obligations between financial institutions takes place as net settlement through BOK-Wire+ on the following business day.

year. The related settlement risk was managed smoothly overall.

Among the risk indicators in the retail payment systems, the number of times where the net debit cap[31] utilization rate of net settlementp articipants exceeded the cautionary level(70%) significantly decreased to two times during the first quarter of 2024, from 13 times during the same period in the previous year. Although there was a slight increase in the average maximum net debit cap utilization rate from the previous year's level of 14.7% to 16.9% in the first quarter of 2024, settlement risk was managed adequately overall (Figure II-3-2).

Figure II-3-2. Net debit cap utilization rate



Note: 1) Average daily maximum net debit cap utilization rates of all participants during the period.
Source: Bank of Korea.

Securities Settlement Systems

The value settled in the securities settlement-systems, operated by the Korea Exchange and the Korea Securities Depository, continued on a rising trend in the first quarter of 2024. Settlement risk was managed stably during this period. The average daily value settled over these systems was bolstered by inter-institutional repo transactions to KRW 306.0 trillion in the first quarter of 2024, extending the upward trend from the previous year (KRW 268.3 trillion).

In the first quarter of 2024, settlements on transactions in exchange-traded stocks and exchange-traded government bonds, as well as OTC stock transactions by institutional investors, were completed by their respective deadlines (16:00, 17:00, and 16:50, respectively).

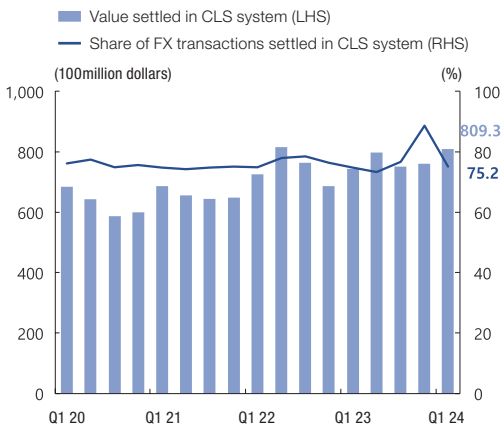
31) The net debit cap is the maximum value of funds transfers that a participant can initiate on behalf of customers in retail payment systems, including the Electronic Banking System, corresponding to the size of credit risk that may be incurred to the overall system by an individual participant. Each new customer transfer order issued by a participantr educes the available portion of the net debit cap, which is replenished when incoming customer transfers are received from other participants. The Bank of Korea operates the settlement risk management system that requires participants to pre-deposit collateral in amounts equivalent to a certain percentage of their net debit cap.

Foreign Exchange Settlement Systems[32]

In the first quarter of 2024, the average daily-value of settlement in the foreign exchange-payment-versus-payment (PvP) system operated by the CLS Bank (CLS System)[33] increased slightly to USD 80.93 billion from USD 76.29 billion a year earlier.

PvP settlements via the CLS system accounted for a continuously high share of 75.2% in total foreign exchange transactions in the first quarter of 2024, and any related settlement risk is assessed to have remained stable (Figure II-3-3).

Figure II-3-3. Value[1] and share[2] of FX transactions settled in CLS system



Notes: 1) Daily average amount of transactions by domestic banks and domestic branches of foreign banks during the quarter.
2) Share of transactions settled in CLS among all CLS-eligible FX transactions (at domestic banks and domestic branches of foreign banks).

Source: Bank of Korea.

32) Foreign exchange settlements are conducted through the CLS system, interbank correspondent network, and domestic foreign currency funds transfer systems. This report focuses on the foreign exchange PvP settlements routed through the CLS System, in which the settlement amounts can be accurately determined.

33) To address time differences between countries, which are a fundamental cause of foreign exchange settlement risk, the CLS (Continuous Linked Settlement) Bank settles most transactions during a designated settlement period (07:00-12:00 CET). In continuous linked settlements, actual fund transfers (payments) are linked and processed within this settlement period, between the accounts of settlement member banks and the CLS Bank, held at the central banks issuing the currencies concerned. At present, the CLS PvP system is connected to large-value payment systems (including BOK-Wire+) run by central banks that issue the 18 CLS settlement currencies (including the USD, EUR, JPY, and KRW).

Analysis of Financial Stability Issues

1. Analysis of Potential Risks in the Financial System Through the Assessment of Macro Leverage 117

2. Reestablishment of the Microdata-based Stress Test Model and Resilience Reviews for Financial Institutions 134

1. Analysis of Potential Risks in the Financial System Through the Assessment of Macro Leverage[1)]

(1) Background
(2) Current Status and Characteristics of Macro Leverage
(3) Assessment of the Macro Leverage Level and Growth Rate
(4) Analysis of Potential Risks
(5) Assessment and Implications

(1) Background

Macro leverage[2)] refers to total debt held by the household, corporate, and government sectors as constituents of the macroeconomy, as a ratio against nominal GDP. As of the end of the fourth quarter of 2023, Korea's macro leverage ratio stood at 251.3%,[3)] higher than the global average (245.1%) but lower than the average of advanced economies (264.3%).[4)] Among borrowers, the corporate sector had the highest macro leverage at 113.9%, followed by the household sector at 93.5%, and the government sector at 43.9%(Figure III-1-1).

An appropriate level of leverage is beneficial in facilitating smooth and effective economic activities among economic entities. However, an excessive increase in private credit may build up financial imbalances,[5)] increasing the vulnerability of the financial system and exacerbating the financial unrest caused by financial or real shocks. Additionally, in the event of financial unrest, it is necessary to assess government leverage along with private credit to comprehensively evaluate the policy response capacity. In this regard, this article examines the current status and characteristics of Korea's macro leverage, evaluates its level and growth rate with a focus on financial stability, and identifies potential risks for each sector.[6)]

1) This article was authored by Na Sung-o, Park Ji-soo, and Nam Seung-hee (Financial Stability Affairs Team); and You Jae-weon and An Jun-young (Financial Stability Analysis Team) and was reviewed by SeoPyoung-seok (director of the Financial Stability Strategy & Coordination Division), Lim Kwang-kyu (head of the Financial Stability Affairs Team), Kim Jeong-ho (head of the Financial Stability Analysis Team), Bahng Hong-ki (director of the Monetary Policy Strategy Division), and Choi, Youngjoo (director of the Money and Financial Markets Division).

2) The Bank for International Settlements (BIS) refers to macro leverage as the credit to the non-financial sector.

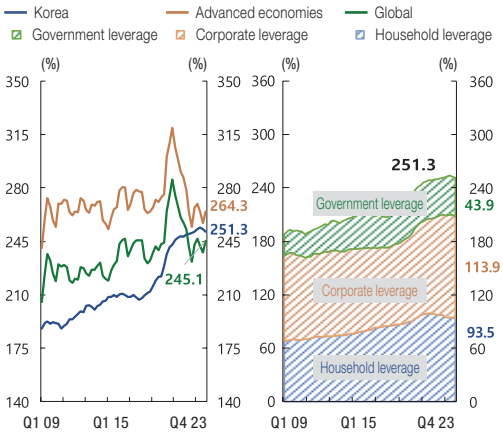
3) This result is based on Korea's gross domestic product (GDP) statistics released on June 5, 2024, reflecting the revision of the GDP base year (2015 → 2020).

4) The global average is based on 44 countries and regions for which the BIS publishes macro leverage levels, while the average of advanced economies is based on the macro leverage ratios of 11 countries and regions classified as advanced economies by the BIS: Australia, Canada, Switzerland, Denmark, the United Kingdom, Japan, New Zealand, Norway, Sweden, the United States, and the euro area.

5) Financial imbalance refers to a drastic increase in credit accompanied by a surge in asset prices. Based on economic entities' optimistic outlooks, the rising private credit and soaring asset prices act in a self-reinforcing manner, accumulating vulnerabilities in the financial system. This may increase the possibility of financial crises, leading to rapid deleveraging and a delay in economic recovery. The ratio of private credit to GDP, which corresponds to the macro leverage of households and corporations, is a key indicator for measuring the degree of financial imbalance.

6) For details regarding the current status of household and corporate credit leverage, refer to "I. Financial Stability Situation by Sector, 1. Credit Market, (3) Credit Leverage."

Figure Ⅲ-1-1. Trends of macro leverage



Source: Bank of Korea, BIS.

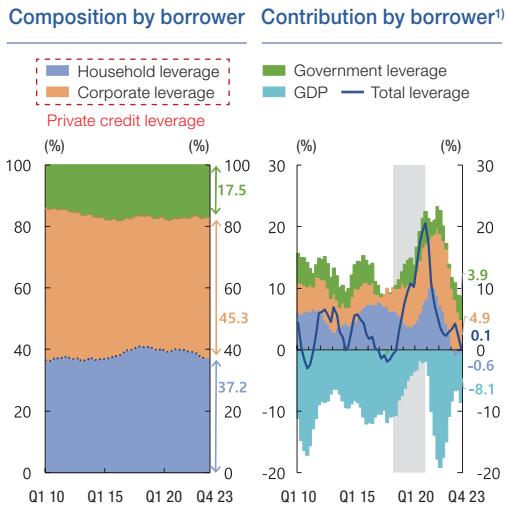
(2) Current Status and Characteristics of Macro Leverage

Korea's macro leverage has increased due to the expansion of real estate-related credit supply in both the household and corporate sectors. In the process, loans from non-bank financial institutions (NBFIs) have also expanded.[7)]

Gradual Rise in Government Leverage amid Increase in Macro Leverage Led by Private Credit

Out of the total credit, which constitutes the numerator of the macro leverage ratio, the private-sector share at the end of the fourth quarter of 2023 stood at 82.5% (45.3% for corporations and 37.2% for households). An analysis of the year-on-year macro leverage changes during 2010-2017 period by sector revealed that, in terms of type of borrower, private credit made a significantly greater contribution to the increase in macro leverage (quarterly average +9.7%p) compared to the government sector (+1.6%p). Notably, during the 2018-2020 period, the expansion of private credit (+12.0%p), coupled with a slowdown in economic growth, led to a rapid rise in macro leverage(Figure III-1-2).

Figure Ⅲ-1-2. Composition and contribution to changes in leverage by borrower



Note: 1) Contribution of each borrower type to changes(yoy) in macro leverage.

Source: Bank of Korea.

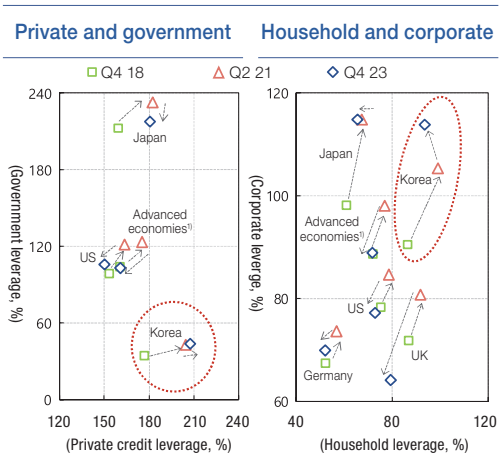
In particular, comparing the changes in Korea's macro leverage in its private and government sectors around the end of the COVID-19 crisis[8)] with those of major countries found that Korea's private credit grew rapidly from the end of 2018 to the second quarter of 2021, while government leverage also continued to rise at a moderate pace. In contrast, most major countries experienced simultaneous increases in private and government leverage, followed by a reversal along the same trajectory, leading to deleveraging in both the private and gov-

7) The risks associated with real estate PF in Korea can be considered as the comprehensive reflection of these characteristics.

8) Given that major countries significantly eased their COVID-19 quarantine measures starting in the third quarter of 2021, this article considers the crisis of the pandemic to have ended as of the same quarter.

ernment sectors. When further breaking down the private credit sector into the household and corporate sectors, most major countries saw simultaneous deleveraging in both sectors after COVID-19. However, in Korea, leverage continued to rise for a while, primarily in the corporate sector(Figure III-1-3).[9]

Figure Ⅲ-1-3. Changes in macro leverage by borrower, pre- and post- COVID19



Notes: 1) Austrailia, Canada, Switzerland, Denmark, United Kingdom, Japan, New Zealand, Norway, Sweden, United States and the Euro area.

Source: Bank of Korea, BIS.

This trend can beattributed to the lingering demand for real estate-related loans, along with the impact of the COVID-19 crisis, including increased demand for living expenses and financial support measures for affected businesses.[10] Additionally, after the pandemic, Korea's financial support policies for vulnerable sectors[11] were sustained for relatively longer compared to other major countries.[12]

Expansion of Real Estate-related Leverage

As of the end of the fourth quarter of 2023, the ratio of outstanding real estate-related loans (the sum of home mortgage loans[13] and loans to the real estate and construction sectors) to GDP was approximately 69.8%,[14] which is divided into 44.3% for home mortgage loans and 25.5% for loans to the real estate and construction industries. By sector, the proportion of home mortgage loans in the household sector relative to total household credit increased slightly from 44.4% at the end of 2010 to 47.4% at the end of 2023, limiting the rise to a mere 3.0%p. However, considering that non-home mortgage loans are included in the other loans category[15] and that credit loans can also be used for real estate purchases, the actual level and increase in real estate-related leverage

9) By sector, leverage began to fall quarter-on-quarter at the end of the fourth quarter of 2021 for the household sector and at the end of the fourth quarter of 2023 for the corporate sector.

10) The government's balance of support for loan maturity extensions and deferments of principal and interest repayments for SMEs and small business owners increased from KRW 75.9 trillion at the end of August 2020 to KRW 141.4 trillion at the end of June 2022, before falling to KRW 76.2 trillion as of June 2023.

11) Other factors include (1) the increased corporate debt due to the expansion of deficits in some public enterprisesresulting from the government's energy price policy in 2022, (2) the increased lending capacity of financial institutions due to the extended relaxation of financial regulations such as the easing of the loan-deposit ratio regulations, and (3) the relatively favorable commercial real estate market compared to other major countries, leading to the sustained demand for related loans.

12) The duration of Korea's financial support policies in response to the COVID-19 crisis was 31 months from March 2020, which is longer than that of other major countries except Japan (40 months). The durations of other major countries are as follows: 15 months for the United States, 16 months for Canada, 13 months for the United Kingdom, 26 months for Germany, and 28 months for France.

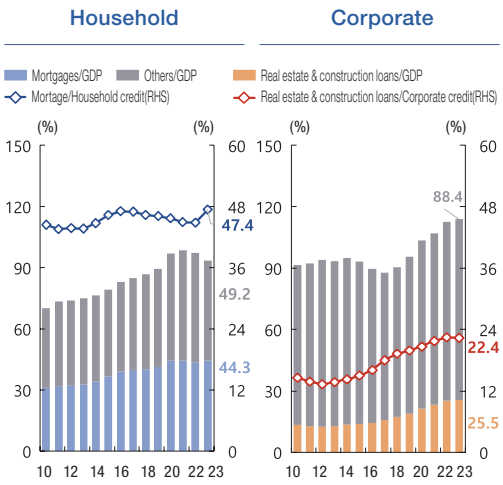
13) According to the household credit statistics, home mortgage loans include individual home mortgage loans, leasehold deposit fund loans, and group loans.

14) This excludes guarantees or asset-backed securities provided by financial institutions for real estate-related loans.

15) This category includes all other loans in household credit, excluding home mortgage loans.

in the household sector are estimated to be higher.[16] Meanwhile, in the corporate sector, the proportion of loans to the real estate and construction industries relative to corporate credit steadily increased from 14.6% to 22.4% (+7.8%p) during the same period, indicating an expansion of real estate-related credit supply over the long term(Figure III-1-4).

Figure Ⅲ-1-4. Leverage related to real estate



Source: Bank of Korea, Financial institutions' business reports.

Rise and Subsequent Fall of Loan Growth Driven by NBFIs Since 2021

Examining the quarter-on-quarter changes in the ratio of loan balances to GDP by financial sector,[17] banks have seen a continued slowdown in growth since the second half of 2020, while NBFIs experienced an expanded increase in loans until the first half of 2022, particularly in loans to real estate-related industries[18] and SEBOs.[19] However, strengthened risk management subsequently led to a rapid contraction of loans from NBFIs,[20] resulting in a decline in the ratio of loan balances to GDP across the financial sector(Figure III-1-5).

16) Comparing the increases in home mortgage loans and other loans during periods of rising real estate prices, the growth of other loans was either larger than or similar to that of home mortgage loans: home mortgage loans increased by KRW 91.0 trillion and other loans by KRW 150.5 trillion from the second quarter of 2009 to the first quarter of 2012; home mortgage loans increased by KRW 305.1 trillion and other loans by KRW 271.4 trillion from the fourth quarter of 2013 to the fourth quarter of 2018; and home mortgage loans increasedby KRW 141.7 trillion and other loans by KRW 220.0 trillion from the fourth quarter of 2019 to the fourth quarter of 2021.

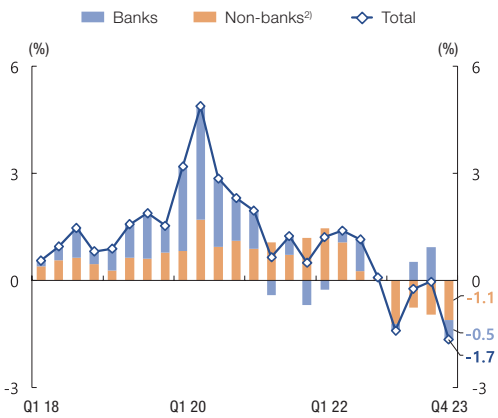
17) As of the end of the fourth quarter of 2023, Korea's macro leverage stood at 251.3%, with 206.1% held by financial corporations and 45.2% by non-financial corporations (including businesses).

18) As of the end of 2022, outstanding real estate PF loans from NBFIs stood at KRW 90.9trillion, marking an increase of KRW 24.5 trillion from KRW 66.4 trillion at the end of 2020. During the same period, banks experienced an increase of only KRW 13.3 trillion in their outstanding real estate PF loans, which is about half the increase observed in the non-bankingsector.

19) As of the end of 2022, the outstanding loans to SEBOs extended by NBFIs stoodat KRW 401.3 trillion, marking an increase of KRW 131.9 trillion from KRW 269.4 trillion at the end of 2020. This increase accounted for 61.0% of the total increase in loans to SEBOs (KRW 216.3 trillion) during the same period.

20) The year-on-year growth rate of loans from NBFIs indicates that household loans (based on household credit statistics) have continued to slow in growth since the end of third quarter of 2021, turning negative at the end of the fourth quarter of 2022, and reaching -3.9% as of the end of the first quarter of 2024. Corporate loans (based on financial institutions' business reports) have also continued to decelerate in growth since the end of the second quarter of 2022, falling to 2.7% by the end of the first quarter of 2024.

Figure Ⅲ-1-5. Changes in ratio of loans to GDP,[1] by financial sectors



Notes: 1) Quarter on quarter
2) Non-bank depository institutions and other financial institutions.
Source: Bank of Korea, Financial institutions' business reports.

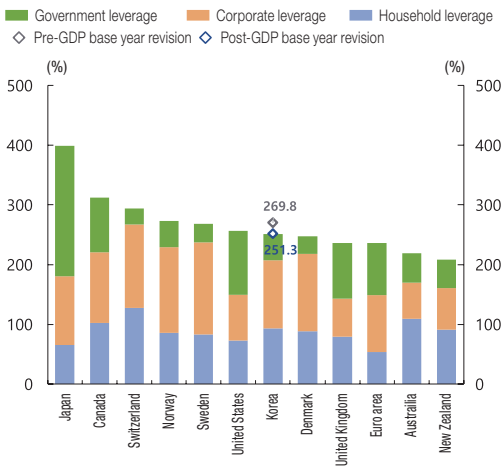
(3) Assessment of the Macro Leverage Level and Growth Rate

As excessive macro leverage can increase the vulnerability of the financial system by accumulating financial imbalances, it is important to compare and assess macro leverage levels and growth rates.

A. Comparison of Macro Leverage Levels

As of the end of the fourth quarter of 2023, Japan had the highest macro leverage among advanced economies[21] at 398.8%, while New Zealand had the lowest at 208.6%, showing a significant difference of up to 190.2%p within the group. Amidst this large disparity, there are various views on the appropriate level of macro leverage.[22] In Korea, the macro leverage ratio decreased from 269.8% to 251.3% after the revision of the GDP base year, bringing it to a level similar to that of the United States and Denmark(Figure III-1-6).

Figure Ⅲ-1-6. Macro leverage by major countries[1]



Note: 1) As of the end of Q4 2023
Source: Bank of Korea, BIS.

Higher Level of Private Credit Compared to Advanced Economies

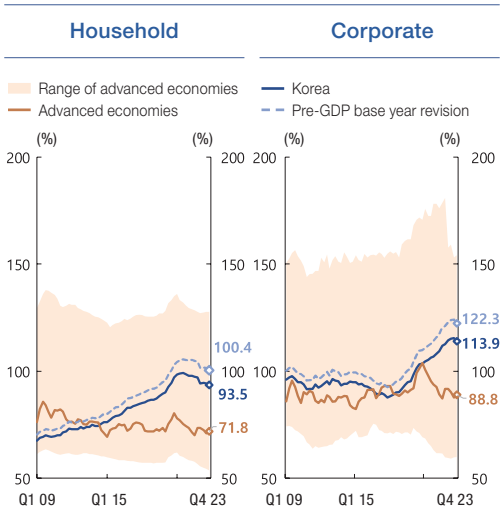
The macro leverage of Korea's household sector, which had been on an upward trend for sometime, began to gradually decline in 2022. However,as of the end of the fourth quarter of 2023, it stood at 93.5% (100.4% before the revision of the GDP base year), which is 21.7%p higher than the average of advanced economies (71.8%). On the otherhand, the

21) This group of advanced economie srefers to 11 countries and regions classified as advanced economies by the BIS (Australia, Canada, Switzerland, Denmark, the United Kingdom, Japan, New Zealand, Norway, Sweden, the United States, and the euro area).

22) Research on the threshold levels of macro leverage primarily focuses on the potential negative impact of high leverage levels on economic growth, which maybe caused by constraints on consumption and investment capacity resulting from increased debt repayment burdens. According to Park, Chang Hyun et al. (2021), existing studies suggested threshold levels of macro leverage for each sector: 75-85% for households, 80-90% for corporations, and 85-90% for the government. However, Pescatori et al. (2014) argued that no specific threshold level exists.

macro leverage of Korea's corporate sector was generally similar to the average of advanced economies until the outbreak of COVID-19. However, unlike the trendsin the advanced economies, Korea's corporate sectormaintained its upwardtrend, reaching 113.9% (122.3% before the revision of the GDP base year), thus expanding the gap with the average of advanced economies (88.8%) to approximately 25%p(Figure III-1-7).

Figure Ⅲ-1-7. Trends of macro leverage of Private sector



Source: Bank of Korea, BIS.

Relatively Low Government Credit

As of the end of the fourth quarter of 2023, the macro leverage of the Korean government sector, based on statistics from the BIS, was 43.9% (47.1% before the revision of the GDP base year), significantly lower than the average among advanced economies (103.7%). This is because most advanced economies carry substantial government debt as reserve currency countries.[23] On the other hand, according to the general government debt (D2) standard[24] used by the IMF, which includes the debt of non-profit public institutions, Korea's ratio rises to 55.2% (before the revision of the GDP base year),[25] slightly higher than thatof based on BIS statistics. Despite this increase, the macro leverage of the Korean government sector remains relatively low compared to the average of advanced economies classified by the IMF (111.0%)(Figure III-1-8).[26]

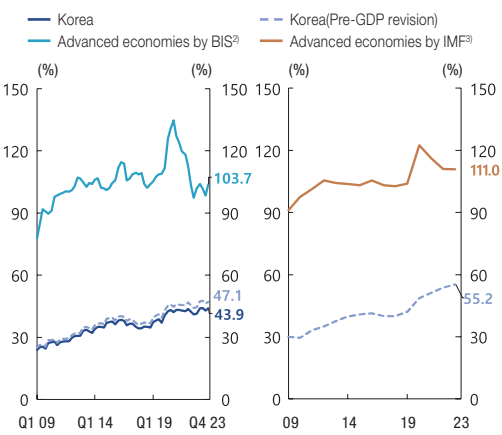
23) As of the end of the fourth quarter of 2023, the macro leverage of the government sector in major reserve currency countries, based on BIS statistics, was as follows: 218.3% for Japan, 107.1% for France, 106.4% for the United States, 92.5% for the United Kingdom, 91.5% for Canada, 60.7% for Germany, and 26.9% for Switzerland.

24) This is a subset of debt classifications based on the Public Sector Debt Statistics Guide (PSDS Guide), which was jointly developed by the IMF, the OECD, and other relevant organizations in 2012 to produce internationally comparable debt information for the public sector. The PSDS Guide classifies debt into basic national debt (D1), general government debt (D2), and public sector debt (D3). D1 encompasses the accounts and funds of central and local governments, and its coverage is consistent with the BIS coverage (the general government sector in the flow of funds statistics). However, D1 is calculated on a cash basis according to the National Finance Act and on a consolidated basis (eliminating internal transactions within the sector), while the flow of funds statistics are compiled on a market value and non-consolidated basis (without eliminating internal transactions within the sector). D2 and D3 are both calculated on an accrual basis, with D2 covering D1 plus non-profit public institutions, and D3 covering D2 plus non-financial public corporations.

25) This is the IMF estimate as of the end of 2023. According to the Ministry of Economy and Finance (General Government Debt and Public Sector Debt for 2022, December 2023), the ratio of general government debt (D2) to GDP was 53.5% at the end of 2022, and the ratio of public sector debt (D3) to GDP was 73.5% (before the revision of the GDP base year).

26) The IMF's Fiscal Monitor (April 2024) classifies a total of 37 countries, including Korea, as advanced economies, offering abroade rscopecompared to the BIS classification, which includes 11 countries and regions in its group of advanced economies.

Figure Ⅲ-1-8. Trends of macro leverage of Government



Notes: 1) For Korea, pre-GDP base year revision basis
2) 11 countries or area
3) 37 countries

Source: Bank of Korea, BIS, IMF.

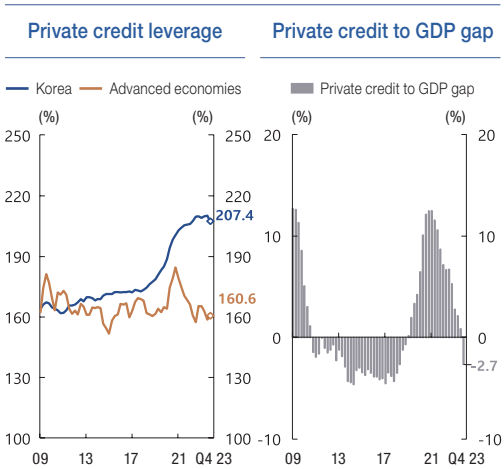
B. Assessment of the Growth Rate

A dramatic expansion of private credit can quickly accumulate vulnerabilities across the financial system, increasing systemic risk.[27] To ensure financial stability, it is important to monitor the growth rate of macro leverage.

Recent Decline in the Growth Rate of Private Credit

As of the end of the fourth quarter of 2023, private credit leverage (the ratio of private credit to GDP), where the borrowers are either households or corporations, stood at 207.4%, higher than the averageof advanced economies (160.6%). However, the growth rate of private credit slowed significantly in 2023, and in the fourth quarter, the private credit-to-GDP gap[28] turned negative (-2.7%p), indicating that the growth rate began to fall below the long-term trend(Figure III-1-9).[29]

Figure Ⅲ-1-9. Trends of private credit leverage and gap1)



Note: 1) Difference bewtween the credit-to-GDP ratio and the long-term trend based on one-sided HP filter(Period : Q4 2000~Q4 2023, λ=25,000)

Source: Bank of Korea, BIS.

Continued Positive Gap in Corporate Loans-Since 2012

Examining the gap between actual credit growth and the long-term trend for each typeof private credit, the household sector

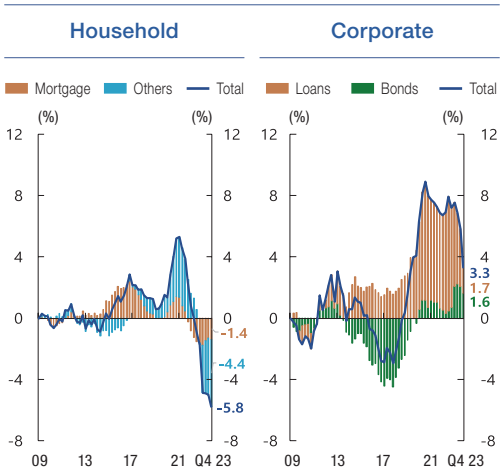
27) Related studies suggest that a credit-to-GDP gap of approximately 9-14%p increases the likelihood of a financial crisis. The BIS also recommends that, according to the countercyclical capital buffer (CCyB), a capital buffer should start to be built up when the credit-to-GDP gap exceeds 2%p, and that the maximum buffer rate of 2.5% should be applied when the credit-to-GDP gap exceeds 10%p.

28) A positive (+) gap indicates that the growth of macro leverage is greater than the long-term trend, while a negative (-) gap indicates that it is smaller. Therefore, a larger positive gap signifies a stronger upward trend, whereas a larger absolute value of the negative gap indicates an expansion in a downward trend.

29) The BIS announced that Korea's private credit-to-GDP gap was +6.3%p at the end of the fourth quarter of 2023. However, this figure is influenced by differences in the parameters (λ=400,000) and the estimation period used to calculate the long-term trend. The continuous reduction in the positive gap (16.6%p at the end of the fourth quarter of 2021 → 15.4%p at the end of the fourth quarter of 2022 → 6.3%p at the end of the fourth quarter of 2023) suggests that the upward trend in private credit has been slowing, as noted in this article.

experienced a rise in the positive gap, primarily in home mortgage loans during 2014-2018 period, and in other loans since 2019, but both turned negative after the end of the fourth quarter of 2022. Meanwhile, corporate credit exhibited a negative gap from the fourth quarter of 2015 to the third quarter of 2018 due to the contraction of the corporate bond market,[30] while a positive gap has persisted in loans since 2012. This positive gap in corporate credit rose rapidly, predominantly in loans, but began to decline in 2023(Figure III-1-10).

Figure Ⅲ-1-10. Trends of macro leverage gap[1] by credit type[2]



Notes: 1) Difference bewtween the credit-to-GDP ratio and the long-term trend based on one-sided HP filter(Period : Q1 2009~Q4 2023, λ=25,000)
2) Except for government loans
Source: Bank of Korea,

Expansion of Policy Financing

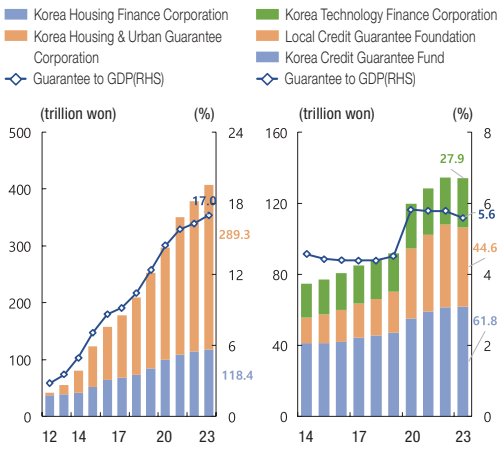
The rapid increase in private credit during the COVID-19 crisis can be partly attributed to sustained housing-related policy financing[31] for the household sector, alongside expanded financial support for the corporate sector. Specifically, the ratio of outstanding public guarantees[32] for the household sector (KRW 407.7 trillion in total) to GDP rose steadily from 2.8% at the end of 2012 to 17.0% at the end of 2023. Meanwhile, the ratio of outstanding public guarantees for SME loans (KRW 134.3 trillion in total) to GDP stood at 5.6%, maintaining an elevated level since rising by a significant margin from 4.5% at the end of 2019 to 5.8% at the end of 2020(Figure III-1-11).

30) Outstanding corporate bonds in Korea (based on flow of funds statistics) increased steadily from KRW 326.9 trillion at the end of the fourth quarter of 2008 to KRW 560.8 trillion at the end of the first quarter of 2015. However, this upward trend later reversed due to the global economic slowdown, which led to poor performance and restructuring in industries such as shipbuilding and shipping, thereby weakening the demand for corporate bonds. Consequently, outstanding corporate bonds in Korea decreased to KRW 495.8 trillion by the end of the fourth quarter of 2017, before beginning to rise again in 2018.

31) Policy mortgage loans (such as the Bogeumjari loan and Relief Conversion loan from the Korea Housing Finance Corporation, and the Didimdol loan and Beotimmok loan from the National Housing and Urban Fund) have expanded alongside housing fund guarantees for the household sector.

32) The Korea Housing Finance Corporation primarily deals with guarantees for leasehold deposit fund loans, while the Korea Housing & Urban Guarantee Corporation handles guarantees for the return of leasehold deposits and intermediate payment loans.

Figure Ⅲ-1-11. Policy finance support and guarantee to GDP

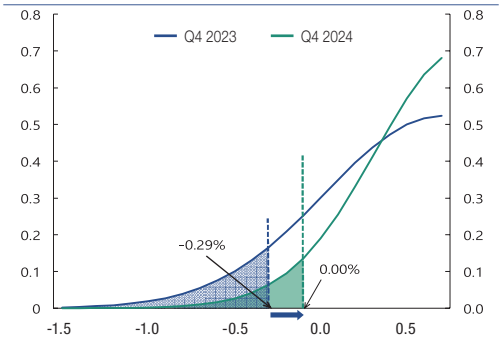


Source: Korea Housing Finance Corporation, Korea Housing & Urban Guarantee, Korea Credit Guarantee Fund, Korea Technology Finance Corporation, Korea Federation of Credit Guarantee Foundations, Bank of Korea.

Mitigated Downside Risks to the Real Economy

To assess the downside risks to economic growth under current financial conditions, this article estimated Growth-at-Risk (GaR),[33] which corresponds to the projected GDP growth at the lower fifth percentile. Using a quantile regression model, the distribution of GDP growth four quarters ahead(t+4quarters) was estimated based on financial conditions in the current quarter (t), such as the credit-to-GDP gap. The estimation result[34] showed that the economic growth distribution for the fourth quarter of 2024 shifted to the right compared to the fourth quarter of 2023. Consequently, GaR increased from -0.29% to 0.00%, predicting a slight decrease in the impact of financial vulnerability on downside risks to the real economy(Figure III-1-12).[35]

Figure Ⅲ-1-12. Distrubution change in GDPgrowth rate by private credit to GDP gap[1)2)]



Notes: 1) 4 Quarter GDP growth distribution forecasts from Q4 2022 and Q4 2023 respectively
2) Horizontal axis means GDP growth rate(QoQ) and vertical axis means the expected value of probability density function

Source: Bank of Korea calculation.

33) Growth-at-Risk (GaR) is a widely used method for measuring financial vulnerability, first introduced by the IMF in October 2017. The estimation formula $\tilde{y}^q_{t+h} = \alpha^q_h + \beta^q_{y,h}\tilde{y}_t + \beta^q_{F,h}F_t + \beta^q_{C,h}C_t + \epsilon_{t+h}$ is used to derive forecasted future GDP distribution by quantile, where $\tilde{y}_{t+h}$, and $\tilde{y}_t$ represent GDP growth rates in period t+h and period t, respectively; F_t represents the Financial Vulnerability Index (FVI) in period t; C_t denotes the private credit-to-nominal GDP gap in period t; and q denotes the quantile. For further details on the GaR analysis method, refer to Box 1 "Assessment of Financial Vulnerability of Korea Using Growth-at-Risk Approach," Financial Stability Report, June 2019.

34) This projected distribution and general GDP forecasts are not comparable due to analytical differences. GaR primarily aims to assess downside risks in extreme situations, such as financial crises, by estimating future economic growth distribution using only a few explanatory variables, such as historical economic growth rates and financial conditions. In contrast, GDP forecasts focus on precisely estimating an overall growth trajectory of the economy by considering various macroeconomic factors, including consumption, investment, and external conditions, from a comprehensive perspective.

35) In addition to the current financial conditions, the increase in the economic growth rate in the fourth quarter of 2023 (0.6%) compared to the same period in the previous year (0.2%) also appears to have contributed to the rightward shift in the GaR for the fourth quarter of 2024. However, it is important to note that the recent rapid deterioration in the real estate and sole proprietor sectors could exacerbate concerns over the negative impact on the real economy to a greater extent than expected.

(4) Analysis of Potential Risks

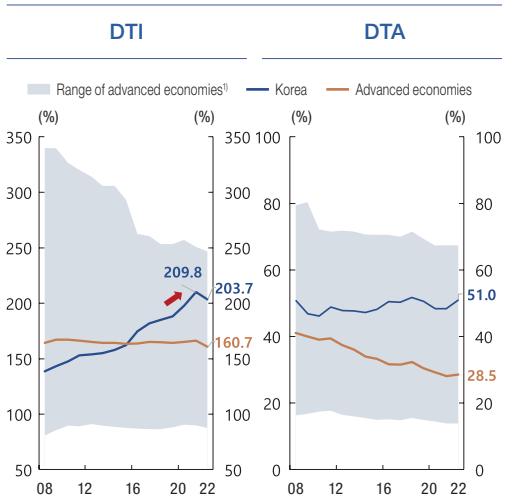
To assess the soundness of macro leverage in terms of qualitative aspects such as borrowers' repayment capacity, this article examined potential risks in the household, corporate, and government sectors, mainly through comparisons with those of advanced economies.[36)]

A. Household Sector

High Debt Repayment Burden

Korean households' debt repayment burden is relatively high compared to that of advanced economies. First, in terms of income, the ratio of household debt to disposable income (the debt-to-income ratio, DTI)[37)] in the Korean household sector was relatively low until the global financial crisis, but it has continued to rise since then, reaching 209.8% at the end of 2021. Although the ratio slightly decreased to 203.7% at the end of 2022, it was still higher than the average of advanced economies (160.7%). Next, in terms of assets,[38)] Korea's debt-to-asset ratio (DTA) has generally fluctuated around 50%, standing at 51.0% at the end of 2022, while the average of advanced economies (28.5%) has continued to decline at a lower level than that of Korea(Figure III-1-13).

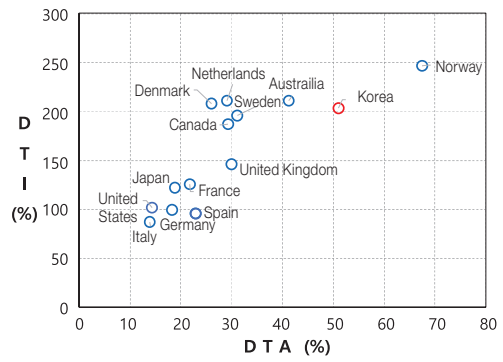
Figure Ⅲ-1-13. Trends of DTI and DTA



Notes: 1) Excluding for Switzerland
Source: OECD

Simultaneous comparisons of the DTI and DTA ratios as of 2022 revealed that Korea, alongside Australia and Norway, exhibited high levels in both metrics. This underscores the need for caution regarding the potential decrease in debt repayment capacity in the event of income reduction or a sharp drop in asset prices(Figure III-1-14).

Figure Ⅲ-1-14. DTI and DTA by countries(year of 2022)



Source: OECD

36) The group of advanced economies for the comparisons includes a total of 15 major countries: two in North America (the United States and Canada), 11 in Europe (Germany, France, the United Kingdom, Spain, Italy, the Netherlands, Switzerland, Sweden, Norway, Ireland, and Denmark), and two in Asia (Japan and Australia).

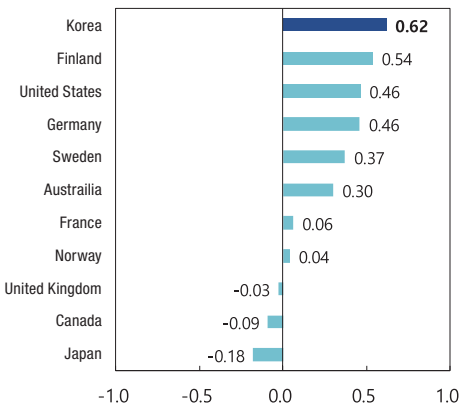
37) The OECD financial indicators dashboard was used for cross-country comparisons. This DTI differs from the one included in "I. Financial Stability Situation by Sector, 1. Credit Market, (1) Household Credit" in calculation method, resulting in some differences in DTI levels.

38) The scope of assets includes financial assets and housing but excludes other non-financial assets.

High Correlation with the Real Estate Market

Macro leverage in Korea's household sector tends to fluctuate in line with trends in real estate prices. According to an analysis of the correlation between the changes in the house price index and the changes in the household debt ratio from 2009 to 2023, Korea exhibited the highest positive correlation among major countries. In particular, during the COVID-19 pandemic, expectations for house price increases remained high,[39] further strengthening the correlation between house prices and household debt ratios(Figure III-1-15).[40]

Figure Ⅲ-1-15. Correlation between housing prices growth and changes in household leverage[1][2]

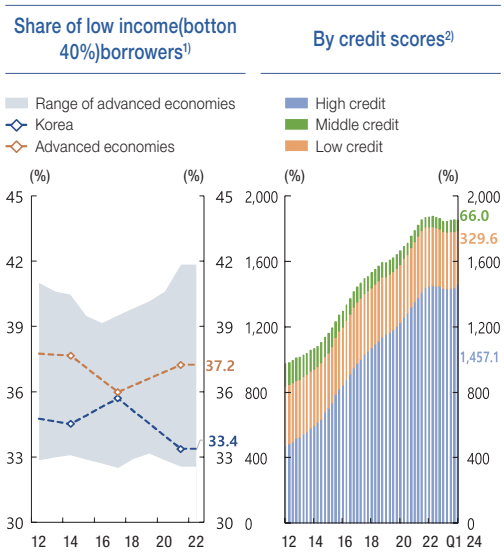


Notes: 1) Correlation between the growth(yoy) of household leverage and growth rate of Housing Price Index(yoy)
2) During Q1 2009~Q4 2023
Source: OECD(Housing Price Index), BIS

Sound Composition of Borrowers

During the accumulation of household debt, lending has primarily been directed towards high-income, high-credit borrowers, resulting in a sound borrower composition. As of the end of 2022, the proportion of loans extended to the bottom 40% income households in Korea's total household loans stood at 33.4%, lower than the average of advanced economies (37.2%). Furthermore, the analysis of the debt size by borrower credit rating, based on the household debt database, reveals that household debt in Korea has increased mainly among high-credit borrowers(Figure III-1-16).[41]

Figure Ⅲ-1-16. Share of household debt, by borrowers income level and credit score



Notes: 1) Dotted lines are estimated data based on year 2014, 2017 and 2021
2) Estimated data calculated using debt proportion by credit levels based on Consumer Credit Panel
Source: Bank of Korea(Consumer Credit Panel), OECD

39) Korea's house price outlook CSI (where a value over 100 indicates higher expectations for price rises than falls) averaged 120 during the COVID-19 crisis (January 2020-June 2021), exceeding the long-term average of 108 during the 2013-2019 period.

40) The correlation between changes in the house price index and changes in the household debt ratio increased significantly from 0.27 before COVID-19 (from the first quarter of 2009 to the fourth quarter of 2019) to 0.72 during the COVID-19 pandemic (from the first quarter of 2020 to the second quarter of 2021).

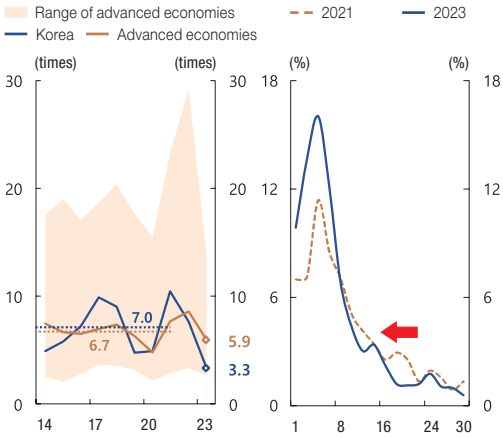
41) The proportion of vulnerable borrowers (borrowers with multiple loans and either in the bottom 30% of income or with a credit score of 664 or below) was only 6.6% (based on the number of borrowers) at the end of the fourth quarter of 2023, close to the lowest level since 2012 (6.0% at the end of the first quarter of 2021).

B. Corporate Sector[42)]

Increased Interest Payment Burden

The interest coverage ratio (operating income[43)] / total interest expenses) of Korean companies was 10.4 in 2021, exceeding the average of advanced economies. However, it declined to 3.3 in 2023, falling below the average of advanced economies, showing a shift to the left in the distribution. From 2014 to 2021, the annual average interest coverage ratio was 7.0, slightly higher than the average of advanced economies (6.7). However, the subsequent decline in the interest coverage ratio resulting from tightened domestic and international monetary policies has been more pronounced for Korean companies compared to those of advanced countries(Figure III-1-17).[44)]

Figure Ⅲ-1-17. Trend and distribution changes of interest coverage ratio[1)]



Notes: 1) EBIT/Total interest expenses.
2) The dashed line represents the average from 2014 to 2021.
3) Proportion of companies in each interest coverage ratio range (1 to 30) relative to the total number of companies

Source: S&P

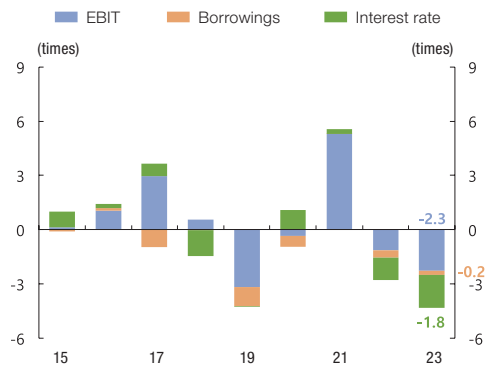
Examining the changes in the interest coverage ratio in terms of operating income, borrowings, and interest rates, the decline in the interest coverage ratio in 2023 compared to the previous year (-4.3) was primarily attributable to the decrease in operating income (-2.3) and the increase in borrowing interest rates (-1.8) (Figure III-1-18).

42) Using S&P's corporate financial information database, Capital IQ, an analysis was conducted on 21,364 listed companies (excluding those in the financial and insurance industries) in a total of 16 countries, including Korea and other advanced economies. However, 311 companies related to electricity, gas, and water services were excluded from the analysis due to differences in privatization status and pricing policies across countries. Meanwhile, the analysis used consolidated financial statements items of listed companies in each country to facilitate international comparisons. Therefore, it is necessary to note that the resulting financial indicators may differ from those of domestic companies obtained based on individual financial statements.

43) This is based on earnings before interest and taxes (EBIT) in consolidated financial statements (net income + interest expenses + corporate taxes), which differs from the operating income in individual financial statements (sales - cost of goods sold (COGS) - selling, general and administrative expenses) used for calculating the interest coverage ratio specified in "I. Financial Stability Situation by Sector, 1. Credit Market, (2) Corporate Credit."

44) The increase in the average borrowing interest rate for companies in 2023 compared to 2021 was 1.6%p in Korea, 1.1%p in Europe, 0.6%p in North America, and 0.5%p in Asia (The borrowing interest rate was calculated as total interest expenses divided by total borrowings. To obtain the average borrowing interest rate for companies, the top and bottom 10% borrowing interest rates were excluded to remove the effect of outliers.).

Figure Ⅲ-1-18. Factors[1] affecting changes in ICR of Korean companies



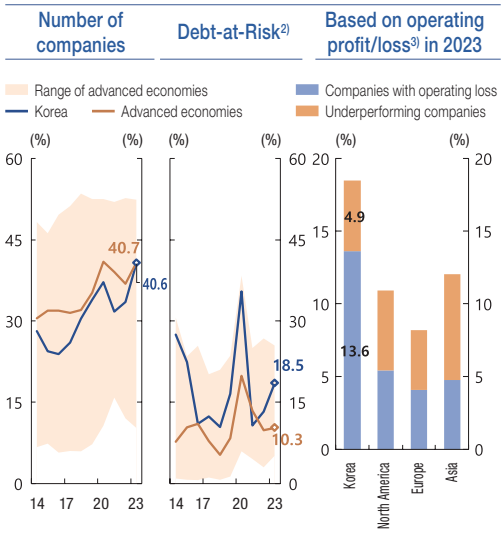
Note: 1) Compared to the previous year, an increase in operating income contributes to a higher interest coverage ratio, while an increase in borrowings and a rise in the average borrowing interest rate (total interest expenses/total borrowings) contribute to a lower interest coverage ratio.

Source: S&P

Expansion of Borrowings by Vulnerable Companies

The proportion of vulnerable companies (those with an interest coverage ratio of less than 1) in Korea was somewhat lower than that of advanced countries in terms of the number of companies. However, it increased to 40.6% in 2023, approaching the average of advanced economies (40.7%). The share of borrowings by vulnerable companies also rose to 18.5% in 2023 as companies with relatively large borrowings were recently classified as vulnerable. When classifying vulnerable companies into companies with operating loss and underperforming companies,[45] Korea showed a significantly higher proportion of borrowings by companies with operating loss (13.6%) compared to underperforming ones (4.9%).[46] This indicates that, in the future, expanding operating income through improved business conditions may be more critical for the recovery of vulnerable companies than easing interest payment burdens through lower interest rates(Figure III-1-19).

Figure Ⅲ-1-19. Proportion of vulnerable companies and operating profit/loss status



Notes: 1) Firms with an interest coverage ratio less than 1
2) Proportion of borrowings held by vulnerable companies in the total borrowings of all companies
3) Proportion of borrowings

Source: S&P

Relatively Sound Principal Repayment Capacity Compared to Advanced Economies

The net debt-to-EBITDA ratio (net debt / operating income),[47] which indicates a corporation's capacity to repay the principal, rose to 1.5 in 2023 due to the increase in net debt and

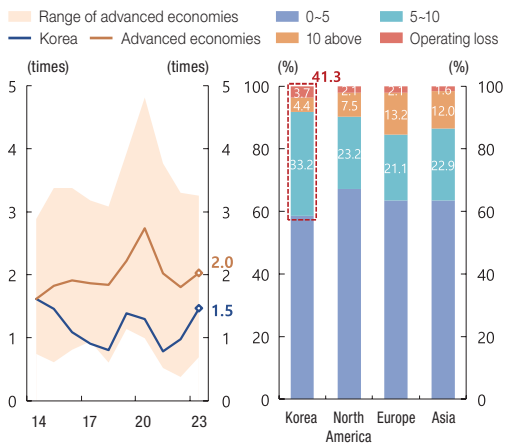
45) Companies with operating loss refer to those with negative operating income, while underperforming companies have positive operating income that is nonetheless insufficient to cover their interest expenses.

46 In terms of the number of companies, the proportion of marginal companies (those with an interest coverage ratio of less than 1 for three consecutive years) in Korea continued to increase, reaching 18.3% at the end of 2023. However, the proportion of borrowings by marginal companies decreased to 4.1% in 2023, similar to the average of advanced economies (3.8%) as some companies with high borrowings in specific industries such as shipbuilding were reclassified as normal companies last year.

47) Net debt is determined by subtracting cash and cash equivalents and short-term financial assets (such as deposits) from total debt, while operating income is based on EBITDA (earnings before interest, taxes, depreciation, and amortization).

the decrease in operating income since 2022,[48] but it still remains lower than the average among advanced economies (2.0). However, the distribution of the net debt-to-EBITDA ratio reveals that the share of net debt held by corporations with a net debt-to-EBITDA ratio exceeding 5[49] (41.3%) is somewhat higher in Korea than the average of advanced economies (34.3%)(Figure III-1-20).

Figure III-1-20. Net debt-to-EBITDA ratio and distribution



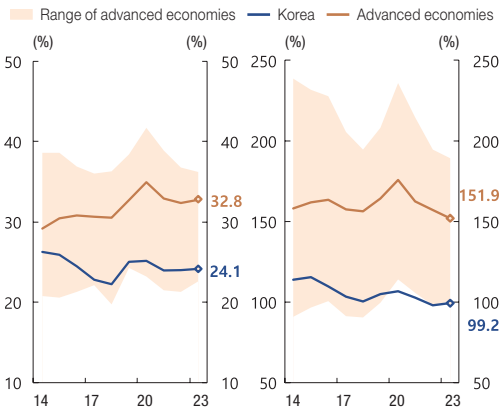
Notes: 1) Net borrowings/EBITDA
2) Proportion of net borrowings held by companies with positive net borrowings in each interval, relative to the net borrowings of those companies

Source: S&P

Sustained Stable Financial Structure

Korean companies' reliance on borrowings (total borrowings / total assets) was 24.1% at the end of 2023, indicating a sound financial structure compared to those of advanced economies.[50] The debt ratio (total debt / total equity) also remained low at 99.2% at the end of 2023,[51] as the increase in borrowings for investment expansion[52] was accompanied by capital accumulation[53] through retained earnings and paid-in capital increases(Figure III-1-21).

Figure III-1-21. Reliance on borrowings and debt ratio



Notes: 1) Total borrowings and bonds payable / Total assets
2) Total debt/Total equity

Source: S&P

48) Of the increase in the net debt-to-EBITDA ratio from 2022 to 2023, 52.5% was attributable to higher net debt and 47.5% to lower operating income (EBITDA).

49) When evaluating companies' debt levels in terms of their capacity to repay the principal, other financial indicators should also be considered alongside the net debt-to-EBITDA ratio. However, the U.S. Federal Reserve, the European Central Bank (ECB), and major international credit rating agencies generally consider a company's debt to be excessive relative to its capacity to repay the principal if its net debt-to-EBITDA ratio exceeds 4 to 6.

50) As of the end of 2023, the proportion of companies in Korea with a reliance on borrowings exceeding 30% was 29.8% (based on the number of companies), which is also lower than the average of advanced economies (36.8%).

51) As of the end of 2023, the proportion of excessively-indebted firms (those with a debt ratio exceeding 200%) in Korea was 11.0% (based on the number of companies), which is lower than the average of advanced economies (16.5%).

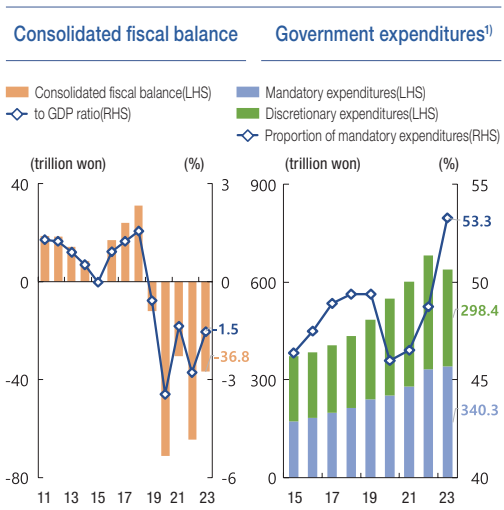
52) Korean companies have had a significantly higher ratio of capital expenditures to cash flow from operating activities (CFO) compared to those of advanced economies. In particular, this ratio has surged since 2022, primarily in the electrical and electronics industry and the petrochemicals industry, reaching 94.7% in 2023 (the average of advanced economies of 43.3%).

53) By the end of 2023, the average capital size of Korean companies (total capital for the year / the number of companies for the year) had increased by 29% compared to the end of 2014, whereas it only increased by 13% in North America, 11% in Europe, and 1% in Asia during the same period.

C. Government Sector

Since the consolidated fiscal balance[54] turned into a deficit in 2019, the deficit has persisted due to the increase in unavoidable government expenditures, such as those for responding to the COVID-19 crisis. In 2023, mandatory spending determined by law, including public pensions and government bond interest, accounted for 53.5%, exceeding discretionary spending (46.7%). Given the expectations of an upward trend in government bond interest as well as statutory spending on welfare in response to population aging and low birth rates,[55] it is crucial to manage the fiscal balance appropriately from a medium- to long-term perspective(Figure III-1-22).[56]

Figure Ⅲ-1-22. Fiscal balance and expenditures

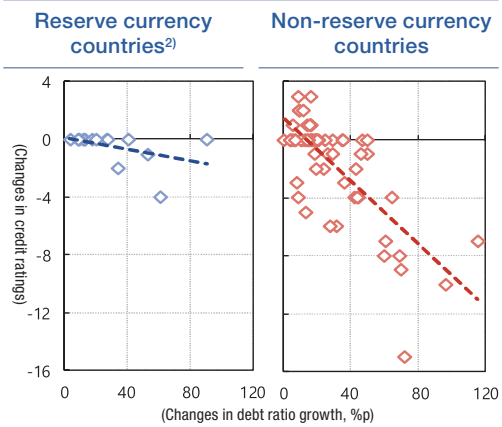


Notes: 1) Original budget basis for 2023

Source: Ministry of Economy and Finance, Korea Fiscal Information Service, Bank of Korea

Meanwhile, non-reserve currency countries with high external dependency need to be vigilant about the risk of capital outflows and instability in the financial and foreign exchange markets that could arise from downgrades in sovereign credit ratings in the event of a rapid increase in national debt. An analysis of changes in credit ratings of countries where the government debt-to-GDP ratio rose for three consecutive years between 1995 and 2023 revealed that non-reserve currency countries experienced larger downgrades compared to reserve currency countries(Figure III-1-23).

Figure Ⅲ-1-23. Relationship between government debt and national credit ratings[1]



Notes: 1) Changes in credit ratings if debt ratio grows 3 consecutive years

2) United States(USD), Canada(CAD), United Kingdom(GBP), Japan(JPY), Switzerland(CHF), Germany and France(EUR)

Source: IMF, Moody's.

54) Consolidated fiscal balance is the comprehensive balance encompassing general accounting, special accounting, and funds for the relevant year, calculated by subtracting total expenditures from total revenues, which exclude internal transactions, borrowings, debt repayments across accounts and funds.

55) The 2023-2027 National Fiscal Management Plan anticipates that the government's mandatory spending will increase at an annual average rate of 5.0% during this period.

56) However, the total expenditure for 2023 was KRW 610.7 trillion (based on final accounts), decreasing by KRW 71.7 trillion compared to the previous year (KRW 682.4 trillion) as the response to the COVID-19 crisis came to an end.

(5) Assessment and Implications

Korea's macro leverage is relatively high in private credit compared to that of advanced economies, with a rapid rise observed until recently, primarily driven by corporate debt. However, since 2023, the growth rate of private credit has significantly slowed,[57] and the repayment capacity of debt-holding households has remained sound, while the overall financial condition of corporations has stayed stable. Therefore, short-term risks to financial stability are not considered to be high. Nevertheless, caution is needed to prevent a resurgence in private credit growth during the transition of global monetary policy.[58] Additionally, given that the macro leverage level remains high, particularly in the private sector,[59] the following measures should be taken for each sector from a medium- to long-term perspective.

First, for the household sector, it is crucial to continue policy efforts to ensure a gradual decline in the household debt-to-GDP ratio.[60] This includes monitoring the effectiveness of the stressed debt service ratio (DSR)[61] introduced in February this year, in conjunction with the real estate market conditions. If necessary, the scope of the DSR application should undergo a reassessment to evaluate its adequacy, with appropriate improvement measures[62] subsequently established to ensure the effectiveness of the policy. Furthermore, it is important to make efforts to expand the availability of amortized and fixed-rate loans, thereby enhancing the quality of household debt.

In the corporate sector, considering macroprudential aspects, it is necessary to channel funds into more productive sectors than the real estate industry, which has previously received excessive credit. First, for real estate PF, it is crucial to continue orderly restructuring, while for marginal companies, appropriate debt adjustment systems should be applied instead of providing excessive financial support, with the aim to avoid the accumulation of leverage in vulnerable sectors. Additionally, to prevent the recurrence of credit supply concentration

57) In its Global Debt Monitor report published in May 2024, the Institute of International Finance (IIF) estimated Korea's macro leverage at 269.0% for the first quarter of 2024 (98.9% for households, 123.0% for corporations, and 47.1% for the government). This is slightly lower than the 271.2% recorded for the fourth quarter of 2023 (before the revision of the GDP base year).

58) It is necessary to proactively respond to the potential accumulation of financial imbalances that may arise during the transition of monetary policy, through the effective implementation of macroprudential policies.

59) It is necessary to note that in the process of deleveraging the overleveraged private sector, government spending may increase to counteract the decline in economic growth, resulting in the transfer of leverage from the private sector to the government sector.

60) The government aimed to manage the annual growth rate of household debt below the economic growth rate (joint statement by relevant ministries on January 4, 2024).

61) As a macroprudential policy tool that imposes a certain level of additional interest rate (stressed interest rate) for DSR calculation, it considers the potential increase in repayment burdens for household loan borrowers due to rising interest rates. It was initially applied to home mortgage loans in the banking sector (on February 26, 2024), with a plan to gradually expand its scope to include the non-banking sector and all loan products.

62) In the event of a significant increase in household debt growth, the government may consider applying the DSR to some of the loans that are currently excluded from the DSR, such as leasehold deposit fund loans, intermediate payment and relocation loans, and policy financing products.

to specific sectors, such as real estate, in the event of changes in financial conditions, it is important to strengthen the management and supervision of exposure concentration risks,[63] particularly among NBFIs.

Given that government leverage has remained low, the associated risks are deemed limited. However, as the last-resort responder to crises, the government needs to maintain fiscal soundness to prevent sovereign risk from spreading to the financial system,[64] while retaining crisis management capacity for emergencies.

References

Park, Chang Hyun, Nam, Seokmo, and Jin, Hyongtae (2021), "Characteristics of Changes in Macro Leverage and Their Macroeconomic Impact," BOK Issue Note, 2021(29)

Adrian, T., Boyarchenko, N. and Giannone, D.(2019), "Vulnerable Growth", American Economic Review, 109(4): pp. 1263-1289

Adrian, T., Grinberg, F., Liang, N., Malik, S. and Yu, J.(2022), "The term structure of growth-at-risk", American Economic Journal: Macroeconomics, 14(3): pp. 283-323

Bassett, W., Daigle, A., Edge, R. and Kara, G.(2015), "Credit-to-GDP Trends and Gaps by Lender- and Credit-type", FEDS Notes

Borio, C.(2012), "The financial cycle and macroeconomics: what have we learnt?", BIS working papers, no.395

Dell'Ariccia, G., Ferreira, C., Jenkinson, N., Laeven, L., Martin, A., Minoiu, C. and Popov, A.(2018), "Managing the Sovereign-Bank Nexus", IMF, no.18/16

Drehmann, M.(2013), "Total credit as an early warning indicator for systemic banking crises", BIS Quarterly Review, June, pp. 41-45

Ivashina, V., Kalemli-Ozcan, S., Laeven, L. and MÜller, K.(2024), "Corporate Debt, Boom-Bust Cycles, and Financial Crises", CEPR Discussion Paper, no.18873

Jorda, O., Kornejew, M., Schularick, M., Taylor, A.(2022), "Zombies at Large? Corporate Debt Overhang and the Macroeconomy", The Review of Financial Studies, 35(10): pp. 4561-4586

Pescatori, A., Sandri, D., and Simon, J.(2014), "Debt and Growth: Is There a Magic Threshold?", IMF Working Paper, no.14/34

Mbaye, S., Badia, M., M. and Chae, K.(2018), "Bailing Out the People? When Private Debt Becomes Public", IMF Working Paper, no.18/141

63) For mutual credit cooperatives, industry-specific lending limits have been introduced, capping loans to the real estate and construction industries at up to 30% of total loans each (with the combined amount limited to up to 50% of total loans).

64) As observed during the 2010 European sovereign debt crisis, excessive government debt can lead to a decline in sovereign credit ratings. This may result in the downgrade of financial institutions, such as banks, that hold significant amounts of government bonds, as well as an increase in interest rates on government-guaranteed debts (sovereign-bank nexus), thereby negatively impacting the financial system.

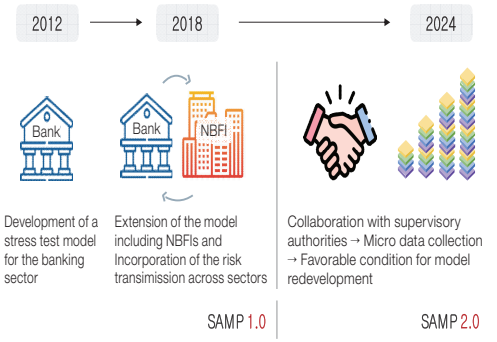
2. Reestablishment of the Microdata-based Stress Test Model and Resilience Reviews for Financial Institutions[65]

(2) Background
(2) Key Features of the Reestablished Stress Test Model
(3) Resilience Reviews for Financial Institutions in the Stress Test
(4) Assessment and Implications

(1) Background

After the initial development of a stress test model for the banking sector under macroeconomic shocks (Systemic risk Assessment model for Macroprudential Policy, or SAMP) in 2012, the Bank of Korea developed[66] an extensive stress test model for banks and nonbank financial institutions in 2018 and has assessed the resilience of financial institutions and the likelihood of systemic risk occurrence. After the second development, the Bank of Korea collected primary data from financial institutions in cooperation with related institutions with the aim of enhancing the accuracy of the model. As a result, the model was newly reestablished (SAMP 2.0) this year to assess the credit risks[67] of financial institutions more accurately based on microdata(Figure III-2-1).[68]

Figure Ⅲ-2-1. Background of Bank of Korea's stress test model reestablishment
(SAMP 1.0 → SAMP 2.0)



Source: Bank of Korea.

This article introduces the highlights of the Bank of Korea's stress test model reestablishment, centered on the credit losses of banks, mutual savings banks, and mutual credit cooperatives, in addition to the model's examination of the resilience of financial institutions against unexpected shocks, noting the growing uncertainties surrounding the Korean economy, such as geopolitical conflicts in the Middle East, a delayed monetary policy pivot by the U.S. Federal Reserve, and the deepening economic slump in China.

65) This article was authored by Noh Yoo-cheol, Oh Sae-yeon, Lee Byung-ho, and Choi Won-yong (Systemic Risk Analysis Team) and was reviewed by Lee Jong-han (director of the Financial System Analysis Division) and Choi Byoung-o (head of the Systemic Risk Analysis Team).

66) For further details, refer to "I. Results of Extensive Stress Test Model Development," Analysis of Financial Stability Issues of Financial Stability Report, December 2018.

67) Credit risk refers to the risk of financial loss as a result of financial institutions' failure to collect contractual cash flows from loan assets or securities due to the debtor's default or the breach of contract by the counterparty.

68) In addition to the utilization of microdata for more accurate assessments of credit risk in each financial sector and institution, the stress-testing model was improved by upgrading the scenario generation model and the non-banking sector model to reflect institutional and regulatory changes in the financial market, such as the introduction of the Korean Insurance Capital Standard (K-ICS) in the insurance industry.

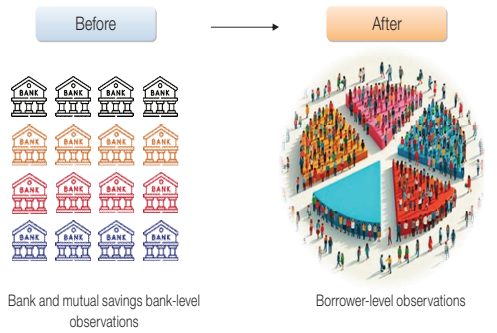
(2) Key Features of the Reestablished Stress Test Model

A. Quantitative and Qualitative Improvement in Primary Data: Aggregate Data at the Institution Level → Detailed Data at the Borrower Level

The stress test model to assess capital adequacy in the financial sector estimates the losses of financial institutions and the subsequent decreases in their capital ratio in the hypothetical event of negative economic shocks on the financial system. The accuracy of the estimation depends on not only the elaborate structure of the model but also the quantitative and qualitative levels of primary data, which is the basis of the model. Given that the sensitivity and transmission paths of shocks are different in each sector of the financial service industry and by the composition of borrowers in each institution, it is necessary to develop a model utilizing primary data containing micro-level information about borrowers.

The previous version of the stress test model was limited in its sophistication and utility because it mainly utilized aggregate data collected at the level of an institution or sector. The reestablished model, however, is based on microdata collected from each institution (at a borrower or a cooperative branch level)[69] to sufficiently reflect the characteristics of each sector and institution and enable more detailed analyses of the paths of shocks that affect the financial conditions of borrowers and change the profits and losses of each financial institution, consequently enhancing the model's accuracy(Figure III-2-2).

Figure Ⅲ-2-2. Transformation of foundational data in the bank and mutual savings bank sectors



Source: Bank of Korea.

B. Estimation of Credit Risks Reflecting Each Financial Institution's Characteristics: Factoring in the Composition of Borrowers, Business Regions, and Industries of Borrowers

Borrower-level data from each financial institution allows the estimation of credit risks in reflection of the institution's characteristics. For example, banks with higher shares of borrowers in financial difficulty tend to see sharper rises in the probabilities of default[70] under macroeconomic shocks, but the previous model estimated the relationship between macroeconomic variables and a bank's average probability of default based on bank-level

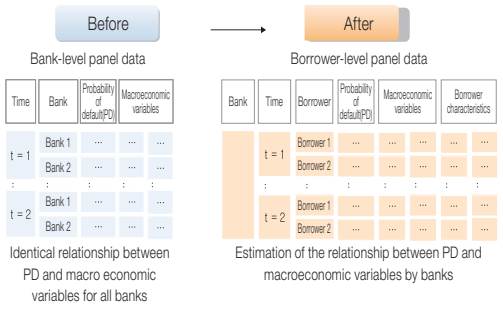
69) The borrower-level loan data was used for the aaralysis for banks (20institutions including internet-only banks) and mutual savings banks (79 institutions). For mutual credit cooperatives (Nonghyup, suhyup, Forestry Cooperatives, Credit Union and MG Communit Credit Cooperatives), Cooperative branch level data was used.

70) In this model, the probability of default refers to the rate of transition from non-defaulted loans(normal and precautionary) in the previous period (t-1) to defaulted loans (loans classified into substandard, doubtful, and estimated loss groups due to delinquent payment of principal and interest over three months) in the current period (t).

panel data and applied the estimated relationship to every bank uniformly. This made it difficult for the previous version of the model to reflect each bank's unique tendencies.

Since the reestablishment, however, borrower-level panel data[71] collected from each bank became available for factoring into the composition of borrowers in estimating the relationship between the probability of default and macroeconomic variables for each bank. This enabled the application of differentiated testing for each bank, raising the probability of default in the event of macroeconomic shocks for banks that have a higher share of loans to vulnerable borrowers(Figure III-2-3).

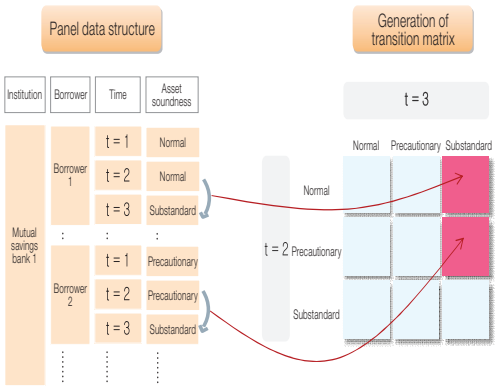
Figure Ⅲ-2-3. Creation of borrower-level panel data for individual banks and Chages in methods for estimating default rates



Source: Bank of Korea.

Meanwhile, in the case of mutual savings banks, data constraints limited the model from utilizing borrower-level information and calculating each mutual savings bank's probability of default. After the reestablishment, the model utilized borrower-level data collected from mutual savings banks to generate panel data tracking the quality of loans (normal, precautionary, and substandard) at the borrower level, and transition matrices,[72] which enabled the calculation of each mutual savings bank's probability of default and the estimation of their relationship with macroeconomic variables(Figure III-2-4).

Figure Ⅲ-2-4 . Generation of borrower-level panel data and transition matices by savings banks



Source: Bank of Korea.

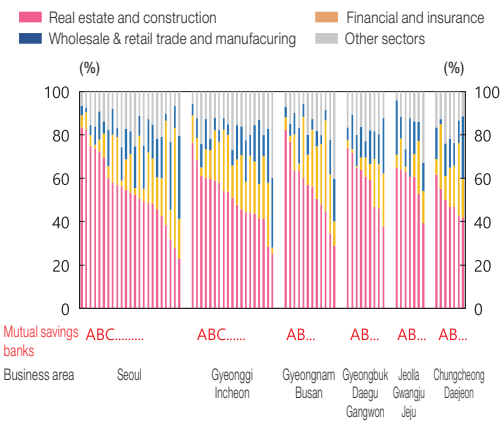
In particular, the fact that mutual savings banks, unlike banks, are prescribed to operate within business regions[73] and the industries of corporate borrowers vary to a great degree for each mutual savings bank was taken into consideration. First, the model reflected regional

71) Borrower-level panel data for each bank was generated on the basis ofindividual account-levelloan data collected from domestic banks.The utilized information was collected from approximately 14 million borrowers across all domestic bank, consisting of 2 to 3 million borrowers in nationwide banks and 200 thousand to 400 thousand borrowers in region-based banks on average as of the end of 2023.

72) Transition matrix refers to a 3×3 matrix that shows the probability of a loan's transition from a certain category of asset quality (normal, precautionary, and substandard) in the current period (t) to a differentcategory in the next period (t+1). As part of the stress test model reestablishment, we newly developed a model to estimate the transition matrices of mutual savings banks to assess the probability of default more accurately. For banks, we have estimated transition matrices for stress testseven before the reestablishment.

differences by estimating the relationship between economic variables in each business region and the probability of default for each mutual savings bank. In addition, given the high variety in the composition of corporate borrowers across different industries even among mutual savings banks in the same business region, mutual savings banks with higher shares of loans to companies in sluggish industries were adjusted to be more susceptible to economic shocks(Figure III-2-5).[74]

Figure Ⅲ-2-5. Composition of industry sectors for corporate loans by mutual savings banks[1]



Notes: 1) Based on industry-specific loan balances at end-2023.
Source: Bank of Korea, Financial institutions' business reports.

C. Segmentation of Stress Test Unit for Mutual Credit Cooperatives: Sector → Cooperative Branch

As for mutual credit cooperatives,[75] the previous version of the model conducted stress testing for mutual credit cooperatives (Nonghyup, Suhyup, Forestry Cooperatives, Credit Union, and MG Community Credit Cooperatives) at a sector level only due to the data constraint at a cooperative branch level.

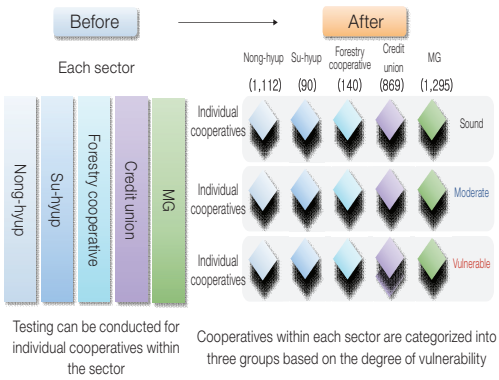
In contrast, the reestablished model utilizes detailed data collected from each cooperative branch, allowing stress tests at a cooperative branch level in every sector. This enabled the identification of cooperative branches where capital adequacy ratios would fall significantly or lower than the supervisory standard under macroeconomic shocks. In addition, cooperative branches were categorized into three groups (sound, moderate, vulnerable) depending on factors such as their degree of vulnerability based on their substandard-or-below loan ratios, as well as results of management status assessment, in order to reflect the phenomenon in which the probability of default rises more sharply for more vulnerable cooperative branches under macroeconomic shocks(Figure III-2-6).

73) In accordance with the Mutual Savings Banks Act, mutual savings banks are prescribed to operate in six business regions(Seoul, Incheon/Gyeonggi, Busan/Gyeongnam, Daegu/Gyeongbuk/Gangwon, Gwangju/Jeonnam/Jeonbuk/Jeju, Daejeon/Chungnam/Chungbuk). The share of loans to individuals and SMEs in each business region shall be 50% or above for mutual savings banks in the Seoul metropolitan area and 40% or above for those in the non-Seoul metropolitan areas.

74) For example, the relationship between the probability of default and housing prices in each mutual savings bank's business region was assessed to reflect regional differences, such as the divide in the housing market betweenthe Seoul metropolitan area and non-Seoul metropolitan areas. In addition, given that the shares of loans to companies in the real estate and construction industries are at high variance, a higher probability of default was applied to mutual savings banks withhigher shares of loans to real estate and construction companies under a scenario wherethe slump in the real estate and construction industriesdeepens. This allowed the model to assess the impact of corporate borrowers' industries on the soundness of mutual savings banks.

75) Mutual credit cooperatives include Nonghyup, Suhyup, ForestryCooperatives, Credit Union, and MG Community Credit Cooperatives.

Figure Ⅲ-2-6 . Segmentation of mutual credit cooperatives for stress testing[1)]



Notes: 1) Figures in parentheses are the number of individual cooperatives at end-2023.

Source: Bank of Korea.

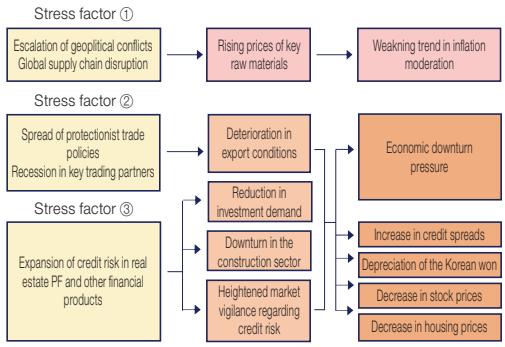
(3) Resilience Reviews for Financial Institutions in the Stress Test

Given the recent potential risk factors surrounding the Korean economy, the reestablished stress test model examined the resilience of financial institutions under a shock situation where risks in the real and financial sectors materialize at the same time.

A. Macroeconomic Scenario Generation Factoring in the Recent Changes in Real and Financial Conditions and Potential Risks[76)]

First, the following stress situation was assumed. On the international front, the escalating geopolitical conflicts and global supply chain disruptions add upward pressure on commodity prices, and the spread of trade protectionism and economic slowdowns in major trading partner countries deteriorate the export environment. On the domestic front, unexpected credit risks stemming from real estate PF heighten market vigilance across the entire financial market. As such, the generated scenario assumed the simultaneous realization of all such risks, leading to delayed financial easing, downward pressure on the economy, wider credit spread, and asset price declines(Figure III-2-7).

Figure Ⅲ-2-7 . Stress factors and patterns of their development



Source: Bank of Korea.

This scenario spans from 2024 to 2025, and each variable's intensity and path reflected its trajectories in the major crises in the past and the recent economic environment. To reflect the interdependency among multiple variables under concurrent shocks in a more detailed way, the quantile VAR[77)] model was utilized to

76) It should be noted that the future paths of major macroeconomic variables in the scenario are not the forecast by the Bank of Korea but the paths under a very exceptional and extreme situation that was assumed toexamine the resilience of financial institutions.

77) The quantile VAR model estimates a vector autoregressive (VAR) model usingthe quantile regression method. The model is suitable for analyzing situations where multiple variables are hit by shocks at the same time, as it generates scenarios by assuming the quantiles of multiple variables. This model is used by researchers at the European Central Bank (ECB) and other institutions for scenario generation, and can also reflect the phenomenon in which the relationships among variables vary according to quantile (Chavleishvili and Manganelli, 2024).

create the following?scenario(Table III-2-1).

Table Ⅲ-2-1. Scenarios for key macroeconomic variables

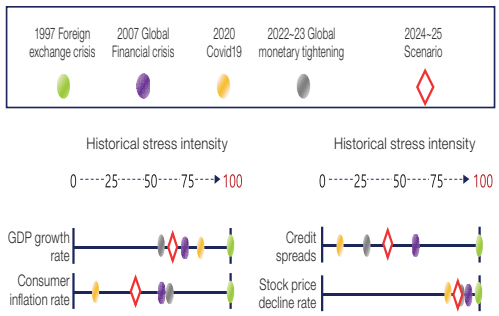
(%, bp)

	Second half of 2024	2025	
		First half	Second half
GDP growth rate[1)]	0.3	0.1	1.5
Inflation[2)]	3.5	3.0	2.5
Credit spreads[3)4)]	165	130	89
Stock price(KOSPI)[4)]	2,142	2,255	2,368

Notes: 1) Year-on-year(YoY) basis.
2) Average YoY(quartely) growth rate of CPI.
3) Corporate bonds(3-year, AA-) yield - Treasury bond(3-year) yield.
4) Average over period.

For each variable in the scenario, the intensity of stress was assessed on a scale of 0 to 100, where the impacts of economic shocks were standardized from the most favorable level (0) to the most deteriorated level (100) in the history from 1991 to 2023. As a result, the shocks against GDP growth and consumer price inflation were assessed to be the mid-level in the historical context (50), indicating that the intensity of the shock in the real sector was lower than those of the global financial crisis and the 1997 foreign exchange crisis, whereas the intensity of shock against asset markets, such as stock markets, was assessed to be very strong in the historical context (80-90), similar to or worse than the shock of the global financial crisis(Figure III-2-8).

Figure Ⅲ-2-8 . Historical levels of scenario intensity[1)]



Note: 1) Standardize each macroeconomic variable to a scale where 100 represents the worst historical level(1991~2023), and 0 represents the best level.
Source: Bank of Korea.

B. Analysis of the Shock Intensity on Vulnerable Institutions in Each Financial Sector and Subsequent Findings

Even under the same macroeconomic shock, the experienced shock intensity may not be the same for financial institutions with higher shares of loans to borrowers with sufficient debt repayment capacity and those with higher shares of loans to borrowers with insufficient debt repayment capacity. To reflect this, institutions with higher shares of loans to vulnerable borrowers or poor asset quality were made to experience greater credit loss in the event of the shocks.

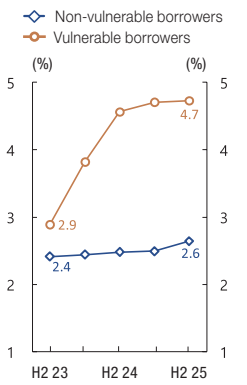
With regard to banks, borrowers were divided into vulnerable[78)] and non-vulnerable borrowers depending on their income and credit score. Under the same macroeconomic scenario, the increase in the probability of default of vulnerable borrowers exceeds that of

78 For household loans, vulnerable borrowers were defined as borrowers with multiple loans (loans from three or more financial institutions) with low income (bottom 30%) or low credit(credit scores of 664 or below). For corporate loans, vulnerable borrowers were defined as those who were categorized as low-credit borrowers by each bank in consideration of the supervisory authority's credit rating system.

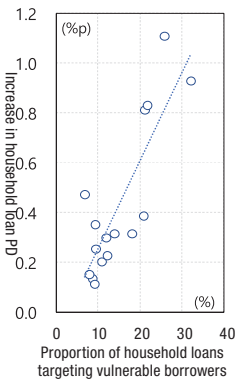
non-vulnerable borrowers, leading to greater credit loss. In the case of domestic banks, the average probability of default by vulnerable household borrowers was estimated to increase by 1.8%p from 2.9% at the end of 2023 to 4.7% at the end of 2025, whereas that of non-vulnerable borrowers rose by 0.2%p from 2.4% to 2.6% during the same period. Consequently, banks with bigger shares of loans to vulnerable borrowers showed sharper increases in the probability of default in the event of macroeconomic shocks(Figure III-2-9).

Figure Ⅲ-2-9. Changes in probability of default (PD) of household loans in banks under stress scenario

Average PD changes between vulnerable and non-vulnerable borrowers[1)2)]



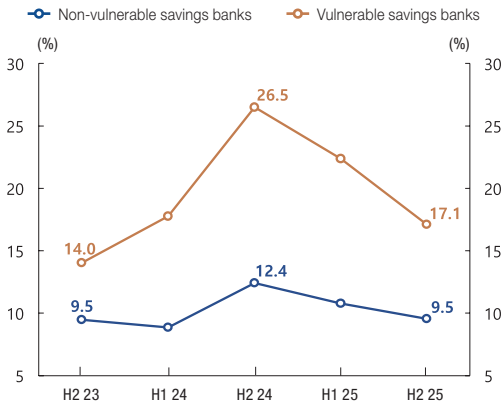
Relationship between vulnerable borrowers' share of household loans by bank and magnitude of PD increases



Notes: 1) Based on end of period.
2) Average PD of each institution.
Source: Bank of Korea.

With regard to mutual savings banks, institutions were categorized as vulnerable and non-vulnerable[79)] based on each institution's share of loans to vulnerable borrowers as a percentage of total loans. Similar to banks, mutual savings banks with higher shares of loans to vulnerable borrowers showed comparatively sharper rises of substandard-or-below loan ratios under macroeconomic shocks. For example, in the case of corporate loans, the average substandard-or-below loan ratio of vulnerable mutual savings banks were estimated to increase from 14.0% at the end of 2023 to the highest of 26.5% (2024-2025), while non-vulnerable mutual savings banks saw only a slight increase from 9.5% to 12.4%(Figure III-2-10).

Figure Ⅲ-2-10. Change in corporate non-performing loan(NPL) ratios of vulnerable and non-vulnerable savings banks under stress scenario[1)2)]



Notes: 1) Based on end of period.
2) Average NPL of each institution.
Source: Bank of Korea, Financial institutions' business reports.

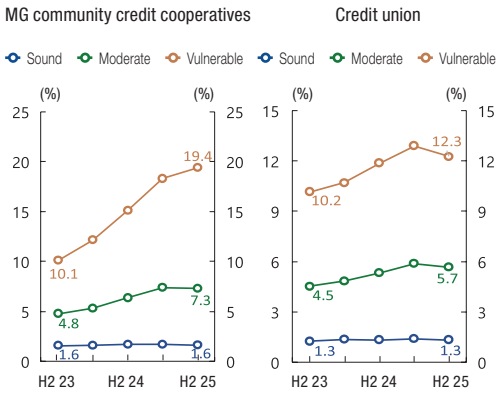
With regard to mutual credit cooperatives, cooperative branches of each sector (Non-

79) Due to the data constraint, mutual savings banks were categorized as vulnerable and non-vulnerable at the institution level, whereas borrower-level data was utilized for banks. In the household loan sector, vulnerable mutual savings banks were defined asmutual savings banks whose average shares of loans to low-credit borrowers(credit scores in the bottom 20% range) out of total unsecured loans to individual borrowers are 61.4% or above (top 25%) from the first quarter of 2021 to the second quarter of 2023 or whose ratios of substandard-or-below loans in the household and other sectors are 20% or above as of the fourth quarter of 2023. In the corporate loan sector, vulnerable mutual savings banks were defined as mutual savings banks whose share of PF loans with high default risk are 9% or above (top 25%) as of the third quarter of 2023, noting growing concerns over defaults on PF loans.

ghyup, Suhyup, Forestry Cooperatives, Credit Union and MG Community Credit Cooperatives) were categorized into three groups (sound, moderate, vulnerable) depending on their substandard-or-below loan ratios at the end of 2023[80] to assess changes in substandard-or-below loan ratio for each group in the event of macroeconomic shocks. As a result, branches in the vulnerable group saw higher rises of substandard-or-below loan ratios in the event of macroeconomic shocks, in every sector, when compared with branches in the other groups.

For example, the average substandard-or-below loan ratio of MG Community Credit Cooperatives branches in the vulnerable group rose from 10.1% at the end of 2023 to maximum 19.4% (during 2024-2025), while the same ratio saw a slight increase from 4.8% to 7.3% in the moderate group and remained around 1.6% in the sound group during the same period. In the case of Credit Union, the substandard-or-below loan ratio of branches in the vulnerable group rose from 10.2% to 12.3% during the same period while the ratio rose from 4.5% to 5.7% in the moderate group and remained around 1.3% for those in the sound group(Figure III-2-11).

Figure Ⅲ-2-11. Change in non-performing loan(NPL) ratios of vulnerable and non-vulnerable MG community credit cooperatives and Credit union under stress scenario[1)2)]



Notes: 1) Based on end of period.
2) Average NPL of each institution.
Source: Bank of Korea, Financial institutions' business reports.

C. Resilience Review of Financial Institutions in Each Financial Sector[81] and Subsequent Findings

The result of the stress test[82] showed the solid resilience of the domestic financial system even in the hypothetical event of delayed monetary easing and shocks on the real and asset markets. However, the decline in capital ratios varied by sector, and financial institutions with higher shares of PF loans or loans

80) In reference to the management status assessment standards of mutual credit cooperatives' federations, branches withsubstandard-or-below loan ratiobelow 3% were categorized as "sound," those from 3% to 7% as "moderate," and those over 7% as "vulnerable" as of the end of 2023. However, in the case of MG Community Credit Cooperatives,branches that had previously been ranked the 4th tier (weak) or 5th tier (risky) in the pastmanagement status assessments by the Korean Federation of Community Credit Cooperatives were categorized into the vulnerable group, even if their substandard-or-below loan ratios were 7% or below.

81) In the case of insurance companies, securities companies, and card corporations, the average capital ratios remained significantly higher than the supervisory standard in all sectors under a macroeconomic shock as mentioned above. As such, the following sections focused on the stress test result of banks, mutual savings banks, and mutual credit cooperatives, along with brief explanations on the test result of insurance companies, securities companies, and card corporations if necessary.

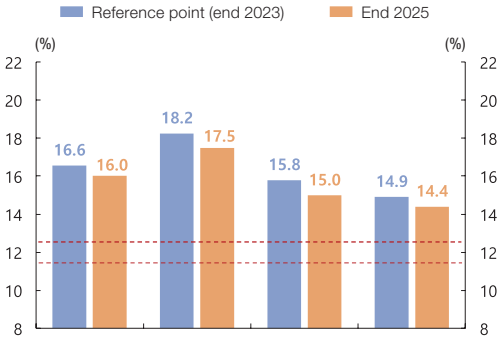
82) In addition to the changes in credit losses due to the changes in the probability of default (substandard-or-below loan ratio), we also assessedother changes in profits and losses including market losses and interest earningsunder the aforementioned scenario. Furthermore, the ripple effects (contagion of losses) through the transition paths of credit and liquidity risks across institutions and sectors were reflected to calculate the decrease in capital ratio in each financial institution under stress situations.

to vulnerable borrowers saw greater declines in their capital ratios.

i. Banks

The total capital ratio of domestic banks on average dropped by 0.6%p from 16.6% at the end of 2023to 16.0% at the end of 2025. By type of bank, the total capital ratios of nationwide banks, region-based banks, and specialized banks declined less than 1%p and remained considerably higher than the supervisory standard (11.5-12.5%), indicating solid resilience in the banking sector(Figure III-2-12).

Figure Ⅲ-2-12. Change in capital ratios of banks[1)2)] under stress scenario

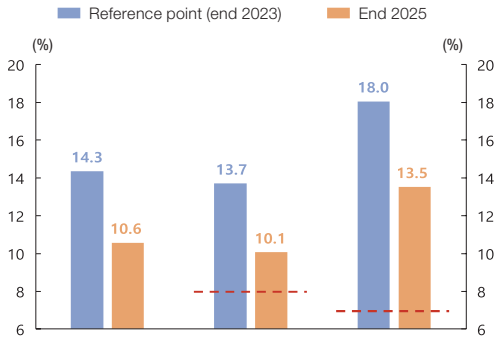


Notes: 1) BIS total capital ratio.
2) Supervisory standard capital ratio : 11.5% (12.5% for D-SIBs)
Source: Bank of Korea, Financial institutions' business reports.

ii. Mutual Savings Banks

Although the average capital adequacy ratio of mutual savings banks fell significantly compared with banks, from 14.3% at the end of 2023 to 10.6% at the end of 2025, it still remained higher than the supervisory standard (8% for large mutual savings banks with assets worth KRW 1 trillion or more and 7% for small and medium-sized mutual savings banks with assets worth less than KRW 1 trillion). The capital ratios of large mutual savings banks and small and medium-sized mutual savings banks fell from 13.7% and 18.0% to 10.1% and 13.5% respectively. Particularly, mutual savings banks with higher shares of PF loans saw a bigger decrease in their capital ratios(Figure III-2-13).

Figure Ⅲ-2-13. Change in capital ratios of savings banks[1)2)] under stress scenario



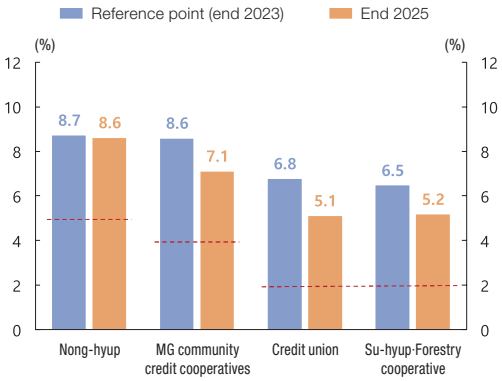
Notes: 1) BIS capital ratio.
2) Supervisory standard capital ratio : 8% for large-sized and 7% for small and medium-sized
Source: Bank of Korea, Financial institutions' business reports.

iii. Mutual Credit Cooperatives

The net capital ratio of each sector in the mutual credit cooperatives remained considerably higher than the supervisory standard even under macroeconomic shocks, indicating solid resilience to be maintained in general. Particularly, the net capital ratio of Nonghyup remained almost unchanged, showing a slight decrease from 8.7% at the end of 2023 to 8.6% at the end of 2025. In contrast, the average net capital ratios of MG Community Credit Cooperatives, Credit Union, Suhyup and Forestry Cooperatives fell by more than 1%p, from 8.6%, 6.8%, and 6.5%, respectively, at the end of 2023 to 7.1%, 5.1%, and 5.2% at the end of

2025(Figure III-2-14).

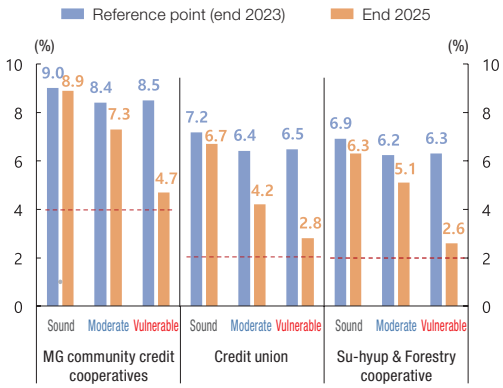
Figure Ⅲ-2-14. Change in capital ratios of mutual credit cooperatives under stress scenario[1)2)]



Notes: 1) Net capital ratio.
2) Supervisory standard capital ratio : 5% for Nong-hyup, 4% for MG, 2% for Credit union·Su-hyup·Forestry cooperative
Source: Bank of Korea, Financial institutions' business reports.

Meanwhile, the detailed analysis of the stress test results of MG Community Credit Cooperatives, Credit Union, Suhyup, and Forestry Cooperatives by group (sound, moderate, vulnerable) shows that the average net capital ratio of MG Community Credit Cooperatives branches in the sound group remained almost unchanged, showing a slight decrease from 9.0% at the end of 2023 to 8.9% at the end of 2025, and the moderate group saw an approximately 1%p decline from 8.4% to 7.3%. In contrast, the vulnerable group saw a significant decrease from 8.5% to 4.7%. In the case of Credit Union, Suhyup, and Forestry Cooperatives, the net capital ratio of branches in the sound or moderate groups remained stable when compared with the supervisory standard, but the average net capital ratio of branches in the vulnerable group fell rather close to the supervisory standard (2%), indicating a risk of significantly undermined resilience in the event of unexpected shocks, mainly in some vulnerable branches, similar to the case of MG Community Credit Cooperatives(Figure III-2-15).

Figure Ⅲ-2-15. Change in capital ratios of mutual credit cooperatives under stress scenario[1)]

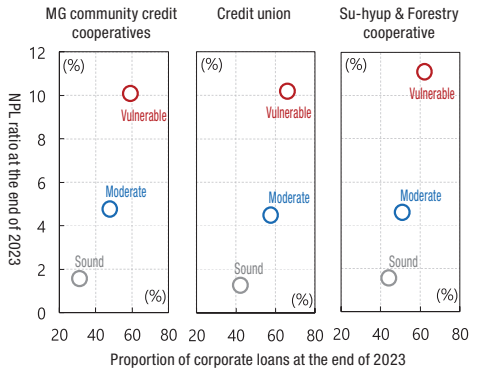


Notes: 1) Net capital ratio.
2) Supervisory standard capital ratio : 5% for Nong-hyup, 4% for MG, 2% for Credit union·Su-hyup·Forestry cooperative
Source: Bank of Korea, Financial institutions' business reports.

The analysis of the characteristics of branches in the vulnerable group also showed that the recent deterioration of asset quality was mainly observed in branches with comparatively higher shares of corporate loans.[83)] For example, corporate loans accounted for more than half of the total loans of the branches in the weak group, which consequently raised the substandard-or-below loan ratio of each branch. This indicates a high likelihood of undermined resilience in branches whose portfolios have an uneven concentration of corporate loans(Figure III-2-16).

83) The delinquency rate of household loans in mutual credit cooperatives rose by 0.5%p from 1.0% at the end of 2022 to 1.5% at the end of 2023, whilethe delinquency rate of corporate loans rose by 2.0%p from 3.3% to 5.3% during the same period.

Figure Ⅲ-2-16. Relationship between corporate loan proportions and NPL ratio within groups in mutual credit cooperatives[1)]



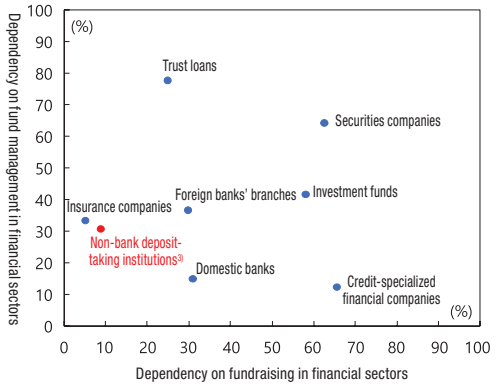
Notes: 1) Proportion of corporate loans to total loan balances and NPL ratio at the end of 2023.
Source: Bank of Korea, Financial institutions' business reports.

D. Impact Assessment for the Overall Financial System and Subsequent Findings

Even in the event of defaults in some mutual savings bank and mutual credit cooperative branches whose capital ratios fall more sharply under macroeconomic shocks, their impacts on the overall financial system would not be catastrophic, considering the interconnected structure of the financial system and the sizes of those institutions.

Mutual savings banks and mutual credit cooperatives, which are non-bank deposit-taking institutions that raise most of their funds from depositors, depend on other financial sectors for less than 10% of their funding. Such non-bank deposit-taking institutions show less interconnectedness in the financial system, compared with banks, securities companies, and insurance companies, indicating that their influence through inter-sector transactions is limited(Figure III-2-17).[84)]

Figure Ⅲ-2-17. Dependency on fundraising and fund management in other financial sectors[1)2)]

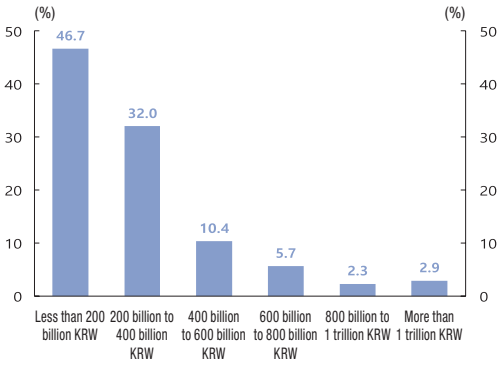


Notes: 1) Calculating the proportion of fundraising (or fund management) from other financial sectors relative to total fundraising (or fund management).
2) End of 2023 basis.
3) Mutual credit cooperatives, savings banks, etc.
Source: Bank of Korea.

In addition, examining the weak group in mutual credit cooperatives, whose net capital ratios fall significantly under macroeconomic shocks, revealed that, as of the end of 2023, branches with assets worth less than KRW 200 billion accounted for 46.7% and branches with assets worth from KRW 200 billion to KRW 400 billion accounted for 32.0%. This indicates that most of these cooperative branches are comparatively small in size, indicating a low likelihood of systemic risk contagion due to defaults by some vulnerable branches(Figure III-2-18).

84) For further detailson theinterconnectedness of financial sectors in recent days, refer to "I. Financial Stability Situation by Sector, 3. Financial Institutions, (3) Interconnectedness."

Figure Ⅲ-2-18. Distribution of assets by scale in vulnerable mutual credit cooperatives[1)]



Notes: 1) End of 2023 basis.

Source: Bank of Korea, Financial institutions' business reports.

(4) Assessment and Implications

As discussed above, this article examined the resilience of financial institutions, centered on banks, mutual savings banks, and mutual credit cooperatives, using the stress test model that thoroughly reflects the characteristics of each financial institution and sector, and enables a wider range of analysis. Under the stress test, it was assumed that potential risks in the real and financial sectors would materialize simultaneously at home and abroad, and institutions deemed more vulnerable to shocks, based on their borrower and asset compositions, were made to experience greater deterioration in their asset quality under macroeconomic shocks.

The stress test results indicated that the capital adequacy ratio of financial institutions generally remained higher than the supervisory standard even under macroeconomic shocks, although concerns were raised over significantly undermined resilience, mainly in some mutual savings banks and mutual credit cooperatives. However, considering the share of mutual savings banks and mutual credit cooperatives in the financial system, their defaults are not likely to escalate into systemic risks.

Meanwhile, there is a need for a more sophisticated approach to improve the loss absorption capacities of financial institutions, given the different levels of vulnerability among institutions, such as financial institutions with higher shares of loans to vulnerable borrowers showing bigger decreases in their capital ratios.[85)] Considering that institutions with a higher share of PF loans may experience significantly undermined resilience in the event of macroeconomic shocks, it is crucial to effectively implement the financial authorities' measures for the soft landing of real estate PF to preemptively remove concerns over defaults. At the same time, it is also necessary to guide such financial institutions to lower their vulnerability against shocks by curbing external growth driven by excessive risk taking for higher returns, such as the rapid expansion of corporate loans, and to remain faithful to their role in financial inclusion, such as relationship banking.

85) In this regard, the financial authorities are seeking to introduce measures such as a stress capital buffer with a primary focus on the banking sector. This would contribute to enhancing the resilience of financial institutions, mainly vulnerable ones, given that the required amount of additional capital is determined by the decrease of Common Equity Tier 1 capitalratioobserved in the stress test results.

Going forward, the Bank of Korea will constantly monitor the resilience of each financial institution and the overall financial system by actively using the reestablished stress test model. In addition to continuously conducting joint stress tests with domestic and international institutions, such as the Financial Supervisory Service, the Bank of Korea will analyze various paths of risks to identify potential risk factors in the financial sector at an early stage and seek policy responses in cooperation with related institutions.

References

Adrian et al. (2020), "Stress Testing at the IMF", IMF Department paper series, 20/04

Bank of Korea (2018), "Results of Extensive Stress Test Model Development," Financial Stability Report (December 2018), pp. 83-89

BCBS (2015), Guidance on Credit Risk and Accounting for Expected Credit Losses, Basel Committee on Banking Supervision

Belkin, B., S. Suchower, and L.R. Forest (1998), "A One-Parameter Representation of Credit Risk and Transition Matrices," CreditMetrics Monitor, Third Quarter 1998

Bhuttaet al.(2020), "Stress Testing Household Debt", Journal of Credit Risk 16:3, pp.1-34

Chavleishvili and Manganelli(2024), "Forecasting and Stress Testing with Quantile Vector Autoregression", Journal of Applied Econometrics 39:1, pp. 66-85

Gross et al.(2020), "Expected Credit Loss Modeling from a Top-Down Stress Testing Perspectivie", IMF Working Paper 20/111, International Monetary Fund

Lee KyooBok and Lee Soo Jin (2017), "Determinants of Korean Savings Banks' Loan Portfolios after Recent Restructuring," KIF Research Paper, 2017-15

Malik and Thomas(2012), "Transition Matrix Models of Consumer Credit Ratings", International Journal of Forecasting 28, pp. 261-272

Nickell et al.(2000), "Stability of rating transitions", Journal of Banking & Finance, 24, pp. 203-227

Wen et al. (2019), "Risk spillovers between oil and stock markets: A VAR for VaR analysis", Energy Economics, 80, pp. 524-535

White et al. (2015), "VAR for VaR: Measuring tail dependence using multivariate regression quantiles", Journal of Econometrics, 187, pp. 169-188

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(2) Corporate Credit		You, Jae Weon · An, Jun Young
(3) Credit Leverage		Park, Ji Soo · Yoo, Seung Won
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(2) Stock Markets		Ahn, Jae Won · Son, Dal Ho
(3) Real Estate Markets	Financial Stability Dep.	Kwon, Yoon Jeong · Shin, Jung Hoo
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(2) Non-Bank Financial Institutions		Kang, Jung Mi · Song, Su Hyuk · Bang, Nu Ri Ko, Hye Young · Kang, Jae Hoon · Park, Su Yeon ·Park, Gi lan
(3) Interconnectedness		Kim, Min Su · Kim, Dong Nyeok
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(2) Non-Bank Financial Institutions	Financial Stability Dep.	Kang, Jung Mi · Song, Su Hyuk · Bang, Nu Ri Ko, Hye Young · Kang, Jae Hoon · Park, Su Yeon · Park, Gi lan
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