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Financial Stability Report

2023. 12

BANK OF KOREA

Bank of Korea Mid- and Long-term Strategic Plan (BOK 2030)

• **Vision**	**Bank of Korea** **: Taking the lead in stabilizing and developing the national economy**	
• **Strategic Directions**	**A**gility	Pursue Innovation in a Flexible and Swift Manner
	Collaboration	Bolster Synergy Through Collaboration
	Expertise	Reinforce Policy and Research Capability

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2023. 12

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.

December 2023

Rhee, Chang Yong
Governor
Bank of Korea

Chairman Rhee, Chang Yong
Member Cho, Yoon Je
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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 November 2023 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.

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Report booklet users	Capture the QR code below with your smartphone.

Executive Summary

Financial Stability Situation and Risk Assessment

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, despite a slight expansion in credit leverage during the second half of the year.[1] Interest rates saw a significant increase in October due to anticipations of prolonged monetary tightening by the U.S. Federal Reserve, then began to fall in November as expectations grew for an end to the tightening policy, which thereby increased volatility in the financial markets, with stock prices initially dropping then rebouding, indicating a diminishing impact of monetary tightening. Within the financial sector, deposits garnered at high interest rates in the fourth quarter of the previous year began to approach maturity and are subsequently being smoothly redeposited without large-scale funds outflows.

However, it is assessed that higher interest rates have increased the debt repayment burdens on borrowers, subsequently elevating credit risks. In addition, the slowdown in private credit expansion during the second half of the year was somewhat slower than expected, which continues to raise concerns about deepening financial imbalances. In particular, the rate of household credit growth has not moderated as anticipated, posing a risk of exacerbating potential vulnerabilities within the financial system from a medium- to long-term perspective[2] and constraining household consumption capacity.

Financial Stability Situation by Sector

In the credit market, private credit leverage hovered at a high level. The corporate credit-to-GDP ratio continued to rise, while the household credit-to-GDP ratio declined at a slower pace than initially anticipated. This situation poses risks, as the escalated interest rates could significantly impair the repayment capacities of both households and corporations in the absence of a robust economic recovery. In addition, persistent high household debt levels could exacerbate repayment burdens of households, curtail consumption, and thereby slow economic growth. Given that corporate loans have increased significantly since the COVID-19 pandemic in specific sectors such as real estate, construction, and wholesale & retail trade, the continuation of sluggishness in the real estate sector and a delay in the recovery of consumption could increase the debt repayment burden for businesses in the aforementioned sectors, thereby raising the credit risks associated with related corporate loans.

In the asset markets, volatility in both bond and stock prices increased through shifting

1) The Financial Stress Index (FSI), which comprehensively indicates the short-term instability of the financial system, rose slightly from May (17.8) to 19.3 (warning stage) in November 2023, but it is below the level of 24.3 during the short-term financial market turmoil in the fourth quarter of 2022.

2) The Financial Vulnerability Index (FVI), a metric for assessing vulnerabilities in the financial system from a medium- to long-term perspective, declined from 46.3 in the first quarter of 2023 to 41.5 in the third quarter, close to its long-term average of 38.1. However, the margin of this decline appears to have contracted slightly.

expectations for the monetary policy stances of major economies and geopolitical risks. In the third quarter, housing prices saw rapid rebounds in some regions, yet, entering the fourth quarter, the momentum of these increases moderated, influenced by rising lending rates and the government's tightening of household debt management policies. The real estate market is anticipated to continue experiencing significant volatility, driven by shifts in market participants' expectations, including housing price forecasts and purchase sentiment.

As for financial institutions, asset growth slowed and asset soundness deteriorated. In the case of non-bank financial institutions (NBFIs), in particular, asset growth decelerated, amid the continued impact of the implementation of the new accounting standard for insurance companies (IFRS17), as well as narrowing lending growth at mutual credit cooperatives and mutual savings banks. Asset soundness across all financial sectors has worsened and elevated interest rates could increase the debt repayment burden of borrowers with some time lag and place a growing burden on financial institutions in terms of managing their credit risks if the recovery in domestic demand is delayed. In particular, financial institutions without an adequate loss-absorbing capacity must be mindful of not only credit risks but also the potential increase in liquidity risk stemming from funds outflows.

Foreigners' domestic portfolio investment showed high volatility due to changing expectations toward monetary policy stances in major countries and the outlook for business conditions. Both stock and bond markets experienced net outflows of foreign investment during certain periods in the second half of the year. Foreign capital flow volatility could expand in the future depending on the operation of monetary policy in major economies and developments in geopolitical conflicts.

Resilience of Financial System

The financial system's resilience, which refers to its capacity to withstand domestic and external shocks, has remained stable, with capital adequacy ratios and liquidity ratios exceeding the regulatory standards. However, the provision coverage ratio is declining as substandard-or-below loans have increased across all financial sectors.

Korea's external payment capacity remained solid overall. The decline in net external assets has slowed and external soundness indicators, such as the ratio of short-term external debt to foreign exchange reserves and the share of short-term external debt in total external debt, have improved significantly as short-term external debt has fallen drastically.

Meanwhile, payment and settlement systems operated smoothly without significant risks. While the settlement amount on major payment and settlement systems, such as BOK-Wire+, continues to increase, driven mainly by securities settlements by financial institutions and electronic funds transfers by individuals and companies, settlement risks have also been managed stably.

Major Financial Stability Risk Assessment

As discussed above, Korea's financial system remained largely stable. This can be attributed to several key factors: Firstly, despite an increase in household debt, the implementation of loan-to-value (LTV) ratio and debt service ratio (DSR) regulations has ensured the sound management of debt quality in terms of collateral values and the credit and income composition of borrowers. Secondly, the adoption of stringent global financial regulations following the Global Financial Crisis has notably bolstered the crisis response capabilities of financial institutions, particularly within the banking sector. In addition, Korea's favorable macroeconomic performance relative to other major countries, as highlighted by external assessment,[3] significantly contributed to the stability in the financial market and the overall financial system, alongside proactive and timely interventions by the government and Bank of Korea to address destabilizing factors such as volatility in the real estate project financing (PF) market and the deposit withdrawals from the MG Community Credit Cooperatives.

However, there are several major risk factors that could undermine financial stability, such as the possibility of a change in the monetary tightening stance, a weakened recovery in domestic demand, and uncertainty regarding the outlook for the real estate market. This report focuses on examining key issues in light of the current status of financial stability and the risk factors in Korea.

First, the background to the surge in corporate debt since the COVID-19 pandemic and the response capabilities of coping with heightened debt level by both enterprises and financial institutions were examined.[4] The results show that despite the quantitative expansion, the overall financial soundness of companies appeared to be robust compared to past financial crises, such as the Asian Financial Crisis and the Global Financial Crisis. As such, qualitative risks appear to be at a level that is manageable by Korea's financial system, as the delinquency rate on corporate loans is significantly below levels seen during the previous crisis. However, amid increased interest rate pressures, the significant weakening of interest repayment capacity among some recently underperforming companies may potentially contribute to the deterioration of asset soundness among financial institutions in the future. In addition, as the proportion of short-term financing for corporate credit has increased, it is necessary to note that if the high interest rates persist longer than market expectations, some companies may face heightened roll-over risks. Furthermore, the efficiency of resource allocation in the financial system is assessed to have deteriorated due to the excessive supply of loans in some

3) The Economist analyzed the economic performance of major countries from the fourth quarter of 2022 to the third quarter of 2023, and ranked Korea second, citing the preemptive interest rate hikes in Korea as the major factor for this performance. The analysis was based on five economic and financial indicators (core CPI, changes in the proportion of consumer products whose prices have risen by more than 2%, GDP growth rate, unemployment rate, and equity prices). ("Which economy did best in 2023?", Finance and economics, The Economist, December 17, 2023).

4) For a detailed discussion of this issue, refer to "I. Analysis of Risks associated with the Recent Expansion of Corporate Credit in Korea and its Policy Implications" Analysis of Financial Stability Issues

sectors, such as the real estate industry.

Meanwhile, an analysis of key risks related to the funding and management of funds by deposit-taking institutions during the recent period of rising interest rates produced the following findings.[5)] With respect to funding, there was an expansion of deposits flowing into non-bank deposit-taking institutions, intensifying competition between banks and non-bank deposit-taking institutions in the deposit market, which resulted in shorter maturity for deposits. Such excessive competition in deposit-taking not only diminishes profitability, but also could undermine the stability of financial institutions with relatively low competitiveness. Regarding fund management, there was an expansion of loans sensitive to conditions in the real estate market, such as real estate mortgages and loans to companies in the construction and real estate industries, especially among non-bank deposit-taking institutions. Accordingly, in the event that higher interest rates persist for longer than market expectations and the modest recovery in the real estate market reverts to a contraction again, there is a risk of rapid deterioration in the soundness of non-bank deposit-taking institutions with a high proportion of real estate-related loans.

Policy Recommendations

First, in order to promote stability in the financial system over the medium- to long-term, efforts should be made to gradually lower and stabilize the ratio of private credit to GDP. Regarding household credit, it is necessary to smoothly implement the “Measures for Household Debt Management” that were previously announced by the government, implementing measures such as the expansion of the scope of DSR and the introduction of a stress DSR for floating rate loans. In addition, it is necessary to comply with the principle of extending loans based on debt repayment capacity by reducing household loans not subject to DSR regulations.

In the case of corporate credit, it is necessary to induce a gradual decrease in the proportion of real estate-related exposure, while avoiding triggering a sharp correction in the real estate market. Furthermore, in order to ensure a soft landing for vulnerable corporations, the viability of individual companies should be assessed and measures for debt restructuring and additional financial support should be implemented on a selective basis.

Next, considering the high level of uncertainty in the real estate market, it is necessary to continue policy efforts to prevent related financial unrest. In particular, regarding real estate PF with noticeable vulnerabilities, it is important to alleviate concerns about the real estate PF market by supporting lenders to quickly decide whether to continue or restructure their projects through voluntary agreements among lenders. Meanwhile, it is also necessary to guide the orderly resolution of insolvent PF entities through market mechanisms.

Financial institutions will need to maintain their asset soundness at a healthy level through proactive write-offs and sales of

5) For further details, refer to “II. Key Risk Assessment of Banks and Non-bank Deposit-taking Institutions” Analysis of Financial Stability Issues.

non-performing loans. In particular, they should elevate their loss-absorbing capacity by accumulating additional loan loss provisions and raising capital in anticipation of the expansion of credit risks in loan assets. NBFIs will also need to increase their loss-absorbing capacity by filling in somewhat less stringent regulatory gaps compared to banks, such as provisioning. Securities companies and credit-specialized financial companies with a high dependence on financial market funding are required to strengthen their liquidity management with regard to factors such as roll-over risks of commercial paper (CP), in response to a possible deterioration in funding conditions.

Finally, policy authorities need to continue policy coordination among relevant agencies, while closely monitoring the development of risk factors at home and abroad. In particular, NBFIs may face not only credit risk, but also liquidity risk when funding conditions deteriorate. Hence, the authorities should enhance the standard of their analysis and secure the capacity for timely action by strengthening information-sharing among relevant agencies with regard to non-bank financial institutions.

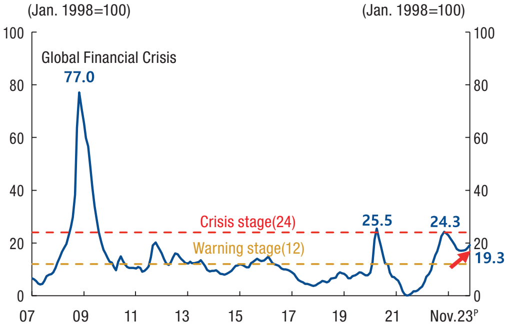
Meanwhile, preparations should be made in advance against the impact exerted in the financial system by potential risk factors arising from future changes in the financial environment. Specifically, domestic companies are expected to face a heavy burden to reduce their greenhouse gas emissions due to the implementation of domestic greenhouse gas reduction targets in response to climate risks and the full implementation of the EU's Carbon Border Adjustment Mechanism (CBAM) by 2026. Therefore, it is necessary to strengthen the price discovery function related to greenhouse gases by vitalizing the domestic GHG emissions trading market. And policy authorities, companies, and financial institutions should cooperate more closely to promote an orderly transition toward a low-carbon economy.

【 Key indicators of Financial Stability 】

1 Overall Assessment

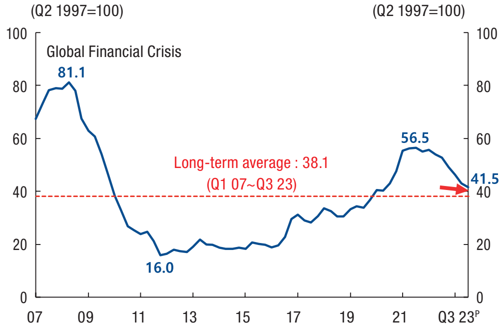
Short-term financial stress (FSI) has risen slightly.
Mid- to long-term vulnerabilities (FVI) have declined, but are above the average.

Financial Stress Index (FSI)



Source: Bank of Korea.

Financial Vulnerability Index (FVI)

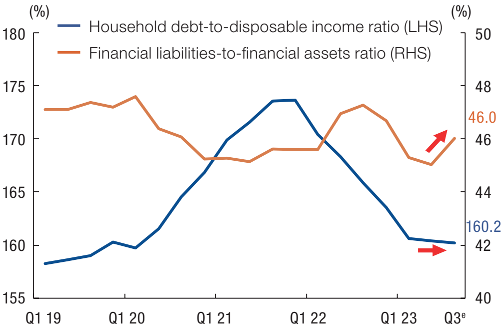


Source: Bank of Korea.

2 Household

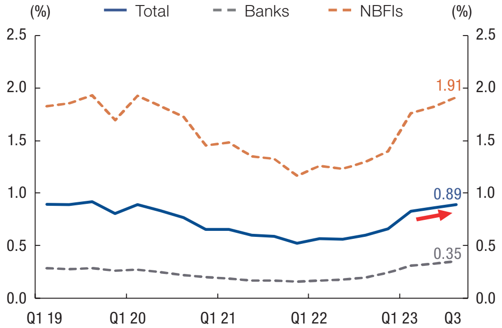
Debt burden among households has increased slightly.
Delinquency rates on household loans has risen.

Debt repayment capacity



Source: Bank of Korea.

Delinquency rates on household loans

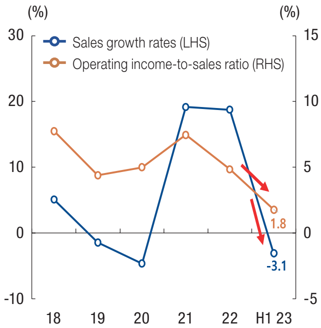


Source: Financial institutions' business reports.

3 Corporate

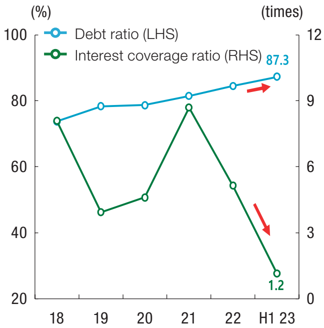
Profitability and interest payment ability at corporations have weakened.
Delinqrency rates on corporate loans have risen.

Growth potential & profitability



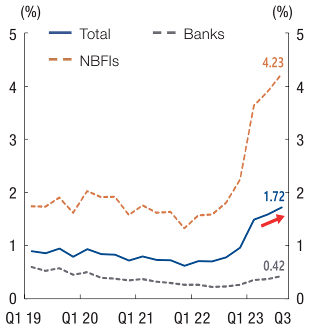
Source: KIS-Value.

Debt ratio & interest coverage ratio



Source: KIS-Value.

Delinquency rates on corporate loans

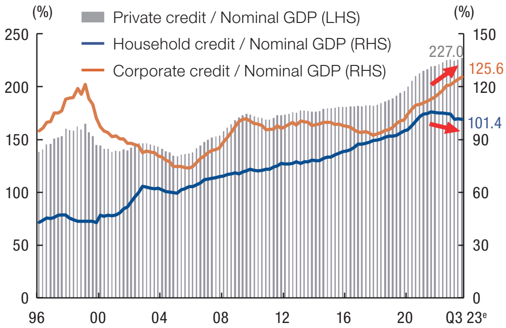


Source: Financial institutions' business reports.

④ Credit Leverage

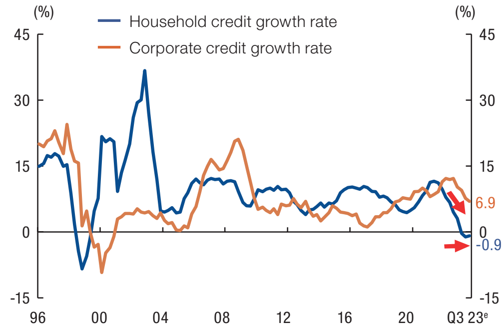
Private credit leverage has risen.
The decline in household credit has been reduced.
The increase in corporate credit has been reduced.

Private credit-to-nominal GDP ratios



Source: Bank of Korea.

Credit growth by sector

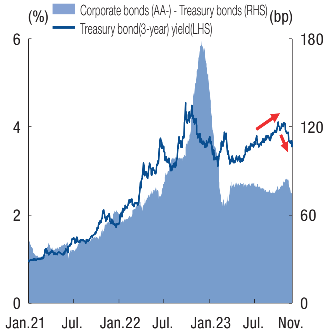


Source: Bank of Korea.

⑤ Asset Market

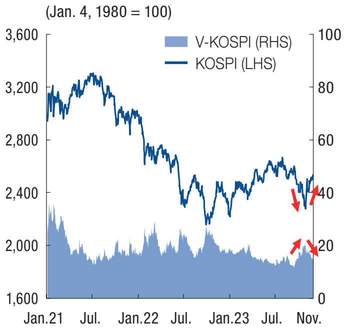
Korea Treasury bond (KTB) yields fell after rising.
Stock prices rebounded after falling.
The increase in housing prices has slowed.

Treasury bond yield & corporate bond credit spreads



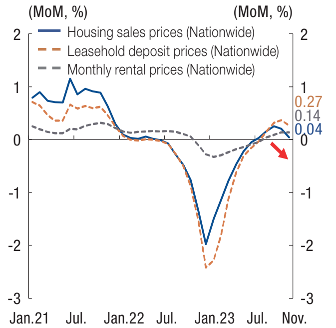
Source: Korea Financial Investment Association.

Stock prices & Stock price volatility



Source: KOSCOM.

Rates of increase in housing prices

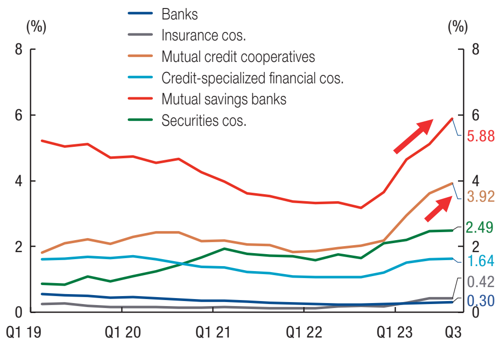


Source: Korea Real Estate Board.

⑥ Soundness of Financial Institutions

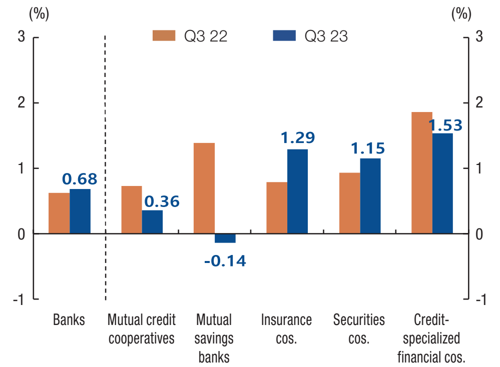
Asset quality at financial institutions has deteriorated.
Profitability varies by financial sector.

Substandard-or-below loan ratio



Source: Financial institutions' business reports.

Return on assets (ROA)

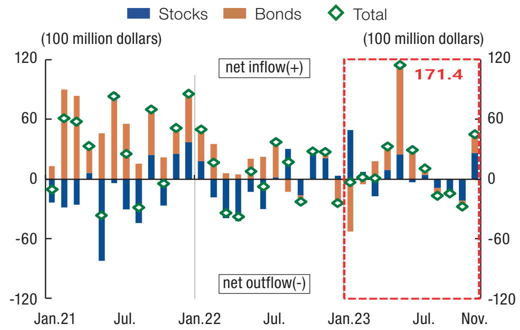


Source: Financial institutions' business reports.

7 Capital Flows

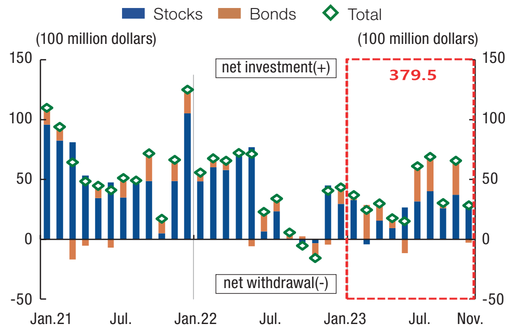
Foreigners' domestic portfolio investment recorded a net inflow. The increase in residents' overseas portfolio investment expanded slightly.

Changes in foreigners' domestic portfolio investment



Source: Bank of Korea.

Changes in residents' overseas portfolio investment

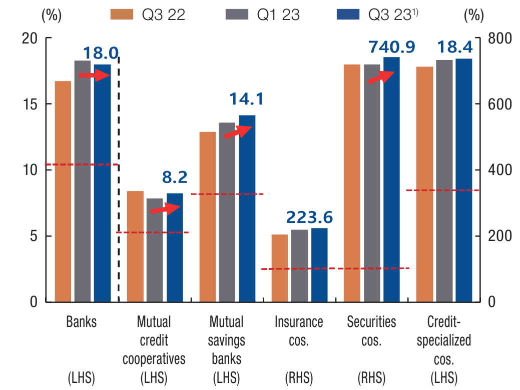


Source: Bank of Korea.

8 Resilience of Financial System

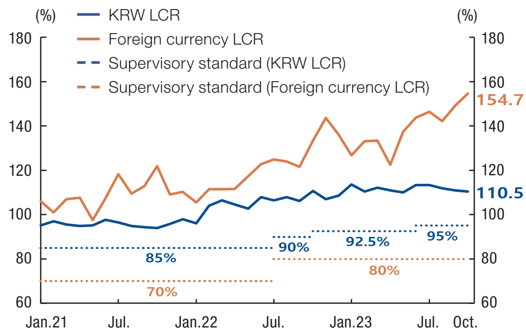
The resilience of banks & NBFIs have remained strong.

Financial Institution capital adequacy ratios



Note: 1) As of Q2 2023 for insuarance companies.
Source: FInancial institutions' business reports.

Commercial banks liquidity coverage ratio (LCR)

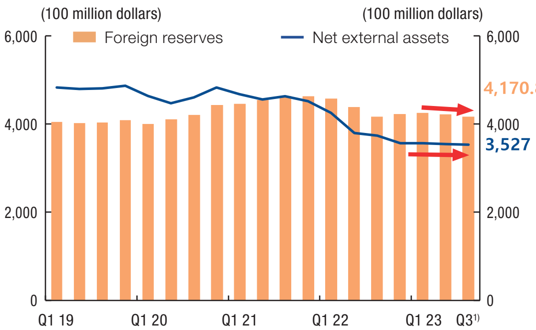


Source: Financial institutions' business reports.

9 External Payment Capacity & Payment and Settlement Systems

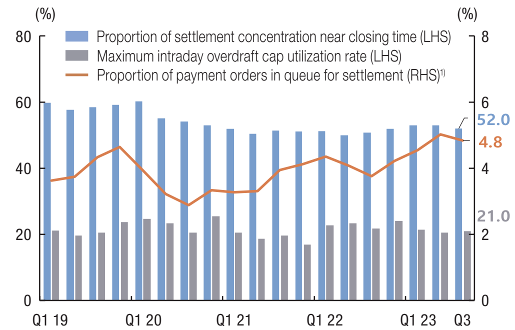
External payment capacity has remainde strong. Settlement risk has been managed appropriately.

Official foreign reserves[1] & net external assets



Note: 1) As of November 2023 for foreign resenes.
Source: Bank of Korea.

Risks related to BOK-Wire+



Notes: 1) Participating institution payment orders in queue for settlement/ total settlement amount during the period (excluding payment orders for liquidity savings).
Source: Bank of Korea.

Financial Stability Situation by Sector

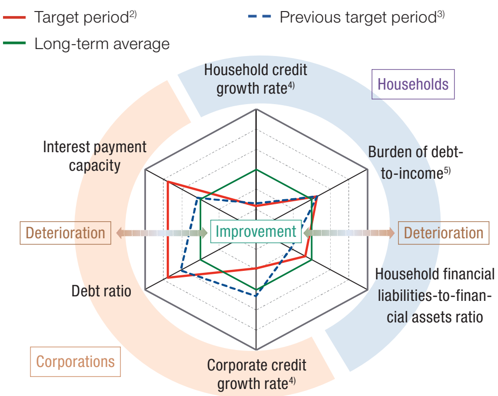
Ⅰ. Credit Markets

Household credit[1] increased, mainly led by housing-related loans, while the debt repayment burden of households edged up. The delinquency rate of household loans continued its upward trend, but its growth rate moderated.

In the case of corporate credit, its upward trend persisted, although its growth rate slowed significantly, especially for corporate loans issued by non-bank financial institutions (NBFIs). The financial soundness of corporations deteriorated as debt ratios increased, accompanied by a decline in profitability and interest payment capacities.

The private credit-to-nominal GDP ratio[2] hovered at a high level with the continued upward trend in corporate credit (Figure I-1).

Figure Ⅰ-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-Q3 2023.(As of end-H1 2023 for debt ratio and interest payment capacity)
3) As of end-Q1 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

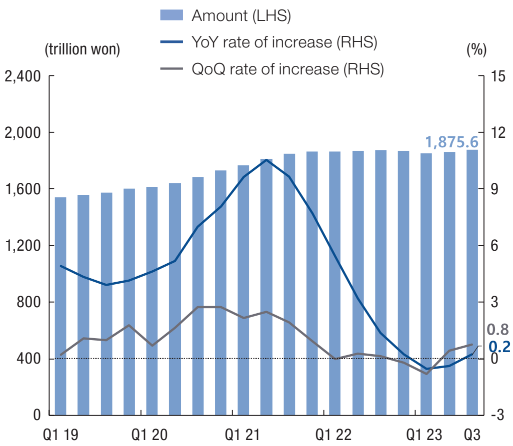
Increase in Household Credit

Household debt (based on household credit statistics)[3] stood at KRW 1,875.6 trillion at the end of the third quarter of 2023. By item, household loans amounted to KRW 1,759.1

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 section, 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 section, 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.

trillion (93.8% of household debt), and merchandise financing, which refers to credit offered by sellers of goods and services, recorded KRW 116.6 trillion (6.2%). In terms of its growth rate, it shifted to an upward trend with an increase of 0.2% year-on-year. On a quarterly basis, it rose by 0.8%, widening its growth margin[4] from the previous quarter (+0.4%)[5] (Figure I-2).

Figure Ⅰ-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 saw their margin of reduction narrow slightly. Home mortgage loans reached KRW 1,049.1 trillion at the end of the third quarter of 2023, up by 4.0% from the same period in the previous year. This is attributed to an increase in government sponsored funds[6] amid the continued demand for funds related to housing purchases.[7] Other loans amounted to KRW 710.0 trillion, down by 5.1% year-on-year. In terms of the value of loans (compared with the previous quarter), home mortgage loans exhibited a significant expansion of their growth rate from the second quarter of 2023 onward, increasing by KRW 17.3 trillion in the third quarter, while other loans declined by KRW 5.5 trillion (Figure I-3).

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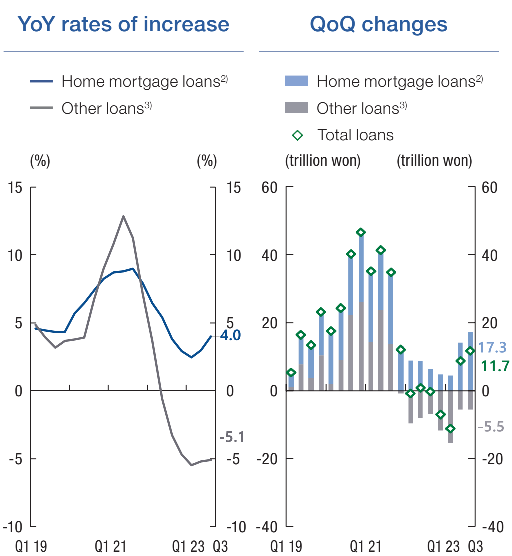
4) On a monthly basis, household loans (issued by overall financial institutions, based on the Financial Services Commission press release) turned to an increase from April 2023 and saw their growth trend expanding until August (+KRW 0.1 trillion in April 2023 → +KRW 2.6 trillion in May → +KRW 3.2 trillion in June → +KRW 5.2 trillion in July → +KRW 6.1 trillion in August). However, from September onward, the scale of growth was contracted (monthly average of +KRW 3.7 trillion from September to November 2023) due to the government's measures to strengthen household loan management such as a restriction on handling 50-year mortgages, the limitation of DSR maturity to 40 years, and the suspension of general-type Bogeumjari loan sales.

5) For more information on the quantitative and prudential features of recent household loans, refer to Box 1 "Characteristics and Implications of the Recent Increase in Household Loans."

6) 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 227.2 trillion at the end of the third quarter of 2023, up by KRW 26.1 trillion from the end of 2022. This represents a significant rise compared to the annual increase in 2021 and 2022 (KRW 14.8 trillion and KRW 6.6 trillion, respectively).

7) The volume of nationwide housing sale transactions (based on contract date, 10,000 units): 10.8 in July-September 2022 → 9.1 in October-December 2022 → 11.9 in January-March 2023 → 15.5 in April-June → 14.9 in July-September.

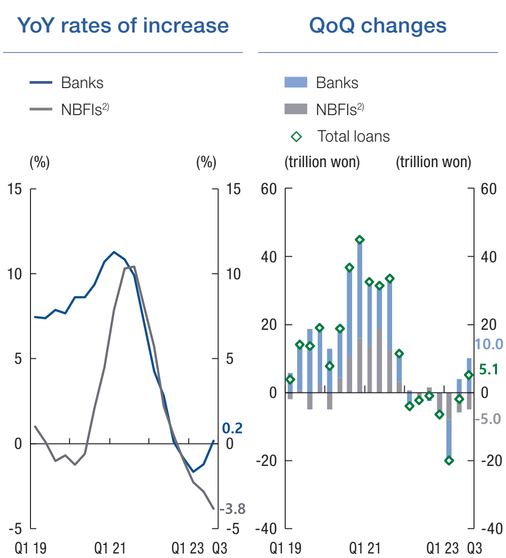
Figure Ⅰ-3. Household loans[1)], by loan type



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.

By type of financial institution, banks and NBFIs exhibited contrasting movements. At the end of the third quarter of 2023, household loans issued by banks shifted upward with an increase of 0.2% year-on-year, reaching KRW 904.5 trillion. However, household loans extended by NBFIs amounted to KRW 627.3 trillion, down by 3.8% year-on-year, widening their margin of decline.[8)] In terms of loan amount variation over the previous quarter, loans of banks turned to an upward trend from the second quarter of 2023 onward, increasing by KRW 10.0 trillion in the third quarter, while loans of NBFIs maintained their downward movement with a decrease of KRW 5.0 trillion (Figure I-4).

Figure Ⅰ-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.

Sluggish Improvement in Household Debt Burden Against Income, and Moderate Increase Against Assets[9)]

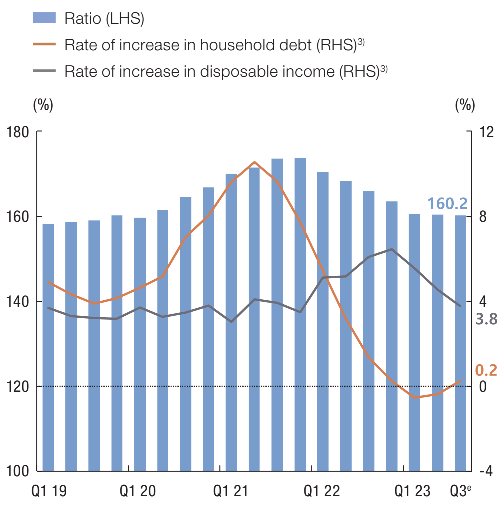
In terms of income, the debt repayment burden across households maintained a similar level during the year. The ratio of household debt

8) This seems to be attributable to the central role of banks in the expansion of home mortgage loans in line with factors such as the demand for funds related to housing purchases. Home mortgage loans of NBFIs continued to decline under the influence of refinancing with policy mortgage loans and a delay in the recovery of housing markets in regional areas.

9) The ratio of household debt to disposal 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 dept repayment burden of households holding debt or borrowers.

to disposable income (based on household credit statistics) decreased by 0.4%p to 160.2% (estimate) in the third quarter of 2023 from the end of the first quarter (160.6%). Examining the components, disposable income (the denominator) increased, while household debt (the numerator) expanded during the second and third quarters of the year, thereby leading to a somewhat slower improvement in debt repayment capacity in terms of income (Figure I-5).

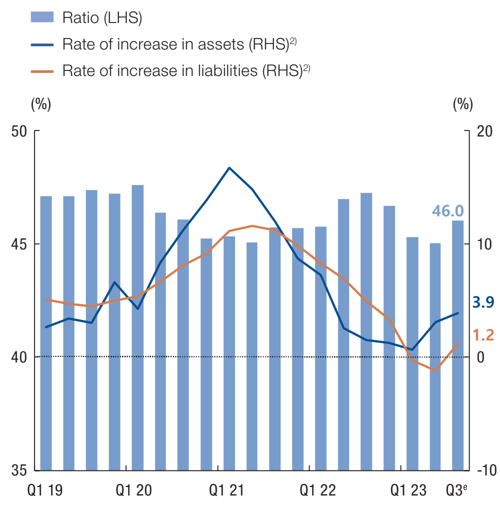
Figure Ⅰ-5. Household debt[1]-to-disposable income[2] ratio



Notes: 1) Based on household credit statistics.
2) Disposable incomes for Q3 2023 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.

Meanwhile, the debt repayment burden in terms of assets increased slightly. The ratio of financial debt to financial assets of households (based on flow of funds statistics) rose to 46.0% (estimate) at the end of the third quarter of 2023, up by 0.7%p from the first quarter (45.3%). This is because, despite the continued growth of financial assets (the denominator), primarily in cash and deposits,[10] the financial debt (the numerator) expanded relatively faster from the second quarter of the year (Figure I-6).

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



Notes: 1) Based on flow of funds statistics (estimated figure for Q3 2023).
2) Year-on-year basis.
Source: Bank of Korea.

Moderate Increase in Share of Vulnerable Borrowers

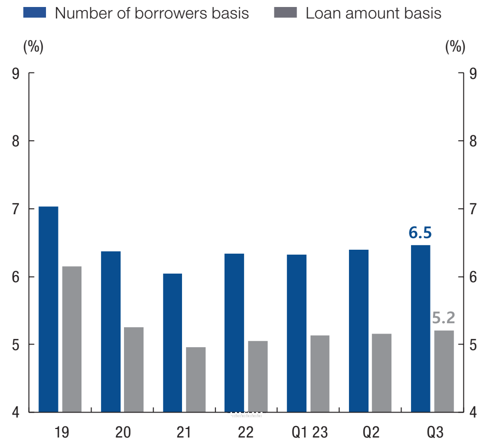
The share of borrowers with comparatively low debt repayment capacities among total household borrowers increased slightly. The number of borrowers with low income (bottom 30%) or low credit (credit scores of 664 or below)[11] who also hold multiple household

10) However, the valuations of equity securities and investment funds decreased due to the decline in the KOSPI index (from 2,477 at the end of the first quarter of 2023 to 2,465 at the end of the third quarter).

11) 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 medium credit scores / borrowers with two loans and a low income or a low credit score) was 17.3% at the end of the third quarter of 2023, a slight increase from 17.0% at the end of the first quarter.

loans, i.e. "vulnerable borrowers", accounted for 6.5% of all borrowers at the end of the third quarter of 2023, up by 0.2%p from the end of the first quarter (6.3%). In terms of loan value, the share of vulnerable borrowers was 5.2% at the end of the third quarter of 2023, marking an increase of 0.1%p from the end of the first quarter (5.1%) (Figure I-7).

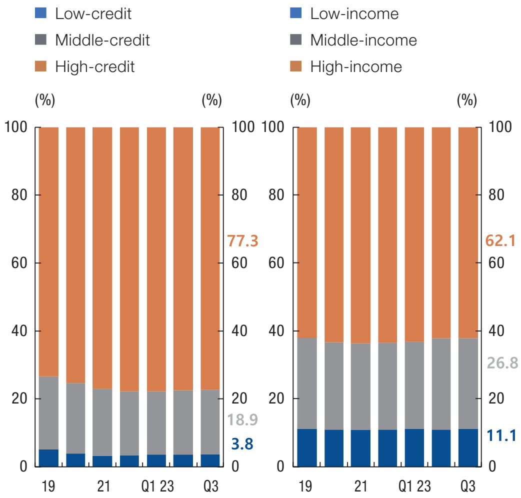
Figure Ⅰ-7. Proportions of vulnerable borrowers



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

By borrower profile (based on loan amount), the proportions of borrowers with a high credit rating and high income declined slightly overall, although they remained at a high level. At the end of the third quarter of 2023, the proportion of borrowers with a high credit rating stood at 77.3%, down by 0.4%p from the end of the first quarter (77.7%). The proportion of high-income borrowers reached 62.1%, showing a decline of 1.1%p from the end of the first quarter of 2023 (63.2%) (Figure I-8).

Figure Ⅰ-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), middle-credit (scores 665-839), low-credit (scores less than or equal to 664).
3) High-income (top 30%), middle-income (30-70%), low-income (bottom 30%).
Source: Bank of Korea staff calculation (Consumer Credit Panel).

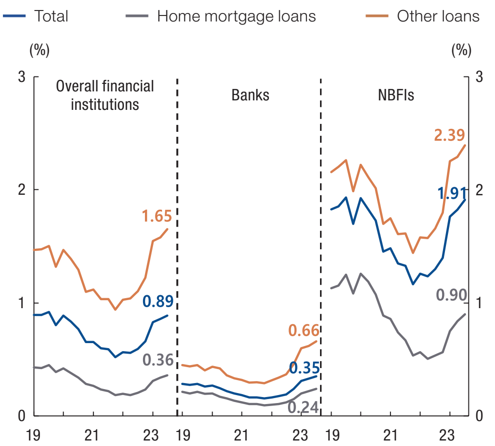
Increase in the Delinquency rate for household loans

The delinquency rate for household loans has been on the rise since the second half of 2022, however, the upward trend has been gradually slowing down recently. As of the end of the third quarter of 2023, the delinquency rate for household loans reached 0.89%, up by 0.06%p from the first quarter. By loan type, the delinquency rate for mortgage loans increased by 0.05%p to 0.36%, while the delinquency rate for other loans rose by 0.10%p to 1.65%. By sector, the delinquency rate for banks was 0.35%, an increase of 0.04%p, while non-bank financial institutions saw a delinquency rate of 1.91%, rising by 0.15%p.[12)] Such increas-

12) The margin of growth based on the previous half of the year (from the end of the third quarter of 2022 to the end of the first quarter of 2023) was 0.23%p overall, with 0.12%p for banks, and 0.46%p for NBFIs.

es in delinquency rates have been observed primarily in vulnerable segments where the burden of debt repayment has relatively increased due to higher interest rates. However, despite these increases in delinquency rates, both bank and non-bank household loan delinquency rates remain relatively low compared to the pre-pandemic long-term average levels[13)] (Figure I-9).

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



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) Mutual savings banks, mutual credit cooperatives, insurance cos., credit-specialized financial cos., etc.
3) Excluding insurance contract loans for insurance cos.
Source: Financial institutions' business reports.

13) The pre-pandemic long-term average delinquency rates of household loans (from the first quarter of 2009 to the fourth quarter of 2019) were 0.50% for banks and 2.85% for NBFIs.

2. Corporate Credit

Slowdown in Corporate Credit Growth

At the end of the third quarter of 2023, corporate loans from financial institutions stood at KRW 1,832.7 trillion, recording an increase of 6.3% year-on-year. Corporate loans witnessed their growth slowing, centered on loans extended by NBFIs and on loans issued to small and medium-sized enterprises (SMEs), under the influence of the growing debt repayment burden of borrowers and the tightened lending attitude of financial institutions. Meanwhile, loans issued to self-employed business owners (SEBOs)[14] amounted to KRW 1,052.6 trillion, up by 3.8% year-on-year.

In the financial sector, the growth of corporate loans slowed mostly among NBFIs. At the end of the third quarter of 2023, corporate loans of banks stood at KRW 1,241.0 trillion (KRW 726.7 trillion from commercial banks, KRW 487.6 trillion from special banks, and KRW 26.7 trillion from branches of foreign banks), showing an increase of 6.7% year-on-year (7.5% at commercial banks and 5.4% at special banks). Corporate loans from NBFIs[15] amounted to KRW 591.7 trillion,[16] increasing by 5.6% year-on-year. As the lending attitude tightened[17] to manage credit risks in response to an increase in 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[18] year-on-year (Figure I-10).

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14) For more information about recent trends in loans issued to SEBOs, refer to Box 2 "Recent Trends and Delinquency Status of Loans to SEBOs."

15) 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.

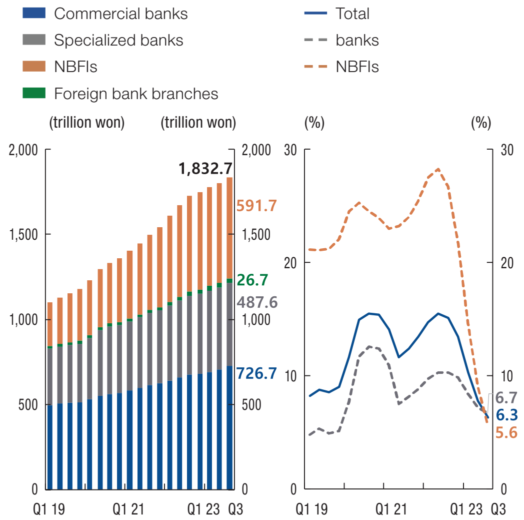
16) In the business sector, mutual credit cooperatives accounted for KRW 365.8 trillion (61.8% of corporate loans offered by NBFIs), followed by insurance companies at KRW 99.7 trillion (16.9%), credit-specialized financial companies at KRW 73.0 trillion (12.3%), and mutual savings banks at KRW 53.3 trillion (9.0%).

17) 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 (-57 in the fourth quarter of 2022 → -31 in the second quarter of 2023 → -22 in the fourth quarter (predicted); credit card companies (-44 → -6 → -14), mutual credit cooperatives (-48 → -24 → -30), and life insurance companies (-22 → -14 → -9). For details, refer to "Results of the survey of financial institutions' lending attitude" (Bank of Korea press release, October 30, 2023).

18) Changes in growth rates of corporate loans by NBFIs for each sector (year-on-year) from the first quarter of 2023 to the third quarter: 22.9% → 11.2% for mutual credit cooperatives; 1.3% → -1.8% for insurance companies; 6.7% → 2.9% for credit-specialized financial companies; and 4.1% → -10.0% for mutual savings banks.

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

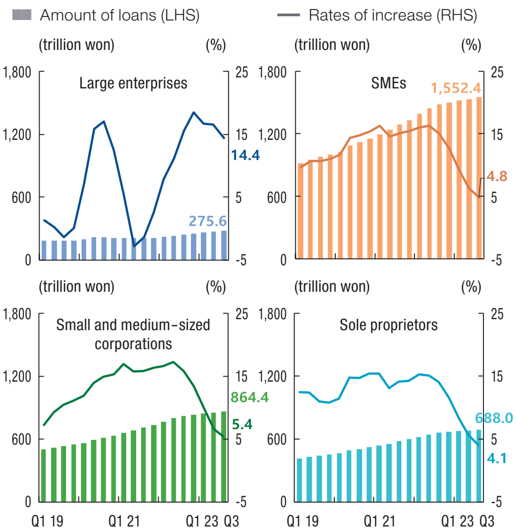
Amount of loans[2] | **Rates of increase[3]**



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.
Sources: Financial institutions' business reports.

By company size,[19] corporate loans experienced a slowdown in growth, mainly driven by SMEs, including sole proprietors. Loans to large enterprises (KRW 275.6 trillion, an year-on-year increase of 14.4%) sustained a relatively high growth rate due to the utilization of bank loans as an alternative financing source, given the elevated yields of corporate bonds.[20] On the other hand, loans to SMEs (KRW 1,552.4 trillion, 4.8%) saw their growth slow significantly due to the increased burden of debt repayment and the sluggishness of the real estate sector, as reflected in loans to SMEs (KRW 864.4 trillion, 5.4%) and loans to sole proprietors (KRW 688.0 trillion, 4.1%) (Figure I-11).

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



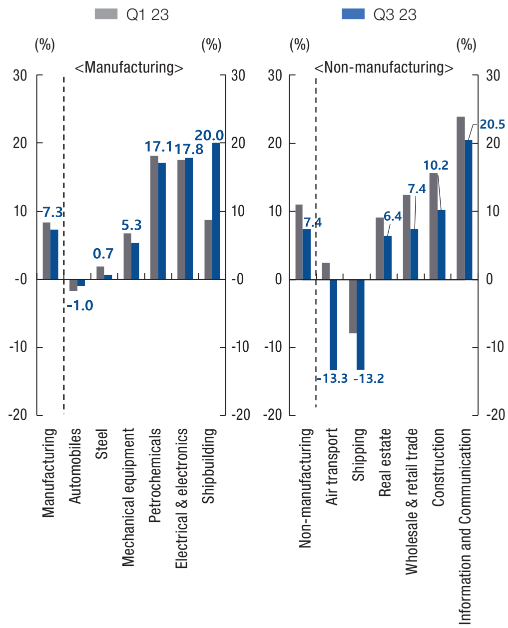
Notes: 1) Based on sum of banks and NBFIs(In the case of NBFIs, financial and insurance loans are included in some business sectors and periods due to data constraints).
2) End-period basis. Rates of increase are year-on-year basis.
3) "Small and medium-sized corporations" refers to SMEs other than sole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

By industry,[21] the growth of corporate loans slowed across all sectors. Corporate loans to the manufacturing sector showed slower growth (7.3%), driven by automobiles, steel, and mechanical equipment. The non-manufacturing sector also experienced a slowdown in loan growth (7.4%) across all segments including air transport, shipping, real estate,

19) 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.
20) Corporate bond rates (3-year, AA rating or higher, based on the average of four private bond rating agencies) remained at a high level: 4.36% at the end of the second quarter of 2022 → 5.20% at the end of the fourth quarter → 4.46% at the end of the second quarter of 2023 → 4.65% at the end of the third quarter.
21) Corporate loans from some NBFIs were excluded from the analysis because they were not classified by industry.

and wholesale & retail trade (Figure I-12).

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

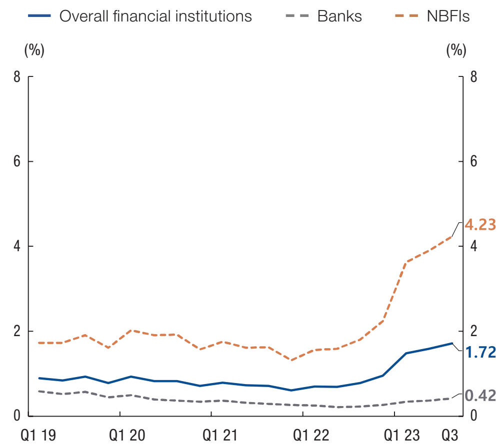


Notes: 1) Year-on-year basis.
2) Sum of banks and some NBFIs that can be classified on an industry basis.
Sources: Financial institutions' business reports.

Rising Delinquency Rates of Corporate Loans

The delinquency rate of corporate loans recorded 1.72% at the end of the third quarter of 2023, up by 0.23%p from the end of first quarter (1.49%). By financial sector, the delinquency rate of corporate loans from banks rose to 0.42%, an increase of 0.07%p from the end of the first quarter (0.35%). This indicates that the delinquency rate faced by banks was close to 0.45%, the level recorded at the end of 2019 before the COVID-19 pandemic. The delinquency rate faced by NBFIs climbed to 4.23%, up by 0.60%p from the end of the first quarter (3.63%), exhibiting a higher growth than that faced by banks. However, the delinquency rates faced by both banks and NBFIs were still below their pre-pandemic long-term average levels,[22)] and their growth margin recently narrowed (Figure I-13).[23)]

Figure Ⅰ-13. Delinquency rates[1)] of corporate loans extended by banks[2)] and NBFIs[3)]



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) Based on domestic banks.
3) Weighted average based on total assets of mutual savings banks, mutual credit cooperatives, insurance companies(excluding insurance contract loans), and credit-specialized financial companies.
Sources: Financial institutions' business reports.

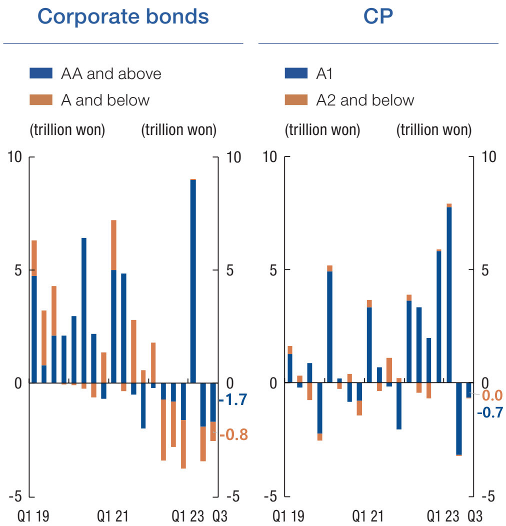
22) The pre-pandemic long-term average delinquency rates of corporate loans (from the first quarter of 2009 to the fourth quarter of 2019) marked 0.93% for banks and 6.13% for NBFIs.

23) The margin of growth based on the previous half of the year (from the end of the third quarter of 2022 to the end of the first quarter of 2023) was 0.71%p overall, with 0.12%p for banks, and 1.83%p for NBFIs.

Net Redemptions of Corporate Bonds and CP

In the financial markets, corporate bonds and commercial papers (CP) recorded a net redemption. Corporate bonds experienced a net redemption in the third quarter of 2023, due to a decline in issuance of bonds under the influence of the utilization of bank loans as an alternative financing source by large enterprises, together with the refinancing funds in advance in the first quarter of the year. Similarly, CP also saw net redemption during the same period, primarily driven by prime CPs and CPs issued by public corporations (Figure I-14).

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



Note: 1) Excluding issuance by financial holding companies and special purpose companies (SPCs). Net-issuance basis.

Sources: Bank of Korea, Korea Securities Depository, Korea Credit Information Services.

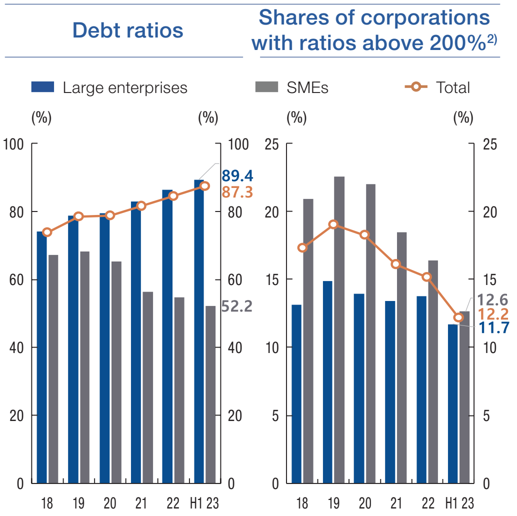
Increase in Debt Ratio and Decrease in Proportion of Excessively-indebted Firms

The corporate debt ratio (debt / equity), which indicates the stability of companies,[24] recorded 87.3% at the end of the second quarter of 2023, rising from the end of 2022 (84.5%). By company size, the debt ratio of large enterprises rose (86.3% at the end of 2022 → 89.4% at the end of the second quarter of 2023), while that of SMEs slightly declined (54.8% → 52.2%).[25]

Meanwhile, the proportion of companies with a debt ratio exceeding 200% (excessively-indebted firms) was 12.2% at the end of the second quarter of 2023, falling significantly from the end of the previous year (15.1%).[26] By company size, SMEs (16.4% at the end of 2022 → 12.6% at the end of the second quarter of 2023) showed a significantly steeper decline than large enterprises (13.8% → 11.7%) (Figure I-15).

24) The analysis was carried out for a total of 2,558 companies (1,291 large enterprises and 1,267 SMEs), including listed companies that had to file a business report at the end of the second 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 done for mostly listed companies, and thus the results of the analysis of the financial soundness of SMEs may differ from those conducted based on large samples that include firms subject to external audits.

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



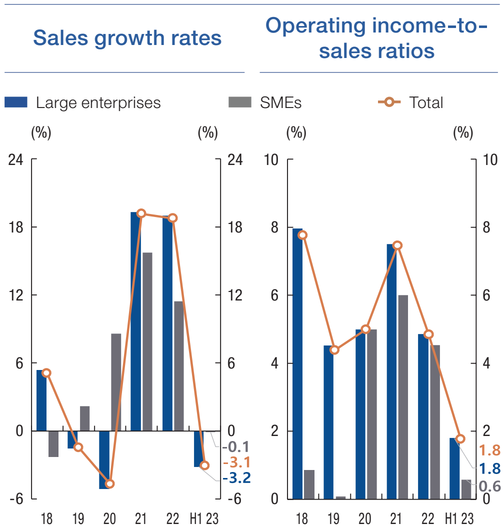
Notes: 1) Debt / Equity, end-period basis.
2) Including corporations with capital erosion.
Source: KIS-Value.

Decline in Growth and Profitability

The growth rate (year-on-year) of corporate sales was -3.1% in the first half of 2023, showing a significant decline from 2022 (18.7%). This is attributable to the sluggish business conditions of key manufacturing sectors including electric & electronic devices and petrochemicals.[27] By company size, the rate of growth in sales among large enterprises (19.0% in 2022 → -3.2% in the first half of 2023) exhibited a greater decline than that of SMEs (11.4% → -0.1%).

The operating income-to-sales ratio (operating income / sales), representing a company's profitability, fell to 1.8% in the first half of 2023 from the previous year (4.8%) due to a decline in operating income. By company size, both large enterprises (4.9% in 2022 → 1.8% in the first half of 2023) and SMEs (4.5% → 0.6%) showed a decrease in profitability[28] (Figure I-16).

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



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

25) While the corporate debt ratio declined in most sectors from the end of the previous year, the figure rose in electric & electronic devices and electricity & gas supply sectors. Within these sectors, in particular, some large enterprises with significant asset sizes saw their debt ratio increase, leading to a rise in the average debt ratio of all listed companies.

26) This is interpreted as a consequence of companies cutting down on debt in response to heightened debt repayment burdens caused by decreased profitability and escalating interest rates.

27) Sales experienced a decrease in key manufacturing sectors, including electric & electronic devices (-18.4% in the first half of 2023), metal products (-15.4%), and petrochemicals (-13.4%). On the other hand, some sectors demonstrated robust growth in sales, such as automobiles (31.5%), transport equipment (30.6%), construction (15.0%), and electricity & gas supply (14.7%).

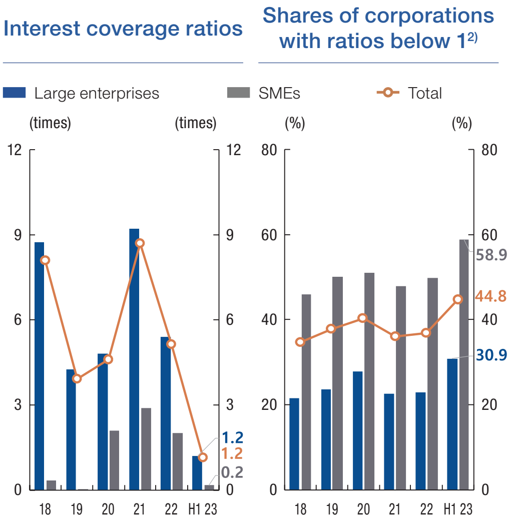
28) By industry, operating income-to-sales ratios were lower in some sectors such as electric & electronic devices (-6.8% in the first half of 2023), electricity & gas supply (-6.7%), and shipbuilding (-0.5%), while they were high in other sectors including information & communication (10.1%), transportation (8.3%), and automobiles (7.4%).

Decline in Interest Payment Ability

The interest coverage ratio (operating income / total interest expenses), which indicates a company's ability to make interest payments,[29] was 1.2 in the first of half of 2023, dropping from 5.1 in 2022, due to the sluggish business conditions in major industries[30] and the rising interest rates.[31] By company size, both large enterprises (5.4 in 2022 → 1.2 in the first half of 2023) and SMEs (2.0 → 0.2) experienced a decline in their interest coverage ratio.

The proportion of companies with an interest coverage ratio of less than one increased dramatically to 44.8% at the end of the second quarter of 2023, from 37.0% at the end of 2022. By company size, both large enterprises (22.9% at the end of 2022 → 30.9% at the end of the second quarter of 2023) and SMEs (49.7% → 58.9%) showed a significant rise (Figure I-17).

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



Notes: 1) Operating income/total interest expenses.
2) Including corporations recording operating losses.
Source: KIS-Value.

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

30) By sector, the interest coverage ratio declined significantly, mainly driven by electric & electronic devices (19.0 in 2022 → -5.9 in the first half of 2023), petrochemicals (9.1 → 1.7) and construction (4.7 → 1.5). Although some sectors experienced an improvement in their interest coverage ratios, such as shipbuilding (-7.4 → -0.3) and electricity & gas supply (-7.0 → -2.1), they continued to register operating losses. On the other hand, automobiles (9.7 → 17.8) exhibited a significant increase in the interest coverage ratio due to favorable operating performances.

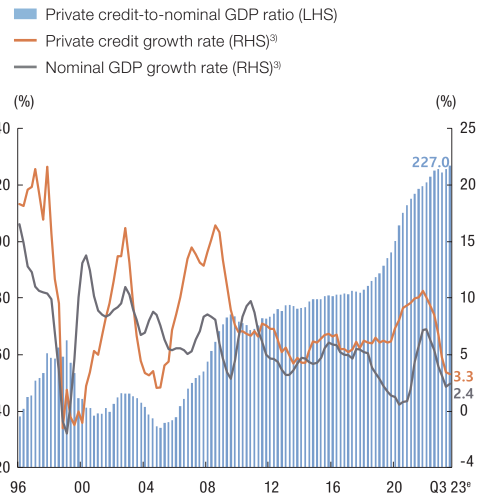
31) The long-term average interest coverage ratio (from 2009 to the first half of 2023) marked 5.1 overall, with 5.4 for large enterprises and 1.1 for SMEs.

3. Credit Leverage

Increase in Private Credit Leverage

At the end of the third quarter of 2023, private credit[32] leverage (private credit-to-nominal GDP ratio) remained high, reaching 227.0% (estimate),[33] an increase of 2.5%p compared to the end of the first quarter (224.5%). The increase in private credit, which accelerated around the outbreak of the COVID-19 pandemic, slowed markedly since the Base Rate hikes in the second half of 2021, but its growth rate still remained higher than the nominal GDP growth rate.[34] The private credit growth rate (year-on-year) fell from 4.8% at the end of the first quarter of 2023 to 3.3% at the end of the third quarter, while the nominal GDP growth rate (year-on-year) declined from 3.1% to 2.4% during the same period (Figure I-18).

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



Notes: 1) Based on flow of funds statistics; estimated figure for Q3 2023.
2) Sum of nominal GDPs for the given and three preceding quarters.
3) Year-on-year basis.
Sources: Bank of Korea.

Household Credit Leverage Remaining at a High Level and Corporate Credit Leverage Continuing to Rise

By sector, household credit leverage remained high without a further increase while corporate credit leverage rose steadily. At the end of the third quarter of 2023, the household credit-to-nominal GDP ratio stood at 101.4% (estimate), similar to the level at the end of the first quarter (101.5%),[35] while the corporate

32) 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.

33) This is based on household and corporate credit in the flow of funds statistics for the third quarter of 2023, 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.

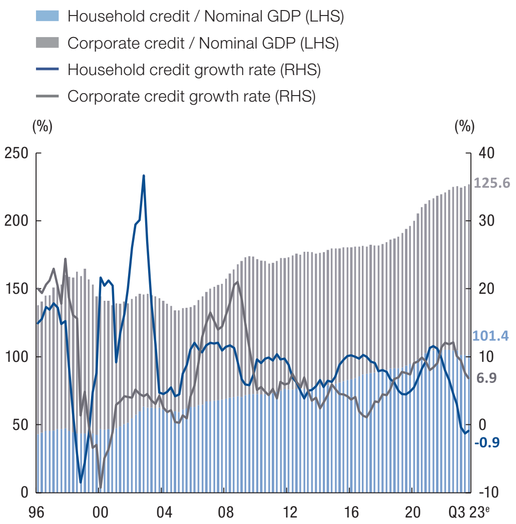
34) This is the growth rate of the sum of nominal GDP for the given and three preceding quarters. It is different from the nominal GDP growth rate for the given quarter.

35) Based on statistics from the Bank for International Settlements (BIS), Korea's household credit leverage was 101.7% at the end of the second quarter of 2023, the fourth highest among 43 economies after Switzerland (126.0%), Australia (111.1%), and Canada (103.2%).

credit-to-nominal GDP ratio increased by 2.6%p from 123.0% to 125.6% (estimate) during the same period.

The growth rate of household credit experienced a smaller decline due to continued demand for funds associated with house purchases, while corporate credit continued to rise, albeit not as rapidly as before, driven by a continued demand for working capital and banks' eased lending attitude toward large enterprises (Figure I-19).

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

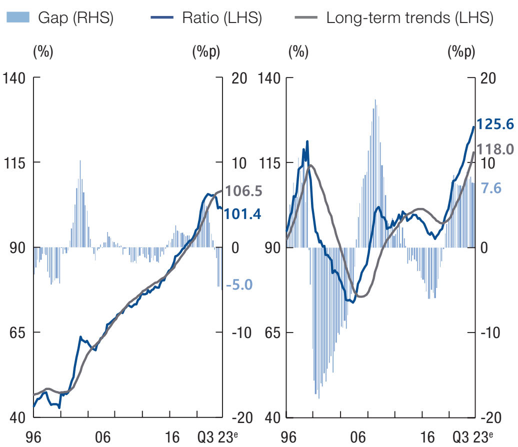


Notes: 1) Based on flow of funds statistics; estimated figure for Q3 2023.
2) Year-on-year basis.
Sources: Bank of Korea.

Household Credit Leverage Remaining Below the Long-term Trend, While Corporate Credit Leverage Remaining Above the Long-term Trend

Household credit leverage remained below its long-term trend[37)] without increasing further, while corporate credit leverage was significantly higher than its long-term trend. After shifting to a decline at the end of the third quarter of 2022 (-0.3%p), the household credit-to-nominal GDP gap widened further from -4.6%p at the end of the first quarter of 2023 to -5.0%p at the end of the third quarter. Meanwhile, the corporate credit-to-nominal GDP gap was +7.6%p at the end of the third quarter of 2023, staying at a level similar to +8.4%p at the end of the first quarter (Figure I-20).

Figure Ⅰ-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 : Q1 1975 to Q3 2023, λ=25,000) based on one-sided HP filter, by sector.
Sources: Bank of Korea.

36) The survey on the lending attitude of financial institutions (Bank of Korea press release, October 30, 2023) found that domestic banks tightened their lending attitude toward SMEs (6 in the fourth quarter of 2022 → 3 in the first quarter of 2023 → 0 in the second quarter → -6 in the third quarter → -6 (predicted) in the fourth quarter), while they continued to ease their lending attitude toward large enterprises (-6 → 6 → 3 → 3 → 0).

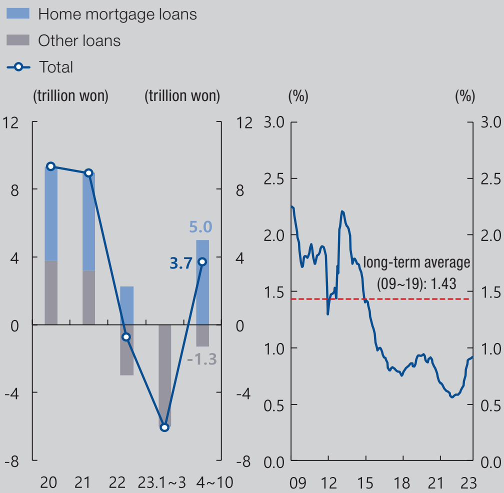
37) As the household or corporate credit-to-nominal GDP ratio tends to rise over the long run as a result of financial deepening, the gap between this ratio and its long-term trend is used as a common indicator for measuring systemic risk in time series. Although the BCBS (2010) recommends a smoothing 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.

Characteristics and Implications of the Recent Increase in Household Loans[1]

As household loans have been increasing again since April 2023, the delinquency rate on household loans has also shown an upward trend since the second half of 2022, although it remains lower than its long-term average. There are concerns that further increases in household loans and a continued deterioration in their soundness may place pressure on financial stability and economic growth in the future. As such, this article aims to examine the key characteristics of the recent increase in household loans from various perspectives, subsequently presenting policy implications for the future management of household loans.

Changes in household loans[1)2)] | Household loan delinquency rates[1)3)]



Notes: 1) Based on entire financial sector.
2) Based on monthly average during the estimation period.
3) Based on 3-month moving average.
Source: Financial Services Commission, Financial institutions' business reports.

Characteristics of the Recent Increase in Household Loans

Growing Share of Household Loans for House Purchases

The recent increase in household loans appears to be largely attributable to the growing demand for funds to purchase housing while the real estate market shows signs of recovery.[2)3)] In terms of the proportion of new household loans

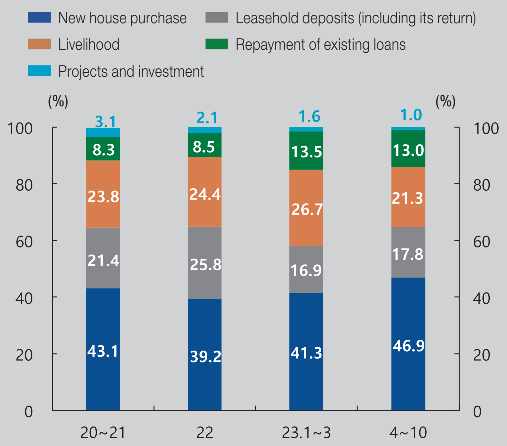
1) This article was authored by Kim Jae-young, Kim Young-ju, and Lee Hae-in (Financial Stability Affairs Team) and was reviewed by Seo Pyoung-seok (director of the Financial Stability Strategy & Coordination Division) and Lim Kwang-kyu (head of the Financial Stability Affairs Team).

2) Housing price forecast CSI (base value = 100) showed an upward trend starting in 2023 until it declined slightly in October, but it remained higher than the base value of 100 (68 in January 2023 → 87 in April → 107 in August → 110 in September → 108 in October).

3) The *Bogeumjari loan* has been operated since January 30, 2023, with the aim to ensure housing stability for lower-income earners and prospective home-buyers. As of the end of October 2023, the cumulative sum of the loans was KRW 41.7 trillion, of which loans for new home purchases accounted for 64.8%, repayment of existing loans for 28.5%, and return of leasehold deposits for 6.7% (Korea Housing Finance Corporation press release, November 3, 2023).

in 2023 by purpose (based on domestic banks), loans for housing purchases increased from 41.3% between January and March to 46.9% between April and October, while loans for living expenses decreased from 26.7% to 21.3% during the same period. Meanwhile, loans for repaying existing loans maintained a relatively high proportion during the same period (13.5% from January to March → 13.0% from April to October 2023), which seems driven in part by the demand for replacing existing loans from commercial banks with other loans at relatively lower interest rates, such as loans issued by internet-only banks[4] or policy mortgage loans.

Share[1)2)] of new household loan amount by purpose



Notes: 1) Based on domestic banks.
2) Compared to new loan amount whose purpose is identifiable.
Source: Financial institutions' business reports.

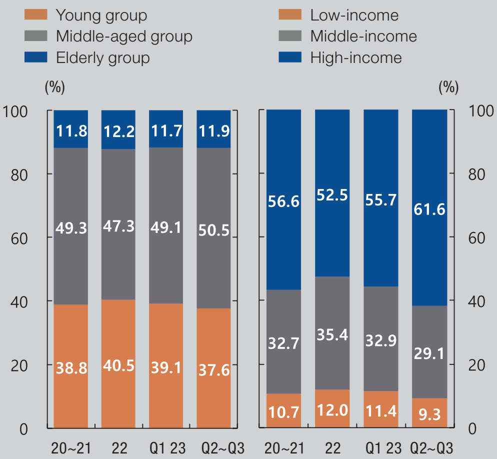
Increase in Household Loans Centered Around Middle-aged or High-income Groups

Household loans increased more among the middle-aged in their 40s to 50s than other age groups and among people with high income in the top 30% than those with middle or low income. Analysis showed that, of the new household loans issued in the second and third quarters of 2023, the proportion of middle-aged borrowers with a relatively steady income accounted for 50.5%, up from 49.1% in the first quarter, while the proportion of young borrowers decreased from 39.1% to 37.6% during the same period.[5)6)] In addition, among borrowers of newly-issued household loans, the share of high-income borrowers with an adequate repayment capacity rose from 55.7% in the first quarter of 2023 to 61.6% in the second and third quarters, whereas the proportion of low-income borrowers dropped from 11.4% to 9.3% during the same period due to more stringent risk management by financial institutions.

4) In 2022, the average interest rate of home mortgage loans from four major commercial banks (based on installment payments, newly-taken amounts, monthly average) was 0.39%p higher than the rate for loans from internet-only banks, and the gap has widened this year, reaching +0.55%p from January to October 2023 (Korea Federation of Banks Consumer Portal).
5) Out of the housing sale transactions nationwide in the second quarter of 2023, the proportion of middle-aged buyers (based on the number of transactions) accounted for 52.4%. In particular, it was estimated that middle-aged people accounted for as much as 62.0% of purchasers of high-priced houses (exceeding KRW 1.5 billion) (Ministry of Land, Infrastructure and Transport fund procurement plan).
6) In addition, with regard to 50-year home mortgage loans, which was one of the factors behind the increase in household loans in the second half of 2023, middle-aged borrowers accounted for 57.1% of the total volume of the said loans provided in 2023 (KRW 8.3 trillion, 81.6% of which was borrowed from July to August), which was significantly higher than other age groups (29.9% for young borrowers, 12.9% for elderly borrowers) (Financial Services Commission press release, September 14, 2023).

Share[1] of new household loan amount by age group and income level

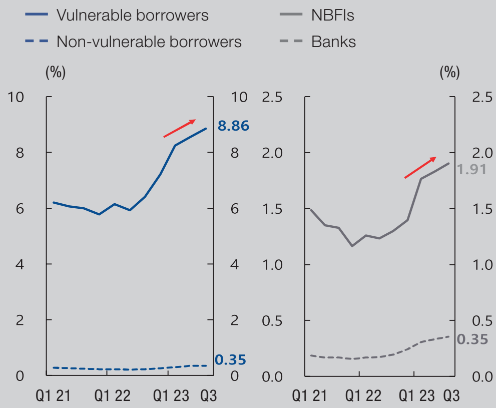
By age group[2)] **By income level[3)]**



Notes: 1) Compared to the total new household loan amount.
2) Young group (30s and under), middle-aged group (40s to 50s), elderly group (60s and over).
3) High-income (top 30%), middle-income (30-70%), low-income (bottom 30%).
Source: Bank of Korea staff calculation (Consumer Credit Panel).

Trend of delinquency rate of household loans by borrower type and sector

By borrower type **By financial sector**



Source: Bank of Korea staff calculation (Consumer Credit Panel), Financial institutions' business reports.

Deteriorating Soundness of Household Loans among Vulnerable Borrowers

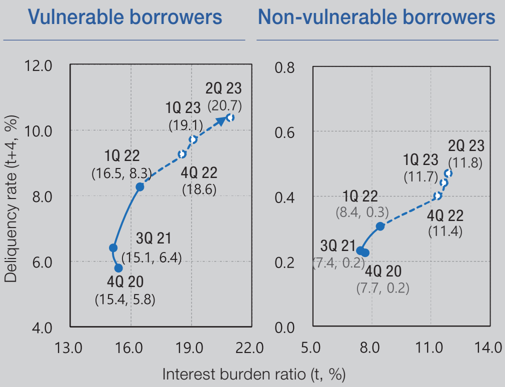
The delinquency rate of household loans has been rising among vulnerable borrowers (those with low income or low credit who hold multiple loans from three or more institutions) or borrowers of loans from NBFIs. The delinquency rate of vulnerable household borrowers maintained an upward trend since the second half of 2022, reaching 8.86% as of the end of the third quarter of 2023, far exceeding that of non-vulnerable borrowers. NBFIs have also shown a similar upward movement in their household loan delinquency rate, which stood at 1.91% at the end of the third quarter of 2023, significantly higher than that of banks (0.35%).

This accumulation of default risk among vulnerable household borrowers seems to stem from the fact that such households have a higher burden of loan repayment relative to income than other groups, which has also been aggravated by factors such as the recent lending rate hikes and limited income conditions. Indeed, an analysis of the relationship between household interest burden ratio (annual amount of interest payment to annual income) and the delinquency rate of household loans showed that a higher interest burden ratio was linked to a higher delinquency rate with the former reflected on the latter at an approximately one-year lag.[7)] By borrower type, as vulnerable household borrowers experienced a greater increase in their interest burden ratio than non-vulnerable borrowers from the second half of 2021, the interest burden ratio of vulnerable household borrowers stood at 20.7% in the second quarter of 2023, almost double that of non-vulnerable borrowers (11.8%). Considering the time lag until the increased interest burden ratio is reflected

7) The time-lag correlation analysis between household interest burden ratio and the delinquency rate from the first quarter of 2012 to the second quarter of 2023 shows that the households' current interest burden ratio has a strong correlation (+0.91) with their delinquency rate after one year (four quarters).

in the delinquency rate, the delinquency rate of household loans is expected to continue rising among vulnerable borrowers for the time being. However, given that vulnerable borrowers with higher default risk account for a relatively lower proportion (6.5% based on the number of borrowers and 5.2% based on the amount of loans at the end of the third quarter of 2023) of the total household loan borrowers and that the delinquency rate of the total household loans remains substantially lower than the long-term average, financial institutions appear to be capable of managing the growing delinquency rate.

Trend[1)2)] of interest burden ratio[3)] and delinquency rate of household loans by borrower type

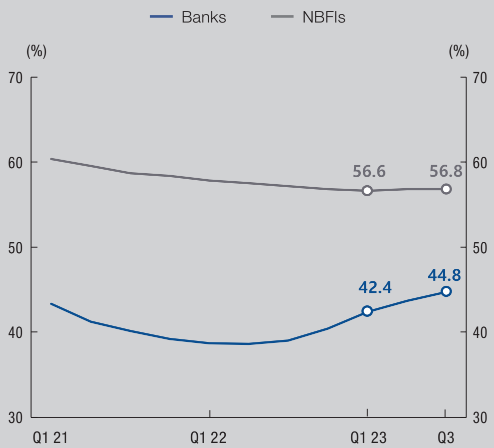


Notes: 1) Interest burden ratio as of period 't' and delinquency rate as of 't+4' are compared considering time lag correlation between the two variables.
2) Delinquency rates at a dotted line represent the expected path after a year, considering interest burden ratio at each point of time.
3) Annual interest payment/annual income.
Source: Bank of Korea staff calculation (Consumer Credit Panel).

Slight Increase in the Average LTV Ratio of Home Mortgage Loans

For home mortgage loans, which accounted for a large portion of household loans, as the upper limit on the loan-to-value (LTV) ratio was raised from the second half of 2022,[8)] the average LTV ratio saw a modest increase led by banks.[9)] As of the end of the third quarter of 2023, the average LTV ratios offered by banks and NBFIs (mutual credit cooperatives) stood at 44.8% and 56.8%, respectively, up from the end of the first quarter (42.4% and 56.6%). However, considering that the average LTV ratio of home mortgage loans remains significantly low, its impact on the soundness of financial institutions may be limited.

Average LTV ratio[1)] of household home mortgage loans by sector



Notes: 1) Based on domestic banks and mutual credit cooperatives.
Source: Bank of Korea staff calculation, Financial institutions' business reports.

Assessment and Implications

Household loans have risen again since April 2023, but the margin of increase has not been significant compared to 2020 and 2021, which saw a steep rise in household loans, or other-

8) From November 2022, the Financial Services Commission raised the LTV ratio to a uniform level of 50% (20-50% → 50%) for no-home or one-home owners (on condition of selling the existing house) in regulated areas, with preferential treatment provided for lower-income earners and prospective home-buyers by raising the LTV ratio to up to 70%. Since March 2023, it has permitted lenders to issue new home mortgage loans to owners of multiple houses who intend to purchase a new house in regulated areas and raised their applicable LTV ratio to up to 30%.
9) By LTV bracket, the proportions of the loans with LTV ratios exceeding 70% increased both at banks (3.2% at the end of the first quarter of 2023 → 5.6% at the end of the third quarter) and NBFIs (5.2% → 6.3%). Given that the auction price ratio of apartments (price / appraised value, based on court auction information) in the Seoul metropolitan area stood at 73.6% in the first half of 2023, it can generally be observed that collateral strength decreases around the 70% LTV mark, considering costs for auction and credit recovery.

wise compared to the long-term average in the past.[10] In addition, considering that most of the recent increase in household loans have been issued to middle-aged or high-income borrowers with an adequate repayment capacity while the delinquency rate of such loans is lower than the long-term average and LTV ratios also remain relatively low for home mortgage loans, which account for a large portion of all household loans, it does not appear to be likely that the recent increase in household loans will adversely affect the stability of the financial system.

However, a prolonged period of excessive household debts relative to the size of the economy could shrink consumption and hinder growth by escalating the debt repayment burden on households. It could also increase the vulnerability of the financial system in the medium to long term. Rising debt service ratios (DSRs) of borrowers and the subsequent increase in the number of borrowers with DSRs in excess of the consumption limiting threshold can lead to a decline in the borrowers' consumption propensity, thereby limiting household consumption in the long run.[11]

Therefore, it is necessary to manage the margin of increase for household loans at a reasonable level by broadly adopting DSR regulations based on a borrower's repayment capacity while steadily improving the structural quality of household loans through various ways, such as the expansion of amortized loans in preparation for possible internal and external shocks. In doing so, however, it is important to avoid causing an excessive contraction of the fund supply to lower-income earners and prospective home-buyers.

In addition, given that the soundness of loans is deteriorating among vulnerable sectors as evidenced by the surging delinquency rates of household loans taken out by vulnerable borrowers and of those provided by NBFIs, financial institutions must expand their loan loss provisions to enhance their loss absorption capacities and manage delinquencies to preempt a larger increase in defaults than expected.

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10) From April to October 2023, household loans increased by a monthly average of KRW 3.7 trillion, which is significantly lower than the average amount of increase from April to October in 2020 and 2021 (+KRW 9.7 trillion) and the average amount from April to October between 2014 and 2022 (+KRW 7.4 trillion) (Financial Services Commission press release, November 8, 2023).

11) In general, household debt boosts consumption, but excessive debts beyond the borrower's income level raise the debt service burden and consequently inhibit consumption (Lombardi et al. (2017), Kang Joung-ku (2017), etc.). Based on the Consumer Credit Panel Database, the proportion of borrowers with DSRs exceeding the threshold for consumption limitations (45.9%) was estimated to have increased by only 0.2%p, from 6.1% at the end of 2022 to 6.3% at the end of the second quarter of 2023, suggesting that the share of borrowers facing consumption limitations has not yet risen considerably. However, according to the estimated share of borrowers with DSRs exceeding the threshold for consumption limitations in terms of income levels, the share of low-income borrowers increased by 0.5%p, significantly higher than the 0.1%p increase in the share of high-income borrowers, implying that the impact on consumption limitations is higher for lower-income borrowers. For details regarding the method of estimation, refer to Issue 1. "Assessment of Household and Corporate Leverage and Implications" in Financial Stability Situation in September 2021.

Share exceeding consumption constraints threshold[1)2)] of household loans (DSR basis)

	Total	Low-income	Middle-income	High-income
Share as of the end of 2022 (A, %)	6.1	15.2	7.4	4.4
Share as of the end of 2Q 2023 (B, %)	6.3	15.7	7.8	4.5
Changes in share (B-A, %p)	+0.2	+0.5	+0.4	+0.1

Notes: 1) A panel fixed-effect model is set up with an average consumption propensity (average of recent 4 quarters) by borrower as a dependent variable and DSR (average of previous 4 quarters) by borrower, rates of increase (YoY) in housing sales and leasehold deposit prices, economic growth rates (YoY), KOSPI increase rates (YoY), household loan interest rates, etc. as explanatory variables.
2) Borrowers during 1Q 2012 ~ 1Q 2021 are analyzed.
Source: Bank of Korea staff calculation (Consumer Credit Panel).

Box 2.

Recent Trends and Delinquency Status of Loans to SEBOs[1)]

Since 2022, loans to SEBOs[2)] have surpassed KRW 1,000 trillion. However, given the recent slump in the service industry,[3)] which is the main sector of operation for SEBOs, in addition to persistent high lending rates, there are concerns about the deteriorating soundness of loans to SEBOs. The following section analyzes the recent trends in loans to SEBOs based on borrower profiles and examines the soundness of the loans based on delinquency rates, using microdata from sources such as the Consumer Credit Panel Database.

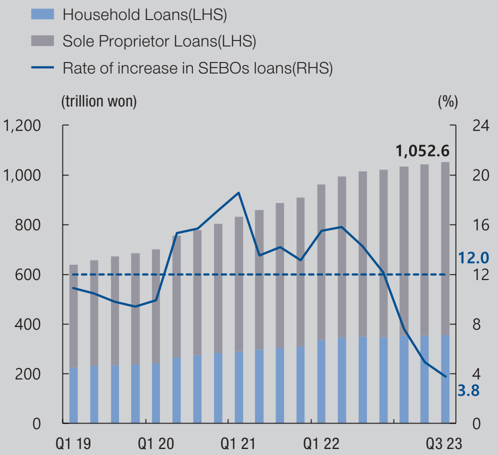
Trends in Loans to SEBOs

Significantly Slowed Increase in Loans to SEBOs

At the end of the third quarter of 2023, the balance of loans to SEBOs reached KRW 1,052.6 trillion, up by KRW 9.4 trillion from the end of the previous quarter (KRW 1,043.2 trillion). However, as the pace of increase slowed down rapidly starting in 2023, the year-on-year rate of increase was significantly lower than the long-term average (12.0% from 2013 to 2023), reaching 3.8% in the third quarter, the lowest level since 2012.

Among loans to SEBOs, the amounts of sole proprietor loans and household loans stood at KRW 696.7 trillion and 355.9 trillion, respectively, showing that the rate of increase in household loans to SEBOs (2.0%) slowed down more than in sole proprietor loans (4.7%).[4)] By financial sector,[5)] the rise in loans to SEBOs slowed down significantly both in banking and non-banking sectors. In particular, the year-on-year rate of increase in SEBO loans from NBFIs plummeted from 24.3% at the end of 2022 to 5.4% in the third quarter of 2023.

Trends in SEBOs loans[1)2)]

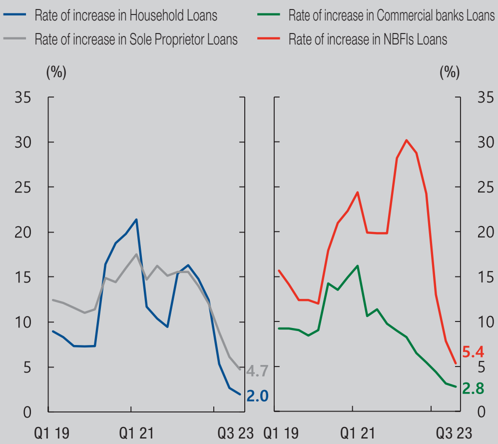


Notes: 1) Year-on-year basis.
2) The dotted line represents the long-term average of Rate of increase in SEBOs loans(Q1 13~Q3 23).
Sources: Bank of Korea Calculation(Consumer Credit Panel).

1) This article was authored by Pyoun Do-hoon and Shin Jung-hoo (Financial Stability Analysis Team) and was reviewed by Seo Pyoung-seok (director of the Financial Stability Strategy & Coordination Division) and Lee Jung-yeoun (head of the Financial Stability Analysis Team).
2) Using the Consumer Credit Panel Database (panel data of about one million borrowers), the Bank of Korea identified borrowers of sole proprietor loans as SEBOs and estimated the size of loans to SEBOs by summing up their household loans and sole proprietor loans.
3) The rate of increase in output indices of service industries (Statistics Korea, year-on-year, constant price basis): 6.4% in the first quarter of 2023 → 2.3% in the second quarter → 1.9% in the third quarter.
4) Among borrowers of SEBO loans (3.145 million), 0.705 million borrowers hold only sole proprietor loans (KRW 168.4 trillion), while 2.440 million borrowers hold both sold proprietor loans (KRW 528.3 trillion) and household loans (KRW 355.9 trillion).
5) Loans to SEBOs consist of 60.1% of loans from banks (KRW 632.8 trillion) and 39.9% of loans from NBFIs (KRW 419.8 trillion).

Rate of increase in SEBOs loans by loan type and financial sector

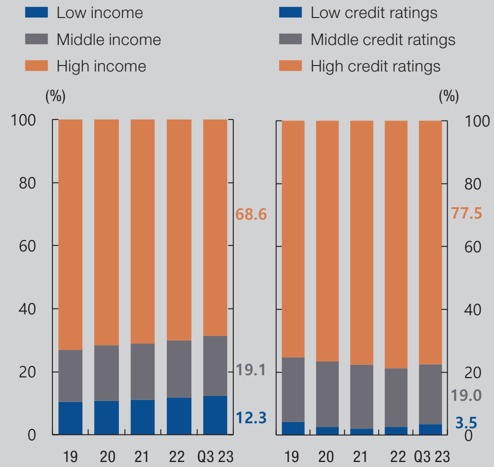
By loan type | **By financial sector**



Notes: 1) Year-on-year basis.
Sources: Bank of Korea calculation(Consumer Credit Panel).

Share of SEBOs loans by SEBOs type

By income level[1)] | **By credit level[2)]**



Notes: 1) Out of all borrowers in Consumer Credit Panel, bottom 30%, middle 40%, and top 30% borrowers are respectively classified as low, middle, and high income borrowers.
2) Low credit ratings(credit score of 664 or less), Middle credit ratings(665~839), High credit ratings(credit score of 840 or higher).
Sources: Bank of Korea calculation(Consumer Credit Panel).

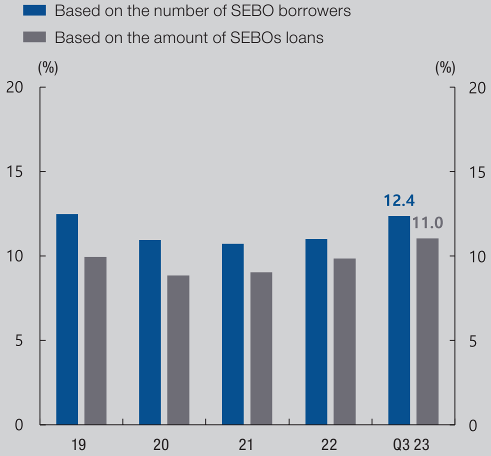
Uptick in the Share of Vulnerable Borrowers of SEBO Loans

By borrower profile, borrowers with high income (1.462 million) and a high credit rating (2.194 million), who have a relatively adequate repayment capacity and lower credit risk, accounted for 68.6% (KRW 722.2 trillion) and 77.5% (KRW 815.7 trillion) of loans to SEBOs, respectively. At the end of the third quarter of 2023, the share of low-income and low-credit borrowers in SEBO loans remained at the low levels of 12.3% and 3.5%, respectively, but there have been upticks since 2022.

Meanwhile, the number of vulnerable borrowers of SEBO loans[6)] stood at 389,000 with the amount of their loans estimated at KRW 116.2 trillion at the end of the third quarter of 2023. Vulnerable borrowers' shares of SEBO loans, calculated separately based on the number of borrowers and the amount of loans, were 12.4% and 11.0%, respectively, up slightly from the end of 2022 (11.0% and 9.8%).

6) Among borrowers of SEBO loans, vulnerable borrowers were defined as low-income or low-credit borrowers with multiple loans (those with a total number of three or more when adding together the number of financial institutions providing household loans to the said borrower and the number of sole proprietor loans taken out by the borrower).

Share of Vulnerable SEBOs[1]



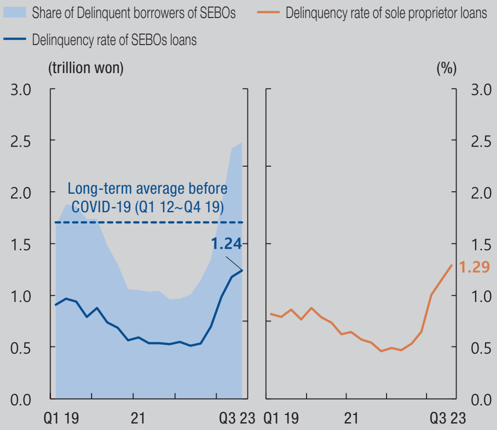
Notes: 1) Low income or low credit SEBO borrowers with multiple loans(the total number of household loan institutions and sole proprietor loan products is 3 or more).
Sources: Bank of Korea calculation(Consumer Credit Panel).

Rise in the Delinquency Rate of SEBO Loans

Based on the Consumer Credit Panel Database, the delinquency rate of loans to SEBOs was estimated at 1.24% as of the end of the third quarter of 2023, a 0.55%p increase from the end of 2022 (0.69%). Since the end of the second quarter of 2022 (0.51%), the delinquency rate of SEBO loans has continued to rise due to business downturns and increased interest repayment burdens, but it remains lower than the pre-pandemic long-term average (1.70% from the first quarter of 2012 to the fourth quarter of 2019). Meanwhile, the actual delinquency rate of sole proprietor loans reported by financial institutions[7] (based on financial institutions' business reports) was recorded at 1.29% across the financial sector as a whole.

Delinquent borrowers' share of loans to SEBOs (the sum of loans that are currently delinquent and loans that are being repaid regularly)[8] (hereinafter "delinquent borrowers' share of SEBO loans") stood at 2.47% as of the end of the third quarter of 2023, an increase of 1.13%p compared to the end of 2022 (1.35%).

Delinquency[1] Trends[2)3)] of SEBOs loans



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) Delinquency rate of SEBOs loans and share of delinquent borrowers of SEBOs are calculated based on SEBOs loans on Consumer Credit Panel. Delinquency rate of sole proprietor loans is calculated based on the whole financial sector on Financial Institutions' Business Reports).
3) The dotted line represents the long-term average of delinquency rate of SEBOs loans(Based on Consumer Credit Panel) before COVID-19 (Q1 12~Q4 19).
Sources: Bank of Korea calculation(Consumer Credit Panel), Financial Institutions' Business Reports).

7) While the delinquency rate and delinquent borrowers' share of SEBO loans are estimated based on sample data from the Consumer Credit Panel Database, the delinquency rate of sole proprietor loans indicates the actual delinquency rate calculated by financial institutions that have issued the sole proprietor loans. However, the delinquency rate of sole proprietor loans is limited as an indicator since it does not include the delinquency rate of household loans to SEBOs.
8) Delinquent borrowers' share of SEBO loans refers to the proportion of the loans held by delinquent borrowers of SEBO loans in the total loans to SEBOs, indicating the maximum delinquency rate in the event that borrowers of SEBO loans who are currently delinquent on some of their loans ultimately become delinquent on all of their loans.

Assessment and Implications

The surge in loans to SEBOs since the outbreak of the COVID-19 pandemic has significantly slowed down this year, with an uptick in the share of vulnerable SEBO borrowers with a relatively low repayment capacity. Although the delinquency rate of loans to SEBOs remains lower than the long-term average before the outbreak of the pandemic, it is important to note that it has been increasing at a steep pace recently. However, considering that a large portion of loans to SEBOs is held by high-grade borrowers with high income or high credit,[9] the possibility of a surge in the default risk of SEBO loans appears to be limited.[10]

However, if the heavy debt service burden from higher interest rates is compounded by a delay in the improvement of SEBOs' income conditions and a slump in the commercial real estate market,[11] default risk could rise, centered around vulnerable borrowers. Therefore, in the short term, measures should be taken to alleviate the interest burden of vulnerable SEBO borrowers[12] and restructure their debt through the low-interest refinancing program[13] and the New Start Fund. At the same time, in the medium to long term, risks related to SEBO loans must be managed preemptively by encouraging borrowers with a stable financial position to repay their loans and promoting a shift in the debt structure from short-term, bullet repayment loans to long-term, amortized loans.

9) As of the end of third quarter of 2023, the delinquency rates of high-credit or high-income borrowers of loans to SEBOs were 0.09% and 0.99%, respectively, remaining lower than the delinquency rate of the total loans to SEBOs (1.24%).

10) Since April 2020, financial authorities have implemented the Loan Maturity Extension and Payment Deferment program for SMEs and small business owners that experience temporary liquidity shortages due to the COVID-19 pandemic. As of the end of June 2023, the balance of loans under the program was approximately KRW 76.2 trillion (KRW 71 trillion for the maturity extension, KRW 4.1 trillion for the principal deferment, and KRW 1.1 trillion for the interest deferment). In accordance with the Financial Services Commission's effort to soft-land loan forbearance measures for SMEs and small merchants, the loan maturity extension program will remain available until September 2025 and the payment deferment program allows the borrowers to amortize the principal and interest for up to 60 months until September 2028 with a maximum grace period of one year, suggesting that the impact of the expiration of the program would not be significant (Financial Services Commission press release, August 29, 2023).

11) Loans to SEBOs are more susceptible to a slump in the commercial real estate market due to their higher share and LTV ratio of loans secured by collateral other than housing than loans to non-SEBOs. For details, refer to Box 2 "Vulnerability and Delinquency Risk of Self-employed Business Owners Debt," Financial Stability Report, June 2023.

12) The Korea Federation of Banks announced the Bank Sector Financial Support Plan that offers approximately KRW 2 trillion in cash refunds for interest payments from SEBOs and small business owners. It is predicted that around 1.87 million sole proprietors will benefit from this plan by receiving KRW 850,000 per person on average as interest refunds (Korea Federation of Banks press release, December 21, 2023).

13) Since September 30, 2022, the Financial Services Commission and the Korea Credit Guarantee Fund have offered the low-interest refinancing program to alleviate the burden of small business owners affected by high interest rates (higher than 7%). This program has reduced the annual interest burden for small business owners by around 5%p (Financial Services Commission press release, August 28, 2023).

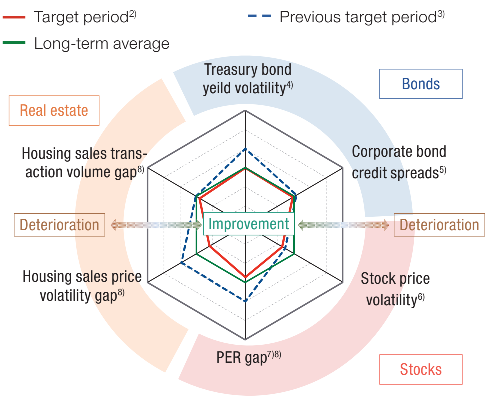
II. Asset Markets

In the asset market, Korea Treasury bond (KTB) yields significantly increased due to the prolonged tightening of the U.S. Federal Reserve's monetary policy and concerns over worsening supply and demand conditions for U.S. Treasury bonds, but the upward trend reversed from November and fell sharply.

Stock prices fluctuated between July and August, driven by the intersection of upward and downward factors, but later declined from September. However, in November, stock prices rebounded due to easing concerns about tightening in the wake of the slowdown in U.S. employment data and expectations of an improvement in the semiconductor industry.

Housing prices and leasehold deposit prices took an upward turn in the second half of this year, but the upward pressure in housing sale prices slowed down in the fourth quarter. Returns on capital for commercial real estate rebounded in the third quarter, but it remains sluggish to date (Figure II-1).

Figure II-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 July to November 2023 (housing sales transaction volume gap being from July to October 2023)
3) During January to June 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

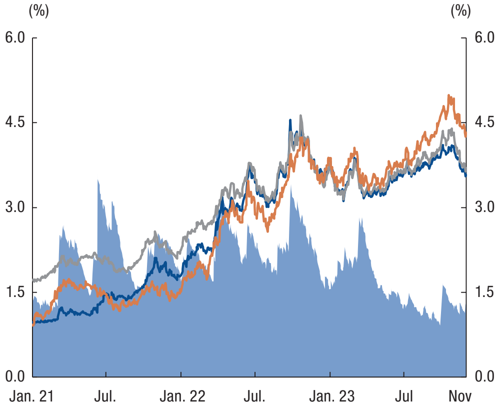
Fall in Long-term Market Interest Rates after a Sharp Rise

KTB yields rose sharply and then fell dramatically in response to the fluctuation of U.S. Treasury bond yields. By period, as U.S. Treasury bond yields rose steeply after late July, primarily driven by the trend of continued robust growth, which in turn heightened expectations of an extended tightening stance by the U.S. Federal Reserve, and concerns over deteriorating conditions in bond supply and demand,[1)]

1) This is mainly attributed to the U.S. Treasury's significant expansion of its Treasury bond issuance volume for the third quarter on August 2, which exceeded initial expectations, amid concerns about reduced investments by Japanese long-term investment institutions, which are the largest investors in U.S. bonds, following the Bank of Japan's decision to maintain its yield curve control (YCC) policy (July 28).

KTB yields also escalated in line with these trends in the U.S. bond market. Even after the August monetary policy decision, KTB yields rose sharply, reaching their highest for the year in October (3-year bonds, 4.10%, 10-year bonds, 4.39%, October 26) on the back of strong U.S. economic and employment data, inflation concerns due to higher oil prices, and a hawkish assessment of the FOMC results in September. However, after November, KTB yields declined significantly along with government bond yields in major countries,[2)] following the moderated stance of the U.S. FOMC meeting results, as well as expectations that the Federal Reserve would end its rate hike due to lower-than-expected U.S. employment and inflation indicators, and the U.S. Treasury's adjustment of the pace of long-term Treasury bond issuance[3)] (Figure II-2).

Figure Ⅱ-2. Korean and US Treasury bond yields

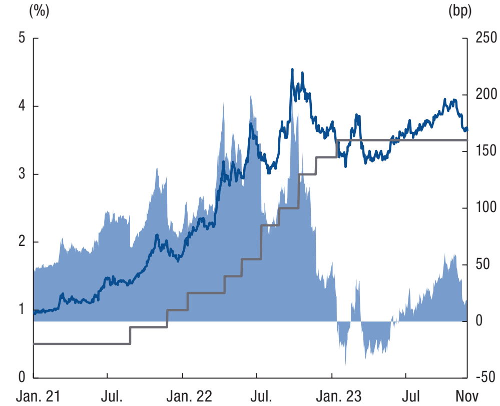


Note: 1) Daily volatility calculated using exponential weighted moving average (EWMA) method.

Sources: Korea Financial Investment Association, Bloomberg.

The spread between the three-year KTB yield and the benchmark rate widened significantly from July and has narrowed rapidly since November (Figure II-3).

Figure Ⅱ-3. Base Rate and Treasury bond yield



Sources: Bank of Korea, Korea Financial Investment Association.

Narrowing Credit Spread of Corporate Bonds

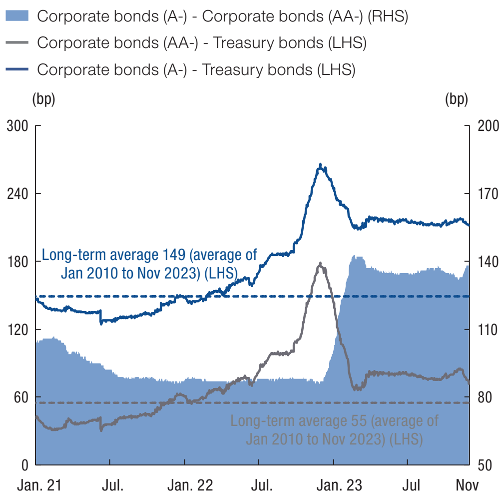
Despite continuing market vigilance in vulnerable sectors such as construction since July, credit spreads on corporate bonds exhibited a stable trend after a slight reduction, particularly in prime bonds, due to robust investment demand driven by favorable interest rate conditions and the announcement of the Bank of Korea's direction for lending system reform (July 27). From mid-October onward, the spreads widened slightly owing to heightened risk aversion by a sharp increase in long-term interest rates. However, in November,

2) In November, the changes in yields for government bonds (10 years, basis points) of major countries were as follows: South Korea (-63), United States (-60), United Kingdom (-34), Germany (-36), Japan (-28), Canada (-51), Australia (-51), New Zealand (-67).

3) The U.S. Treasury's refunding plan for the fourth quarter of 2023 indicated a reduced increase in long-term securities (10-30 years) compared to the previous quarter (from +USD 18 billion in the third quarter to +USD 9 billion in the fourth quarter), falling short of market expectations.

with the impact of a rapid decline in long-term interest rates, they contracted to levels lower than those at the end of June. Meanwhile, the spread between credit ratings (based on AA- and A-) slightly widened compared to the end of June, as the spread for AA- narrowed more significantly[4] (Figure II-4).

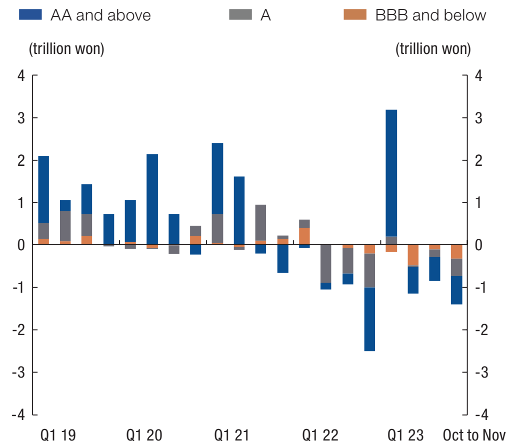
Figure Ⅱ-4. Corporate bond credit spreads[1] and spread across credit ratings



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

Regarding corporate bond issuance during the second half of the year, a net redemption trend continued with a decline in the volume of issuance, which was triggered by factors such as large-scale pre-issuance by companies during the first quarter, utilization of alternative funding sources such as bank loans, and a slowdown in the demand for medium- to long-term funds. In particular, seasonal factors (vacation period, semi-annual report submissions, etc.) played a key role in restraining new bond issuance during July and August. Subsequently, after September, the burden of an increase in issuance interest rates acted as a key deterrent to the market's appetite for the new issuance of corporate bonds (Figure II-5).

Figure Ⅱ-5. Net corporate bond[1] issuances[2]



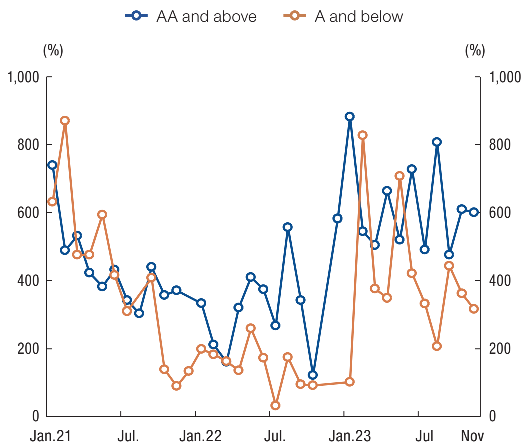
Notes: 1) Public offer basis; excluding issuance by financial companies.
2) Monthly average basis.
Sources: Bank of Korea, Korea Securities Depository.

Meanwhile, apart from a few vulnerable industries and underperforming companies, the volume of issued corporate bonds was effectively absorbed by the market, showing a favorable market participation to corporate bond demand survey[5] (Figure II-6).

4) The spread (in basis points) between corporate bond credit ratings (from A- to AA-): 136 at the end of July 2023 → 133 at the end of August → 136 at the end of September → 133 at the end of October → 140 at the end of November.

5) Out of 26 companies that conducted demand forecasting from July to November (89 cases, KRW 4.2 trillion), only 6 companies had unsold issues (7 cases, KRW 361 billion).

Figure Ⅱ-6. The rate of participation[1] in book-building for corporate bonds[2]



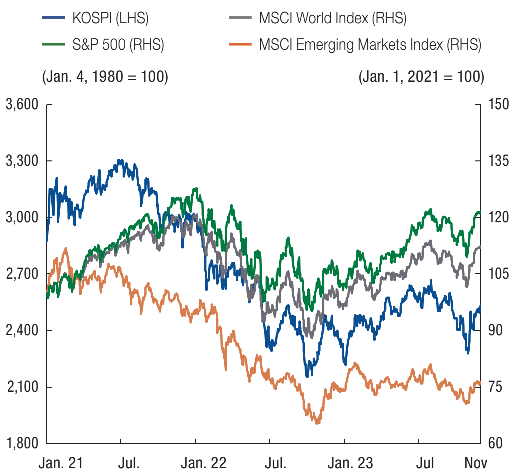
Notes: 1) Participation amount in book-building /expected issuance amount.
2) Public offer basis; excluding issuance by financial companies.
Sources: Bank of Korea, Korea Securities Depository.

2. Stock Markets

Fall in Stock Prices and the Subsequent Rebound

In July and August, stock prices fluctuated due to a combination of positive factors such as the prospect of a soft landing for major economies and negative factors such as the U.S. credit rating downgrade and concerns over the bankruptcy of Chinese real estate companies. From September onwards, stocks fell sharply along with major economies as the possibility of prolonged monetary tightening by the U.S. Federal Reserve was highlighted due to concerns over a renewed surge in inflation, triggered by rising international oil prices. However, in November, they rebounded substantially with the expectations of an improvement in the semiconductor industry, along with the moderated concerns about tightening, affected by slowing U.S. employment data (Figure II-7).

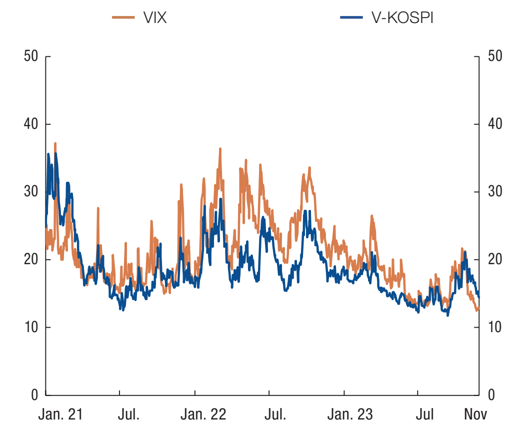
Figure Ⅱ-7. KOSPI and global stock prices



Source: KOSCOM, Bloomberg.

The KOSPI 200 Volatility Index (V-KOSPI) increased in October as market uncertainty heightened due to escalating conflicts in the Middle East, but decreased after November as the likelihood of further escalation weakened and expectations grew that the U.S. Federal Reserve would conclude its interest rate hike cycle (Figure II-8).

Figure Ⅱ-8. Stock price volatility indices[1]

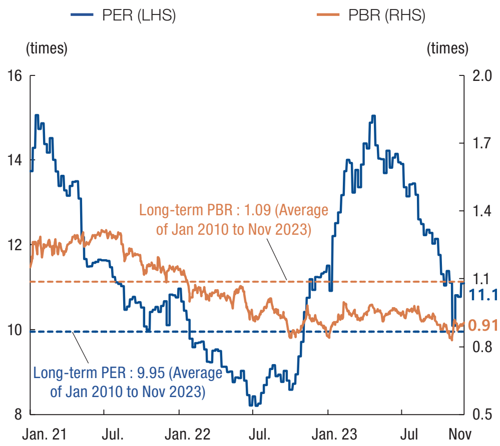


Note: 1) The volatility indices are calculated using prices for options on the KOSPI 200 and S&P 500 indices.
Sources: KOSCOM, Bloomberg.

Decline in PER and PBR

The average price-to-earnings ratio (PER)[6] fell to 11.1 as of November, slightly above the long-term average (9.95, since 2010), as stock prices declined mainly in secondary battery-related stocks, on expectations of slowing demand for electric vehicles despite the increase in expected corporate earnings. The average price-to-book value ratio (PBR) fell from 0.94 at the end of June to 0.91 in November (Figure II-9).

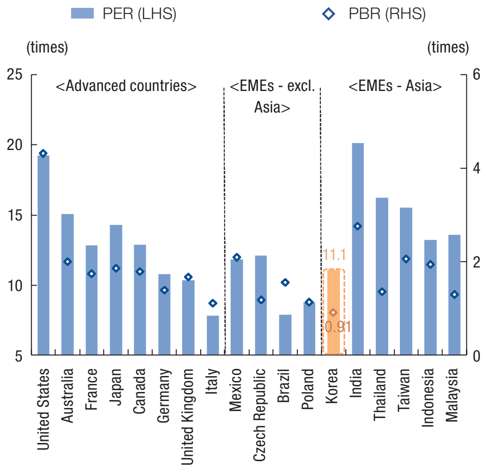
Figure II-9. PER[1)] and PBR[2)]



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 November (Figure II-10).

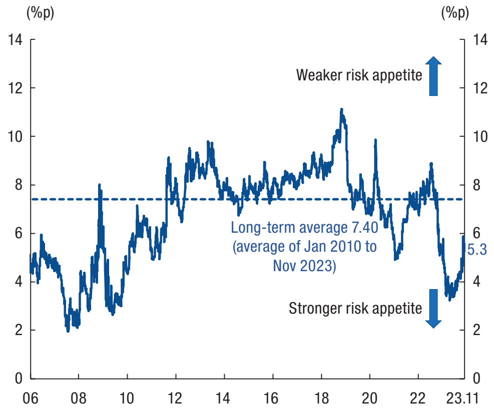
Figure II-10. PERs[1)2)] and PBRs[1)] of major countries



Notes: 1) Nov 2023 basis.
2) MSCI basis (12-month forward).
Sources: Bloomberg, Refinitiv.

Meanwhile, the stock risk premium[7)] rose in the second half of the year as investors' risk appetite weakened, but remains at 5.3%p as of November, hovering below its long-term average (7.40%p since 2010) (Figure II-11).

Figure II-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).
Source: Bloomberg, Refinitiv.

6) 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.

7) 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.

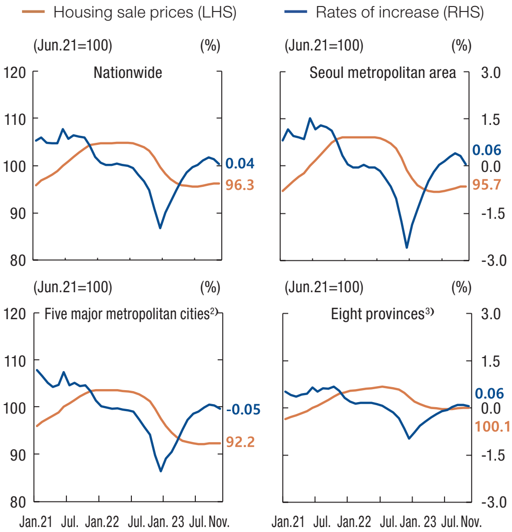
3. Real Estate Markets

Slowdown in Growth of Housing Sale Prices

Housing sale prices were initially on the upswing due to the government's measures at the beginning of the year to prevent a hard landing in the real estate market, but their upward movement subsequently slowed in the fourth quarter. This deceleration is attributed to the downward pressure resulting from the increase in loan interest rates[8] and the government's more stringent management of household loans.[9)10)]

In the Seoul metropolitan area, housing prices continued the upward trend after switching to an increase of +0.03% in June 2023 compared to the previous month. However, after October, the margin of increase narrowed, resulting in a 0.06% increase in November compared to the previous month. For non-Seoul metropolitan areas, the five metropolitan cities saw a decrease of -0.05% compared to the previous month, while the eight provinces registered an increase of 0.06%[11] (Figure II-12).

Figure Ⅱ-12. Trends and rates of increase[1] in housing sale prices



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

The price-to-income ratio (PIR), which compares housing prices with income, and the price-to-rent ratio (PRR), which compares housing prices with rent, both continued to decline.

In the third quarter of 2023, the PIR (nation-

8) A fixed mortgage loan rate from deposit-taking banks (based on new loans, unit: %): 4.41 in January 2023 → 4.32 in March → 4.20 in June → 4.53 in October.
An adjustable mortgage loan rate from deposit-taking banks (based on new loans, unit: %): 5.03 in January 2023 → 4.69 in March → 4.41 in June → 4.64 in October.

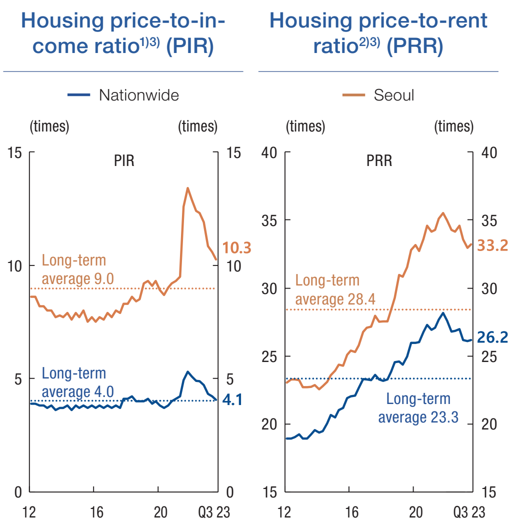
9) On September 13, 2023, the government announced measures to manage household debt, including tightening the standards for 50-year maturity mortgage loans and suspending the supply of general-type special mortgage loans, aka Bogeumjari loan.

10) According to the KB Weekly Apartment Sales Price Index, housing prices turned downward in the second week of November.

11) Growth rate in the multi-family housing sale prices (month-on-month, unit: %, source: Korea Estate Board): -0.54 in January 2023 → 0.71 in March → 0.67 in June → 0.59 in September → -0.28 in October.
Growth rate in the housing sale prices (month-on-month, unit: %, source: KB Real Estate): -1.31 in January 2023 → -0.83 in March → -0.25 in June → 0.06 in September → 0.06 in October → 0.00 in November.

wide) fell to 4.1 from the first quarter (4.3).[12) The PRR (nationwide) has also been on a downward trend since it peaked at 28.2 in the fourth quarter of 2021. However, in the third quarter of 2023, the ratio stood at 26.2, equal to the first quarter of 2023. Both the PIR and the PRR remain above the long-term averages of 4.0 and 23.3, respectively (Figure II-13).

Figure Ⅱ-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.

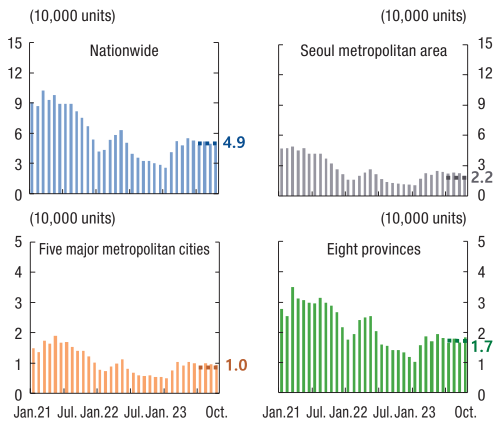
3) Long-term average is average for the peniod between Q1 2012 and Q3 2023

Sources: Bank of Korea staff calculations, Korea Real Estate Board.

The volume of housing sales transactions in the second half of 2023 increased significantly compared to the same period of the previous year, but still remains well below the long-term average.

From July to October 2023, the volume of housing sales transactions soared by 41.0% to a monthly average of 49,000 units from the same period of the previous year (35,000 units), but has remained below the long-term average of 75,000 units since 2010. By region, in the Seoul metropolitan area, the volume of housing sales transactions averaged 22,000 units, up 59.0% from 14,000 units in the same period in the previous year. In the five metropolitan cities, the average increased by 57.4% to 10,000 units from July to October. The eight provinces showed an increase of 16.6% to reach 17,000 units from the same period in the previous year. However, since September, the volume of housing transactions has gradually declined and purchase sentiment, which had been gradually recovering this year, also declined significantly in October[13) (Figure II-14).

Figure Ⅱ-14. Housing sale transaction volumes



Sources: Ministry of Land, Infrastructure and Transport.

12) The PIR (nationwide, third quintile, source: KB Real Estate): 5.3 in the fourth quarter of 2022 → 4.9 in the first quarter of 2023 → 4.8 in the second quarter → 4.6 in the third quarter.
The PIR (Seoul, third quintile, source: KB Real Estate): 11.9 in the fourth quarter of 2022 → 10.8 in the first quarter of 2023 → 10.5 in the second quarter → 10.0 in the third quarter.

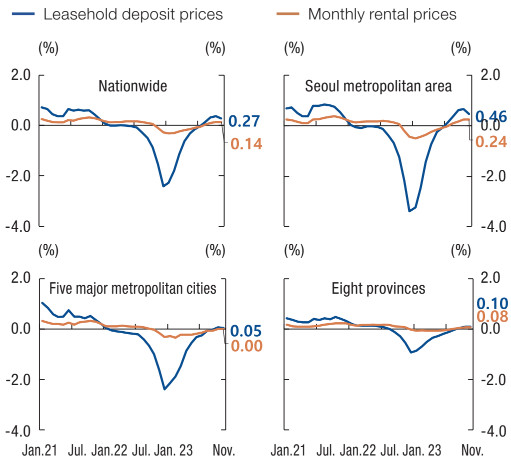
13) Buyer Superiority Index (source: KB Kookmin Bank): 17.9 in January 2023 → 21.9 in March → 28.4 in June → 32.9 in September → 28.2 in October → 23.1 in November.

Increase in Leasehold Deposits and Monthly Rental Prices

With the expanded demand for leasehold and rental housing, driven by the shrinking demand for housing purchases, there has been a continuous upward trend in leasehold deposits jeonse and in monthly rental prices, in particular around the Seoul metropolitan area.[14)15)]

In the Seoul metropolitan area, leasehold deposit prices and monthly rental prices recovered after turning to an upward trend during July and August, while the five metropolitan cities saw an upward shift from October. In the eight provinces, those prices turned to an upward trend between August and September, followed by a modest increase ever since (Figure II-15).

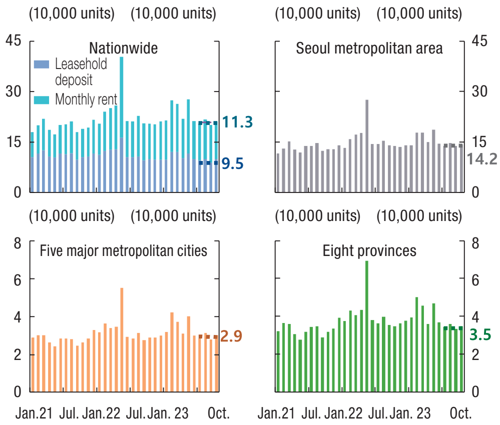
Figure Ⅱ-15. Rates of increase[1)] in leasehold deposits and monthly rental prices



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

The transaction volume of leasehold deposits and monthly rentals amounted to a monthly average of 208,000 housing units from July to October of 2023, a slight decline of 1.8% from the same period of the previous year (212,000 units). By rental type, the volume of leasehold deposit transactions showed a monthly average of 95,000 units, down by 6.1% from the same period of the previous year (102,000 units), while that of monthly rentals averaged 113,000 units, up by 2.1% from the same period of the previous year (110,000 units). As a result, the proportion of monthly rentals out of the sum of leasehold deposits and monthly rentals rose by 2.1%p to 54.2% from July to October, compared with the same period of the previous year (52.1%) (Figure II-16).

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



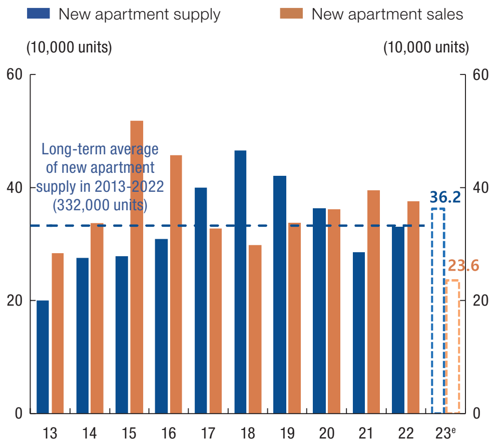
Notes: 1) Since June 2021, the scope of calculation has been expanded from registered fixed date data to housing rental transaction report data.
2) During May 2022, the number of reports temporarily increased due to the expiration of the guidance period for reporting rental transactions.
3) Due to data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

14) Growth rate of leasehold deposit prices (month-on-month, unit: %, source: Korea Real Estate Institute): -2.29% in January 2023 → -0.04% in July → 0.15% in August → 0.32% in September → 0.36% in October → 0.27% in November.
Growth rate of monthly rental prices (month-on-month, unit: %, source: Korea Real Estate Institute): -0.33% in January 2023 → -0.05% in July → 0.04% in August → 0.09% in September → 0.14% in October → 0.14% in November.
15) Growth rate of home leasehold deposit prices (month-on-month, unit: %, source: KB Real Estate): -1.98% in January 2023 → -0.93% in March → -0.22% in June → 0.14% in September → 0.20% in October → 0.18% in November.

In 2023, the supply of new apartments[16] reached 362,000 units, higher than the previous year's level (330,000 units), and is expected to surpass the average level in previous years (an annual average of 332,000 units from 2013 to 2022). In the second half of 2023, the number of new apartments available was 196,000 units, an increase of 12.6% from 174,000 units in the first half of the year and also a slight increase from the same period of the previous year (187,000 units). However, the new apartment sales volume for 2023 is expected to reach 236,000 units, showing a substantial reduction of 35.6% from the previous year (368,000 units) (Figure II-17). In particular, the sales volume of new apartments offered in the first half of 2023 registered a significant decrease, with 75,000 units available, marking a 55.9% drop compared to the same period of the previous year. Additionally, in the second half of 2023, there was a reduction in the sales volume to 162,000 units, marking a decline of 19.8% compared to the same period in the previous year.

Meanwhile, the volume of unsold new homes has been on a continual decline since the end of February 2023 (75,000 units) to reach 58,000 units as of the end of October (7,000 units in the Seoul metropolitan area and 51,000 units in the non-Seoul metropolitan areas), a 22.7% decrease from the end of February.[17] Meanwhile, the number of finished-yet-unsold new homes continues to show a gradual upward trend.[18]

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



Note: 1) As of Nov. 16, 2023. Based on sum of monthly planned amount for 2023.

Sources: Real Estate 114.

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

At the end of the third quarter of 2023, office rental prices increased by 0.59% to 101.25 compared to the first quarter (100.06), driven by the restriction of new supply and the reduction of remote work. However, retail rental prices remained at a similar level to the first quarter, changing slightly from 99.55 to 99.53, influenced by factors such as rising interest rates, the contraction of consumer sentiment,[19] and shifts in consumption patterns

16) By region, in 2023, both the Seoul metropolitan area (179,000 units → 193,000 units) and non-Seoul metropolitan areas (151,000 units → 177,000 units) are expected to show an increase in new apartments over the previous year.

17) Stock of unsold new housing units (based on month-end): 75,000 units in January 2023 → 75,000 units in February → 63,000 units in July → 62,000 units in August → 60,000 units in September → 58,000 units in October.

18) Stock of unsold new housing units after construction completion (based on month-end): 8,000 units in January 2023 → 9,000 units in February → 9,000 units in July → 9,000 units in August → 10,000 units in September → 10,000 units in October.

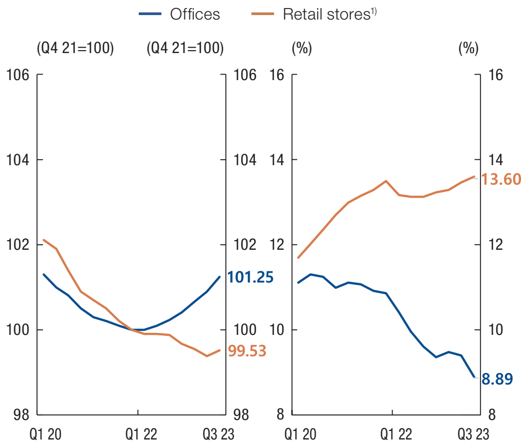
19) The Consumer Sentiment Index changed from 92.0 in March 2023 to 100.7 in June, followed by 99.7 in September, 98.1 in October, and 97.2 in November, indicating a decline in the second half of the year.

in favor of online shopping. The vacancy rate for offices stood at 8.89% as of the end of the third quarter of 2023, down 0.59%p from the first quarter (9.47%), while the vacancy rate for retail stores was 13.60%, up 0.32%p from the first quarter (13.28%)[20] (Figure II-18).

(-0.15%), still falling below the long-term average. The volume of commercial real estate transactions during the third quarter of 2023 was 43,000, a decrease of 24.9%, compared to the 58,000 transactions from the same period in the previous year (Figure II-19).

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

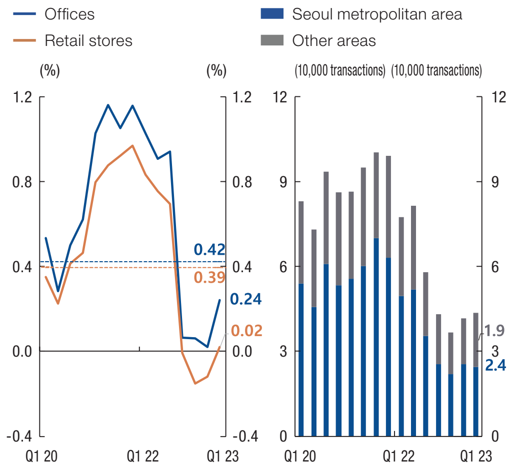
Rental price indices | Vacancy rates



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

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

Return on capital1)2) | Transaction volume3)



Notes: 1) Quarter-on-quarter rate of increase in asset value reflecting changes in land and building prices. Retail stores are based on medium- to large-sized units.
2) The dashed line represents the average from the first quarter of 2009 to the third quarter of 2023.
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.

Continued Slump in Returns on Capital for Offices and Retail Stores

The return on capital for commercial real estate including offices and retail stores rebounded in the third quarter, but remains sluggish overall.

During the third quarter of 2023, the capital return for offices stood at 0.24%, an increase of 0.18%p from the first quarter (0.06%), while the return on capital for retail stores was 0.02%, up 0.17%p from the first quarter

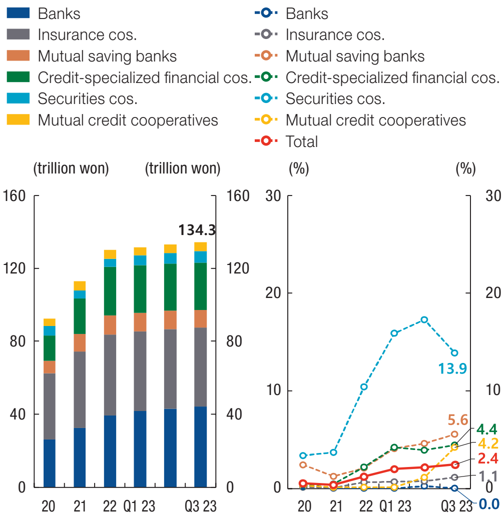
20) For details regarding commercial real estates, refer to Box 3 "Recent Trends and Risk Assessment of Commercial Real Estate Collateralized Loans."

Slowed Growth of Real Estate PF Loans, Slight Increase in Delinquency Rates

As of the third quarter of 2023, the balance of real estate project financing (PF) loans (excluding debt guarantees) stood at KRW 134.3 trillion, showing a slowdown in growth since the end of 2022. By sector, banks and securities companies showed an increase of KRW 4.8 trillion and KRW 1.8 trillion, respectively, compared to the end of the previous year, whereas insurance companies, mutual savings banks, credit-specialized financial companies, and mutual credit cooperatives each experienced a decrease of KRW 1.0 trillion, KRW 0.7 trillion, KRW 0.8 trillion, and KRW 0.1 trillion, respectively, compared to the end of the previous year. The delinquency rate on real estate PF loans is showing an upward trend overall. The delinquency rates faced by banks and insurance companies remained low at 0.0% and 1.1%, respectively, in the third quarter of 2023, while mutual savings banks, credit-specialized financial companies, and mutual credit cooperatives experienced significant rises in delinquency rates, reaching 5.6%, 4.4%, and 4.2%, respectively, representing hikes of 3.5%p, 2.2%p, and 4.1%p, compared to the end of the previous year. The delinquency rate for securities companies stood at 13.9%, a slight decrease from the previous quarter (17.3%), though it remains at a high level (Figure II-20).

Figure Ⅱ-20. Trends in PF loan balances and delinquency rates

Loan balances | Delinquency rates



Sources: Financial institutions' business reports.

Box 3.

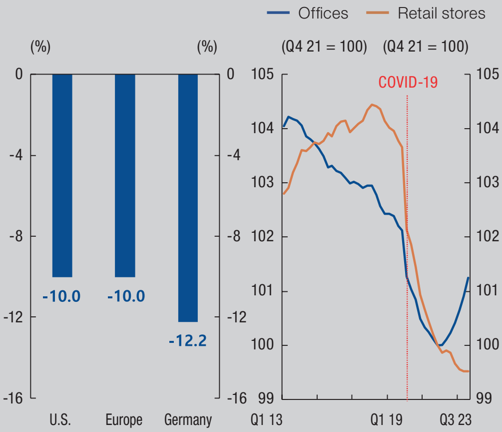
Recent Trends and Risk Assessment of Commercial Real Estate Collateralized Loans[1]

With the expansion of non-face-to-face consumption amid a prolonged low-interest-rate environment since the COVID-19 pandemic, the commercial real estate market in major countries, which had flourished with a focus on logistics and warehouse facilities, began to exhibit signs of sluggishness in the second half of 2022, influenced by rising interest rates and an economic slowdown. In the United States, commercial real estate prices have shown a downward trend, particularly around offices and rental apartments, with a 10.0% decline from their peak in the second quarter of 2022. Similarly, the Eurozone and Germany also saw their prices decrease by 10.0% and 12.2%, respectively. In the United States, amid the expansion of commercial real estate exposure, primarily among small and medium-sized banks,[2] the concentration of loan maturities within the timeframe of 2023 to 2024[3] has led to heightened concerns over deteriorating financial soundness[4] among small and medium-sized banks handling a significant portion of these loans.[5]

Despite a narrower margin of reduction compared to other major countries, commercial real estate rental prices in Korea, especially for retail stores, have continued to fall since the COVID-19 pandemic, while offices have escaped a period of downturn and started to show signs of recovery. However, the increasing burden of interest rates has led to the deterioration of profitability in commercial real estate, consequently raising concerns over the soundness of related loans. Against this backdrop, this article analyzes trends in the commercial real estate market and scrutinizes their impact on related loans.

Commercial real estate market trends in major countries

Price decline[1] | **Domestic rental price indices**



Notes: 1) The decline since the peak after 2020 until the third quarter of 2023 for the Unites States and Germany, and until the second quarter of 2023 for the Eurozone.
Source: Bloomberg, BIS, Korea Real Estate Board.

1) This article was authored by Park Jae-hyun and Jung Yoon-jae (Financial Stability Analysis Team) and was reviewed by Seo Pyoung-seok (director of the Financial Stability Strategy & Coordination Division) and Lee Jung-yeoun (head of the Financial Stability Analysis Team).
2) As of March 2023 in the United States, commercial real estate collateralized loans accounted for 28.7% of the total assets held by small and medium-sized banks, whereas for large banks, the said loans comprised only 6.5% of their total assets (JP Morgan).
3) Approximately USD 1.4 trillion, representing 31% of all commercial mortgages (USD 4.4 trillion), is expected to mature from 2023 to 2024 (Korea Center for International Finance).
4) In the United States, commercial real estate loans are often non-recourse (which indicates borrowers are not liable for repayment beyond the collateral provided). Therefore, if the value of the collateral falls below the remaining loan balance, borrowers can choose to declare strategic bankruptcy.
5) Approximately 70% of banks' commercial real estate mortgages are concentrated in small and medium-sized banks (FRED).

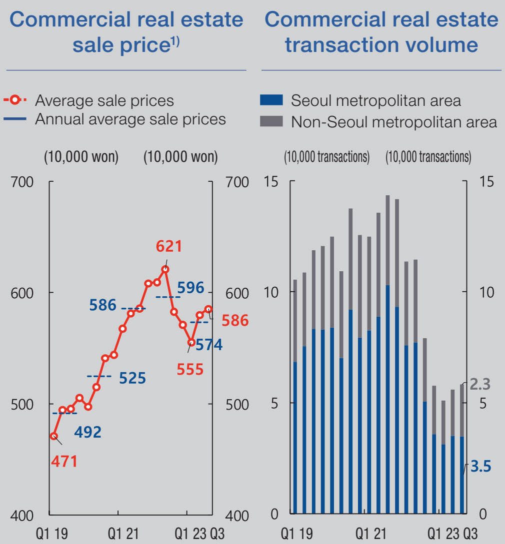
Trends in the Commercial Real Estate Market

Sluggish Commercial Real Estate Transactions

The sale prices of commercial real estate (based on the actual transaction prices from the Ministry of Land, Infrastructure and Transport) had risen significantly after COVID-19 but turned downward in the second half of 2022.

The average sale price per square meter of commercial real estate[6] was approximately KRW 4.71 million in the first quarter of 2019, but after COVID-19, it rapidly increased, reaching KRW 6.21 million in the first half of 2022. However, as the second half of 2022 unfolded, the real estate market showed overall sluggishness with a rise in interest rates and concerns of an economic slowdown, leading to a significant adjustment before recently rebounding somewhat. The transaction volume also marked a substantial decrease of 26.7% to 58,000 transactions in the third quarter of 2023, compared to the same period of the previous year. By region, the Seoul metropolitan area saw a 31.0% decrease with 35,000 transactions, while non-Seoul metropolitan areas experienced a 19.0% reduction to 23,000 transactions compared to the previous year.

Commercial real estate transaction prices and volume trends



Notes: 1) sale price per unit area(m²).
Source: Ministry of Land, Infrastructure and Transport, Bank of Korea staff calculation.

The sluggishness of the commercial real estate market is mainly attributed to factors such as the delayed economic recovery, an increase in the supply of commercial real estate, changes in consumption patterns, and rising interest rates. By type, the market for logistics centers and retail stores contracted to a greater extent than offices. Meanwhile, conditions are relatively favorable for the domestic office market, compared to other types of real estate,[7] due to decreasing trend of remote work and limited new supply of offices in city centers. Particularly in Seoul, rental prices are continuing to rise,[8] and the vacancy rate remains at a very low level.[9]

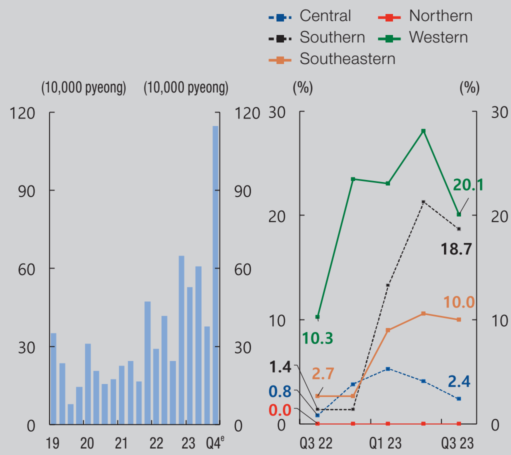
6) Average prices per unit area for commercial real estate were calculated by averaging the sale prices for each transaction as registered with the Ministry of Land, Infrastructure and Transport (actual transaction prices).
7) The nationwide vacancy rate for offices (annual average, unit: %): 11.9 in 2019 → 11.2 in 2020 → 11.0 in 2021 → 9.9 in 2022 → 9.3 in the third quarter of 2023.
8) In Seoul, the rental price index for office buildings with a floor area of 10,000m2 or more increased by 11.2% to 15.3% as of the second quarter of 2023 compared to the first quarter of 2022 (KB Real Estate).
9) As of the second quarter of 2023, the office vacancy rate in Seoul stood at 2.4%, a significantly lower level compared to major cities (Beijing 24%, Singapore 9%, Tokyo 5%) (KB Commercial Real Estate Market Review for the third quarter of 2023).

Concerns over Excess Supply of Commercial Real Estate

With the significant expansion of demand for logistics facilities in line with shifts in consumption patterns in the wake of COVID-19, the supply of new distribution centers has significantly increased since 2022. In particular, as many of the business sites commissioned during the COVID-19 period reached completion of construction in 2023, there were growing concerns about an oversupply in this sector. The vacancy rates for distribution centers in the Seoul metropolitan area showed a significant increase from 4.0% in the third quarter of 2022 to 13.1% in the same quarter of 2023. Particularly in the southern, southeastern, and western regions of the Seoul metropolitan area, the ongoing influx of new supply led to increases in vacancy rates of 17.3%p, 7.3%p, and 9.8%p, respectively, relative to the third quarter of 2022. On the other hand, in the central and northern regions, which experienced limited supply, vacancy rates either saw a minimal rise (+1.6%p) or remains extremely low (0%).

Trends in logistics center supply and vacancy rates

Logistics center new supply volume[1)2)]	Bacancy rate of lofistics centers in the Seoul metropolitan area[3)4)]

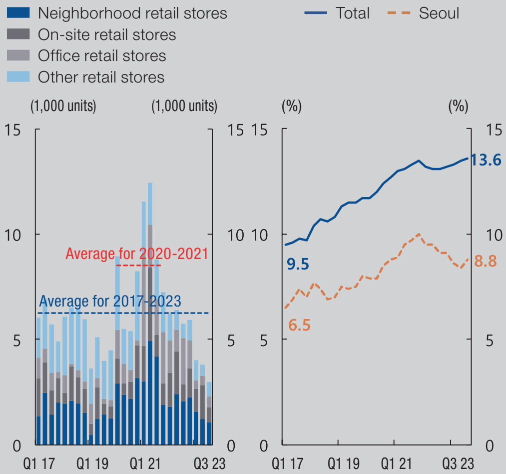


Notes: 1) For the fourth quarter of 2023, projected supply.
2) "Pyeong" is a unit of land area in South Korea, where 1 pyeong is equivalent to 3.31 square meters.
3) Central: Gunpo, Uiwang, Suwon, Osan, Dongtan Northern: Namyangju, Goyang, Paju, Pocheon, Yangju Southern: Hwaseong, Pyeongtaek, Anseong Southeastern: Yongin, Icheon, Yeoju, Gwangju, Seongnam Western: Incheon, Gimpo, Bucheon, Ansan, Siheung
4) As of the third quarter of 2023.
Source: Genstarmate, JLL.

Retail stores have also seen a slowdown, driven by a rapid growth in non-store-based retail such as online shopping in line with the increase in non-face-to-face consumption, as well as an expansion in the supply of retail spaces available. From 2020 to 2021, the number of new retail stores stood at a quarterly average of about 8,500 units per quarter, a significant increase from the average of around 6,300 units since 2017. While vacancy rates are showing an upward trend overall, by region, the rates are higher in non-Seoul regions. Specifically, in the third quarter of 2023, Sejong City had the highest vacancy rates at 25.7% for medium-to-large retail stores (15.0% for small stores), compared to the metropolitan area of Seoul, Incheon, and Gyeonggi, which showed better performance with rates ranging from 8% to 14% (5% to 7% for small stores).

Medium- to large-sized commercial retail stores[1] trends in supply volume and vacancy rates

Medium- to large-sized commercial retail stores supply volume	Vacancy rate trends in medium- to large-sized commercial retail stores



Notes: 1) retail stores with over 330m² or three or more floors

Source: Korea Real Estate Board.

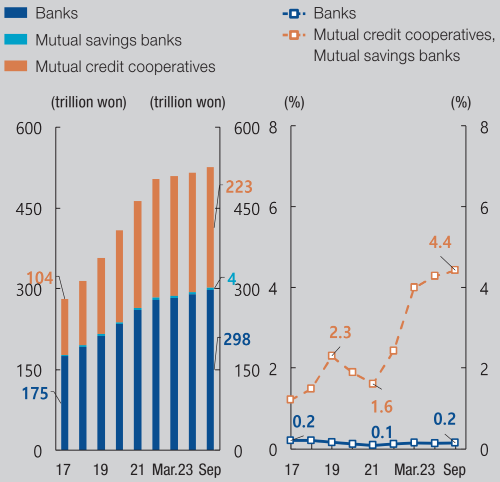
Risk Assessment of Commercial Real Estate Collateralized Loans

Increased Delinquency Rates in the Non-banking Sector

The volume of commercial real estate collateralized loans held by the financial sector (based on banks, mutual savings banks, and mutual credit cooperatives)[10] stood at KRW 525 trillion in September 2023. After it rose rapidly with an average annual growth rate of 9.9% from 2017 to 2022, the pace of growth has shown signs of slowing down this year. By sector, both banks and NBFIs saw growth in these loans. The balance of bank-issued collateralized loans from commercial real estate reached KRW 298 trillion in September 2023, an increase of 70.6% from KRW 175 trillion at the end of 2017. Among NBFIs, the balance of loans held by mutual credit cooperatives, which accounted for the majority of related loans,[11] surged from KRW 104 trillion to KRW 223 trillion during the same period, representing an increase of 114.1%. In terms of the soundness of these loans, whereas banks are maintaining a relatively healthy level of soundness, NBFIs are experiencing a gradual deterioration. As of the end of September 2023, the delinquency rate for banks' commercial real estate collateralized loans remained at a very low level of 0.2% but the delinquency rate in NBFIs, particularly in Nonghyup and Sinhyup, jumped rapidly to 4.4% at the end of September 2023.

Trends in commercial real estate mortgage loan balances and delinquency rates[1)2)3)]

Trends in balances	Trends in delinquency rates



Notes: 1) As of period end

2) Mutual savings banks based on the top 20 companies

3) Banks based on the top 5 banks (KB, NH, Shinhan, Woori, and Hana bank)

Source: Financial institution business reports (Internal survey).

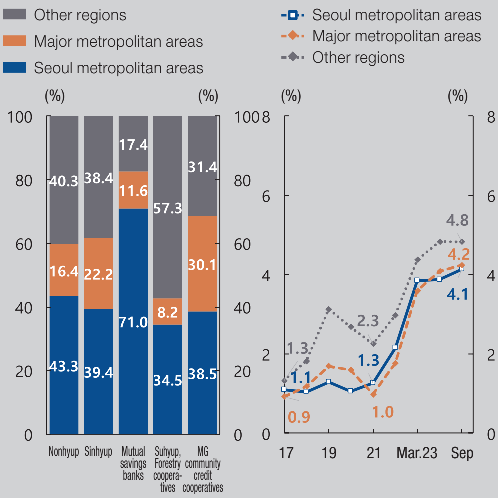
10) The data is based on loans secured by collateral other than housing, excluding land and factories.

11) As of the third quarter of 2023, mutual credit cooperatives handled 98.1% of NBFIs' commercial real estate collateralized loans.

In terms of the region-specific proportions of commercial real estate collateralized loans from NBFIs, the Seoul metropolitan area has the largest share, which has been steadily increasing since 2015.[12] As of September 2023, mutual savings banks held the highest proportion of said loans in the Seoul metropolitan area at 71.0%, followed by Nonghyup with a share of 43.3%, with Suhyup and Forestry Cooperatives holding the lowest proportion at 34.5%. When examining delinquency rates by region, those outside the Seoul metropolitan and major metropolitan cities exhibited higher delinquency rates. Furthermore, since 2021, delinquency rates have been increasing across all regions, with the Seoul metropolitan area showing an increase from 1.3% in 2021 to 4.1% in September 2023, major metropolitan cities from 1.0% to 4.2%, and other areas from 2.3% to 4.8%.

Non-bank regional distribution and delinquency rates of commercial real estate mortgage loans

Loan balance proportion[1)] Delinquency rates[2)]



Notes: 1) As of September 2023.
2) Sejong City is included in the major metropolitan cities.
Source: Financial institution business reports (Internal survey).

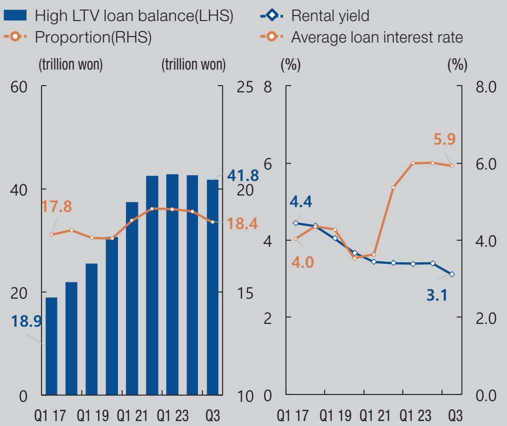
Increased Default Risk of High LTV Loans

Examining the inherent potential risks of the commercial real estate collateralized loans of NBFIs, which demonstrate relatively higher delinquency rates, the balance of high loan-to-value (LTV) loans (exceeding 70%) is shown to be on a decline. In addition, the proportion of high LTV loans in the total commercial real estate collateralized loans held by NBFIs decreased from 19.1% of 2022 to 18.4% of this year. Considering these factors, there appears to be a lower likelihood of large-scale defaults in the short term. However, as the volume of high LTV loans in NBFIs increased from KRW 18.9 trillion in 2017 to KRW 41.8 trillion in the third quarter of 2023, alongside consistently rising loan interest rates amid a continuous decline in rental yields since 2022, the default risk of these loans is assessed to be higher than in the past.

12) As of 2015, the share of NBFIs' commercial real estate collateralized loans extended to the Seoul metropolitan area was 34.3%, increasing to 45.0% as of September 2023.

Non-bank high LTV commercial real estate mortgage loans and profitability

High LTV mortgage loans[1)2)]	Commercial real estate yield[3)4)], average loan interest rate



Notes: 1) Loan balances are aggregated for mutual savings banks and mutual credit cooperatives, and the proportion is based on their share of the total commercial real estate mortgage loans.
2) Loans with LTV exceeding 70%.
3) Based on income yield of medium- to large-sized commercial retail stores.
4) The third quarter of 2023 is based on the average of the first quarter to the third quarter (considering seasonal factors).
Source: Financial institution business reports (Internal survey), Korea Real Estate Board.

Assessment and Implications

Given the sluggishness of the domestic commercial real estate market, centered around distribution centers and retail stores, there are growing concerns about the soundness of commercial real estate collateralized loans. In particular, it is essential to note the rapid increase in the delinquency rate of related loans from NBFIs. However, while delinquency rates are relatively well-managed in the banking sector, the delinquency rate of Nonghyup, which holds the largest share of such loans in the non-banking sector, is also favorable compared to other NBFIs. Consequently, there does not appear to be a high likelihood of large-scale defaults occurring within NBFIs. However, considering the possibility that loan defaults may materialize due to factors such as the continued oversupply of commercial real estate, delayed economic recovery, and increased interest rate burdens, it is crucial for financial institutions to proactively respond by strengthening their loan loss provision coverage. In addition, there appears to be a need to more actively manage risks regarding NBFIs with smaller market shares but higher delinquency rates.

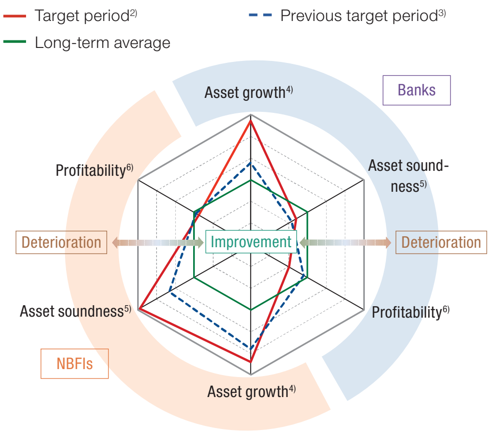
Ⅲ. Financial Institutions

Commercial banks'[1] asset soundness decreased slightly due to a rise in borrowers' debt repayment burden caused by rising interest rates, although profitability remained favorable.

Asset growth at NBFIs slowed significantly, and their asset soundness also declined. Profitability also deteriorated, except in some sectors.

Mutual transactions among financial institutions decreased, but the share in total financial sector assets increased slightly (Figure III-1).

Figure Ⅲ-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 Q3 2023.
3) End of Q1 2023. For profitability, end of Q3 2022.
4) Rate of increase in total assets.
5) Substandard-or-below loan ratio.
6) Return on assets (ROA).
Sources: Bank of Korea, Financial institutions' business reports.

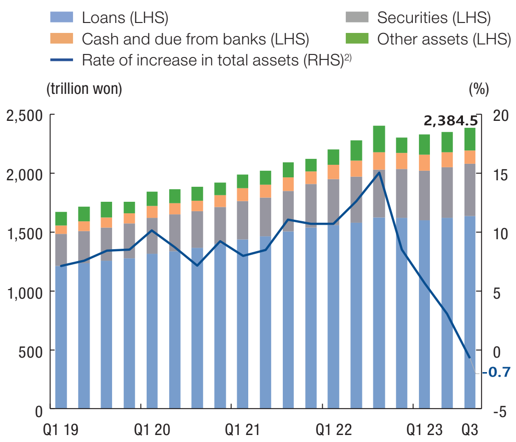
1. Banks

Asset Growth Shifting to a Decline

The total assets of commercial banks stood at KRW 2,384.5 trillion at the end of the third quarter of 2023, down 0.7% year-on-year, registering the first negative growth rate since the end of the second quarter of 2010 (-0.2%).

By asset type, loans rose by a mere 0.7% year-on-year, a significantly slower pace than in the first quarter of 2023 (2.6%), due to a significant decline in repo purchases despite the expansion in lending. As the persistently higher interest rates reduced the incentive to hold cash assets, cash and cash equivalents fell by the largest percentage (-22.4%) since the second quarter of 2002 (-23.3%). Securities, on the other hand, increased by 10.1% year-on-year, a greater margin of increase than in the first quarter of this year (8.1%) (Figure III-2).

Figure Ⅲ-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 banks' business reports.

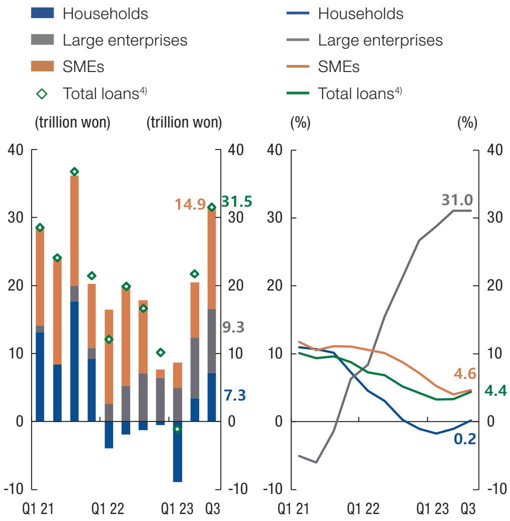
1) Commercial banks (nationwide and regional banks) are analyzed in the Financial Stability Report, while specialized banks (KDB, IBK, Korea Eximbank, Nonghyup Bank, and Suhyup Bank) with different business models are not.

In terms of loans by type of borrower (Korean won-denominated loan basis), corporate loans increased greatly by KRW 24.2 trillion (KRW 9.3 trillion for large enterprises and KRW 14.9 trillion for SMEs) in the third quarter of 2023, while household loans (KRW 7.3 trillion) also saw a slight increase in growth.

Corporate loans continued to increase for both large enterprises and SMEs, as supply factors such as expanded loans from banks coincided with increased demand among businesses for working capital due to economic uncertainty. In particular, loans issued to large enterprises increased by 31.0% year-on-year, the highest since the second quarter of 2012 (31.4%). Household loans saw their growth rate turn positive (+0.2%) compared to the same period of the previous year as mortgage loans[2] increased mainly due to the easing of real estate and lending regulations and the supply of policy loan products[3] (Figure III-3).

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

Scale of change	Rate of increase



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 others.

Sources: Commercial banks' business reports.

Slight Decline in Asset Soundness

The substandard-or-below loan ratio, which is an indicator of the asset soundness of commercial banks, stood at 0.30% at the end of the third quarter of 2023, a steady increase from the fourth quarter of 2022 due to an increase in substandard-or-below loans.[4] How-

2) At the end of the third quarter of 2023, the growth rate of mortgage loans on a year-on-year basis was 3.04%, slightly higher than at the end of the first quarter of 2023 (1.03%).

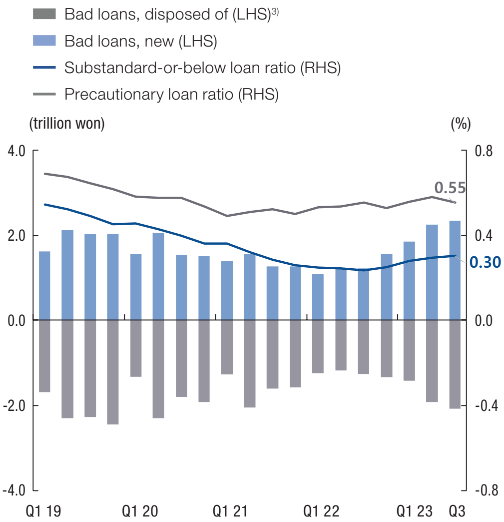
3) Between the second and third quarters of 2023, there was a KRW 17.2 trillion increase in mortgage loans (based on household credit statistics) provided by the Korea Housing Finance Corporation and the National Housing and Urban Fund, including the Beotimmok Jeonse deposit loan program (National Housing and Urban Fund), which is supplied using bank funds in the form of secondary collateral when the National Housing and Urban Fund's financial resources are insufficient, and the Bogeumjari loan program (Korea Housing Finance Corporation), which temporarily relaxed the supply limit and eligibility requirements.

4) At the end of the third quarter of 2023, the precautionary loan ratio decreased by 0.01%p from the first quarter of 2023 (0.56% → 0.55%). By borrower, the ratio for households and SMEs increased by 0.05%p (0.36% → 0.41%) and 0.22%p (0.57% → 0.79%), respectively, from the first quarter of 2023, while the ratio for large enterprises decreased by 0.75%p (1.14% → 0.39%).

ever, since the second quarter of 2023, the rise in the substandard-or-below loan ratio has been slowing down due to banks' efforts to clean up bad loans through proactive write-offs and sales. In the third quarter of 2023, substandard-or-below loans by commercial banks amounted to KRW 2.3 trillion, increasing each quarter since the fourth quarter of 2022 (KRW 1.6 trillion in the fourth quarter of 2022 → KRW 1.8 trillion in the first quarter of 2023 → KRW 2.2 trillion in the second quarter of 2023 → KRW 2.3 trillion in third quarter of 2023). Meanwhile, the size of non-performing loans has expanded in the second and third quarters of this year (KRW 1.3 trillion in the fourth quarter of 2022 → KRW 1.4 trillion in the first quarter of 2023 → KRW 1.9 trillion in the second quarter of 2023 → KRW 2.1 trillion in the third quarter of 2023) (Figure III-4).

By type of borrower, the substandard-or-below loan ratios of households and SMEs continued to rise from the second half of last year, though the pace of increase has slowed. At the end of the third quarter of 2023, the substandard-or-below loan ratios of households and SMEs were 0.27% and 0.39%, respectively, up 0.03%p and 0.02%p from the end of the first quarter of this year. In the case of large enterprises, the substandard-or-below loan ratio declined until the third quarter of 2022, then rose in the second quarter and remained at a similar level at the end of the third quarter despite the significant expansion of loans to large enterprises this year (0.15% at the end of the fourth quarter of 2022 ⟶ 0.14% at the end of the first quarter of 2023 ⟶ 0.19% at the end of the second quarter of 2023 ⟶ 0.20% at the end of the third quarter of 2023) (Figure III-5).

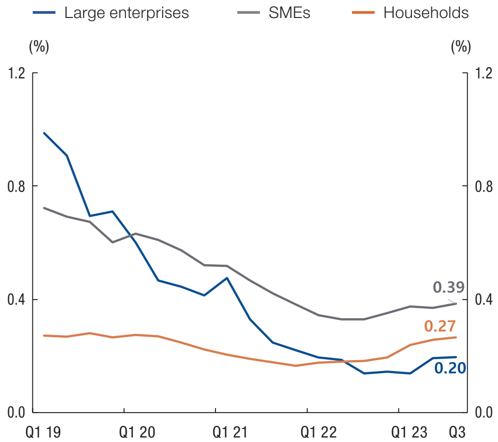
Figure Ⅲ-4. Commercial bank bad loans[1] and substandard-or-below loan ratio[2]



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 banks' business reports.

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

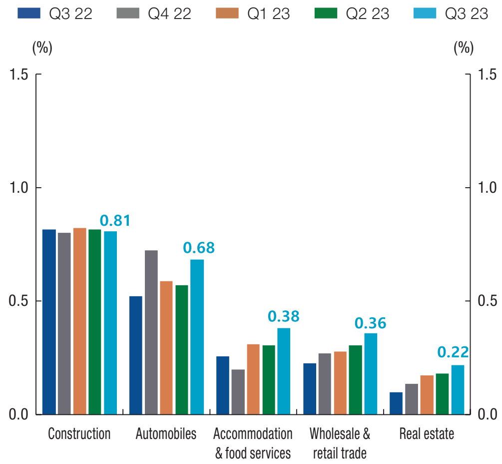


Sources: Commercial banks' business reports.

By industry, the substandard-or-below loan ratio increased in most of the industries, including automobiles (0.59% in the first quarter of 2023 → 0.68% in the third quarter of 2023), accomodation & food services (0.31%

→ 0.38%), wholesale & retail trade (0.28% → 0.36%), and real estate (0.17% → 0.22%), while construction remained at a similar level to the previous quarter (0.82% → 0.81%). Meanwhile, in automobiles, despite the favorable business environment,[5] loans decreased and the substandard-or-below loan ratio increased significantly due to the bankruptcy of some auto parts manufacturers (Figure III-6).

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

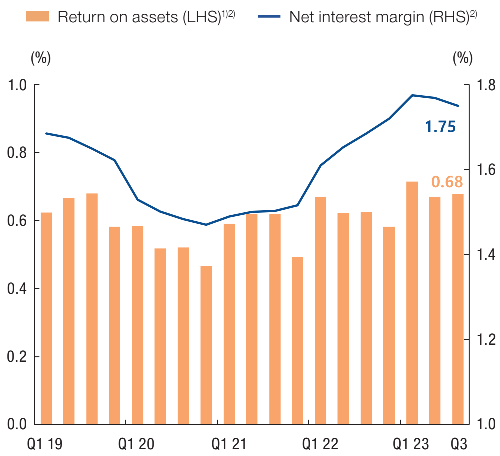


Sources: Commercial banks' business reports.

Satisfactory Profitability

The profitability of commercial banks continued to improve. Return on assets (ROA) of banks was 0.68% (annualized basis) in the third quarter of 2023, up 0.06%p year-on-year (0.62%). Meanwhile, the net interest margin (NIM) declined slightly to 1.75% in the third quarter of 2023[6] after reaching 1.77% in the first quarter of 2023, the highest level[7] since the fourth quarter of 2014 (1.83%), amid rapid growth in interest income due to higher lending rates since the second half of 2021 (Figure III-7).

Figure Ⅲ-7. Commercial bank profitability



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

The net income of commercial banks amounted to KRW 11.9 trillion in the first three quarters of 2023, up KRW 1.4 trillion from the same period of the previous year (KRW 10.5 trillion). This is attributable to an increase in interest income (KRW 30.3 trillion), up by KRW 2.3 trillion from the same period last year (KRW 28.0 trillion) driven by an increase in loan assets, mainly corporate loans, and a rising net

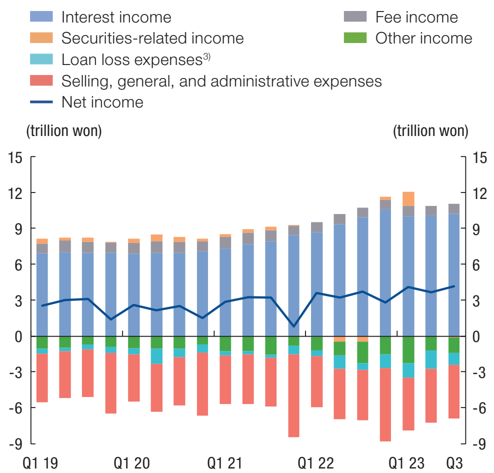
5) In the first half of 2023, revenue in the automotive industry increased by 31.5% year-on-year, and the interest coverage ratio (operating income/total interest expenses) was 17.8, a significant increase from the end of 2022 (9.7) due to its favorable operating performances.

6) This was mainly due to the increase in interest expense in the fourth quarter of 2022 as banks attracted receivables at higher interest rates due to the normalization of regulatory ratios and deterioration of bank bond issuance conditions.

7) Commercial banks in Korea 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.

interest spread.[8] Securities-related income rose by KRW 2.0 trillion compared to the same period last year, mainly due to valuation gain. However, loan loss expenses climbed to KRW 3.7 trillion, up KRW 1.6 trillion from the same period of the previous year (KRW 2.1 trillion), led by the proactive accumulation of additional loan loss provisions[9] in preparation for internal and external uncertainties, which contributed to the decline in profit (Figure III-8).

Figure Ⅲ-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 banks' business reports.

2. Non-Bank Financial Institutions

2-1. Non-bank Deposit-taking Institutions

Continued Slowdown of Asset Growth

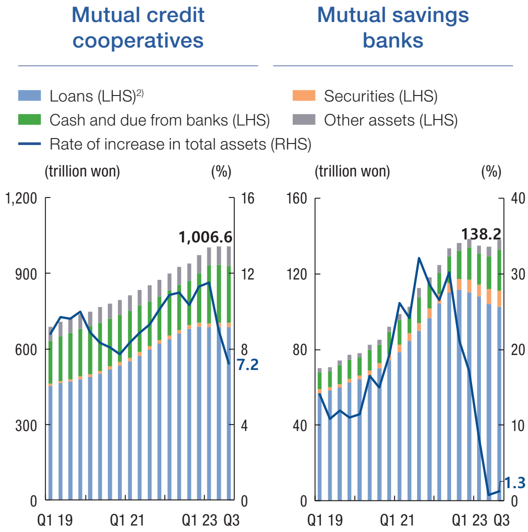
Asset growth among non-bank deposit-taking institutions (NBDIs)[10] has slowed sharply since 2022. The total asset growth rate of mutual credit cooperatives and mutual savings banks at the end of the third quarter of 2023 was 7.2% and 1.3%, respectively, significantly lower than that of the first quarter of 2023 (11.5% and 8.3%, respectively). The growth rate of loans of mutual credit cooperatives and mutual savings banks stood at 1.0% and -8.1%, respectively, at the end of the third quarter of 2023, significantly lower than that of the first quarter of this year (7.2% and 3.6%, respectively). This was driven by a rise in non-performing loans and a deterioration in deposit taking incentives due to high deposit interest rates which constrained asset expansion (Figure III-9).

8) The net interest spread of deposit-taking banks on the quarterly average balance was 2.50%p in the third quarter of 2023, up 0.08%p from the same period of last year (2.42%p). Meanwhile, the balance-based net interest spread at the end of October 2023 was 2.47%p, down from 2.49 %p in the previous month.

9) At the end of the third quarter of 2023, the provision coverage balance was KRW 10.9 trillion, up 26.8% from KRW 8.6 trillion at the end of the third quarter of 2022.

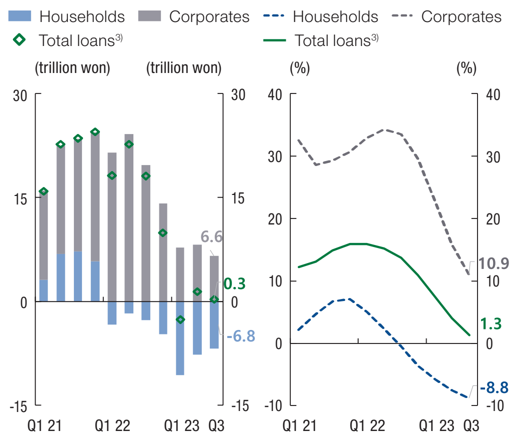
10) Non-bank deposit-taking institutions (NBDIs) refer to mutual credit cooperatives and mutual savings banks that are similar to commercial banks in terms of deposit- and loan-oriented funding and operating practices. NBDIs are distinctly different from other NBFIs, such as securities and credit-specialized financial companies that primarily raise marketable funds and insurance companies that receive premiums, in that their funding practices differ from those of other NBFIs, their fund management is heavily weighted toward financial instruments such as bonds and equities, and the risk factors they face are significantly different from those of other NBFIs, consisting of large-scale deposit withdrawals and concerns about loan asset distress. As such, from this issue of the Financial Stability Report, NBFIs are subdivided into two categories to provide more in-depth analysis on potential risks in line with the characteristics of NBFIs: (1) non-bank deposit-taking institutions and (2) insurance, securities, and credit-specialized financial companies, among which securities and credit-specialized financial companies are considered non-bank financial intermediation under the FSB standards. For details, refer to Box 4 "Characteristics and Implications of Recent Movements of the Domestic Non-bank Financial Intermediation Sector."

Figure Ⅲ-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 institutions' business reports.

Figure Ⅲ-10. Scale of change[1)] and rate of increase[2)] in mutual credit cooperative



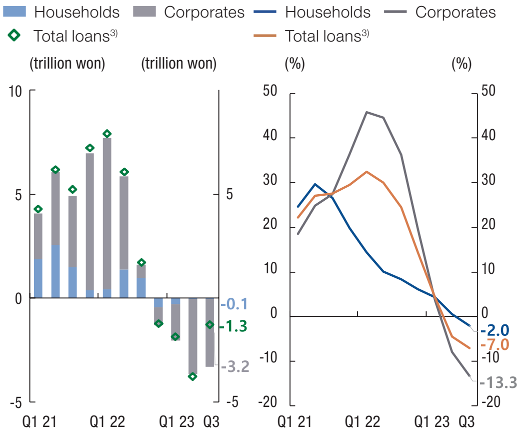
Notes: 1) Compared to previous quarters.
2) Year-on-year basis.
3) Including policy loans and others.
Sources: Financial institutions' business reports.

Looking at loans from mutual credit cooperatives by type of borrower, household loans decreased by KRW 6.8 trillion and corporate loans increased by KRW 6.6 trillion in the third quarter of 2023, while total loans[11)] increased by KRW 0.3 trillion. The growth rate of household loans (year-on-year) was -8.8% in the third quarter of 2023, widening the margin of decline from the first quarter (-5.8%), while the growth rate of corporate loans narrowed over the same period (22.6% → 10.9%) (Figure III-10).

In terms of loans from mutual savings banks by type of borrower, household and corporate loans decreased by KRW 0.1 trillion and KRW 3.2 trillion, respectively, in the third quarter of 2023. In particular, the growth rate of corporate loans was -13.3% (year-on-year), marking the largest decline since the fourth quarter of 2013 (-14.7%), as lending shrank due to increased costs of raising funds and managing non-performing loans. The growth rate of total loans was -7.0% (year-on-year), the lowest since the first quarter of 2014 (-8.5%) (Figure III-11).

11) The total loans include other loans such as policy loans other than household and corporate loans, and the balance of other loans at the end of the third quarter of 2023 stood at KRW 18.8 trillion, up by KRW 0.5 trillion during the third quarter.

Figure Ⅲ-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 others.
Sources: Financial institutions' business reports.

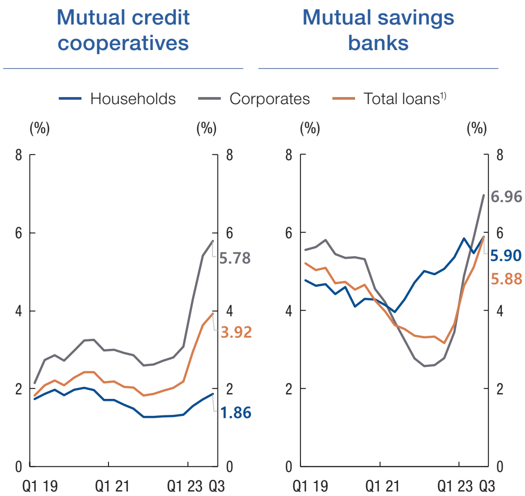
Deterioration in Asset Soundness

The asset soundness of NBDIs deteriorated as debt repayment burdens of borrowers increased, led by sustained high levels of interest rates, and business conditions weakened.

The substandard-or-below loan ratio of mutual credit cooperatives stood at 3.92% at the end of the third quarter of 2023, up 0.98%p from the first quarter of 2023. By type of borrower, household loans increased to 1.86% at the end of the third quarter of 2023, up 0.29%p from the first quarter of this year, while corporate loans increased by 1.50%p over the same period (4.28% → 5.78%).

The substandard-or-below loan ratio of mutual savings banks stood at 5.88% at the end of the third quarter of 2023, up 1.24%p from the first quarter of this year. By type of borrower, household loans continued to remain high at 5.90% at the end of the third quarter of 2023, up from 5.85% at the end of the first quarter of this year, while corporate loans increased by 2.08%p over the same period (4.88% → 6.96%) (Figure III-12).

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



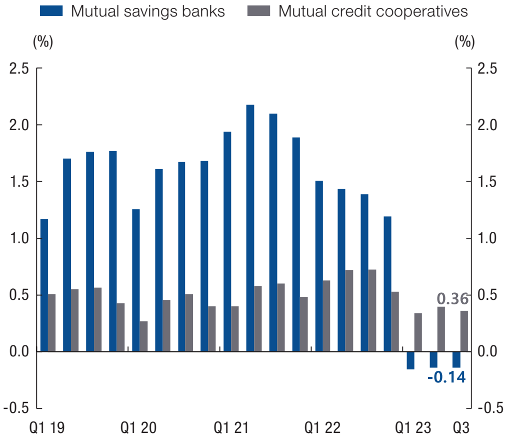
Note: 1) Including policy loans and others.
Sources: Financial institutions' business reports.

Continued Deterioration in Profitability

The profitability of non-bank deposit-taking institutions continued to deteriorate.

The ROA of mutual credit cooperatives in the third quarter of 2023 stood at 0.36%, down by 0.36%p year-on-year. Meanwhile, the ROA among mutual savings banks was -0.14%, remaining negative since the first quarter of this year (Figure III-13).

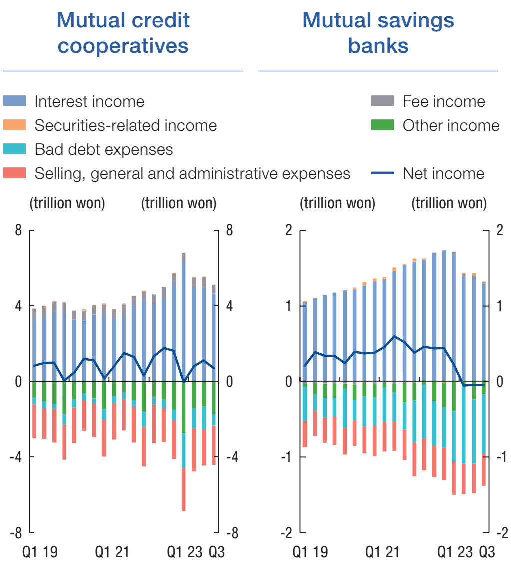
Figure Ⅲ-13. Deposit-taking institution ROAs[1]



Notes: 1) Accumulated quarterly incomes, annualized.
Sources: Financial institutions' business reports.

The net income of mutual credit cooperatives decreased to KRW 2.6 trillion in the first three quarters of 2023, down by KRW 2.1 trillion from the same period of the previous year (KRW 4.7 trillion). This was driven by an increase in bad debt expenses[12] to KRW 1.5 trillion from KRW 1.4 trillion in the same period last year. The net loss of mutual savings banks for the first three quarters of 2023 stood at KRW 0.1 trillion, down KRW 1.4 trillion year-on-year[13] (net income of KRW 1.3 trillion). This is attributable to a KRW 0.9 trillion decrease in interest income in the first three quarters of 2023 compared to the same period of the previous year (KRW 5.0 trillion), reflecting the reversal of the decline in loan assets, and an increase in bad debt expense[14] to KRW 2.7 trillion, up KRW 0.9 trillion from the same period of the previous year (KRW 1.8 trillion) (Figure III-14).

Figure Ⅲ-14. Deposit-taking institution net income composition[1]



Notes: 1) During the period basis.
Sources: Financial institutions' business reports.

2-2. Insurance, Securities, and Credit-specialized Financial Companies

Continued Decline in Asset

The total assets held by insurance, securities, and credit-specialized financial companies dropped 5.3% year-on-year to KRW 2,258.8 trillion at the end of the third quarter of 2023. The growth rate of total assets began to slow

12) At the end of the third quarter of 2023, the substandard-or-below loans (balance) of mutual credit cooperatives amounted to KRW 27.4 trillion, up 96.2% from the end of the third quarter of 2022 (KRW 14.0 trillion).

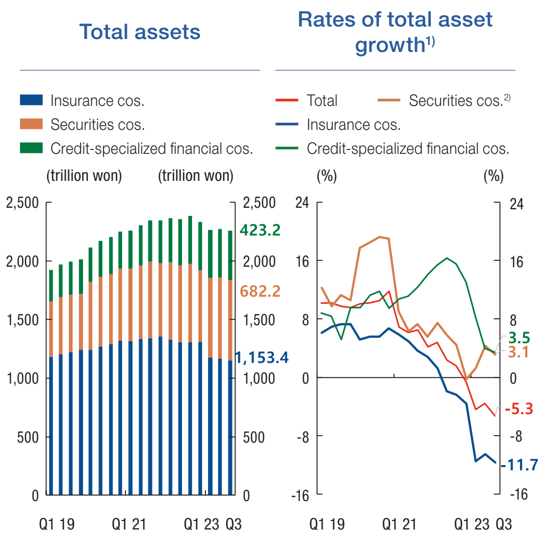
13) The general credit lending rates (based on newly-extended amounts) of mutual savings banks has steadily increased from 14.7% in January 2022 to 16.6% in October 2023, approaching the level of the statutory maximum rate (20%). With limited capacity to increase lending rates, the profitability of mutual savings banks has been deteriorating due to higher financing costs amid sluggish loan demand.

14) The substandard-or-below loans (balance) of mutual savings banks amounted to KRW 6.9 trillion at the end of the third quarter of 2023, up 67.5% from the end of the third quarter of 2022 (KRW 4.1 trillion).

down from 2021, shifting to a decline in the fourth quarter of 2022 with the margin of decline expanding since (Figure III-15).

By sector, the total assets of insurance companies continued to decline year-on-year (-11.7%) at the end of the third quarter of 2023, due to the application of new insurance accounting standards15) effective from 2023. The total assets of securities companies continued to grow at a slower pace of 3.1% year-on-year, despite an increase in securities,16) as investor deposits continued to decline due to the sluggish stock market.17) As for credit-specialized financial companies, the total assets rose by a mere 3.5% year-on-year, as credit card companies' growth slowed since 2023 and the decline in household loans issued by capital companies has been accelerated.18

Figure Ⅲ-15. The amount of total asset and growth rate



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

Deterioration of Asset Soundness

The asset soundness of insurance, securities, and credit-specialized financial companies declined in all sectors, led by real estate PF-related exposures.

The substandard-or-below loan ratio for insurance companies was 0.42%, rising for the first two quarters of this year and then remaining at the previous quarter's level in the third quarter. By sector, the ratio for general

15) As a result of the transition from IAS39 to IFRS9 as the standard for the classification and measurement of financial assets from 2023, some financial assets that were previously measured at cost were now measured mark-to-market to reflect the decrease in asset values caused by the increase in interest rates. In addition, as the IFRS4 accounting standard for insurance contracts was replaced by IFRS17, the existing asset item of deferred acquisition cost (1.0% of total assets as of the end of 2022) was excluded from asset items, and insurance contract loans (4.7% of total assets) was changed to deduction items on insurance liabilities, resulting in a decrease in book liabilities.

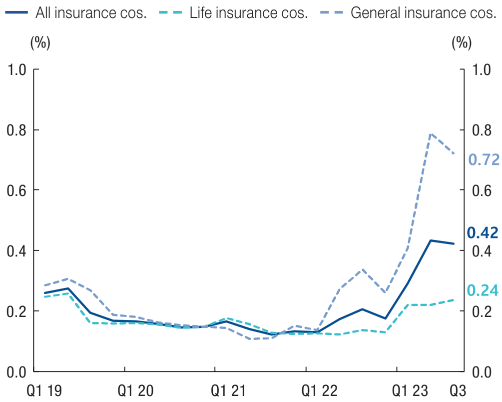
16) At the end of the third quarter of 2023, the year-on-year growth rate of securities holdings of securities companies was 8.9%, similar to the growth rate at the end of the second quarter (9.0%).

17) The year-on-year growth rate of investor deposit balances at the end of the third quarter of 2023 was -15.2%, continuing the decline from the end of the second quarter (-14.4%).

18) Credit card asset growth (year-on-year) of credit card companies was 3.9% at the end of the third quarter of 2023, continuing its slowdown from the end of the third quarter of 2022 (14.3%). Household loans at capital firms have been declining since the end of the third quarter of 2022, when growth switched to a decline (-2.8%), with the margin of decline extending to the end of the third quarter of 2023 (-13.4%).

insurance companies,[19] which have a higher proportion of real estate PF loans, is higher than that for life insurance companies. Meanwhile, the substandard-or-below loan ratio of insurance companies is lower than that of securities firms (2.49%) and credit-specialized financial companies (1.64%) (Figure III-16).

Figure Ⅲ-16. Insurance cos. substandard-or-below loan ratios



Source: Financial institutions' business reports.

The substandard-or-below loan ratio of securities companies[20] stood at 2.49% at the end of the third quarter of 2023, rising steadily from the third quarter of 2022. This was driven mainly by the deterioration in the soundness of private placement bonds.[21] The substandard-or-below loan ratio appears to rise more sharply among most securities companies[22] other than comprehensive financial investment companies[23] (Figure III-17).

The substandard-or-below loan ratio of credit-specialized financial companies increased slightly to 1.64% in the third quarter of 2023, compared to the previous quarter. The substandard-or-below loan ratio of credit card companies has remained at a similar level[24] since the first quarter of 2023, while the substandard-or-below loan ratio of capital companies has continued to rise since the fourth quarter of 2022 as their loan soundness has deteriorat-

19) The proportion of real estate PF loans accounted for 28.5% of general insurance companies' loans as of the end of the third quarter of 2023, which is higher than that of life insurance companies (17.6%).

20) 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.

21) The substandard-or-below loans of private placement bonds by securities companies was KRW 0.7 trillion at the end of the third quarter of 2023, a significant increase from the end of the previous year (KRW 0.2 trillion) due to an increase in the volume of private placement bond underwriting to fulfill real estate PF debt guarantees.

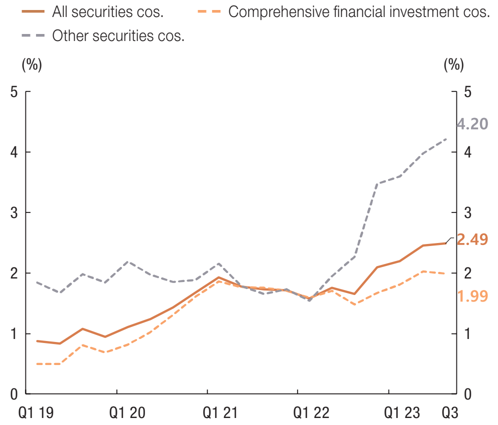
22) As of the end of the third quarter of 2023, the proportion of real estate PF-related exposures (loans and debt guarantees) in assets subject to asset quality classification for securities companies was higher for securities companies excluding comprehensive financial investment business entities (26.0%) compared to comprehensive financial investment business entities (18.5%).

23) 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 companies 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.

24) Credit card companies appear to have strengthened their asset quality management since the second half of last year. According to the Bank of Korea's Loan Officer Survey on Financial Institution Lending, tightened lending trends have continued since the third quarter of 2022 (Lending Index: 0 in the second quarter of 2022 → -31 in the third quarter of 2022 → -44 in the fourth quarter of 2022 → -7 in the third quarter of 2023), and the Household Debt Database shows that the creditworthiness of new loan borrowers was 775.3 points in the year before (the third quarter of 2021- the second quarter of 2022), but rose to 778.8 points in the following year (the third quarter of 2022-the second quarter of 2023).

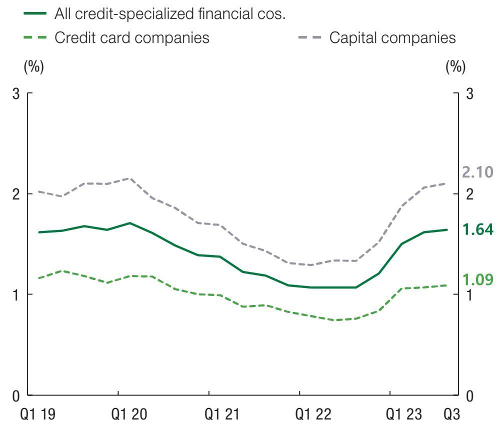
ed,[25] mainly in corporate loans (Figure III-18).

Figure Ⅲ-17. Securities cos. substandard-or-below loan ratios[1)]



Notes: 1) Excluding accounts receivable.
Source: Financial institutions' business reports.

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



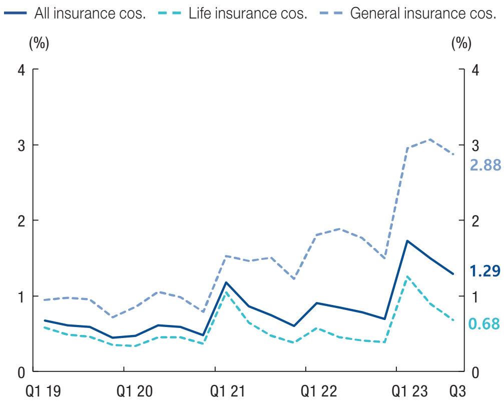
Source: Financial institutions' business reports.

Varying Profitability by Sector

The profitability of insurance and securities companies improved, while that of credit-specialized financial companies declined.

The ROA of insurance companies in the third quarter of 2023 was 1.29%, up 0.51%p year-on-year. This was due to the improved performance by general insurance companies driven by higher insurance sales,[26] along with the impact of accounting standard changes[27] (Figure III-19).

Figure Ⅲ-19. Insurance cos. ROA[1)]



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

The ROA of securities companies amounted to 1.15% in the third quarter of 2023, up 0.22%p year-on-year. Revenues from debt guarantee

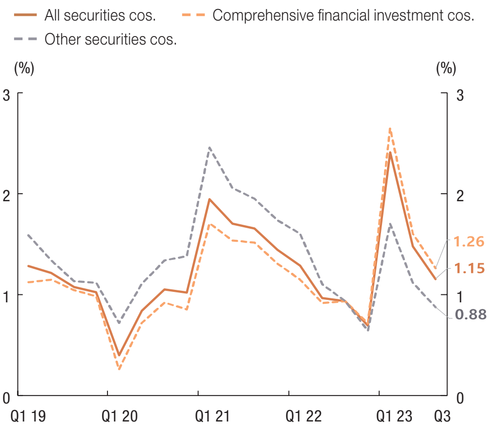
25) The standard-or-below loans ratio for capital companies' real estate PF loans stood at 4.14% at the end of the third quarter of 2023, up significantly from 1.71% at the end of the fourth quarter of 2022.

26) The earned premiums of general insurance companies (based on gross written premiums) amounted to KRW 85.9 trillion in the first three quarters of 2023 (cumulative), up 9.1% from KRW 78.6 trillion in the same period of the previous year. In contrast, life insurers earned KRW 76.4 trillion during the same period, down 1.6% year-on-year from KRW 77.7 trillion.

27) The introduction of IFRS17 led to a decrease in current expenses due to an increase in the deferral period of new or renewal insurances contract (7 years → full insurance period), and the introduction of IFRS9 resulted in valuation gains on financial instruments due to an increase in the number of securities whose valuation gains and losses are recognized in profit or loss.

commissions and other fees[28] declined, but proprietary trading gains expanded significantly,[29] mainly in bond trading (Figure III-20).

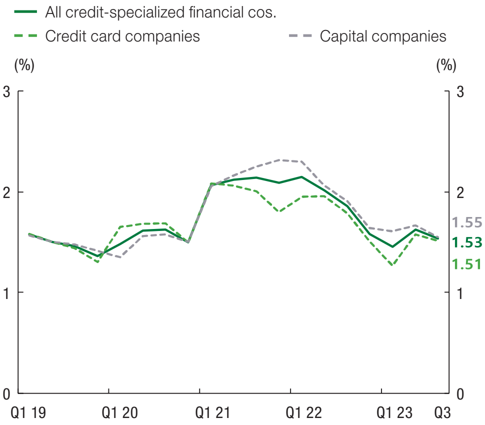
Figure Ⅲ-20. Securities cos. ROA[1)]



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

The ROA of credit-specialized financial companies[30] declined to 1.53% in the third quarter of 2023, down 0.32%p year-on-year. For both credit card and capital companies, higher financing costs[31] due to rising interest rates were the main factors contributing to the decline in profitability (Figure III-21).

Figure Ⅲ-21. Credit-specialized financial cos. ROA[1)]



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

28) Revenue from commissions through the first three quarters of 2023 (cumulative) was KRW 9.0 trillion, down by KRW 1.6 trillion year-on-year (KRW 10.6 trillion) due to lower performance in debt guarantees and underwriting.

29) In the first three quarters of 2023 (cumulative), gains from proprietary trading stood at KRW 7.1 trillion, up KRW 5.4 trillion year-on-year. This was driven by a significant performance improvement in proprietary trading of bonds (KRW 7.6 trillion gain) compared to the same period last year (KRW 2.4 trillion loss).

30) As the use of net income reflecting loan loss provisions based on supervisory regulations may increase the volatility of the return on total assets, net income under the accounting standards was used.

31) Through the first three quarters of 2023 (cumulative), the interest expense (borrowings, corporate bonds, etc.) of card companies and capital companies increased by 50.2% and 52.2% year-on-year, respectively.

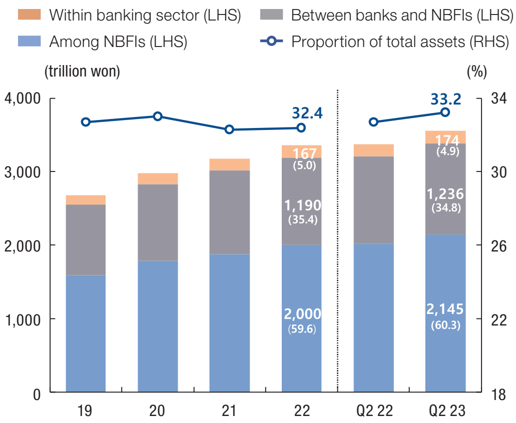
3. Interconnectedness

Decreased Growth in Mutual Transactions

Mutual transactions between financial institutions[32)] reached KRW 3,554 trillion at the end of June 2023, up by 5.3% year-on-year, but the rate of growth declined slightly.[33)] However, the share of mutual transactions in the total assets of the financial sector (KRW 10,692 trillion, based on flow of funds statistics) was 33.2% at the end of June 2023, up slightly from 32.7% at the end of June 2022, as the growth rate of financial institutions' supply of funds to the non-financial sector shrank[34)] further due to the increase in the debt repayment burden of borrowers caused by rising interest rates and the strengthening of lending attitudes centered on non-bank financial institutions.

As for mutual transactions between financial institutions by sector, transactions between banks[35)] (KRW 174 trillion) rose by 4.1% year-on-year. Transactions between NBFIs (KRW 2,145 trillion) increased by 6.2% year-on-year, showing the highest growth rate of all sectors, owing to an increase in the amount of investment funds managed by insurance companies and the amount of securities companies' repo operated by trusts, while their share of total mutual transactions rose by 0.9%p to 60.3%. Mutual transactions between banks and NBFIs (KRW 1,236 trillion) increased by 3.8%, reflecting an increase in other financial institutions' fund operation with banks[36)] and banks' fund operation with securities companies (Figure III-22).

Figure Ⅲ-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 are playing central roles in mutual transactions

32) 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 48 financial products, 34 financial sectors, and nine other sectors, including deposits, loans, and derivative products. 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.

33) The year-on-year growth rate of mutual transactions between financial institutions was 6.5% at the end of June 2021, 9.3% at the end of June 2022, and 5.3% at the end of June 2023.

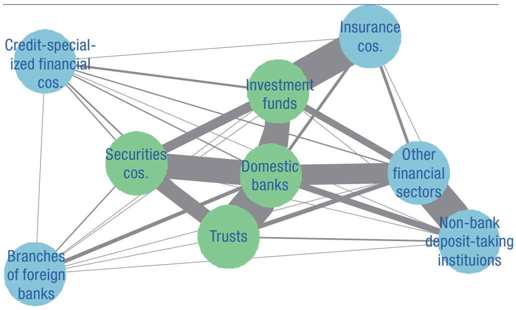
34) Financial institutions' funding transactions to households and enterprises increased by a mere 2.8%, from KRW 10 quadrillion and 384 trillion at the end of June 2022 to KRW 10 quadrillion and 679 trillion at the end of June 2023.

35) "Banks" refers to domestic banks, including commercial banks and special banks. Korean branches of foreign banks were included in the non-banking sector for analysis.

36) Other financial institutions include federations of NBDIs, and the value of NBDIs' fund operation with banks increased from KRW 93.8 trillion at the end of June 2022 to KRW 119.2 trillion at the end of June 2023.

between financial sectors. As for the size of mutual transactions between financial sectors at the end of June 2023, mutual transactions between banks and trusts were the largest (KRW 273.7 trillion), followed by transactions between investment funds and insurance companies (KRW 248.9 trillion), and between banks and investment funds (KRW 220.3 trillion) (Figure III-23, Table III-1).

Figure Ⅲ-23. Map of financial sector interconnectedness[1)2)3)]



Notes: 1) The green dot (●) indicates the four highest-ranked financial sectors in terms of their mutual transaction volumes.
2) Using network visualization analysis, line thicknesses are all proportional to the mutual transaction volumes.
3) End of 2Q 2023 basis.
Source: Bank of Korea.

Table Ⅲ-1. Volumes of mutual transactions across financial sectors[1)2)]

(trillion won)

Sectors	Domestic banks	Branches of foreign banks	Trusts	Investment funds	Insurance cos.	Securities cos.	Other[3)]
Domestic banks	173.9	52.4	252.9	135.3	62.5	164.7	210.6
Branches of foreign banks	37.9	38.2	13.4	10.4	2.9	16.8	12.9
Trusts	20.8	13.2	60.8	14.4	16.8	23.6	69.5
Invest-ment funds	85.0	4.8	73.3	48.6	243.4	74.7	79.4
Insurance cos.	11.3	7.0	6.8	5.6	14.3	7.7	15.1
Securities cos.	54.9	20.8	150.2	64.1	21.5	124.2	45.3
Other[3)]	147.3	16.7	132.0	120.2	80.1	105.4	390.9

Notes: 1) The horizontal sector refers to fundraising from the vertical sector, while the vertical sector means fund management through the horizontal sector.
2) End of 2Q 2023 basis.
3) Credit-specialized financial cos., non-bank deposit-taking institutions, etc.
Source: Bank of Korea.

Looking at mutual transactions by product, transactions in stocks and deposits increased. In particular, the volume of stock transactions increased significantly (KRW 664.0 trillion → KRW 778.7 trillion) in line with the surge in investment in equity-type products such as funds issued by insurance and securities companies,[37)] and the volume of deposit transactions increased due to the increase in the volume of deposits in federations of financial institutions for low-income groups (Table III-2).

37) The value of insurance companies and securities companies' equity operations increased from KRW 233.7 trillion at the end of June 2022 to KRW 256.1 trillion at the end of June 2023, and from KRW 63.2 trillion to KRW 77.0 trillion, respectively.

Table Ⅲ-2. Volumes of mutual transactions across financial sectors, by product

(trillion won, %)

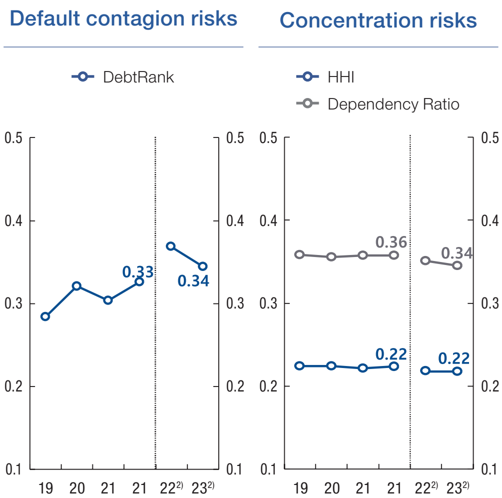
Product	End of 2Q 2022		End of 2Q 2023		B-A
	Amount (A)	Share	Amount (B)	Share	
Deposits	767.8	22.7	806.8	22.7	39.0
Stocks[1]	664.0	19.7	778.7	21.0	114.7
Bonds	736.1	21.8	717.0	20.2	-19.1
Repos	154.4	4.6	186.0	5.2	31.6
Loans	170.9	5.1	184.6	5.2	13.7
Derivatives	133.8	4.0	115.6	3.3	-18.2

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

Slight Decrease in Default Contagion Risk

The interbank index of DebtRank,[38] an indicator of default contagion risk, moderated slightly year-on-year in transactions between financial sectors, owing to a decrease in foreign exchange swap transactions[39] by branches of foreign banks. Meanwhile, the Herfindahl-Hirschman Index (HHI),[40] which indicates the concentration risk and the dependency ratio[41] of a single counterparty in mutual transactions between financial sectors, remained at a level generally similar to that of the same period of last year (Figure III-24).

Figure Ⅲ-24. Default contagion and concentration risks among financial sectors[1]



Notes: 1) End-period basis.
2) End of 2Q 2023 basis.
Source: Bank of Korea.

38) 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 0.05 means that losses following the insolvency of an individual sector (banking) will, on average, give rise to a loss of 5% of total financial (banking) sector capital (Battiston et al. "DebtRank: Too Central to Fail - Financial Networks, the Fed, and Systemic Risk," 2012).

39) The scale of derivatives transactions conducted by branches of foreign banks decreased by KRW 14.1 trillion from KRW 72.9 trillion at the end of June 2022 to KRW 58.8 trillion at the end of June 2023.

40) 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 were based on the size of the funding transactions.

41) 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 are based on the size of the funding transactions.

Box 4.

Characteristics and Implications of the Domestic Non-bank Financial Intermediation Sector[1)]

Since the Global Financial Crisis, the non-bank sector in Korea has grown rapidly due to the tightened regulation of the banking sector and the search for high-yielding and high-risk assets amid low interest rates. The non-bank sector complements the credit intermediation function of banks and contributes to real economic activity by fostering competition in financial markets. However, due to the diversification of financial market participants and credit intermediation methods, as well as the increasing interconnectedness among the financial industry sectors, the potential for the non-bank sector to become a primary source of systemic risk has increased.[2)]

Korea has been monitoring the status of non-bank financial intermediation in compliance with the standards of the Financial Stability Board (FSB)[3)] since 2011.[4)] Non-bank financial intermediation collectively refers to financial institutions other than deposit-taking institutions that provide credit intermediation functions but are subject to relatively lenient regulations, and financial activities carried out by such financial institutions. This excludes banks, mutual credit cooperatives, and mutual savings banks, and includes financial institutions such as insurance, securities, and credit-specialized financial companies, and financial activities such as debt guarantee and asset securitization. Among them, sectors with a high potential for systemic risk due to maturity and liquidity transformation, leverage, and incomplete transfer of credit risk in the credit intermediation process are classified as the narrow measure of non-bank financial intermediation.

Current Status of the Domestic Non-bank Financial Intermediation Sector

As of the end of June 2023, the size of the domestic non-bank financial intermediation amounted to KRW 5,639 trillion,[5)] or 107.5% of deposit-taking institutions' financial assets and 252% of nominal GDP (as of 2022). In terms of growth rate, the domestic non-bank financial in-

1) This article was authored by Kwon Yoon-jeong, Song Su-hyeok (Non-bank Risk Analysis Team), Kim Hyeon-man, and Bae Ju-won (Flow of Funds Team) and was reviewed by Lee Jong-han (director of the Financial Risk Analysis Division), Shin Jun-young (head of the Non-bank Risk Analysis Team), and Song Jae-chang (head of the Flow of Funds Team).

2) The ELS margin call experienced by securities companies in March 2020 following a decline in overseas stock prices and the unrest in the PF-ABCP market in the fourth quarter of 2022 are notable examples of financial market risks spreading through the non-bank sector, including securities companies, and undermining financial stability.

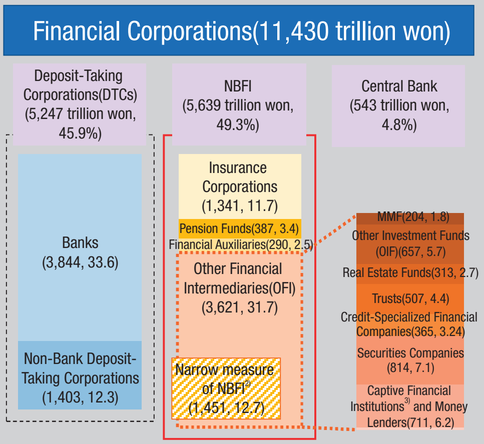
3) Having been reclassified and segmented based on the statement of flow of funds in accordance with FSB guidelines, the detailed classification of financial segments and the scope of assets are slightly different from the statement of flow of funds.

4) In response to the G20 leaders' identification of non-bank financial intermediation (previously referred to as shadow banking) as one of the causes of the financial crisis at the November 2008 G20 summit and their call for stronger regulation against non-bank financial intermediation at the November 2010 summit, the FSB has been monitoring the state of the global non-bank financial intermediation sector since 2011.

5) As of the end of 2022, Korea comprises 2.0% of the global non-bank financial intermediation sector, which consists of 29 countries.

termediation has more than tripled since the end of 2009 (KRW 1,688 trillion). In particular, pension funds (retirement pension accounts of securities and insurance companies) and real estate funds (including REITs) rose by 10 and 14 times,[6] respectively, and securities institutions (including securities finance) increased by 4 times or more.

Financial asset of domestic financial sector and NBFI



Notes: 1) End of Q2 2023 basis.
2) Generally included in OFI but defined by specific criteria.
3) It refers to financial holding companies and securitization companies.
Sources: Bank of Korea.

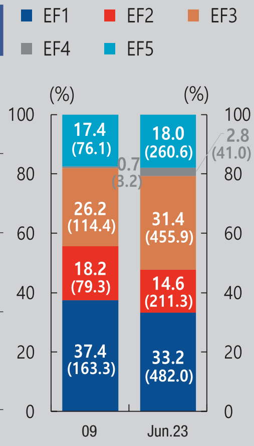
Meanwhile, the narrow measure of non-bank financial intermediation[7] with a higher potential for systemic risk was KRW 1,451 trillion, equivalent to 25.7% of the entire non-bank financial intermediation sector (12.7% of all financial sectors). The narrow measure of non-bank financial intermediation is divided into five categories (EF1 - EF5) based on the economic function of each sector within the financial system. EF1 (some collective investment vehicles)[8] accounts for the largest share of the narrow measure of non-bank financial intermediation, followed by EF3 (some securities companies), EF5 (securitization vehicles), EF2 (some credit-specialized financial companies), and EF4 (debt guarantees).

Distinctions of narrow measure NBFI

	Distinctions	Typical entity types
EF1	Collective investment vehicles with features that make them susceptible to runs	MMFs, Fixed income funds
EF2	Lending dependent on short-term funding	Credit-Specialized Financial Companies
EF3	Market intermediation dependent on short-term funding	Broker Dealers
EF4	Facilitation of credit intermediation	Financial guarantors, credit insurance companies
EF5	Securitisation-based credit intermediation	Securitisation vehicles

Sources: Bank of Korea.

Portion[1] by sector of narrow measure of NBFI



Notes: 1) Figures in parantheses are the balance(trillion won)
Sources: Bank of Korea.

Korea's EF1 (KRW 482 trillion) is mainly composed of open-ended bond funds[9] and MMFs (80.5%). In the event of maturity or liquidity transformation in the asset management process for

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6) While retirement pension funds grew significantly due to the government's revitalization measures such as the expansion of the tax deduction limit (2015) and the scope of participation in individual retirement plans (IRPs) (2017), real estate funds (including REITs) experienced a substantial growth due to the demand for alternative investments from financial institutions under low interest rates and the government's policy support (tax support, relaxation of listing requirements, etc.).

7) A narrow measure of non-bank financial intermediation does not include public financial institutions and financial institutions affiliated with holding companies of banks, but does include securities company debt guarantees, which is an off-balance sheet item.

8) Stock funds and capital-type real estate funds (including REITs) with weak credit intermediation are excluded.

9) As of the end of October 2023, 94.6% of bond funds and 100% of MMFs operate as open-ended funds.

collective investment vehicles, or financial market stress under highly leveraged conditions, these vehicles may become vulnerable to liquidity issues because of margin call demands or mass redemption requests from investors.

EF2 (KRW 211 trillion) and EF3 (KRW 456 trillion) are mainly financed through marketable borrowings such as corporate bonds and CPs, and also with considerable short-term borrowings. When maturity or liquidity transformation occurs in the asset management process for credit-specialized financial companies and securities companies, the deterioration of financial market conditions may cause liquidity risk in these sectors due to difficulties in refinancing short-term funds.[10] In particular, credit-specialized financial companies may face liquidity risk due to their high interconnectedness with other financial institutions that primarily purchase bonds issued by credit-specialized financial companies, as they may take on risk from other financial institutions.[11]

EF4 (KRW 41 trillion)[12] facilitates credit creation by transferring credit risk associated with loans or debt securities. However, if credit, liquidity, and counterparty risks are not properly assessed due to the impact of information asymmetries, it may lead to excessive risk-taking by financial institutions, resulting in the increased pro-cyclicality of credit. In addition, liquidity risk may arise for the guarantors due to the unexpected realization of debt guarantee obligation.

EF5 (KRW 261 trillion) is financed through the issuance of securitized securities based on less liquid assets such as time deposits, loans, and account receivables. Underlying asset holders such as financial institutions can expect to diversify their financing sources and reduce financing costs through asset securitization. However, the process of asset securitization includes maturity and liquidity transformation, which can lead to excessive credit creation.

Characteristics of the Domestic Non-bank Financial Intermediation Sector

Low Share of Collective Investment Vehicles

In Korea, the share of collective investment vehicles[13] in the non-bank financial intermediation sector (20.0% at the end of 2022) and their share compared to nominal GDP (50.6%) are lower than the global level (34.2% and 92.4%, respectively). This is mainly attributable to the

10) For further details on raising funds for securities companies and credit-specialized financial companies, refer to Box 6 “Assessment and Implications of Funding Conditions of Securities and Credit-specialized Financial Companies.”

11) In March 2020, when the global stock market decline triggered a large-scale margin call on the foreign currency margin related to securities companies’ derivative-linked securities (ELS) for hedging purposes, securities companies sold a large amount of bonds issued by credit-specialized financial companies in the process of raising won-denominated funds required to secure foreign currency funds. As a result, the liquidity risk of securities companies transformed into roll-over risk on the bonds issued by credit-specialized financial companies, such as the interest rate on such bonds increasing significantly.

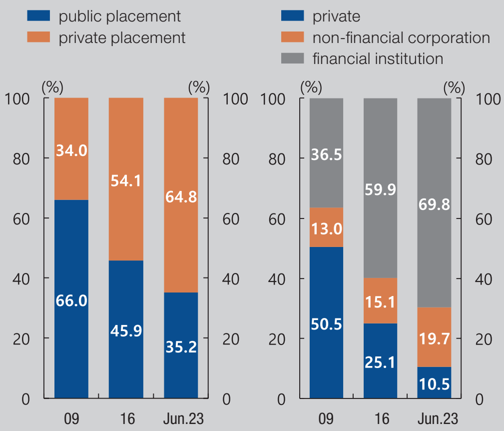
12) At the end of June 2023, the growth rate (in multiples) of the narrow measure of domestic non-bank financial intermediation is 3.3 times that of 2009, among which EF4 (12.8) is the highest (EF1 3.0, EF2 2.7, EF3 4.0, EF5 3.4).

13) Collective investment vehicles are classified into MMFs, investment funds (stocks, bonds, etc.), and real estate funds by type, and public and private placements by fundraising method, which are all included in the non-bank financial intermediation sector, regardless of their type and fundraising method. Meanwhile, schemes excluding stock funds and capital-type real estate funds are classified into the narrow measure of non-bank financial intermediation.

lack of growth in public offering funds after the Global Financial Crisis, as individual investors' participation in the market has been sluggish. The low proportion of collective investment vehicles has a positive aspect in that a large-scale redemption request by a fund is relatively limited in its negative impact on the financial system. However, it is necessary to note the rapid growth of private equity funds, which differ from public equity funds as they have less stringent regulations on leverage and investment products, and that institutional investors, who are highly likely to take collective action, account for the majority of all investors. In addition, there is a need to be mindful of the enhanced interconnectedness between collective investment vehicles and securities companies, given the role of securities companies as prime brokers (providing securities borrowing and lending, leverage, etc.).

Trend of changes[1] in the domestic fund market

portion by fundraising method | portion by investor type



Notes: 1) End of the period basis.
Sources: Korea Financal Investment Association

Increased Importance of Securities Companies in the Financial System

The assets and liabilities of securities companies have grown rapidly, mainly among large securities companies, as the financial authorities' measures to promote investment banking (IB) and deregulation have expanded the funding sources and business scope of securities companies. The assets of securities institutions (including the Korea Securities Finance Corporation) have more than quadrupled since 2009, thereby expanding the share of securities institutions in the non-bank financial intermediation sector.[14] In the process, the interconnectedness between securities companies and financial markets has also deepened. Securities companies play a role as major borrowers in the short-term financial market and as large-scale purchasers of government and corporate bonds in the capital market. In addition, securities companies are engaged in the investment brokerage of securities and derivatives, market-making activities and underwriting and arranging securities, which are crucial for the smooth operation of the financial system. As a result, the liquidity or credit risk of securities companies now wields greater influence on financial markets, while on the other hand, the influence of credit crunch in financial markets on the liquidity situation of securities companies has also increased.

14) The proportion of securities institutions (including the Korea Securities Finance Corporation) in the total non-bank financial intermediation sector increased from 10.9% in 2009 to 14.4% at the end of June 2023, and the share of EF3s in the narrow measure of non-bank financial intermediation increased from 26.2% to 31.4% over the same period.

Policy changes related to domestic securities companies

Year	Policy	Contents
2009	Enforcement of financial investment services and capital markets Act	Permission for broker dealers to engage in debt guarantee business.
2012	Change in calculation method of net capital ratio	Relaxation of the method for incorporating debt guarantees in credit risk calculation(deduction item → application of risk value)
2013	Enforcement of policy related to comprehensive financial investment business entity	Allowance of corporate credit granting and prime brokerage services (PBS) for comprehensive financial investment business entity(with capital of 3 trillion won or more).
2014	Introduction of new net capital ratio.	Changing the calculation method from net operating capital relative to the gross risk to surplus capital(net operating capital - gross risk) relative to necessary retained capital, thereby increasing investment capacity for risky assets.
2015	Announcement of fostering strategies for large-scale investment banking(IB)	Expansion of corporate credit granting limits for comprehensive financial investment business entity, Permitting short-term financial transactions including commercial paper issuance (with capital of 4 trillion won or more) etc.

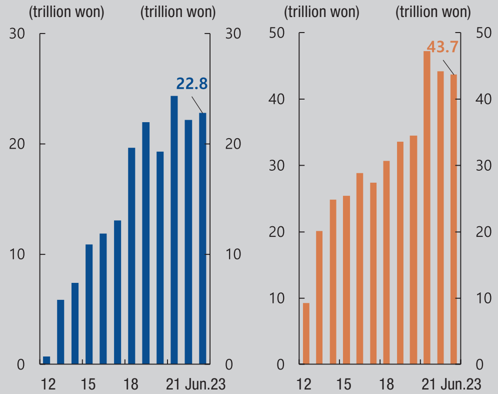
Sources: Bank of Korea.

Rapid Growth of Real Estate PF-Related Narrow Measure of Non-bank Financial Intermediation

Real estate PF-related financial activities in the non-bank financial intermediation sector in Korea have also grown rapidly. In the narrow measure of non-bank financial intermediation, EF4 (debt guarantees) and EF5 (securitization vehicles) have increased significantly,[15] largely due to securitized real estate PF asset-backed securities guaranteed by securities companies. This is attributable to the fact that securities companies have utilized PF debt guarantees as a new source of revenue since the mid-2010s, and the risky investment capacity of large securities companies has increased under the influence of factors such as regulatory reforms. As securities companies became the main debt guarantor for real estate PF financing, financing efficiency has enhanced, which consequently enhanced the interconnectedness between the real estate market and the financial market. In particular, real estate PF asset-backed securities are often short-term, with a maturity of three months or less, and if there is a credit crunch in the short-term financial market, securities companies may face difficulties in refunding, leading to liquidity risks and a contraction in the real estate market. Similarly, in the event of a downturn in the real estate market, real estate PF loans, which serve as underlying assets, may become non-performing loans. This may lead to losses for securities companies that have guaranteed the debt, which may act as a disturbing factor for the financial market.

Size of PF debt guarantee by broker dealers

Balance of PF asset-backed securities



Sources: Financial institutions' business reports, Korea Securities Depository

15) At the end of September 2023, PF debt guarantees accounted for 54% of securities companies' debt guarantees, while PF asset-backed securities accounted for 25% of the total balance of asset-backed securities, excluding asset-backed loans (ABLs) and based on the balance of asset-backed securities aggregated by the Korea Securities Depository.

Implications

Korea's non-bank sector has grown at a rapid pace. Not only has the asset size expanded significantly, but the credit intermediation channels, financial products, and counterparties have also diversified. In this process, the risk profile has become more complex, the concentration of funds has intensified in certain sectors such as real estate, and its connectivity with the capital market has been strengthened. While the financial authorities are planning and implementing regulatory measures[16] to curb risks in the non-bank sector, unexpected risks may arise as new financial products and techniques emerge in the course of future financial innovation and the business scope of the non-banking sector expands even further.

Therefore, continuous efforts should be made to monitor the operating behavior and potential risks found in the non-bank sector. While closely examining the potential systemic risk resulting from growing interconnectedness among financial institutions and between financial institutions and markets, it is imperative to proactively identify vulnerable sectors that are likely to cause the transfer of risk to other sectors in the event of a deterioration in their soundness, by frequently examining the business conditions and transaction details of financial institutions such as securities companies, which are becoming increasingly important in the financial system. In addition, there is a need for active participation[17] in global discussion for identifying risk-incurring paths and preparing regulatory improvement measures in the non-bank sector, centered on the FSB. Meanwhile, to maintain business soundness even in the event of financial market instability, individual financial institutions should endeavor to improve their own risk management systems.

16) The financial authorities sequentially issued the following: (i) a plan to strengthen the macro-prudential management of non-banks in January 2019, (ii) a plan to manage the soundness of real estate PF exposures in December 2019, (iii) a plan to improve the private equity system in April 2020, (iv) a plan to comprehensively improve the asset securitization system in May 2020, (v) a plan to strengthen the derivative securities market in July 2020, and (vi) a plan to enhance the competitiveness of public funds in January 2021.

17) The FSB, together with international standard-setting organizations such as the International Organization of Securities Commissions (IOSCO) and the Committee on Payments and Market Infrastructures (CPMI), is conducting research on vulnerability factors in the non-bank financial intermediation sector, including MMFs, open-ended funds, and margin calculation systems, and preparing proposals to improve the system, while the Bank of Korea is participating in related discussions as an active member of the working group under the FSB.

IV. Capital Flows

In certain periods during the second half in 2023, domestic portfolio investment by foreigners exhibited high volatility, experiencing net outflows in both stocks and bonds due to changes in expectations regarding monetary policy in major countries. However, there was a net inflow in 2023 overall.

As for overseas portfolio investment by residents, there was a net decrease in investment in stocks, driven by a waning incentive for investment in overseas stocks due to a high exchange rate and potential foreign currency losses resulting from exchange rate volatility. Nonetheless, the overall portfolio size slightly expanded as investment in bonds recorded a net increase due to expectations of a decrease in interest rates on U.S. treasury bonds.

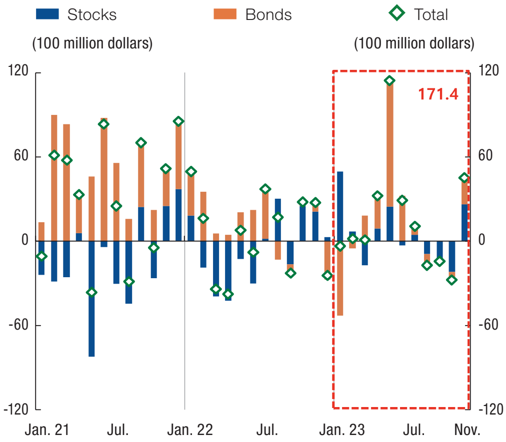
Net Inflow of Foreign Portfolio Investment in Domestic Securities in 2023, Notwithstanding a Net Outflow in Certain Periods in the Second Half of the Year

From January to November 2023, portfolio investment in domestic securities by foreigners[1] recorded a net inflow of USD 17.14 billion (USD 5.64 billion in stocks, USD 11.50 billion in bonds) (Figure IV-1). In the first half of the year, investment in both stocks and bonds exhibited net inflows amounting to USD 17.52 billion (USD 7.0 billion in stocks, USD 10.52 billion in bonds). However, in the second half of the year, foreign portfolio investment in domestic securities demonstrated a net outflow of USD 370 million (a net outflow in stocks amounting to USD 1.36 billion, a net inflow in bonds amounting to USD 990 million) as investment in both stocks and bonds recorded net outflows for three consecutive months from August,[2] before returning to a net inflow in November.

1) 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).

2) For more details, refer to Box 5 “Characteristics and Assessment of Recent Flows of Foreign Portfolio Investment in Domestic Securities.”

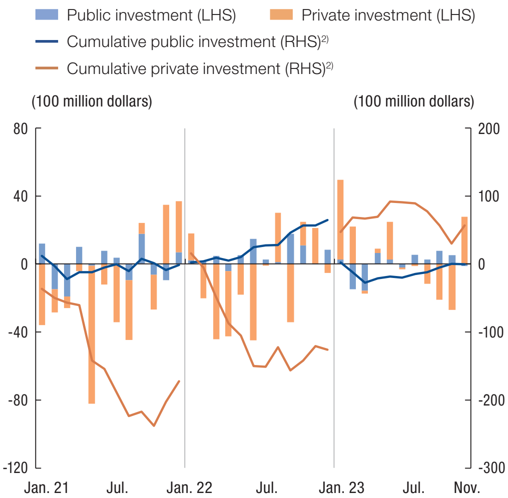
Figure IV-1. Changes in foreigners' domestic portfolio investments[1)]



Notes: 1) Positive values indicate net inflow, while negative values indicate net outflow.
Source: Bank of Korea.

Private investment, accounting for a significant portion of foreigners' investment in domestic stocks,[3)] led the overall net inflow in such investment, while the inflow and outflow of public investment were limited (Figure IV-2). Meanwhile, with regard to the inflow and outflow of investment in stocks in 2023 by period, the investment recorded a net inflow in the first half of the year owing to a partial alleviation of concerns over monetary tightening by the U.S. Federal Reserve and expectations for improved business conditions in the semiconductor sector, despite the heightened risk aversion sentiments stemming from the incidents of Silicon Valley Bank (SVB) and Credit Suisse (CS). However, from the latter half of the year, the investment switched to a net outflow due to escalating worries about prolonged monetary tightening by the U.S. Federal Reserve, reinforced risk aversion sentiments around the world after the rise of geopolitical risks caused by the armed conflict between Israel and Hamas, and ongoing sales for profit realization focusing on the secondary battery sector. Nevertheless, from November, investment in stocks returned to a net inflow with continued expectations for improved business conditions in the semiconductor sector and the partial alleviation of global concerns over long-term high interest rates.

Figure IV-2. Net foreigner stock investment inflows[1)], by investor type



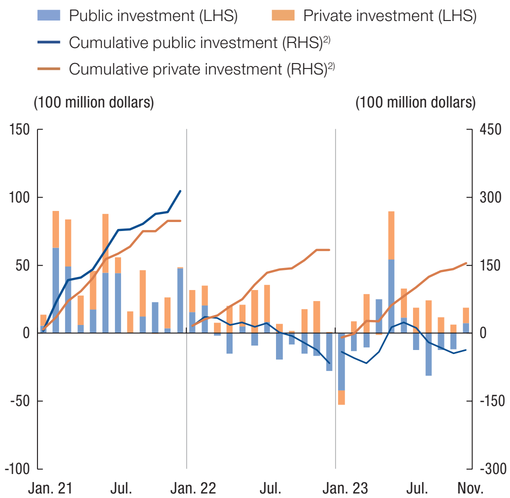
Notes: 1) positive values indicate net inflow, while negative values indicate net outflow.
2) Cumulative sums of monthly net inflows since January by year.
Source: Bank of Korea.

Private investment played a crucial role in recording a net inflow in investment in bonds by foreigners, whereas the inflow of public investment was sluggish due to the deterioration of investment capacity caused by a strong U.S. dollar (Figure IV-3). On a monthly basis, the inflow and outflow of such investment fluctuated significantly, primarily influenced by changes in the incentive for arbitrage. By period, in the beginning of this year, investment

3) As of the end of November 2023, private investment constituted 86.3% of the stock investment by foreigners.

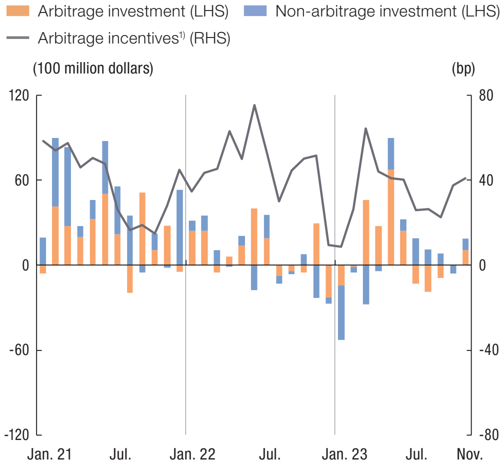
in bonds saw a net outflow due to a relatively low arbitrage incentive, driven by expectations for the U.S. Federal Reserve to adjust its pace in raising its benchmark interest rates, but after March, as the global risk aversion sentiment intensified followed by incidents involving SVB and CS in addition to an increase in the incentive for arbitrage, there was a shift towards a net inflow. In the second half of the year, unrest in the global financial market subsided and liquidity condition of foreign exchange market improved, leading to a reduction in the incentive for arbitrage as well as a weakened net inflow of investment in bonds (Figure IV-4).

Figure Ⅳ-3. Net foreigner bond investment inflows[1], by investor type



Notes: 1) positive values indicate net inflow, while negative values indicate net outflow.
2) Cumulative sums of monthly net inflows since January by year.
Source: Bank of Korea.

Figure Ⅳ-4. Inflows and outflows of arbitrage investment



Notes: 1) Arbitrage incentives = Domestic/international interest rate spread(Korea 3-month Monetary Stabilization Bond interest rate - 3M Term SOFR rate) - 3-month maturity FX swap rate, on a monthly average basis.
Source: Bank of Korea.

At the end of November 2023, the balance of stock investment by foreigners reached KRW 652 trillion, accounting for 28.4%[4] of market capitalization, up 0.4%p from the end of the previous year (28.0%). Meanwhile, the balance of bond investment by foreigners amounted to KRW 244 trillion, representing 9.8% of the balance of the total listed bonds, up 0.1%p from the end of the previous year (9.7%).

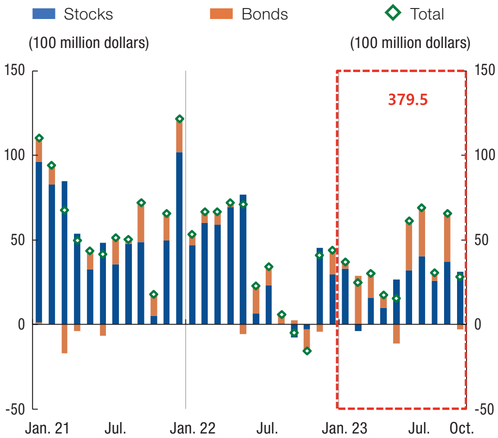
Slight Increase in Overseas Portfolio Investment by Residents

From January to October 2023, net investment in overseas securities by Korean residents stood at USD 37.95 billion (USD 24.73 billion in stocks, USD 13.22 billion in bonds), showing a slight increase compared to the same period last year (total of USD 37.19 billion, with USD 33.13 billion in stocks and USD 4.05 bil-

4) Sum of the total market capitalizations of the KOSPI and KOSDAQ markets, excluding ETFs.

lion in bonds) (Figure IV-5). This is attributed to an increase in net investment in bonds by non-financial corporations (including individuals) and other financial institutions (including asset management companies), despite a decrease in net investment in stocks.

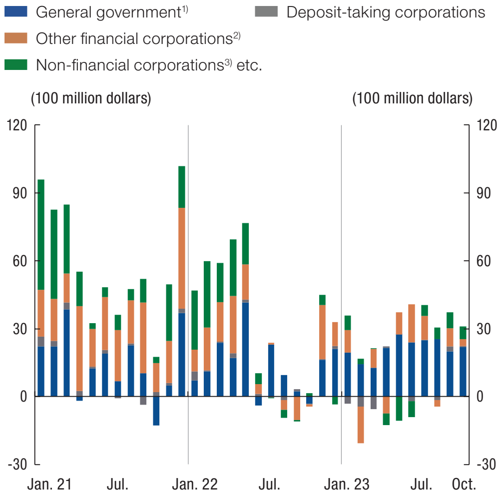
Figure Ⅳ-5. Change in residents' overseas portfolio investment[1)]



Note: 1) Positive values indicate net investment, while negative values indicate net withdrawal.
Source: Bank of Korea.

With regard to stocks, concerns relating to a high exchange rate and the possibility of foreign currency losses due to exchange rate volatility led to a diminished incentive for investing in overseas stocks. Consequently, the purchase of overseas stocks, particularly by non-financial corporations (including individuals) and other financial institutions (including asset management companies), experienced a slowdown (Figure IV-6).

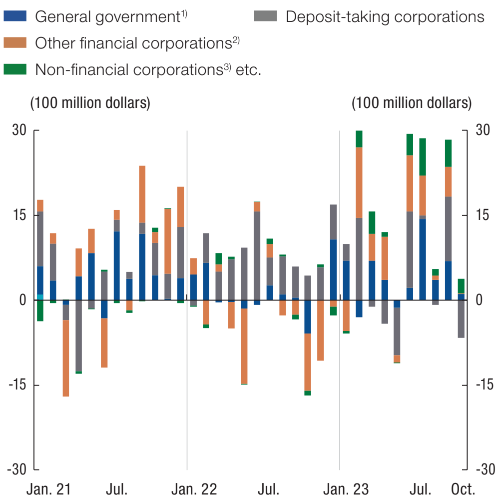
Figure Ⅳ-6. Net residents' overseas stock invest-ment outflows, by investor type



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

With regard to bonds, non-financial corporations (including individuals) increased net investment in bonds for the purpose of capital gains (non-arbitrage), driven by expectations of lower interest rates on U.S. bonds. Additionally, in response to heightened uncertainty in the real estate market, other financial institutions (including asset management companies) reduced their investment in beneficiary certificates (stocks) while expanding their investment in loans, which are considered relatively safer (Figure IV-7).

Figure Ⅳ-7. Net residents' overseas bond in-vest-ment outflows, by investor type



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

Overseas portfolio investment by Korean residents is expected to sustain a net outflow, influenced by ongoing expectations of lower interest rates in major countries, as well as pension funds' plan to expand their share of overseas portfolio investment. However, a high level of volatility is also expected, given the current geopolitical risks, including the Israel-Hamas conflict and the Russia-Ukraine war, along with factors such as the global economic cycle and changes in price forecasts.

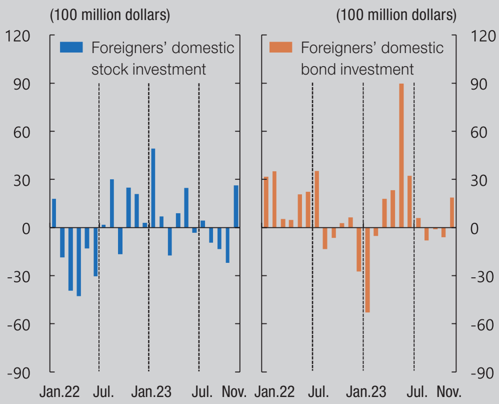
Box 5.

Characteristics and Assessment of Recent Flows of Foreign Portfolio Investment in Domestic Securities[1]

Throughout this year, the global financial markets have witnessed heightened volatility, primarily driven by uncertainties surrounding the direction of the monetary policies implemented by central banks of major countries, including the U.S. Federal Reserve. Amid this trend, foreigners' domestic portfolio investment, which experienced a significant net inflow during the second quarter of 2023, exhibited a consecutive three-month period of net outflow from August to October, raising concerns over the potential for continued foreign investment outflows.[2] In particular, these concerns were further intensified by the recent net outflows in investment in both stocks and bonds during the said three-month period. The following section elucidates implications of such net outflows by conducting a comparative analysis, examining the characteristics of the recent outflows in foreign portfolio investment in domestic securities and the historical net outflows in foreign investment in both stocks and bonds over a period of at least three months.

Inflow and outflow of foreigners' domestic portfolio investment[1]

Total stock investment	Total bond investment



Notes: 1) Positive value means net inflow and negative value means net ouflow.

Source: Bank of Korea.

Background of Recent Net Outflows of Foreign Portfolio Investment in Stocks

From August to October 2023, foreign investment in stocks and bonds experienced net outflows due to unfavorable developments in both internal and external investment conditions. In terms of external factors, there were growing concerns worldwide over the possible long-term persistence of high interest rates in line with factors such as modest economic indicators in the U.S. in the latter half of 2023, demonstrating that apprehension over prolonged high interest rates may not only dampen investment sentiments but also impose constraints on investment capacity. Additionally, starting from October, geopolitical risks in the Middle East came to the fore due to the armed conflict between Israel and Hamas.

1) This article was authored by Yun Seung-wan and Jung Sung-woo (Capital Flows Analysis Team) and was reviewed by Shin Jae-hyuk (director of the Foreign Exchange Analysis Division) and Yu Jae-hyun (head of the Capital Flows Analysis Team).

2) Nevertheless, in November, foreign portfolio investment reverted to a net inflow, driven by the alleviation of concerns over prolonged high interest rates worldwide and sustained expectations regarding the recovery of the semiconductor sector.

In terms of internal factors, there was a growing sentiment that the secondary battery industry had become overvalued, prompting an acceleration of sales for profit realization. In 2023, share prices of secondary battery stocks soared,[3)] driven by optimistic expectations surrounding the industry's performance based on the increasing demand for electronic vehicles. However, in the latter half of this year, internal and external uncertainties increased considerably, and some expressed concerns about the performance of the secondary battery industry. Consequently, foreign investors engaged in sales of stocks in the secondary battery industry for the purpose of profit realization.

In the bond markets, a robust U.S. dollar[4)] emerged as a limiting factor for the investment capacity of foreign investors. Since the public sector plays a substantial role in bond investments and manages foreign exchange reserves, a surge in the U.S. dollar diminishes the public sector's foreign exchanges reserves and subsequently hampers its investment capacity. During the latter half of this year, the domestic demand for foreign currency funds witnessed a decline due to the reduced appraisal value of foreign assets owned by residents, attributed to the global increase in interest rates. Concurrently, the domestic supply of foreign currency funds saw a rise, driven by offshore investors purchasing Non-Deliverable Forwards (NDFs). As a result, the conditions of foreign currency funds in Korea improved, resulting in decreased incentive for arbitrage and subsequently slowing down the inflow of funds held by entities engaging in arbitrage activities.

Comparison with Previous Instances of Prolonged Net Outflows

There have been several instances in the past where foreign portfolio investment in stocks consistently recorded net outflows for three months or more.[5)] However, only four cases have been identified where both stocks and bonds experienced simultaneous net outflows for three or more consecutive months. These periods include: (1) September to November 2008; (2) June to September 2015; (3) December 2015 to February 2016; and (4) August to October 2023, the most recent. In particular, the first three historical instances of net outflows also saw widespread unrest and disruptions in the global financial markets, such as the Global Financial Crisis and financial stress in emerging market economies (EMEs).

In contrast to the previous cases, the most recent instance of net outflows involves a comparatively low level of unrest in the global financial markets.[6)] Also, there are some differences between the recent case and the three previous episodes in terms of the size and magnitude of the net outflow in foreign investment in domestic securities, as well as the composition of such investment.

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3) From January to July 2023, the prices of certain ETFs related to the secondary battery industry saw a remarkable surge of approximately 100%.
4) From August to October 2023, the U.S. dollar index rose by 4.7%.
5) Since 2007, there have been a total of nine instances of net outflows in foreign portfolio investments lasting for three consecutive months or more. The net outflow that began in the second half of 2008 persisted for seven consecutive months, owing to factors such as the Global Financial Crisis.
6) Average values of the volatility index (VIX) during the periods of net outflows in foreign investment in stocks and bonds: 51.3 from September to November 2008, 18.0 from June to September 2015, 21.3 from December 2015 to February 2016, and 16.6 in the most recent net outflow period.

Limited Size and Magnitude of the Most Recent Net Outflow Compared to the Past

During the most recent net outflow period, the total size of the net outflow in foreign portfolio investment in domestic securities amounted to USD 5.91 billion, marking only half of the average size of the net outflows during the three preceding periods (USD 12.61 billion). Accordingly, the average monthly size of the most recent net outflow was USD 1.97 billion, which is also lower than that of the previous net outflows. Examining net outflows by investment type, bonds experienced a net outflow of USD 1.47 billion, significantly below the three-period average of USD 5.55 billion. Similarly, the most recent net outflow in such investment in stocks was USD 4.45 billion, also less than the three-period average (USD 7.06 billion). Moreover, the magnitude of the most recent net outflow in the foreign investment in both stocks and bonds (the proportion of the net outflow relative to the balance of domestic securities held by foreigners) recorded an identical figure of 0.8%, which is notably insignificant when compared to the ratios observed in the previous three periods.

Net outflow of foreigners' domestic portfolio investment during net-outflow-periods[1)2)]

(100 million dollars, %)

	Net outflow during the period	Monthly average of net outflow during the period	Intensity of net outflow
① Sep.~Nov.08(3)	172.4	57.5	6.8
② Jun.~Sep.15(4)	104.7	26.2	2.1
③ Dec.15~Feb.16(3)	101.1	33.7	2.2
④ Aug.~Oct.23(3)	59.1	19.7	0.8

Notes: 1) Periods during which both stock and bond investments recorded net outflow for more than 3 consecutive months.
2) Number in paranthesis refers to the duration of net-outflow-period by months.
3) Net outflow during the period compared to the balance of foreigners' portfolio investments in the previous month.
Source: Bank of Korea.

Net outflow of foreigners' domestic stock and bond investments during net-outflow-period[1)2)]

(100 million dollars, %)

	Stocks		Bonds	
	Net outflow	Ratio to balance[3)]	Net outflow	Ratio to balance[3)]
① Sep.~Nov.08(3)	86.3	4.2	86.2	18.1
② Jun.~Sep.15(4)	68.8	1.7	35.9	3.8
③ Dec.15~Feb.16(3)	56.7	1.6	44.4	5.0
④ Aug.~Oct.23(3)	44.5	0.8	14.7	0.8

Notes: 1) Periods during which both stock and bond investments recorded net outflow for more than 3 consecutive months.
2) Number in paranthesis refers to the duration of net-outflow-period by months.
3) Net outflow during the period compared to the balance of foreigners' portfolio investments in the previous month.
Source: Bank of Korea.

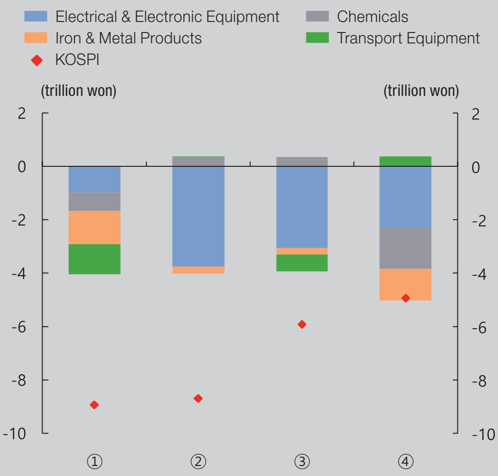
Net Outflow Limited to Specific Sectors, Unlike in Previous Instances

Examining the composition of funds affected by the net outflows, in the most recent net outflow period, the size of the net outflow associated with stocks surpassed that of bonds, similar to the trend observed in the three preceding periods.

Meanwhile, there were differences in terms of the detailed composition of each investment. Specifically, concerning foreign investment in stocks, the most recent net outflow was primarily driven by key industries such as electrical and electronics, chemicals, transportation equipment, and steel. In the case of bond investments, short-term funds experienced a net outflow, while long-term funds recorded a net inflow.

Concerning foreign investment in stocks during the most recent net outflow period, stocks in key industries such as electrical and electronics, chemicals, transportation equipment, and steel constituted approximately 94% of the stocks subject to net selling by foreigners in the KOSPI market. Inversely, the net selling of stocks was limited in industries outside the aforementioned major industry sectors. In the previous three periods, however, stocks in major industries accounted for only 40 to 60% of the stocks subject to net selling by foreigners, and other industries also experienced substantial net selling.

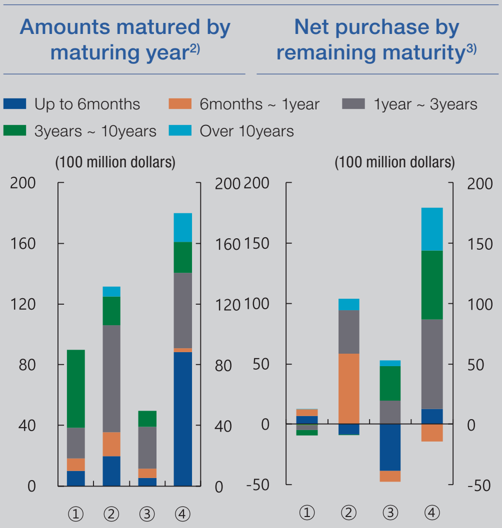
Net purchase[1)2)] of foreigners' domestic stock[3)] by industries



Notes: 1) Positive value means net purchase and negative value means net selling.
2) ① Sep.~Nov.08, ② Jun.~Sep.15, ③ Dec.15~Feb.16, ④ Aug.~Oct.23
3) KOSPI basis.
Source: Yonhap Infomax.

In terms of foreign investment in bonds, both in the most recent period and the preceding three periods, the size of redemptions at maturity surpassed that of net selling. This suggests relatively subdued activity in the reinvestment of matured funds. When categorizing funds redeemed at maturity by their maturity, during the past net outflow periods, the majority of bonds repaid at maturity were medium- and long-term bonds. However, in the most recent net outflow period, short-term bonds issued in the first half of the year constituted a significant portion of the bonds repaid at maturity. More specifically, the bonds redeemed at maturity during the most recent net outflow period were primarily composed of foreign investment in short-term bonds that flowed into the Korean financial market amid the heightened unrest in the global financial markets due to incidents involving SVB and CS in the first half of 2023.[7)] Additionally, examining the bonds subject to net buying by foreign investors during the net outflow periods in foreign portfolio investment in domestic securities based on their maturity, during the most recent net outflow period, there was a large increase in net inflows associated with ultra-long-term bonds[8)] with a residual term to maturity of ten years or more as well as long-term bonds with a residual term maturity of three to ten years.

Amounts matured and net purchase[1)] of foreigner's domestic bond by maturity



Notes: 1) ① Sep.~Nov.08, ② Jun.~Sep.15, ③ Dec.15~Feb.16, ④ Aug.~Oct.23
2) Maturity at the time of issuance basis.
3) Remaining maturity on trade date basis. Positive value means net purchase and negative value means net selling.
Source: Bank of Korea.

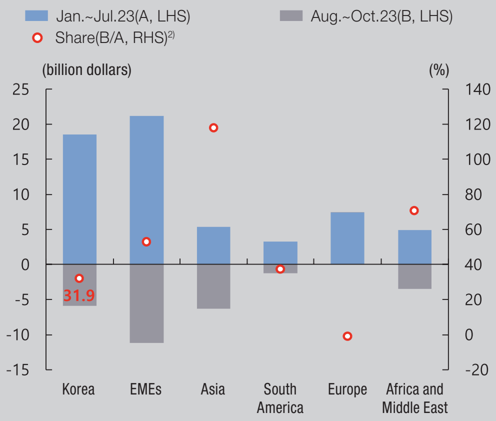
7) This is mainly attributed to the sluggish reinvestment of funds redeemed at maturity due to the favorable conditions of foreign currency funds.
8) In general, foreign investors who sell bond forwards to domestic insurance companies tend to buy long-term government bonds to hedge the corresponding positions. Also, they hedge risks associated with fluctuation of exchange rates and interest rates through CRS Pay transactions.

Comparison with Other EMEs in Asia

Limited Magnitude of Net Outflows in Korea Compared to Other EMEs in Asia

Since August, a trend of net outflows in foreigners' domestic portfolio investment has been observed in both Korea and other EMEs. During 2023, EMEs in Asia experienced net inflows in foreigners' domestic portfolio investment during the first half, followed by a shift to a net outflow in the latter half. When examining this trend by region, EMEs in Asia experienced a limited net inflow during the initial six months, while the net outflow in the subsequent six months was substantial.[9] In Korea, the proportion of the most recent net outflow (calculated as the ratio of the net outflow from August to October 2023 relative to the net inflow from January to July 2023) stood at 31.9%. This percentage is comparatively lower than the ratios recorded in other EMEs, indicating that the magnitude of the net outflow in Korea was relatively limited when compared with other EMEs.

Inflow and outflow of portfolio investment by foreigners[1]



Notes: 1) Positive value means net inflow and negative value means net ouflow
2) Net outflow between August and October compared to net inflow between January and July 2023.
Source: Bank of Korea, IIF

Assessment and Implications

Examining the primary causes behind the recent outflows in foreigners' domestic portfolio investment amid escalating volatility in the global financial markets,[10] the outflow of foreign investment in stocks can be traced back to accelerating profit realization by foreigners, prompted by a dramatic surge in share prices within the secondary battery industry in the first half of 2023. Additionally, the outflow of foreign investment in bonds is attributed to arbitrage funds, which entered the Korean market in the first half of the year, being redeemed at maturity due to improved conditions in foreign currency liquidity in Korea. In this regard, the most recent outflow

9) The subdued inflow of foreign investment in Asian EMEs is mainly attributed to the continued sluggishness in the inflow of funds into China due to worries over an economic slowdown (USD -31.03 billion from January to July 2023 → USD -42.27 billion from August to October 2023).

10) During the most recent net outflow period, volatility expanded in the global financial markets due to uncertainties related to monetary policies in major countries, but remained relatively stable compared to the previous net outflow periods.

of foreigners' domestic portfolio investment was relatively limited in size and magnitude compared to past net outflows in Korea and those observed in other EMEs this year, while also only affecting specific industries. Notably, unlike in the previous instances, long-term bonds are experiencing a net inflow, which demonstrates a sustained confidence among foreign investors in the Korean economy.

Subsequently, starting from November, foreign domestic portfolio investment has undergone a shift towards a net inflow, driven by a significant increase in foreign investment in stocks, a trend that is anticipated to persist for the time being. The primary driver behind this shift lies in the improved sentiment among foreign investors regarding the Korean economy, which is a result of diminished concerns about prolonged monetary tightening measures by the U.S. Federal Reserve, which had previously led to the net outflow of foreign domestic portfolio investment, as well as the reduced likelihood of an escalation of conflict in the Middle East since November.[11)] Moreover, the growing anticipation of a recovery in current balances and the semiconductor sector also appear likely to contribute to further inflows of foreign domestic portfolio investment.

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11) Investments in stocks recorded a dramatic increase in net inflow after a temporary measure imposed by the Korean government to ban short selling (November 5). This measure was one of the factors causing the net inflow in foreign investment in stocks in November.

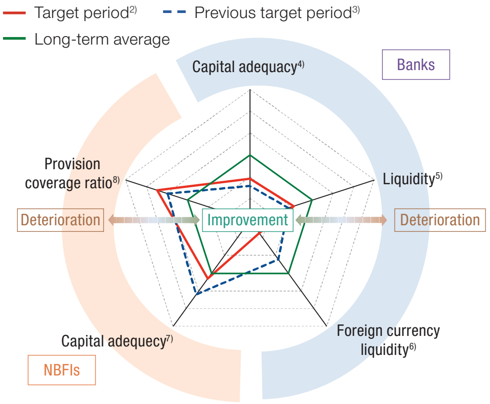
Resilience of Financial System

I. Financial Institutions

Commercial banks'[1] resilience remained strong. The capital adequacy ratio, a gauge of bank's loss absorption capacity, was substantially above the regulatory 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 their ability 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 sub-standard-or-below loans at most institutions, their resilience remained at an adequate level, with their capital adequacy ratios exceeding the supervisory standard (Figure I-1).

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



Notes: 1) The indices of current and previous target period are standardized based on the long-term(5-year) average.
2) End-Q3 2023(end-October 2023 for banks' liquidity and foreign currency liquidity, end-Q2 2023 for insurance cos' capital ratios).
3) End-Q1 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.
Sources : Bank of Korea staff calculation.

1. Banks

Maintenance of Loss Absorption Capacity at a Favorable Level

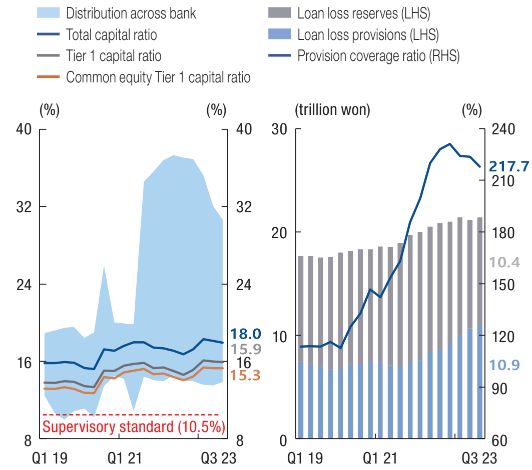
Commercial banks' capital adequacy ratio (BIS ratio) and Common Equity Tier 1 capital ratio stood at 18.0% and 15.3%, respectively, at the end of the third quarter of 2023, inching down from the end of the first quarter (18.3% and 15.4%). This is mainly attributable to the rise in banks' risk-weighted assets due to the

1) In this report, the banking sector analysis only considers commercial banks (nationwide, regional, and internet-only banks). Special banks (Korea Development Bank, Industrial Bank of Korea, Korea Eximbank, Suhyup Bank and Nonghyup Bank) are excluded due to the difference in business model.

expansion of loans, despite a boost in capital from an increase in net income. The total capital ratio was significantly above the supervisory minimum standards (10.5%, D-SIB[2] 11.5%) for all banks.

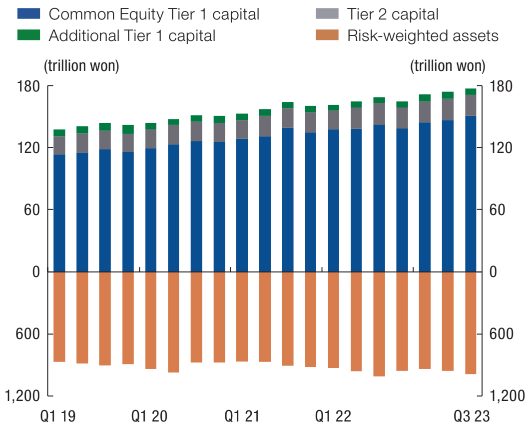
The loan loss provision coverage ratio (loan loss provisions to substandard-or-below loans), reflecting banks' ability to absorb expected losses, fell 6.6%p from 224.3% at the end of the first quarter of 2023 to 217.7% at the end of the third quarter. The decline in the provision coverage ratio came as a result of a rise in substandard-or-below loans (+KRW 0.6 trillion) for some banks during this period, which offset the effect of the increase in loan loss provisions (+KRW 1.0 trillion) driven by increased delinquency rates. Loan loss reserves, which are based on loan classification stipulated under supervisory regulations to supplement loss absorption capacities, marked a high level this year at KRW 10.4 trillion as of the third quarter of 2023, in line with the continued efforts of the financial authorities[3] (Figure I-2, Figure I-3).

Figure Ⅰ-2. Commercial banks[1] Basel III-basis capital ratios[2][3] and provision coverage ratio[2][4]



Notes: 1) Excluding TossBank(under BaselⅠ until the end of 2023)
2) End-period basis.
3) Supervisory 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) Provision coverage ratio = Loan loss provisions / Substandard-or-below loans.
Sources : Commercial banks' business reports.

Figure Ⅰ-3. Commercial banks[1] capital ratio decomposition[2]



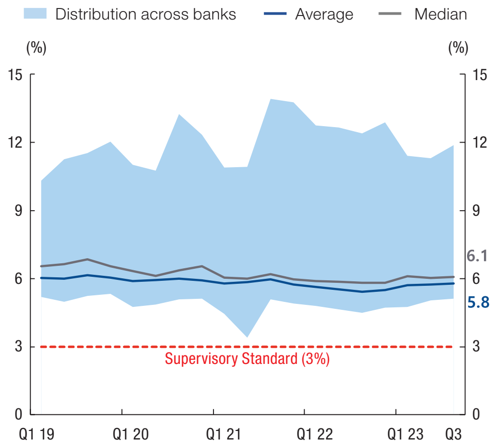
Notes: 1) Excluding TossBank(under Basel I until end of 2023)
2) End-period basis.
Soucres : Commercial banks' business reports.

2) In 2023, domestic systemically important banks (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), which is applied to 2024 as well.

3) The loan loss reserves are funds built up additionally to supplement loan loss provisions, as required under the current supervisory regulation. Financial authorities announced in January 2023 the introduction of the right to request the accumulation of special loan loss reserves, which aims to strengthen banks' loss absorption capacities in response to economic conditions, and then established the supervisory regulations for the said system in November.

At the end of the third quarter of 2023, commercial banks' leverage ratio[4] stood at 5.8%, similar to the level at the end of the first quarter (5.7%) and above the regulatory minimum requirement (3%) for all institutions. However, some banks saw slight decreases in their leverage ratio due to the growth of loan assets compared to the previous quarter (Figure I-4).

Figure Ⅰ-4. Commercial banks[1)] leverage ratios[2)]



Notes: 1) Excluding TossBank(Regulatory leverage ratio not applied until the end of 2023)

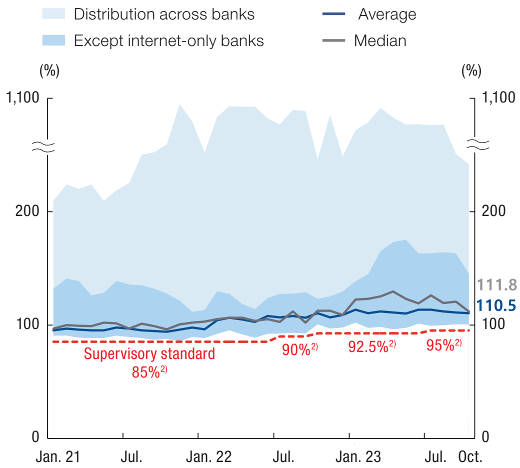
2) Tier 1 capital(Common Equity Tier 1 capital + Additional Tier 1 capital) / Total exposure, end-period basis.

Sources: Commercial banks' business reports.

Generally Sound Liquidity Coverage

Banks' liquidity coverage ratio (LCR)[5)] dropped 1.7%p from 112.2% in March 2023 to 110.5% in October. This was chiefly due to the rise in the total net cash outflows driven by the increased maturing deposits[6)] in the second half of 2023. All banks' LCR exceeded the former regular supervisory standard (100%) that was in place before it was lowered[7)] (Figure I-5).

Figure Ⅰ-5. Commercial banks LCR[1)]



Notes: 1) High-quality liquid assets(intra-month average balance) / Total net cash outflows over the next 30 calendar days.

2) April 2020 to June 2022: 85%, July to September 2022: 90%, October 2022 to June 2023: 92.5%, July 2023 to June 2024: 95%.

Sources: Commercial banks' business reports.

4) The leverage ratio means the simple Tier 1 capital ratio under the Banking Business Supervision Regulations. The leverage ratio aims 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 leverage ratio plays a supplementary role to 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 leverage ratio is also applied to internet-only banks.

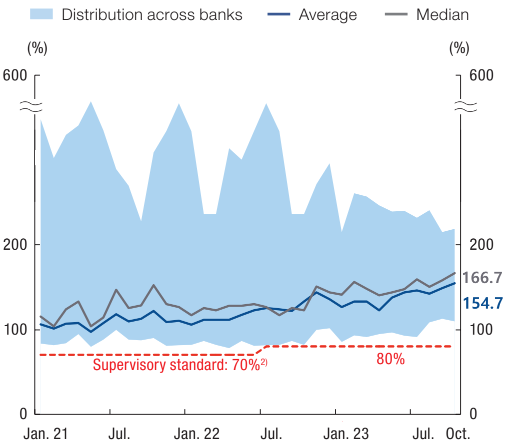
5) The LCR is calculated as the ratio of high-quality liquid assets (HQLA) to total expected net cash outflows over the next 30 calendar days, using the intra-month average balance of HQLA.

6) The amount of maturing won-denominated deposits held by commercial banks surged by approximately KRW 100 trillion, from KRW 165.7 trillion in the second quarter of 2023 to KRW 265.9 trillion in the fourth quarter.

7) Currently, the supervisory standard for LCR is 95%. Financial supervisory authorities extended the application of this regulatory ratio until June 2024 and the normalization of the ratio will be determined in the second quarter of 2024.

The foreign currency LCR,[8] indicating banks' capacity to respond to foreign currency liquidity shocks, rose 21.4%p from 133.3% in March 2023 to 154.7% in October. The foreign currency LCR was comfortably above the supervisory minimum requirement (80%) for all banks (Figure I-6).

Figure Ⅰ-6. Commercial banks foreign currency LCRs[1)]



Notes: 1) High-quality liquid foreign currency assets(intra-month average balance)/ Total net cash outflows in foreign currency over next 30 calendar days

2) Temporary application from April 2020 to June 2022.

Sources: Commercial banks' business reports.

At the end of the third quarter of 2023, the net stable funding ratio[9] (NSFR), providing a picture of the long-term stability of banks' funding structure, stood at 114.5%. All banks met or exceeded the supervisory NSFR requirement (100%) during this period (Table I-1).

Table Ⅰ-1. Commercial banks[1)] net stable funding ratio[2)3)]

(%)

	2021	2022				2023		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Average	111.2	108.9	108.2	108.2	111.9	112.2	114.6	114.5
Median	109.2	107.7	107.7	106.6	109.7	108.6	111.6	111.3

Notes: 1) Excluding TossBank(NSFR regulation not applied until the end of 2023)

2) Available Stable Funding / Required Stable Funding; end-period basis.

3) The supervisory standard is 100%.

Sources: Commercial banks' business reports.

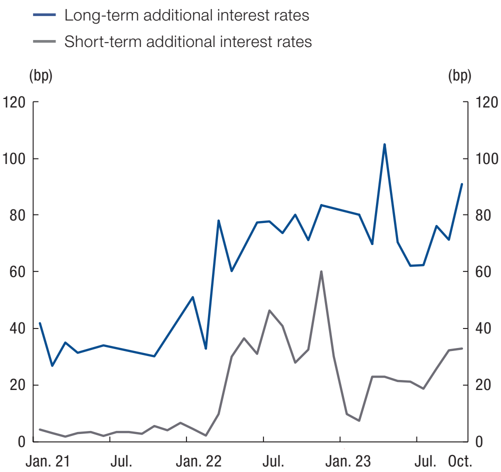
Generally Favorable Foreign Currency Funding Conditions

Commercial banks' foreign currency funding conditions were generally favorable. Although banks' foreign currency borrowing spreads rose in April 2023, driven by the continued impact of the Silicon Valley Bank (SVB) and Credit Suisse (CS) crisis, it rapidly fell back thanks to the aggressive policy response from the U.S. Federal Reserve and other institutions. Meanwhile, commercial banks' short- and long-term foreign currency borrowing spreads increased in the second half of 2023. However, this rise was mainly due to the extended maturity of bank borrowings rather than a deterioration in foreign currency funding conditions, and in light of past trends, banks' external currency funding conditions appear to be stable (Figure I-7).

8) 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 the steady supply of foreign currencies to the real economy sector even under a stress situation. 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.

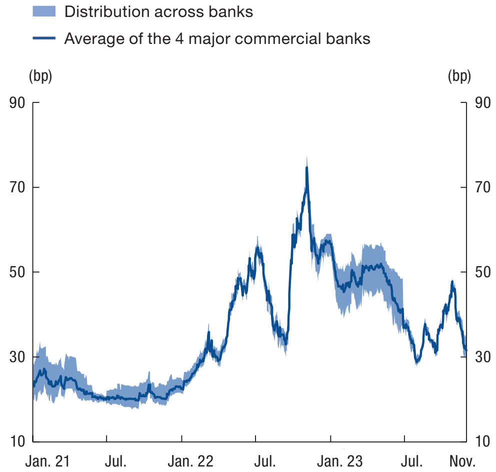
9) The NSFR limits banks' overreliance on short-term wholesale funding by requiring them to fund certain portion of their long-term assets under management with stable debt and capital.

Figure Ⅰ-7. Commercial bank short- and long-term foreign currency borrowing spreads[1)2)]



Notes: 1) based on LIBOR before March 2022, and 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.
Sources: Bank of Korea

Figure Ⅰ-8. Commercial bank[1)] CDS premium[2)]



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

Commercial banks' CDS premium has shown an overall downward trend since the first quarter of 2023 as well. In October, the CDS premium rose temporarily due to the Israel-Hamas war, and then it fell rapidly and returned to the previous level (Figure I-8).

2. Non-Bank Financial Institutions

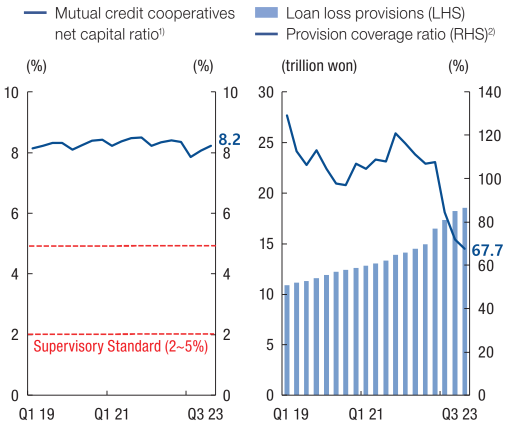
2-1. Non-bank Deposit-taking Institutions

Decline in Some Indicators of Loss Absorption Capacities

Mutual credit cooperatives' net capital ratio[10] rose by 0.4%p from 7.8% at the end of the first quarter of 2023 to 8.2% at the end of the third quarter. The provision coverage ratio (loan loss provisions to substandard-or-below loans) fell by 16.9%p from 84.6% to 67.7% during the same period due to a sharp rise in substandard-or-below loans[11] (Figure I-9).

Mutual savings banks' BIS capital ratio rose by 0.5%p from the end of the first quarter of 2023 (13.6%) to 14.1% at the end of the third quarter. This was attributable to the decline in risk-weighted assets prompted by decreasing loans, which more than offset the weakening of capital caused by the drop in net income of most mutual savings banks.[12] Although all mutual savings banks' BIS capital ratios were above the supervisory standards (7 to 8%), some were found to be approaching the regulatory standards. The provision coverage ratio (loan loss provisions to substandard-or-below loans) dropped by 9.6%p from the end of the first quarter (95.9%) to 86.3% at the end of the third quarter, due to the amount of increase in substandard-or-below loans (+KRW 1.1 trillion) substantially exceeding the additional reserves for loan loss provisions (+KRW 0.4 trillion)[13] (Figure I-10).

Figure Ⅰ-9. Mutual credit cooperatives loss absorption capacities indicators



Notes: 1) The supervisory standard is 5% for Nonghyup, 4% for MG community credit cooperatives and 2% for Suhyup, Credit union and NFCF.
2) Loan loss provisions / Substandard-or-below loans.

Sources: Financial institutions' business reports.

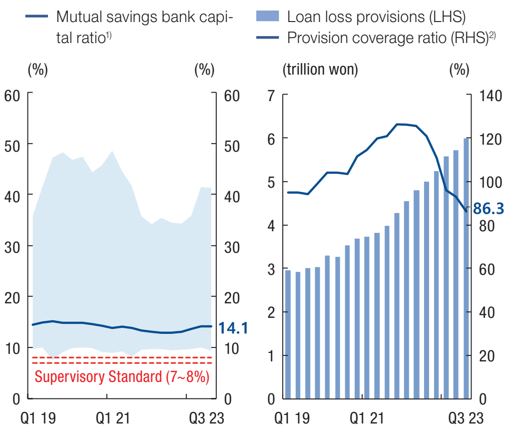
10) Net capital ratio = (total assets - total liabilities - investment money + subordinated borrowings + loan loss provisions) / (total assets + loan loss provisions) × 100. However, the investment money herein solely refer to funds guaranteed to be refunded to a member upon withdrawal from the cooperative.

11) The regulatory ratio concerning the supervision of mutual credit cooperatives is the ratio of loan loss provisions to the required reserves for assets subject to loan loss provisions (e.g. loans) pursuant to Article 12 of the Regulation on Supervision of Mutual Financial Business. In the third quarter of 2023, the regulatory ratio of mutual credit cooperatives (excluding MG Community Credit Cooperatives) reached 123.3%, higher than the supervisory standard (100%).

12) From the first to third quarter of 2023, mutual savings banks recorded a cumulative net loss of -KRW 0.1 trillion, and the amount of their risk-weighted assets fell by 3.0% from KRW 117.5 trillion in the first quarter of 2023 to KRW 114.1 trillion in the third quarter.

13) The regulatory ratio concerning the supervision of mutual savings banks is the ratio of their loan loss provisions to the mandatory reserve standard, which stood at 110.2% in the third quarter of 2023, remaining higher than the regulatory ratio (100%).

Figure Ⅰ-10. Mutual savings bank loss absorption capacities indicators



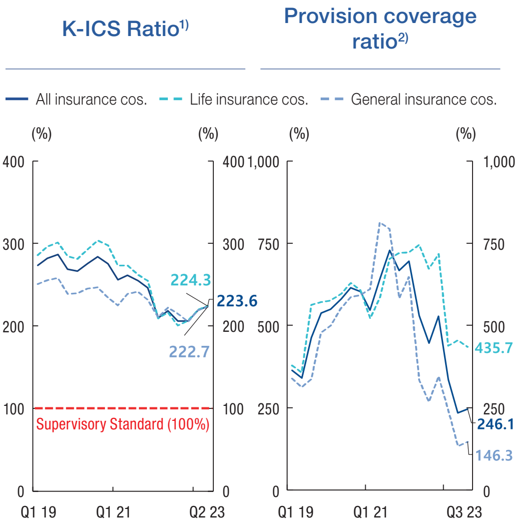
Notes: 1) Capital / Risk-weighted assets. The supervisory standard is 7% (8% for institutions with assets of more than 1 trillion won). The shaded area represents the range of capital ratios accross mutual savings banks.
2) Loan loss provisions / Substandard-or-below loans.
Sources: Financial institutions' business reports.

2-2. Insurance, Securities, and Credit-specialized Financial Companies

Varying Loss Absorption Capacities by Sector

The K-ICS ratio[14] (standard with transitional measures applied), a new standard for capital requirements indicating insurance companies' loss absorption capacities, continued its upward trend from the fourth quarter of 2022, reaching 223.6% at the end of the second quarter of 2023.[15] The provision coverage ratio continued to fall due to the increase in substandard-or-below loans centered around general insurance companies[16] until it reached 246.1% (435.7% for life insurance companies, 146.3% for general insurance companies) at the end of the third quarter of 2023, an uptick from the end of the previous quarter (234.9%) (Figure I-11).

Figure Ⅰ-11. Insurance cos. loss absorbing capacity



Notes: 1) Amount of available capital / amount of required capital, based on RBC ratio until 2022 and K-ICS ratio from 2023.
2) (Loan loss provisions + loan loss reserves) / substandard-or-below loans.
Source: Financial institutions' business reports.

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14) 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, termination, 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.

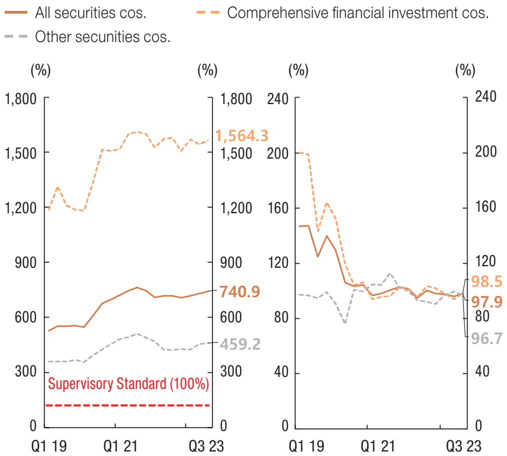
15) In conjunction with changes in insurance companies' reserve standard, the disclosure deadline related to capital adequacy was temporarily extended, by one month, to three months from the quarter-end (four months from the year-end for annual book closing). As a result, the latest available data is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

16) General insurance companies' substandard-or-below loans fell to KRW 91.1 billion at the end of the second quarter of 2021 before switching to an upward trend by rising to KRW 602.0 billion at the end of second quarter of 2023, and then decreased again to KRW 559.9 billion at the end of third quarter.

Securities companies' net capital ratio stood at 740.9% at the end of the third quarter of 2023, showing a steady increase for both comprehensive financial investment companies (1,564.3%) and other securities companies (459.2%). Their provision coverage ratio was 97.9%, remaining around 100% since the second half of 2020 for both comprehensive financial investment companies and other securities companies (Figure I-12).

Figure Ⅰ-12. Securities cos. loss absorbing capacity

Net capital ratio[1]	Provision coverage ratio[2]



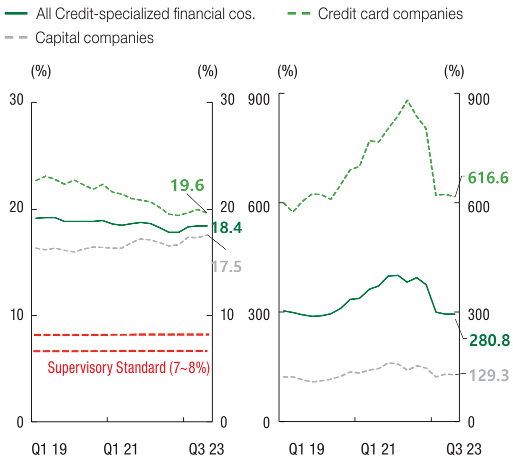
Notes: 1) (Net operating capital - total risk) / required maintenance equity.
2) (Loan loss provisions + loan loss reserves) / substandard-or-below loans.

Source: Financial institutions' business reports.

The adjusted capital ratio of credit-specialized financial companies was 18.4% at the end of the third quarter of 2023, staying similar to the level at the end of the previous quarter. The decrease in the provision coverage ratio slowed down mostly among credit card companies, reaching 280.8% at the end of the third quarter of 2023, with the diminishing impact of regulations amended earlier this year[17] and a slowdown in the steep increase in substandard-or-below loans of credit card companies, which continued from the third quarter of 2022[18] (Figure I-13).

Figure Ⅰ-13. Credit-specialized financial cos. loss absorbing capacity

Adjusted capital ratio[1]	Provision coverage ratio[2]



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 institutions' business reports.

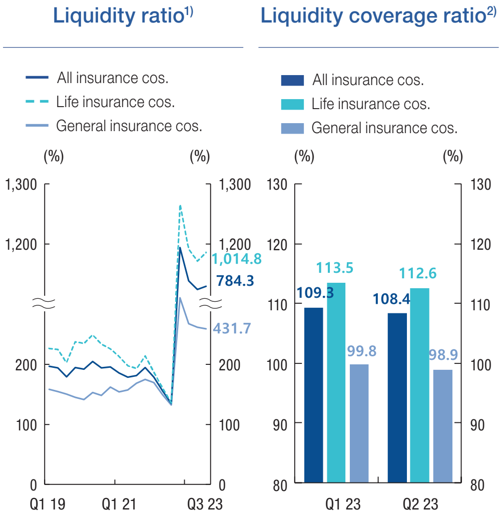
17) According to the revision of the Regulation on Supervision of Specialized Credit Finance Business (effective as of January 1, 2023), the credit conversion factor for credit sales and unused card loan commitments of credit card companies for which loan loss reserves are provided was adjusted down to the level of other financial sectors, such as banks and insurance companies (50% → 40%). As a result, the amount of provisions required to set aside by supervisory regulations decreased in the first quarter of 2023.

18) The increase in substandard-or-below loans held by credit card companies accelerated from KRW 1.2501 trillion at the end of the third quarter of 2022 (7.9% increase from the previous quarter) through KRW 1.3764 trillion at the end of the fourth quarter (10.1% increase) to KRW 1.6926 trillion at the end of the first quarter of 2023 (23.0% increase) before slowing down to KRW 1.7200 trillion (1.6% increase) at the end of the second quarter and KRW 1.7899 trillion (4.1% increase) at the end of the third quarter.

Moderate Level of Liquidity Response Capacity

Insurance companies' liquidity ratio fell to 134.2% at the end of the third quarter of 2022, due to the decline in asset value as a result of interest rate hikes and increased payments of insurance claims[19] from the second half of 2022, and rose significantly after the fourth quarter thanks to financial authorities' decision to broaden the definition of liquid assets.[20] The liquidity coverage ratio (LCR),[21] which was adopted in 2023 to assess companies' ability to respond to liquidity stress, stood at 108.4% at the end of the second quarter, remaining similar to the level at the end of the previous quarter (109.3%) (Figure I-14).

Figure Ⅰ-14. Insurance cos. liquidity coverage



Notes: 1) Liquidity assets / average insurance payment of three months.
2) Under liquidity stress, available liquidity / required funding.
Source: Financial institutions' business reports.

Due to the increase in funding through the money market,[22] securities companies' liquidity ratio continued to drop,[23] reaching 117.0% at the end of the third quarter of 2023. The adjusted liquidity ratio, which takes account of

19) In 2022, amid sluggish sales of savings-type insurance policies due to rising interest rates among deposit-taking institutions, the amount of insurance claims paid by insurance companies rose sharply, driven by the surge in the cancellations of insurance policies from the third quarter of 2022, which were sold in large numbers during 2013, as they become tax-exempt after more than 10 years of payments

20) Through the revision of the Regulation on the Supervision of Insurance Business (effective as of December 2022), supervisory authorities broadened the definition of liquid assets related to the application of the liquidity ratio regulations (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) to alleviate insurance companies' burden of holding liquidity assets.

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

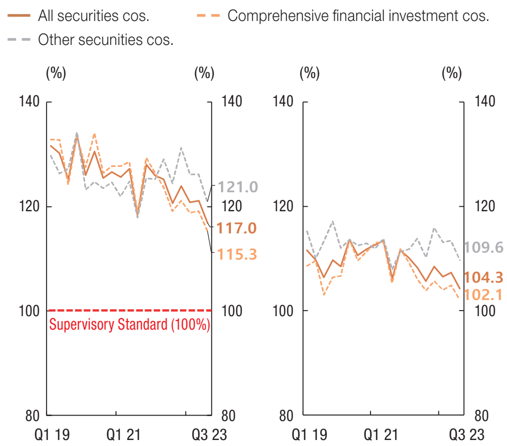
22) The amount of securities companies' funding through RPs (excluding CMA) increased steadily from KRW 55.7 trillion at the end of 2021 to KRW 61.3 trillion at the end of the third quarter of 2023.

23) The plunge in the liquidity ratio at the end of the third quarter of 2021 was mainly attributable to the fact that the one-year ELSs issued in large volumes at the end of 2020 were now approaching their maturity during the quarter and hence classified as liquid liabilities.

debt guarantees[24] as part of contingent liabilities, stood at 104.3%, 12.7%p lower than the non-adjusted ratio (Figure I-15).

Figure Ⅰ-15. Securities cos. liquidity coverage

Liquidity ratio[1)]	Adjusted liquidity ratio[2)]



Notes: 1) Liquidity assets with remaining maturity within three months / liquidity liabilities with remaining maturity within three months

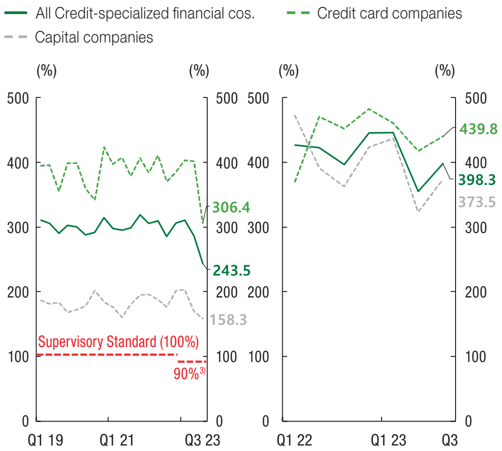
2) Liquidity assets with remaining maturity within three months / (liquidity liabilities with remaining maturity within three months + debt guarantee)

Source: Financial institutions' business reports.

The liquidity ratio of credit-specialized financial companies decreased to 243.5% at the end of the third quarter of 2023, affected by the increase in the amount of commercial paper (CP) with a remaining maturity of less than three months.[25] The immediately available liquidity ratio,[26] indicating companies' capacity to respond liquidity risks under a one-month stress scenario, rose to 398.3% from the end of the previous quarter (354.7%), staying significantly higher than the liquidity ratio (Figure I-16).

Figure Ⅰ-16. Credit-specialized financial cos. liquidity coverage

Liquidity ratio[1)]	Immediately available liquidity ratio[2)]



Notes: 1) Liquidity assets maturing within 90 days / liquidity liabilities maturing within 90 days.

2) Immediately available liquidity assets / liablities maturing in a month.

3) Temporary adjustment in place from December 2022 to June 2024.

Source: Financial institutions' business reports.

24) At the end of the third quarter of 2023, the total debt guarantees of securities companies stood at KRW 40.0 trillion.

25) With the approaching maturity of CPs with a maturity of one year and more, which were issued in large numbers by credit-specialized financial companies from 2021 to 2022, the amount of CPs with a remaining maturity of less than three months rose from KRW 2.9 trillion at the end of the first quarter of 2023 to KRW 7.7 trillion at the end of third quarter.

26) 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 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 line) by borrowings maturing within one month.

27) For details, refer to Box 6 "Assessment and Implications of Funding Conditions of Securities and Credit-specialized Financial Companies."

Across all sectors, capital ratios have remained stable, exceeding the regulatory standards by a considerable margin. However, given that the provision coverage ratio of insurance companies has recently seen a noticeable decline and securities companies' ratio has remained relatively low, it seems necessary, especially for these companies, to enhance their loss absorption capacity by proactively setting aside sufficient provisions. Although the liquidity response capacity of all sectors is relatively sound, they need to secure sufficient liquidity in anticipation of a potential deterioration of funding conditions,[27] taking caution to prevent the vulnerability of their funding maturity structure from increasing.

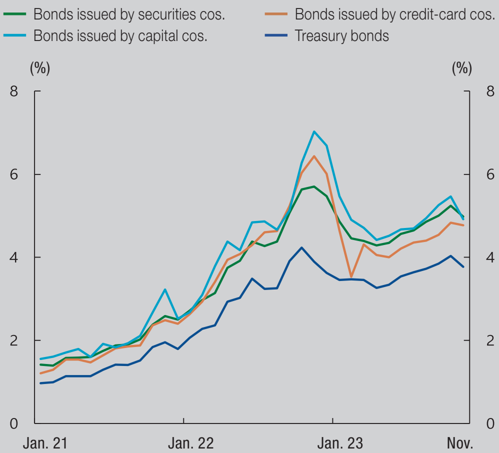
27) For details, refer to Box 6 "Assessment and Implications of Funding Conditions of Securities and Credit-specialized Financial Companies."

Box 6.

Assessment and Implications of Funding Conditions of Securities and Credit-specialized Financial Companies[1)]

In the second half of 2023, the increase in bank bond issues amid growing market interest rates (three-year Treasury bonds) raised concerns that funding costs may rise at securities companies and credit-specialized financial companies (hereinafter "CSFCs"), which generally raise funds through marketable borrowings.[2)3)] This article examines the recent funding situations at securities companies and CSFCs, along with the impact of risks related to real estate project financing (PF) on funding conditions, thereby identifying implications.

Rising trends of bond interest rates of securities cos. and credit-specialized financial cos.[1)2)]



Notes: 1) 3-year basis
2) Average interest rates based on the amount of bonds issued by CSFCs and average bond yields for bonds for securities cos.

Source: Yonhap Infomax, Bank of Korea staff calculation

Increased Dependency on Short-term Marketable Borrowings

At the end of the third quarter of 2023, the ratio of short-term marketable borrowings (CPs, short-term bonds, RPs, etc.) to total borrowings at securities companies and CSFCs[4)] increased by 5.0%p and 6.4%p from the end of 2020 to 31.5% and 13.6%, respectively.

1) This article was authored by Song Su-hyuk, Nam Seung-hee, and Na Sung-o (Non-Bank Risk Analysis Team) and was reviewed by Lee Jong-han (director of the Financial Risk Analysis Division) and Shin Jun-young (head of the Non-Bank Risk Analysis Team).

2) As of the end of September 2023, the ratio of marketable funding to borrowings was 37.1% at securities companies (13.3% for RPs excluding CMA-type RPs, 8.4% for promissory notes, 6.6% for CPs, 5.6% for corporate bonds, 1.6% for short-term bonds, and 1.7% for call money) and 78.2% at CSFCs (64.6% for corporate bonds, 12.6% for CPs, 0.8% for short-term bonds, and 0.3% for RPs), excluding subordinated bonds from corporate bonds.

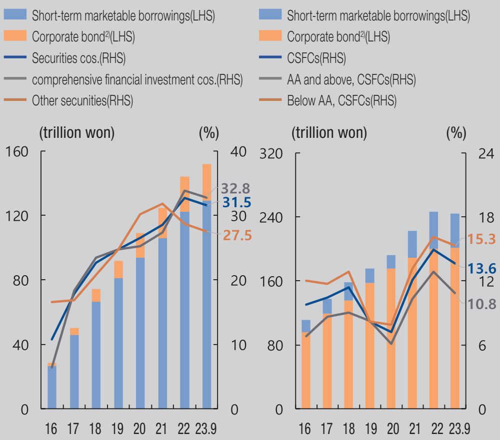
3) The interest rate spreads on bonds issued by securities companies and CSFCs against three-year Treasury bonds had decreased steadily since the alleviation of unrest in the money market in the fourth quarter of 2022, but they switched to an increase in the second half of 2023. During the fourth quarter of 2023 (from October to November), the average spreads recorded an increase by 0.19%p for credit card cos. bonds, 0.19%p for securities cos. bonds, and 0.14%p for capital cos. bonds, compared to the second quarter.

4) The ratio of short-term marketable borrowings at CSFCs dropped from 2018 to 2020 along with decreasing market interest rates. However, from 2021 to 2022, the issuance of CPs, particularly with a maturity of more than one year, surged in response to the decrease in demand for corporate bonds driven by the anticipation of rising long-term interest rates.

By size of securities company, comprehensive financial investment companies expanded the issuance of promissory notes,[5] leading to their short-term marketable borrowings exceeding those of small and medium-sized companies from 2022. Among CSFCs, those with smaller assets and average or low credit ratings (below AA) were more dependent on short-term marketable borrowings than those with high credit ratings, suggesting that companies with lower credit ratings were more exposed to the vulnerable structure of funding.[6]

Marketable borrowings and share of short-term marketable borrowings[1)]

Securities cos.	Credit-specialized financial cos.



Notes: 1) Bars for marketable borrowings and lines for share of short-term marketable borrowings
2) Except for non-guatanteed subordinated bonds
Sources: Financial institutions' business reports, Yonhap Infomax

Impact of Increased Issuance of Bank Bonds

During the fourth quarter of 2023 (from October to November), the net issuance of bank bonds rose dramatically (+KRW 14.0 trillion) from the previous quarter (KRW 3.9 trillion) to KRW 17.9 trillion. However, securities cos. bonds were net redeemed (KRW 0.6 trillion), while the net issuance of bonds by CSFCs only inched up by KRW 2.0 trillion to KRW 3.6 trillion from the previous quarter.[7] The increase in the net issuance of bank bonds usually tended to coincide with a decline in the net issuance of securities cos. and CSFCs bonds.[8]

The amount of securities cos. and CSFCs bonds maturing during the first half of 2024 stands at KRW 46.9 trillion in total,[9] up from the second half of 2023 (+KRW 3.6 trillion). In consideration of a dramatic fall in the amount of maturing bank bonds,[10] the burden imposed on securities companies and CSFCs by bond roll-overs will be relatively moderate. However, if banks expand new funding by issuing bank bonds[11] instead of deposits and installment savings, the demand for bonds issued by securities companies and CSFCs may be crowded out and their issuing costs may also rise.

5) The amount of promissory notes issued by comprehensive financial investment companies increased by 121.0% from the end of 2020 (KRW 15.6 trillion) to KRW 34.4 trillion at the end of the third quarter of 2023.

6) The issuance of CPs with a maturity of more than one year dropped sharply at CSFCs in 2023, while the volume of maturing CPs is expected to increase from the fourth quarter, which seems likely to cause a shift in the maturity structure of CP toward shorter maturity cycles.

7) Bonds issued by CSFCs were net redeemed (-KRW 487.0 billion) in October, but they turned to a net issuance (+KRW 4.1 trillion) in November thanks to the increase in bonds issued by CSFCs with high credit ratings, under influence of decreasing market interest rates.

8) From the first quarter of 2018 to the third quarter of 2023, the correlation coefficient between the net issuance of bank bonds and that of bonds by securities companies and CSFCs (compared to the previous quarter) was -0.35.

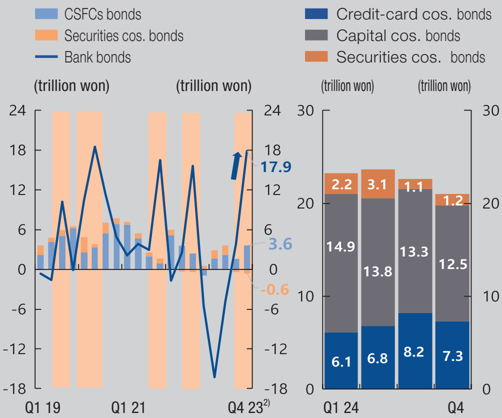
9) By business type, capital companies accounted for the largest amount at KRW 28.7 trillion (22.4% compared to the balance of bonds at the end of September 2023), followed by credit card companies at KRW 12.9 trillion (16.3%) and securities companies at KRW 5.3 trillion (23.3%).

10) The amount of bank bonds maturing rose steadily from 2020 to its peak of KRW 111.9 trillion in the first half of 2023 before switching to a decrease in the second half (KRW 108.2 trillion). The margin of decrease is expected to widen, reaching KRW 81.1 trillion in the first half of 2024.

11) The Financial Services Commission had gradually phased out the existing limit on the issuance of bank bonds (100% of the amounts of bank bonds maturing each month) since March 2023 and abolished the limit in October 2023.

Net issuances and amounts due at maturity

Net issuances[1)] | **Maturities**



Notes: 1) Shading means periods of increasing bank bonds issuances
2) During October and November, 2023
Sources: Yonhap Infomax

Impact of Risks Related to Real Estate PF Exposure

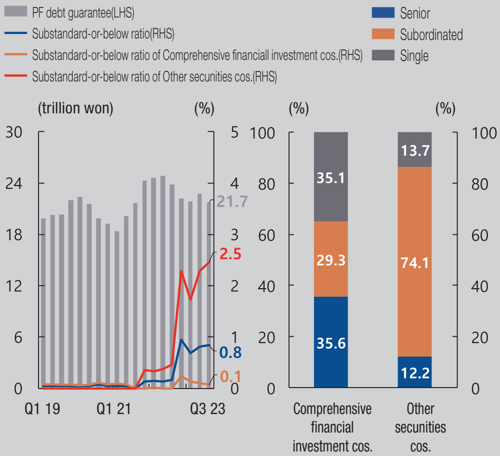
A surge in the delinquency rate of real estate PF loans[12)] has raised concerns about their soundness. The deteriorating soundness of real estate PF exposure may lead to the realization of securities companies' debt guarantees and rising credit spreads of CSFCs.

Securities Companies: Possibility of the Realization of Real Estate PF Debt Guarantees

The total value of securities companies' real estate PF debt guarantees[13)] decreased by 2.2% from the end of 2022 (KRW 22.2 trillion) to KRW 21.7 trillion at the end of the third quarter of 2023, while substandard-or-below loan ratios rose at small and medium-sized companies. In particular, for small and medium-sized companies, the demand for funds to fulfill the debt guarantees may be higher than expected due to the large proportion of subordinated debt (74.1%), which have a high likelihood of the realization of debt guarantees.

Real estate PF debt guarantee and share by repayment priority of securities cos.

PF debt guarantee and substandard-below ratio | **Share by repayment priority[1)]**



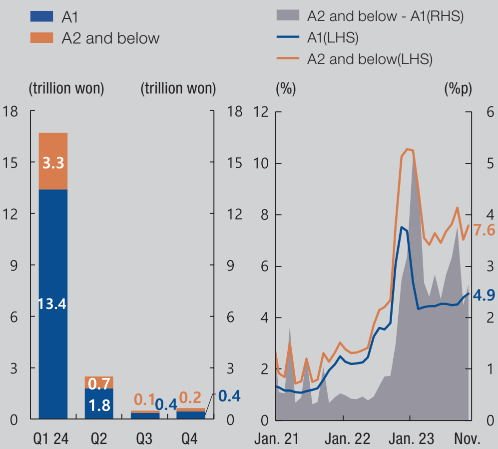
Notes: 1) End of September, 2023
Sources: Financial institutions' business reports

Meanwhile, with regard to PF-ABCPs, which are subject to debt guarantees by securities companies for real estate PF, a sum of KRW 16.7 trillion or 82.0% of the total amount maturing in 2024 (KRW 20.3 trillion as of November 2023) is concentrated in the first quarter. In particular, there remains high level of market vigilance for PF-ABCPs with low credit ratings of A2 or below (KRW 3.3 trillion).[14)]

12) As of the end of the third quarter of 2023, the delinquency rate of real estate PF loans stood at 13.9% for securities companies and 4.4% for CSFCs, higher than the levels at the end of 2022 (10.4% for securities companies and 2.2% for CSFCs).
13) The provision of credit (KRW 19.7 trillion) bearing both liquidity and credit risks account for the overwhelming majority of securities companies' real estate PF debt guarantees (91.1%).
14) As of the end of November 2023, credit spreads between PF-ABCPs with credit ratings of 'A1' and 'A2 and below' stood at 2.65%p, remaining significantly higher than the level before the period of unrest in the money market in the fourth quarter of 2022 (0.87%p as of September 2022).

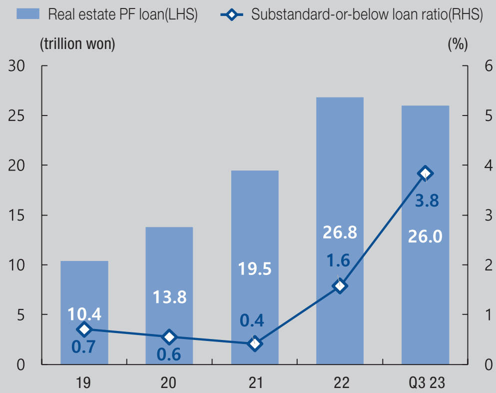
Amounts due at maturity and interest rates[1)2)] of PF-ABCP by credit rating[3)]

Maturities | Interest rates and spread



Notes: 1) Including Asset based securities
2) End of November, 2023
3) 3-month weighted average basis
Sources: Yonhap Infomax

Real estate PF loan and substandard-or-below loan ratio of credit-specialized cos.



Sources: Financial institutions' business reports

CSFCs: Increased Credit Spreads

The balance of CSFCs' real estate PF loans (KRW 26.0 trillion as of the end of the third quarter of 2023) shifted to a downward trend in 2023. However, the deteriorating soundness of loans held by capital companies, which account for the largest proportion,[15)] widened the increase in the substandard-or-below loan ratios.

The gap in credit spreads between capital and credit card cos. bonds over Treasury bonds narrowed in November 2023 but generally remained significantly wider than usual[16)] throughout this year. Unlike securities companies, which are affected by the risk of realization of debt guarantees, capital companies' funding costs have risen through the widened credit spreads on capital cos. bonds, which are the main source of funding for capital companies, prompted by concerns about the deteriorating soundness of real estate PF loans.

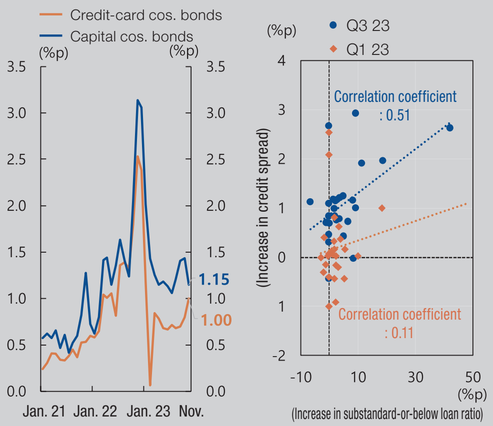
In 2023, in particular, the correlation coefficient between the changes in the ratio of substandard-or-below real estate PF loans held by capital companies and changes in credit spreads on capital cos. bonds (year-on-year) jumped from 0.11 at the end of the first quarter of 2023 to 0.51 at the end of the third quarter, thereby raising the sensitivity of credit spreads on bonds issued by

15) At the end of the third quarter of 2023, the balance of capital companies' real estate PF loans stood at KRW 24.0 trillion (KRW 1.9 trillion for credit card companies), accounting for 92.5% of the total balance of CSFCs' loans.
16) At the end of November 2023, the gap in credit spreads between capital and credit card cos. bonds over Treasury bonds narrowed compared to the previous month (0.64%p → 0.14%p). However, the average gap was 0.57%p during this year (from January to November), remaining considerably wider than before (0.16%p from 2018 to 2022).

CSFCs to the deterioration in the asset quality of real estate PF loans.[17] This suggests that delays in improving the soundness of real estate PF loans may lead to a corresponding increase in the funding costs faced by capital companies.

Credit spreads[1] and asset soundness of Real estate PF loan of capital cos.

Trends in credit spreads	Correlation between asset soundness and spread[2]



Notes: 1) Corporate bond funding rate - treasury bonds(3-year) rate

2) Year-on-year change criteria

Sources: Financial institutions' business reports, Yonhap Infomax

Assessment and Implications

Securities companies and CSFCs' capacities to respond to liquidity risks are assessed to be relatively moderate overall.[18] However, they need to prepare for the possibility of rising funding costs as a result of changing financial market conditions, such as an increase in the issuance of bank bonds and higher market interest rates persisting longer than market expectations. Securities companies and CSFCs with lower credit ratings, in particular, should take extra caution regarding the roll-over risks related to short-term marketable borrowings.

Meanwhile, the deterioration in the soundness of real estate PF-related exposure may lead to a rapid exacerbation of funding conditions for both securities companies and CSFCs, since the former could face an increase in liquidity demand to fulfill debt guarantees for real estate PF loans and the latter could experience growing costs for the issuance of bonds due to rising credit spreads. Some securities companies and CSFCs with low liquidity ratios,[19] in particular, should strengthen the management of their liquidity[20] while monitoring changes in funding conditions.

In addition, securities companies and CSFCs should proactively restructure insolvent real estate PF loans by taking advantage of the PF Lenders' Agreement[21] while making independent efforts to improve their asset soundness in anticipation of growing risks associated with an increase in real estate PF exposure stemming from the delayed recovery of the real estate market. These measures will contribute to easing the pressure on the widening of the credit spread and the rise in funding costs resulting from a higher level of credit vigilance.

17) Unlike capital companies, credit card companies do not show a clear correlation between the degree of asset quality deterioration and the rise in credit spreads. This may be attributable to the enhanced management of asset quality by credit card companies through a reinforced screening process for new loans since the third quarter of 2022.

18) For details, refer to "I. Financial Institutions - 2. Non-Bank Financial Institutions - 2.2. Insurance, Securities, and Credit-specialized Financial Companies" in Resilience of Financial System.

19) As of the end of September 2023, liquidity ratios of most securities companies and CSFCs were significantly above the regulatory standards, although some (10 securities companies and 8 CSFCs) showed relatively low liquidity ratios (lower than 110%).

20) Securities companies and CSFCs are required to more stringently manage liquidity indicators, such as adjusted liquidity ratios taking into account the amount of debt guarantees, and immediately available liquidity ratios that indicate the capacity to respond liquidity risks under one-month stress scenarios, respectively.

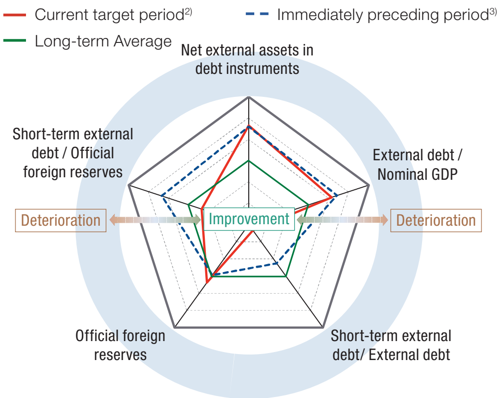
21) In April 2023, the PF Lenders' Agreement, which applies to the entire financial sector, was revised and placed into effect to determine the normalization of vulnerable PF sites related to real estate PF loans through debt adjustments by major lenders.

II. External Payment Capacity

Korea's external payment capacity has remained strong overall.

The decline in net external assets slowed down, and there was a significant improvement in external soundness indicators, including 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 significant reduction in short-term external debt (Figure II-1).

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

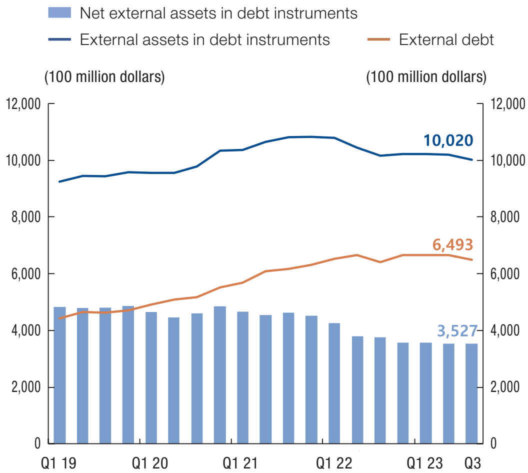


Notes : 1) Standardized based on the long-term average (5 years) for each indicator, the relative level of the indicator for this target period and the previous target period is shown on the map.
2) As of the end of Q3 2023
(As of the end of November 2023 for official foreign reserves)
3) As of the end of Q1 2023
Sources: Bank of Korea

Deceleration in the Decline of Net External Assets

At the end of the third quarter of 2023, Korea's net external assets (external assets - external debts) decreased by USD 3.5 billion compared to the end of the first quarter of 2023 to USD 352.7 billion. However, the pace of decline decelerated compared to the immediately preceding period (a decline of USD 18 billion between the third quarter of 2022 and the first quarter of 2023) (Figure II-2).

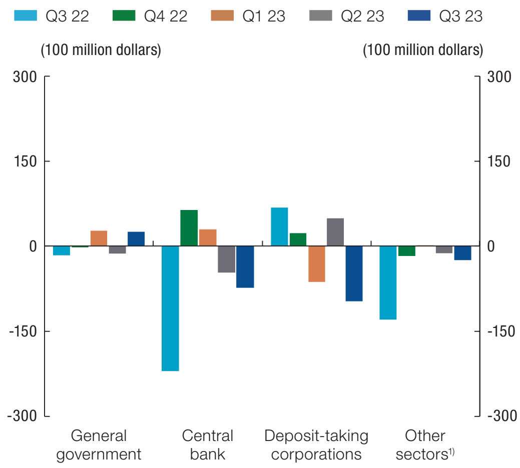
Figure II-2. Net external assets in debt instruments[1]



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

External assets stood at USD 1.002 trillion as of the end of the third quarter of 2023, representing a decline of USD 19.2 billion compared to the end of the first quarter of 2023. The external assets of the general government, including the National Pension Service, rose by USD 1.2 billion, boosted by an increase in portfolio investment in overseas securities. However, the central bank saw a decline in their external assets of USD 12 billion, influenced by measures to contain foreign exchange market volatility and a reduction in official foreign reserves stemming from the decreased USD-converted value of non-USD assets due to a strong U.S. dollar. The external assets of deposit-taking institutions decreased by USD 4.8 billion as domestic banks reduced the operation of their external assets. The external assets of other sectors fell by USD 3.6 billion, attributed to a reduction in portfolio investments in overseas stocks by other financial institutions (Figure II-3).

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

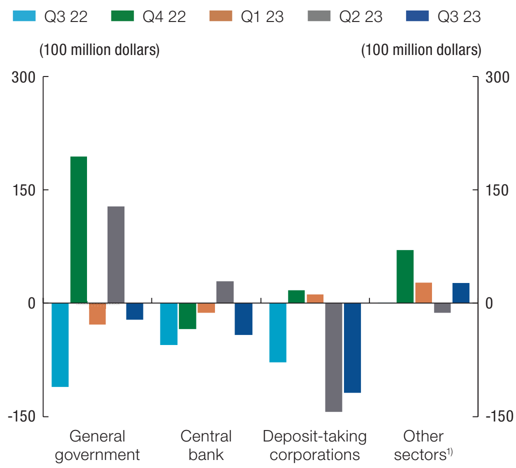


Note: 1) Including other financial corporations (Securities cos., Asset management companies, Insurance cos., etc.) and NBFIs

Sources: Bank of Korea

As of the end of the third quarter of 2023, Korea's external debt totaled USD 649.3 billion, reflecting a decrease of USD 15.7 billion compared to the first quarter of 2023. The external debt of the general government increased by USD 10.6 billion, driven by a rise in foreign investment in government bonds. In contrast, the central bank witnessed a reduction in its external debt of USD 1.3 billion, attributed to decreased foreign investment in Monetary Stabilization Bonds (MSBs). Deposit-taking institutions also experienced a decrease in their external debt by USD 26.3 billion, stemming from reduced foreign investment in bank bonds and decreased borrowings by foreign bank branches from their head offices. Conversely, other sectors observed growth in external debt by USD 1.4 billion, due to an increase in the issuance of foreign currency-denominated bonds by private entities (Figure II-4).

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



Note: 1) Including other financial corporations (Securities cos., Asset management companies, Insurance cos., etc.) and NBFIs

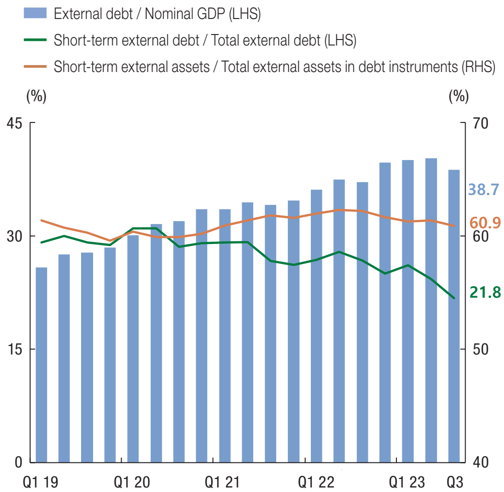
Sources: Bank of Korea

At the end of the third quarter of 2023, the share of external debt to nominal GDP was 38.7%, showing a decline from the first quarter (40.0%). The share of short-term external debt in the total external debt diminished to 21.8%, down from 26.1% in the first quarter.[22)]

22) The short-term external debt as of the end of the third quarter of 2023 declined by USD 32.1 billion compared to the first quarter of the same year, influenced by decreased external borrowings by banks, a decline in foreign investments in short-term won-denominated bonds, and the recovery of frozen funds deposited in Korea by Iran.

The share of short-term credit in the total external assets fell to 60.9% from 61.2% in the first quarter of this year (Figure II-5).

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

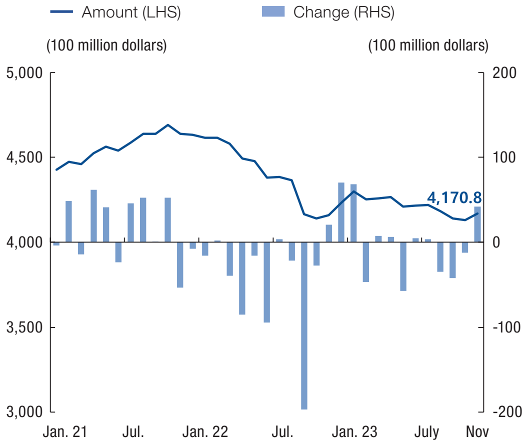


Note : 1) End-quarter basis
Sources: Bank of Korea

Declining Foreign Exchange Reserves

As of the end of November 2023, Korea's foreign exchange reserves totaled USD 417.08 billion, indicating a decrease of USD 3.9 billion compared to the figure recorded at the end of May 2023 (USD 420.98 billion). This is attributed to measures taken to contain the volatility of the foreign exchange market (including the temporary effect of a foreign currency swap with the National Pension Service), despite increasing foreign currency deposits in financial institutions (Figure II-6).

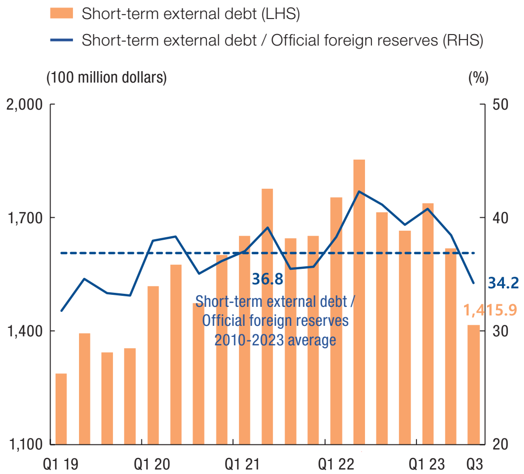
Figure Ⅱ-6. Balance of and changes in official foreign reserves[1)]



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

Meanwhile, the share of short-term external debt to foreign exchange reserves stood at 34.2% at the end of the third quarter of 2023, representing a decrease of 6.5%p compared to the figure recorded at the end of the first quarter of this year (40.8%) due to a notable reduction in short-term external debt (Figure II-7).

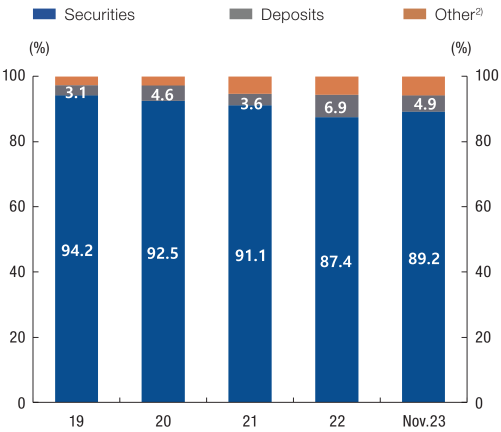
Figure Ⅱ-7. Short-term external debt-to-official foreign reserves ratio[1)]



Note : 1) End-quarter basis
Sources: Bank of Korea

As of the end of November 2023, marketable securities (89.2%) and deposits (4.9%) 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-8)

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



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

III. Financial Market Infra-structures

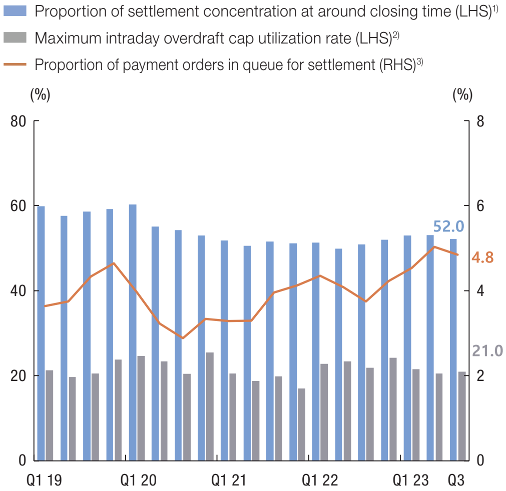
The value of settlement in BOK-Wire+ and other major payment and settlement systems have continuously increased, driven by the steady rise in securities settlements by financial institutions. Settlement risk was managed appropriately, remaining at a stable level.

BOK-Wire+

During the third quarter of 2023, the average daily value settled over BOK-Wire+, providing final settlement of obligations between financial institutions, reached KRW 543.9 trillion, continuing on the upward trend from the prior year (KRW 524.3 trillion). Settlement risk was managed at a stable level.

The maximum intraday overdraft cap utilization rate and the proportion of payment orders in queue for settlement, which are two indicators of the level of settlement liquidity among BOK-Wire+ participants, were maintained at a generally stable level of 21.0% and 4.8%, respectively, in the third quarter of 2023. Of the total settlement value, the portion that was settled near the closing time (16:00-17:30) increased slightly from the same period of the previous year (50.8%) to 52.0% (Figure III-1).

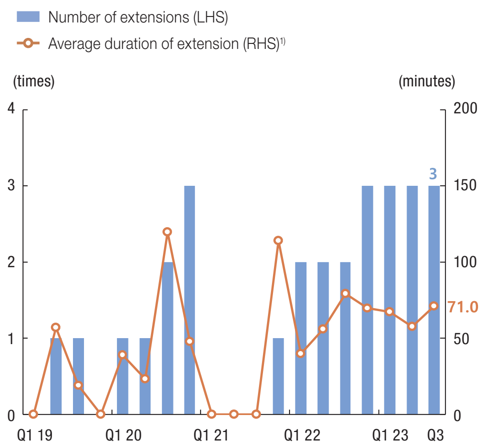
Figure Ⅲ-1. Risk indicators related to BOK-Wire+



Notes: 1) Amount of settlements processed after 16:00 / Total settlement amount during the period.
2) Average of daily maximum amount of participating institutions' overdraft cap utilization rate.
3) Participating institutions' payment orders in queue for settlement / Total settlement amount during the period (excluding payment orders for liquidity savings).
Source: Bank of Korea.

Meanwhile, the closing time of BOK-Wire+ was extended three times during the third quarter of 2023, mostly due to settlement processing resulting from the Bank of Korea's RP purchase bidding. (Figure III-2).

Figure Ⅲ-2. Extension of BOK-Wire+ operating hours



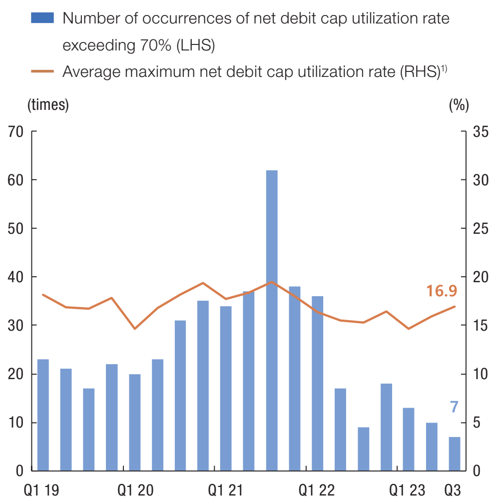
Note: 1) Total duration of extension / Number of extensions during the quarter.
Source: Bank of Korea.

Retail Payment Systems

During the third quarter of 2023, the average daily value settled over the retail payment systems, operated by the Korean Financial Telecommunications and Clearings Institute(KFTC), decreased to 96.7 trillion won, lower than in 2022 (99.3trillion won). 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[1] utilization rate of net settlement participants exceeded the cautionary level (70%) decreased to 7 times during the third quarter of 2023, from 9 times during the same period a year earlier. Although there was a slight increase in the average maximum net debit cap utilization rate from the previous year's level (15.3%) to 16.9%, settlement risk was managed adequately overall (Figure III-3).

Figure Ⅲ-3. Net debit cap utilization rate



Note: 1) Average of daily maximum net debit cap utilization rates of 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 third quarter of 2023. Settlement risk was managed stably during this period. The average daily value settled over these systems was lifted by inter-institutional repo transactions to KRW 265.5 trillion, extending the upward trend from last year (KRW236.8 trillion).

In the third quarter of 2023, settlements on transactions in exchange-traded stocks and exchange-traded government bonds, as well

1) In the retail payment systems, including the CD/ATM System, the Interbank Funds Transfer System, and the Electronic Banking System, although funds are immediately made available to the payee, the resulting credits and debits between the financial institutions are settled at a designated time (11:00 A.M.) of the following business day through BOK-Wire+. Hence, financial institutions are exposed to credit risks. In order to mitigate the net settlement risk in the retail payment systems, the BOK requires participants to independently establish an upper limit on their own unsettled net debit positions, in other words, a “net debit cap”.

as OTC stock transactions by institutional investors, were completed by their respective deadlines (16:00, 17:00, 16:50) (Table III-1)

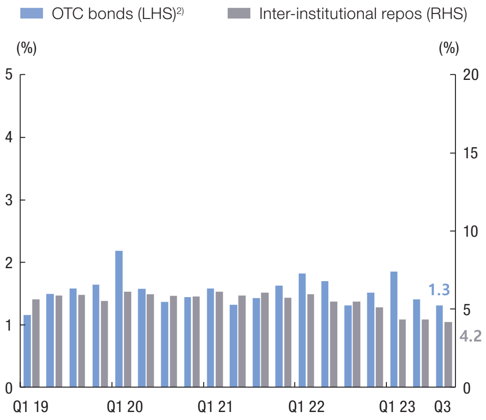
Table Ⅲ-1. Proportion[1] of securities settlements completed after the deadline

	Penalty deadline[2]	Proportion (%)				
		2022		2023		
		Q3	Q4	Q1	Q2	Q3
Exchange-traded stocks	16:00	-	-	-	-	-
Exchange-traded government bonds	17:00	-	-	-	-	-
Institutional investors for OTC stocks	16:50	-	-	-	-	-

Notes: 1) Value of settlements processed after the deadline / total settlement amount during the peroid.
2) Deadlines after which settlement delay penalties are imposed.
Source: Bank of Korea.

Of the OTC bond transactions and inter-institutional repo transactions, the proportions settled on a free-of-payment (FoP) basis, rather than through the delivery-versus-payment(DvP) system, remained at the stable levels of 1.3% and 4.2%, respectively, during the third quarter of 2023 (Figure III-4).

Figure Ⅲ-4. Share[1] of FOP settlements



Notes: 1) Proportion of settlements not processed through the DvP (delivery-versus-payment) system, among the total settlement amount (of OTC bonds and inter-institutional repos).
2) Based on final settlement after deduction of linked settlements.
Source: Korea Securities Depository.

Foreign Exchange Settlement Systems[2]

In the third quarter of 2023, the average daily value of settlement in the foreign exchange payment-versus-payment (PvP) system operated by the CLS Bank (CLS System)[3] increased slightly to USD 75.09 billion from USD 74.84 billion a year earlier.

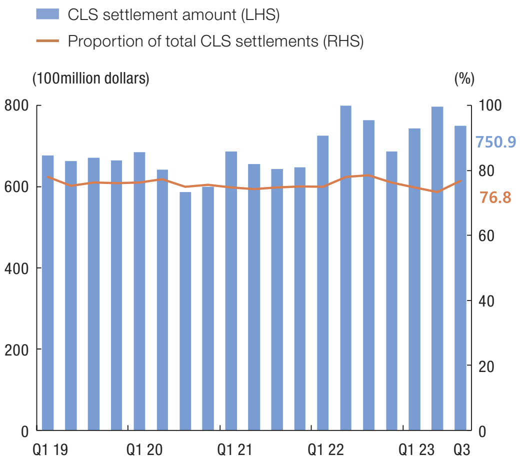
PvP settlement via the CLS system accounted

2) Foreign exchange settlements are conducted through the interbank correspondent network, the PvP system operated by CLS Bank, and domestic foreign currency funds transfer systems. In this report, we focus on foreign exchange PvP settlements routed through the CLS System in which the settlement amounts can be accurately determined.

3) 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 issuing the 18 CLS settlement currencies (including the USD, EUR, and JPY).

for a continuously high share of 76.8% in total foreign exchange transactions, and any related settlement risk is assessed to have remained stable (Figure III-5).

Figure Ⅲ-5. Settlement amount[1)] and proportion[2)] made through the CLS system



Notes: 1) Daily average amount of transactions made by domestic banks and foreign banks' branches during the quarter.
2) Proportion of trades settled through the CLS system among the total amount of CLS-eligible FX transactions (at domestic banks and foreign banks' branches).

Source: Bank of Korea.

Overall Assessment

Korea's financial system has remained stable overall as the resilience of financial institutions and Korea's external payment capacity maintained favorable conditions, despite a slight expansion in credit leverage during the second half of the year.

Korea's financial system also remained stable in the face of recent challenges in the domestic and international environments, such as rising interest rates. This can be attributed to several key factors: First, despite an increase in household debt, the implementation of loan-to-value (LTV) ratio and debt service ratio (DSR) regulations has ensured the sound management of debt quality in terms of collateral values and the credit and income composition of borrowers. Second, the adoption of stringent global financial regulations following the Global Financial Crisis has notably bolstered the risk management capabilities of financial institutions, particularly within the banking sector. Korea's favorable macroeconomic performance relative to other major countries, as acknowledged by external assessments,[1] significantly contributed to the stability of the financial market and of the overall financial system, alongside proactive and timely interventions by the government and Bank of Korea to address destabilizing factors such as volatility in the real estate project financing (PF) market and deposit withdrawals from the MG Community Credit Cooperatives.

Interest rates saw a significant increase in October due to anticipations of prolonged monetary tightening by the U.S. Federal Reserve, then began to fall in November as expectations grew for an end to the tightening policy, which thereby increased volatility in the financial markets, with stock prices initially dropping then rebounding, indicating a diminishing impact of monetary tightening. Within the financial sector, deposits garnered at high interest rates in the fourth quarter of the previous year began to approach maturity and are subsequently being smoothly redeposited without large-scale funds outflow.[2] However, it is assessed that the increased interest rates have heightened the debt repayment burdens on borrowers, subsequently elevating credit risks.

As a result, the Financial Stress Index (FSI),[3] which comprehensively shows the level of short-term stability in the financial system, rose slightly to 19.3 (warning stage) in November 2023, from 17.8 in May. However, this was still below the level of 24.3 indicated during the short-term financial market tur-

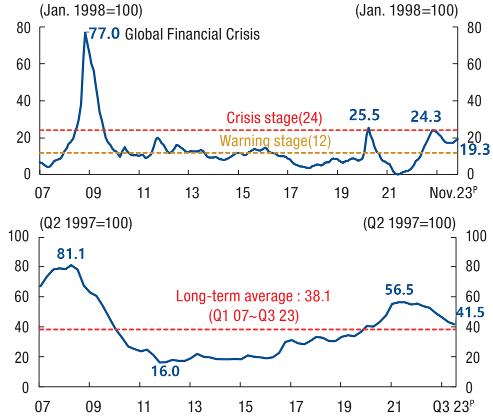
1) The Economist magazine analyzed the economic performance of major countries from the fourth quarter of 2022 to the third quarter of 2023, and ranked Korea second, citing the preemptive interest rate hikes in Korea as a major factor for this performance. The analysis was based on five economic and financial indicators (core CPI, changes in the proportion of consumer products whose prices have risen by more than 2%, growth rate, unemployment rate, and equity prices). ("Which economy did best in 2023?", Finance and economics, The Economist, December 17, 2023).

2) For more information on major risks to the funding and operation of deposit-taking institutions during the recent period of rising interest rates, refer to "II. Key Risk Assessment of Banks and Non-bank Deposit-taking Institutitons," Analysis of Financial Stability Issues.

3) The FSI is a composite index (on a scale of 0-100) calculated by normalizing 20 monthly stress indicators from the real economy and financial sectors. It was first compiled in 2012 and has since undergone a full reform to reflect changes in the structure of the financial system, including the growing influence of the non-banking sector, and to remain responsive to short-term financial stressors. For details, refer to Box 7 "Results of Financial Stress Index (FSI) Reform."

moil in the fourth quarter of the previous year.

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



Notes: 1) A comprehensive index(0~100) derived by standardizing 20 monthly indicators of financial and real sectors representing short-term financial system instability.
Thresholds for caution and danger levels are set at 12 and 24, based on the 'noise-to-signal ratio' method.
2) A comprehensive index(0~100) derived by standardizing 39 indicators related to three assessment factors (asset prices, credit accumulation, and financial system resilience) representing medium to long-term financial vulnerability.
Source : Bank of Korea.

Meanwhile, the slowdown in private credit expansion during the second half of the year was somewhat slower than expected, which continues to raise concerns about deepening financial imbalances. In particular, despite high levels of private credit leverage, the rate of household credit growth has not moderated as anticipated, posing a risk of exacerbating potential vulnerabilities within the financial system from a medium- to long-term perspective.

In this context, the Financial Vulnerability Index (FVI),[4] a metric for assessing vulnerabilities in the financial system from a medium- to long-term perspective, declined from 46.3 in the first quarter of 2023 to 41.5 in the third quarter, close to its long-term average of 38.1. However, the margin of this decline appears to have contracted slightly.

Vulnerability Assessment

By sector, private credit leverage in the credit market hovered at a high level. The corporate credit-to-GDP ratio continued to rise, while the household credit-to-GDP ratio declined at a slower pace than initially anticipated. This situation poses risks, as the escalated interest rates could significantly impair the repayment capacities of both households and corporations in the absence of a robust economic recovery. In addition, persistent high household debt levels could exacerbate repayment burdens of households, curtail consumption, and thereby slow economic growth. Given that corporate loans have increased significantly since the COVID-19 pandemic in specific sectors such as real estate, construction, and wholesale & retail trade, the continuation of sluggishness in the real estate sector and a delay in the recovery of consumption could increase the debt repayment burden for businesses in the aforementioned sectors, thereby raising the credit risks associated with related corporate loans.[5]

In asset markets, volatility in both bond and stock prices increased through shifting expectations for monetary policy stances in major economies and geopolitical risks. In the third quarter, housing prices saw rapid rebounds in

4) The Financial Vulnerability Index (FVI) is a composite index (on a scale of 0-100) calculated by normalizing 39 indicators related to three assessment items: asset prices, credit accumulation, and financial system resilience.
5) For details, refer to "I. Analysis of Risks associated with the Recent Expansion of Corporate Credit in Korea and its Policy Implications," Analysis of Financial Stability Issues.

some regions, yet, entering the fourth quarter, the momentum of these increases moderated, influenced by rising lending rates and the government's tightening of household debt management policies. The real estate market is anticipated to continue experiencing significant volatility, driven by shifts in market participants' expectations, including housing price forecasts and purchase sentiment.

Meanwhile, financial institutions are currently evaluated to be maintaining a favorable standard of resilience, backed with capital ratios well above the regulatory minimum across most sectors. However, considering the worsening of asset soundness across all financial sectors, elevated interest rates could increase the debt repayment burden of borrowers with some time lag and place a growing burden on financial institutions in terms of managing their credit risks if the recovery in domestic demand is delayed. In particular, financial institutions without an adequate loss-absorbing capacity must be mindful of not only credit risks but also of the potential increase in liquidity risk stemming from capital outflows.

Risk Factors

Major potential risk factors[6] that exacerbate the vulnerability of Korea’s financial system include the possibility of a change in the monetary tightening stance, a sluggish recovery in domestic demand, and uncertainty in the real estate market.

Amid the heightened uncertainty around the monetary tightening stance of major economies, changes in market expectations regarding the direction of monetary policy may result in escalated volatility in foreign exchange and financial markets. In addition, expanding expectations of global interest rate cuts may lead to a resurgence in household debt, which has recently been moderating.

If the recovery in domestic demand is more sluggish than anticipated, coupled with sustained high interest rates, it could increase the debt repayment burden for existing borrowers, resulting in negative impacts on credit risk associated with loans issued to vulnerable households, as well as on the real estate and construction sectors. Additionally, the contraction of household consumption and business investment capacities could serve as a short-term factor for weakening the economic recovery.

Meanwhile, an additional contraction in the real estate market, which exhibited a modest recovery this year, may increase the risk of losses at financial institutions related to real estate PF. In particular, financial institutions that are assessed to possess an inadequate loss-absorbing capacity may encounter challenges in managing liquidity in the event of a large-scale withdrawal of deposits, coupled with concerns about the deterioration of asset soundness. Also, with an increase in roll-over risks associated with short-term PF-ABCP and CP, which are the primary sources of fi-

6) According to the Systemic Risk Survey conducted during the second half of 2023 based on responses from 82 financial and economic experts, key risk factors were identified as follows: high household debt level and increased repayment burden (70.1%); continued high interest rate levels (55.8%); increased risk of corporate insolvency due to deteriorating business conditions and worsening funding conditions (37.7%); and uncertainty about real estate market recovery (35.1%). For detailed results, refer to Box 9 “Results of the Systemic Risk Survey.”

nancing for real estate PF, there could be a rise in credit spreads and financing costs.

Policy Recommendations

First, in order to promote stability in the financial system over the medium- to long-term, efforts should be made to gradually lower and stabilize the ratio of private credit to GDP. Regarding household credit, it is necessary to smoothly implement the “Household Loan Management Measures” that were announced previously, implementing measures such as the expansion of the scope of DSR and the introduction of a stress DSR for floating rate loans. In addition, it is necessary to comply with the principle of extending loans based on debt repayment capacity by reducing household loans not subject to DSR regulations.

In the case of corporate credit, it is necessary to induce a gradual decrease in the proportion of real estate-related exposure, while avoiding triggering a sharp correction in the real estate market. Furthermore, in order to ensure a soft landing for vulnerable corporations, the viability of individual companies should be assessed and measures for debt restructuring and additional financial support should be implemented on a selective basis.

Considering the high level of uncertainty in the real estate market, it is necessary to continue policy efforts to prevent related financial unrest. In particular, regarding real estate PF with noticeable vulnerabilities, it is important to alleviate concerns about the real estate PF market by supporting lenders to quickly decide whether to continue or restructure their projects through voluntary agreements among themselves. Meanwhile, it is also necessary to guide the orderly resolution of insolvent PF entities through market mechanisms.

Financial institutions will need to maintain their asset soundness at a healthy level through proactive write-offs and sales of non-performing loans. In particular, they should elevate their loss-absorbing capacity by accumulating additional loan loss provisions and raising capital in anticipation of the expansion of credit risks in loan assets.[7)] NBFIs will also need to increase their loss-absorbing capacity by filling in somewhat less stringent regulatory gaps compared to banks, such as provisioning. Securities companies and credit-specialized financial companies with a high dependence on marketable fundraising are required to strengthen their liquidity management with regard to factors such as roll-over risks of commercial paper (CP), in response to a possible deterioration in funding conditions[8)].

Finally, policy authorities need to continue policy coordination among relevant agencies, while closely monitoring the development of risk factors at home and abroad. In particular, NBFIs may face not only credit risk, but also liquidity risk when funding conditions deteriorate. Hence, the authorities should enhance the standard of their analysis and secure the

7) Financial authorities have established regulatory provisions for "special loan loss reserve requirements" that allow them to demand additional provisions for loan losses if it is determined that a bank's level of loan loss reserves and provisions is insufficient to absorb losses in response to economic conditions.

8) For details regarding this issue, refer to Box 6 “Assessment and Implications of Funding Conditions of Securities and Credit-specialized Financial Companies.”

capacity for timely action by strengthening information-sharing[9] among relevant agencies with regard to non-bank financial institutions.

Meanwhile, preparations should be made in advance in case there is an impact exerted on the financial system by potential risk factors arising from future changes in the financial environment. Specifically, domestic companies are expected to face a heavier burden to reduce their greenhouse gas emissions due to the implementation of domestic greenhouse gas reduction targets in response to climate risks and the full implementation of the EU's Carbon Border Adjustment Mechanism (CBAM) by 2026. Therefore, it is necessary to strengthen the price discovery function related to greenhouse gases by vitalizing the domestic GHG emissions trading market.[10] And policy authorities, companies, and financial institutions should cooperate more closely to promote an orderly transition toward a low-carbon economy.

9) Bank of Korea has revised the "Bank of Korea lending facility" to provide swift liquidity support to non-bank deposit-taking institutions during financial instability. To achieve this, it has pursued enhanced information sharing with supervisory authorities (Bank of Korea Press Release, July 27 and October 31, 2023).

10) For details, refer to Box 8 "Market Conditions and Implications of the Korea Emission Trading Scheme (K-ETS)"

Box 7.

Results of Financial Stress Index (FSI) Reform[1)]

The Financial Stress Index (FSI) is a composite index designed to detect the probability of financial instability in both the financial and real economy sectors at the early stages, which the Bank of Korea has been calculating on a monthly basis since its initial compilation in 2012. In the decade following the development of the FSI, the need for its reform has emerged due to significant changes in the structure of the financial system, such as a notable rise in the influence of the non-bank financial sector.[2)] Following the introduction of the Financial Vulnerability Index (FVI)[3)] in 2021, which assesses financial imbalances from the medium- to long-term perspective, there has been a greater need to strengthen the mutually supplementary roles of the two indexes. In response, the Bank implemented an overhaul of the FSI in order to reflect systemic changes in the financial system and improve its capacity to encapsulate short-term financial stresses.

Major Content of the Reform

First, the components and sub-indicators of the FSI underwent a reorganization. Three sectors (real economy, households, and corporates) were combined into one sector (real economy), and the non-bank financial sector was newly added. Consequently, the previous six sectors?-financial market, external, real economy, households, corporates, and banks?were streamlined into five sectors, comprising financial market, external, real economy, banks and non-bank financial institutions. In addition, the sub-indicators for each sector were re-selected in line with their explanatory power of major crises, data availability, and the timing of data acquisition. The sub-indicators newly added to the non-bank financial sector pertain to sources of short-term instability associated with mutual savings banks, mutual credit cooperatives, credit-specialized financial companies, securities companies, and insurance companies. Meanwhile, the total number of sub-indicators remains unchanged at 20, as with the previous FSI.

Sectors and sub - indicators[1)] of FSI

Sectors	Sub-indicators	Sectors	Sub-indicators
Financial market	KOSPI volatility	Banks	Foreign currency debt ratio
	KOSPI decline rate		Delinquency rate
	Credit spread		**Bank bond spread**
	Yield spread	NBFIs	**Mutual savings banks' delinquency rate**
External sector	Won/Dollar volatility		**Mutual credit cooperatives' delinquency rate**
	Covered interest parity arbitrage		**Credit-specialized financial companies bond spread**
	Korean CDS spread		**MMF increase rate**
	Foreign reserves gap		**Debt/Asset ratio of Insurance cos.**
Real economy	**House price volatility**	Consumer survey index	
	Trade volume decline rate	All industries BSI	

Note: 1) The bold text indicates the changed sub-indicators in this revision.

1) This article was authored by Park Ji-soo and Lee Young-jae, (Systemic Risk Analysis Team) and was reviewed by Lee Jong-han (director of the Financial Risk Analysis Division) and Lim Ho-sung (head of the Systemic Risk Analysis Team).

2) The share of the non-bank financial sector in the overall financial system (based on total assets) increased from 40.3% in 2010 to 47.1% in 2015 and further to 48.4% in 2020.

3) For detailed information on the development of the FVI, refer to "I. Financial Vulnerability Index: New Compilation Results and Implications," Analysis of Financial Stability Issues of Financial Stability Report, June 2021.

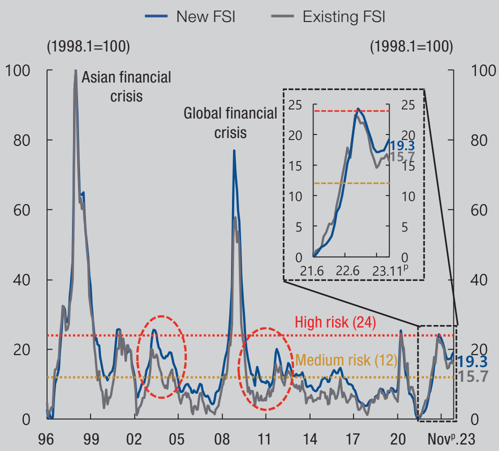
Next, the method of calculating the composite index was improved.[4] More specifically, the calculation process of the FSI consists of four distinct stages: (1) normalization of sub-indicators, (2) extraction of the common factors for the five sectors,[5] (3) calculation of a composite index through the equal-variance weighted averaging[6] of common factors, and (4) conversion of the index value[7] to a 0-100 scale. The same methodology is applied to calculate the sub-indices for each sector as well.

Lastly, the threshold values of the FSI were given new names, changing from the previous designations of "warning" and "crisis" thresholds to "warning" and "danger" thresholds,[8] while their numerical levels were also readjusted. The values for "warning" and "danger" thresholds were set at 12 and 24, respectively, using the noise-to-signal ratio (NTSR) method.[9] These values were determined by reflecting the results of the Systemic Risk Survey conducted by the Bank of Korea and information on recent periods of heightened financial risks.[10]

Results of Calculation

Both the new and existing calculations of the FSI demonstrated similar trends in general, although some differences were observed during certain time periods. For instance, the new FSI showed a slightly higher level than the old FSI in 2003 and 2011, when the credit card crisis and the closure of mutual savings banks, respectively, increased risk in the non-bank financial sector. In recent years, the disparity between the values of the two indices have diminished in relative terms, but since November 2022, the new FSI has been calculated at a slightly higher level than the old FSI.

New FSI and existing FSI



Source: Bank of Korea.

4) The method for calculating the factors for each sector shifted from a simple average to the extraction of common factors. For further details on the previous compilation method for the FSI, refer to Box IV-1 "Outline of Financial Stability Index (FSI)," Analysis of Financial Stability Issues of Financial Stability Report, April 2012.

5) The common factors for the sub-indicators were extracted using a time-varying parameter dynamic factor model which reflects time variations to calculate the significance of each indicator. This methodology is also applied to the calculation of the FVI.

6) Equal-variance weighted averaging was employed in this calculation to control the influence of the common factors with different variances on the overall variance of the index.

7) The index value was converted to a value between 0 and 100, with 100 representing the historically highest value.

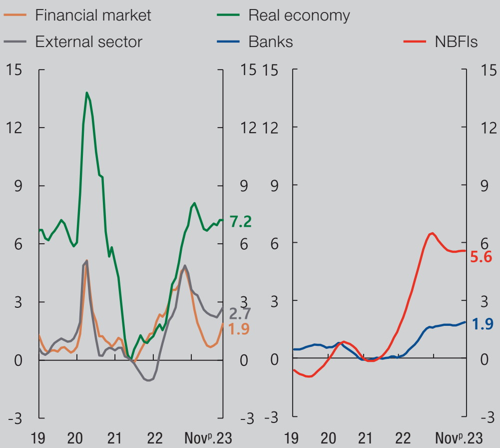
8) The "warning" threshold is defined as the stage where domestic and external shocks cause a mild effect on the Korean financial system, while the "danger" threshold denotes the stage when these shocks cause a severe impact. The term "crisis" was adjusted to "danger" since the former could be interpreted to refer to a financial crisis at the level of the Global Financial Crisis or Asian Financial Crisis.

9) This is a method of calculating optimal thresholds that minimizes the probability of a false positive for the occurrence of a crisis at the "warning" or "danger" level [Type 2 error] against the probability of an accurate prediction for the occurrence of a crisis [1-(Type 1 error)].

10) The increase in the threshold value is mainly attributed to the rise in the new FSI level resulting from the inclusion of the non-bank financial sector.

Furthermore, an analysis of recent FSI trends by sub-sector indicates that the main factors of FSI movement varied across different periods. In early 2020, at the onset of the COVID-19 pandemic, the real economy sector played a leading role in the increase in the FSI under the influence of the sharp contraction in trading volume and deterioration in sentiment indices. In the second half of 2022, the real economy, external, and financial market sectors had a substantial impact. Among financial institutions, the non-bank financial sector has exerted a relatively higher impact than the bank sector due to an increase in delinquency rates of non-bank deposit-taking institutions since the second half of 2022.

Sectoral FSI[1)]



Note: 1) The sectoral indices evaluate the relative changes in each sector compared to the minimum point of the FSI(June 2021), and sums up to the composite index.
Source: Bank of Korea.

Assessment and Implications

Designed to reflect changes in the structure of the financial system, the reformed FSI demonstrated superior performance to the old FSI in predicting crises[11)] and forecasting downside risks to the economic growth rate, as assessed through GaR analysis,[12)] therefore being able to make more accurate assessments regarding short-term financial instabilities. Along with the Financial Vulnerability Index (FVI), which captures financial instability in the medium- to long-term horizon, the new FSI is expected to serve as a valuable reference index for comprehending the status of financial stability.

11) The AUC value is determined by calculating the graph area under the Receiving Operator Curve (ROC), which plots the probability of a false positive for the occurrence of a crisis [Type 2 error] on the X-axis against the probability of an accurate prediction for the occurrence of a crisis [1-(Type 1 error)] on the Y-axis. The AUC value of the new FSI (0.942) was higher than that of the old FSI (0.921). A higher AUC value indicates superior early-warning capability for crises.

12) The old and new FSI were used to estimate the bottom 10% quartile of the GDP after the first quarter and compared to the actual GDP during major crises, including the Asian Financial Crisis, the Global Financial Crisis, and the COVID-19 pandemic. The results indicated that the margin of error for the new FSI (0.4-1.0%p) was smaller than that of the old FSI (0.8-3.2%p).

Box 8.

Market Conditions and Implications of the Korea Emission Trading Scheme (K-ETS)[1)]

In 2015, the parties to the United Nations Framework Convention on Climate Change (UNFCCC) signed the Paris Agreement, which aims to hold the increase in the global average temperature to well below 2.0°C above pre-industrial levels,[2)] which required each party to set a nationally determined contribution (NDC) target. In accordance with the agreement, each signatory nation has to review their implementation of NDCs every five years and submit updated NDCs based on the results of the review as part of international cooperation efforts.[3)] In keeping with this global trend, the Korean government has established measures to realize its 2030 NDC target[4)] (a 40% reduction from the 2018 levels) as an intermediate goal toward achieving carbon neutrality by 2050, in addition to annual objectives (2023-2030) and sector-specific goals.

In association with the management of the nation's emissions reduction target, the Korean government introduced the greenhouse gas (GHG) emissions trading scheme (ETS)[5)] in 2015, which serves as an institutional framework aimed at achieving the NDC target. Under the ETS, the government allocates emissions allowances to the regulated GHG-emitting corporations, either for free or with a charge,[6)] at specific planned time periods. For example, the period from 2021 to 2025 corresponds to the Phase 3 Allocation Plan.

Amid the government's recent announcement to revitalize the emissions trading market, substantive discussions are expected to commence on the forthcoming allocation of emissions allowances ahead of the Phase 4 Allocation Plan (2026-2030). Moreover, the trajectory of the current NDC target is set to rapidly intensify the GHG reduction target from 2027 onward in alignment with the

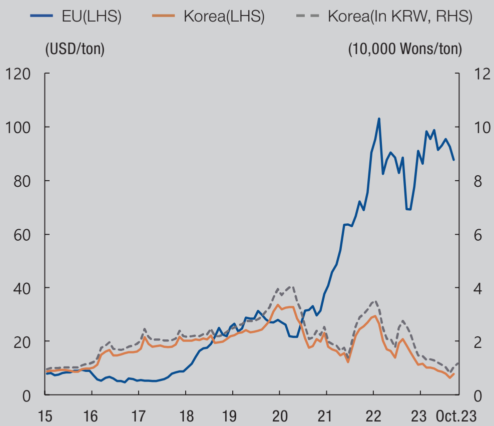
1) This article was authored by Kim Kyungsup, Kim Jaeyoon, and Lee Jiwon (Sustainable Growth Research Team) and was reviewed by Lee Beomho (director of the Financial Stability Research Division).
2) The Paris Agreement determined to keep the increase in the global average temperature well below 2°C above pre-industrial levels, while pursuing efforts to limit the temperature increase to 1.5°C.
3) During the technical dialogue of the first global stocktake in September 2023, the UNFCCC indicated that the current NDCs set by the parties were not adequate to achieve the temperature target set by the Paris Agreement.
4) According to the 2030 NDC target outlined in the Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis and its Enforcement Decree, the government is obligated to achieve a 40% reduction in GHG emissions, from the 2018 levels (approximately 730 million tons) by 2030. The NDC target includes annual objectives spanning from 2023 (approximately 630 million tons) to 2030 (approximately 440 million tons), with specific goals for the sectors of energy supply industry, transport, buildings, and waste.
5) The ETS refers to a system that allocates annual emissions allowances to companies with annual emissions of 125,000 tons or more or those with a business site that produces annual emissions of 25,000 tons or more, thus allowing these companies to trade emissions allowances when the actual amount of emissions exceeds or falls below the allocated quota under the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits. Under the Phase 3 Allocation Plan, the GHG emissions of companies subject to the ETS account for 73.5% of nationwide emissions.
6) In the Phase 3 Allocation Plan, the maximum percentage of paid allocations, which are auctioned through competitive bidding, is limited to 10% of the total allocated amount.

Phase 4 period, which is expected to result in a contraction of the emissions cap compared with the previous phase and thereby increase the burden of GHG reduction on companies. This article examines future conditions of GHG reduction, while drawing its effects on corporate financial ratios and subsequent implications.

Recent Developments in the GHG Emissions Trading Market

Since the introduction of the ETS in 2015 in Korea, the trading volume of emissions allowances has shown a gradual increase, while their prices exhibited frequent plunges in 2020. In particular, as the decline in prices accelerated in the past year due to an oversupply of emissions allowances and a weak demand base, the prices in August 2023 have recorded the lowest level since the implementation of the ETS (monthly average of KRW 8,338 per ton). Later, the prices of emissions allowances rebounded (to KRW 11,732 in October 2023), albeit remaining at a low level. This movement stands in contrast to the EU emissions trading market, where prices demonstrated a consistent rise. Despite the gradual strengthening of the GHG reduction target[7] in Korea over time, the prices of emissions allowances experienced a decline and remained consistently low. This raised persistent concerns that the ETS market failed to function effectively to incentivize GHG reduction. In response, the government announced a plan to revitalize the ETS market in September 2023, which includes the expansion of the ETS market base and enhancements to market stabilization measures.

Carbon prices[1] in the Korean ETS and the EU ETS



Note: 1) Based on monthly average spot prices
Source: International Carbon Action Partnership

Changes in Policy Environment in the Emissions Trading Market

Since the measure to revitalize the GHG emissions trading market emphasizes the restoration of market functionality, it is expected to lead to an increase in the prices of emissions allowances through the mitigation of price volatility and enhancement of supply-side flexibility. Limitations on the banking of emissions allowances[8] have been consistently cited as a primary cause of the prolonged low prices of allowances. Restrictions on the ability to carry forward emissions allowances to the subsequent year[9] forced

7) Although the 2030 NDC target was initially set in 2015 as a 37% reduction below the business-as-usual (BAU) level by 2030, it was raised in 2021 to a 40% reduction below the level in the base year of 2018.

8) This allows the companies that are subject to the ETS to submit an emissions allowance corresponding to their actual GHG emissions to the regulatory authority by the end of August each year, then carry forward any remaining emissions allowance to be retained and used in the subsequent year. Unlike in Korea, the EU does not impose restrictions on the banking of emissions allowances.

9) Companies with a surplus emissions allowance were previously permitted to carry forward emissions allowances equal to 100% of their net allowance sales for the year to the subsequent year. However, this measure eases the restrictions on allowance banking, enabling the companies to increase the amount carried forward by up to three times of the net allowance sales for the year. This allows companies to retain more emissions allowances in the subsequent year, compared to under the previous system.

companies with surplus emissions allowances (when actual emissions are below the allocated emissions allowances) to sell the excess emissions allowances to the market every year, thus leading to a chronic oversupply of emissions allowances until recently. Given the current market conditions, this policy of allowing companies to carry forward a greater volume of emissions allowances[10] is expected to reduce the quantity of emissions allowances available for sale. In addition, there is a potential for upward pressure on emissions allowance prices, depending on the level of reduction in the emissions cap under the Phase 4 Allocation Plan.[11]

In addition to expectations of a future increase in emissions allowance prices due to this measure, the Carbon Border Adjustment Mechanism (CBAM)[12] is scheduled to be fully implemented in 2026, which will require company exporting to the EU to equally share carbon costs with EU companies, based on the principle of fair distribution among nations. As the EU incorporates the carbon costs determined by the CBAM into the market prices of EU emissions allowances, there is an anticipation that domestic emissions allowance prices will gradually begin to converge with international prices. In the current environment, where emissions allowance prices in Korea are significantly below the EU prices at merely one-tenth of the EU level, there is an expectation for a substantial increase in upward pressure on domestic allowance prices, coinciding with the full implementation of the CBAM.

Pathway for NDC Implementation

As the allocation of emissions allowances is determined to be closely aligned with the NDCs, it is necessary to examine the future pathways for NDCs. Regarding the current NDCs, which calls for a 40% reduction (equivalent to 290 million tons) from the total GHG emissions in 2018 (the base year), their annual pathway reveals the significant surge in reduction targets after 2027. By sector,[13] the energy supply sector (electricity, gas power, etc.) accounts for 45.9% (120 million tons), the largest in the reduction targets, along with the industrial sector at 11.4% (30 million tons) and the transport sector at 37.8% (37 million tons). In particular, the energy supply sector, which represents the largest portion in the NDC

10) Furthermore, the government aims to stabilize supply and demand in the emissions trading market by designating additional market makers to enhance market liquidity, and by devising a market stability reserve to adjust the annual volume of auctioned allocations based on allowance supply and demand conditions. As part of efforts to broaden the market base, the government will allow a futures market for emissions allowances, as well as the launch of new financial instruments linked to emissions allowances.

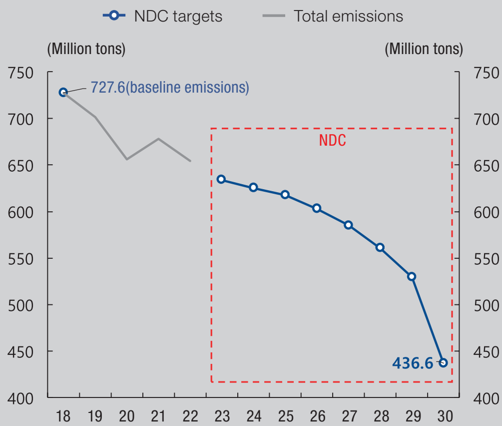
11) According to the government's "Economic Policy Direction for the Second Half of 2023" (July 2023), the Phase 4 Basic Plan for the ETS, which determines the emissions cap for the 2025-2030 period, will be established in consideration of the current NDC target, which is more stringent than the previous target.

12) The CBAM imposes carbon costs on carbon emissions embedded in certain goods (steel, cement, aluminum, fertilizer, electricity, and hydrogen) that are imported to the EU region, mandating equal treatment to those produced by companies within the EU, based on the submission of a CBAM report. Consequently, it functions as the carbon border tax, akin to import duties in nature. However, carbon costs incurred domestically are eligible for deduction when submitting a CBAM report.

13) The GHG reduction targets comprise emissions from various sectors such as energy supply (electricity, gas power, etc.), industries, transport, buildings, agriculture, livestock and fisheries, and waste, as well as carbon sinks, and other absorption and removal sectors. The analysis in this article places its primary focus on the sectors of energy supply, industries and transport, which generally encompass corporations in Korea.

target, is set to face a sharp increase in its burden of emission reduction from 2027 onward.

Annual greenhouse gas emissions and Nationally Determined Contribution(NDC) targets[1]



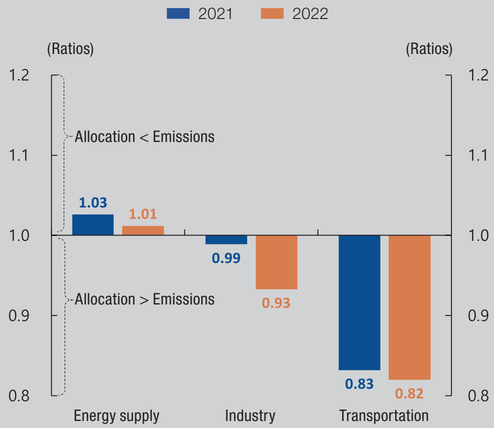
Note: 1) Based on the revised NDC targets as of March 2023
Sources: National Inventory Report

The current NDC pathway is designed in a structure where the reduction target will rapidly intensify approaching 2030. If the government incorporates this enhanced NDC pathway into the National Emission Allocation Plan for Phase 4, it is likely that the emissions cap allocated to the regulated GHG-emitting companies will be lower than the current level. Consequently, companies could face a growing financial burden in the process of reducing GHG emissions or purchasing emissions allowances in the cases that their emissions exceed allocations, while the emissions trading market may face upward pressure on the prices of emissions allowances due to the increased demand.

Assessment of GHG Reduction Burden on Companies

The burden on companies to reduce GHG emissions appears to be less than significant at present, as the prices of emissions allowances have hovered at a low level, while emissions have generally been managed within the allocated caps.

Ratios of greenhouse gas emissions[1] to emission allowances



Note: 1) Annual allocation amount under the Korean Emissions Trading Scheme and total greenhouse gas emissions by sector.
Sources: Greenhouse Gas Inventory and Research Center

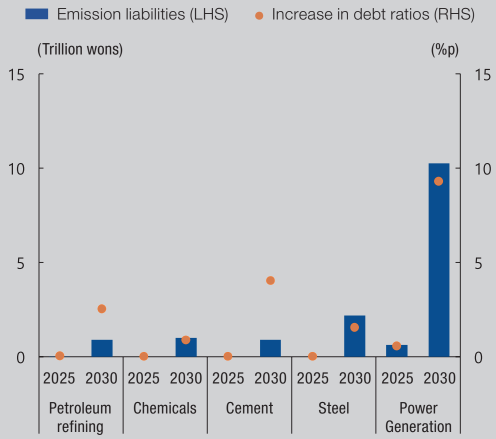
However, the potential increase in allowance prices and the tightening of GHG reduction targets could lead to an escalation in the burden of emissions reduction. As such, this article estimated the scale of emission liabilities and consequent changes in the debt ratio,[14] by applying the carbon price pathway from the Network for Greening the Financial System (NGFS)[15] scenarios to allowance prices based on the NDC

14) As an obligation for companies to submit their allowances to the government, emissions liabilities are measured and recognized as anticipated expenditures incurred in purchasing paid allocations of emissions allowances and emissions allowances corresponding to excess emissions (when emissions exceed allocations). While purchased emissions allowances are regarded as assets, at the same time, they are assessed as liabilities in this report with a focus on the duty of corporations to submit emissions allowances.
15) The NGFS is a group of central banks and supervisors committed to researching and discussing climate risks.

pathway by 2030. Under the results, emissions liabilities do not significantly increase in 2025, compared to the end of 2022, while they exhibit a significant rise in 2030.

For the power generation industry, which produces a high volume of GHG emissions, emissions liabilities are recognized to be higher in 2025 compared to the end of 2022, with an increase of 9.3%p expected by the end of 2030. This indicates that a substantial financial burden would be incurred on the pathway of strengthening GHG emissions reduction targets. While some sectors, such as steel, oil refining, chemicals, and cement, would experience a gradual expansion of their emissions liabilities after 2025, the impact may not be as significant as that of the power generation industry.

Emission liabilities[1)] and changes in debt ratios[2)3)4)5)]



Notes: 1) Emission liabilities refer to an estimated amount required for compliance with the obligation to submit emission allowances, calculated as the sum of the emission cost for excess emissions over allocated allowances (excess emissions × market price for emission allowance) and the cost of purchasing additional emission allowances through auctions.
2) Change in the total debt-to-equity ratio from year-end of 2022.
3) For the corporations subject to emission allowance allocation, expected emissions are estimated by applying the average annual emission reduction rate for the past three years (2019-2022) to the average emissions from 2021 to 2022.
4) The government's NDC targets are assumed for estimating allocation amounts, and for 2030 estimations, all sectors' allocation amounts are subject to a 10% paid allocation.
5) The emission allowance price is estimated based on the carbon pricing from the NGFS's 2050 Net Zero scenario.

Sources: Bank of Korea staff calculations, Greenhouse Gas Inventory and Research Center, NGFS

Implications

In line with the objective of achieving carbon neutrality by 2050, the government is anticipated to reduce the emissions cap, while expanding paid allocations. Consequently, allowance prices are likely to rise above the recent levels due to the heightened GHG reduction targets that will enter into effect in 2026 with the launch of the Phase 4 Allocation Plan.[16)] In addition, the full implemen-

16) In response to tightened reduction targets from 2026, the demand for emissions allowances could increase from 2025. For example, allowance prices in EU experienced a significant surge in 2021 when the EU incorporated emissions caps into its carbon neutrality targets.

tation of the EU CBAM is expected to impose a greater burden on companies for emission reduction. Furthermore, there is a potential factor for an increase in energy costs during the energy transition aimed at reducing carbon emission in the power generation industry.

As such, GHG-intensive companies face the need to secure their resilience against future transition risks by strengthening their efforts to proactively reduce GHG emissions in preparation for an increasing reduction burden, while concurrently managing financial soundness in terms of emissions liabilities at a favorable level.

Meanwhile, it is imperative to provide inclusive support for vulnerable groups, including SMEs and low-income households, which are highly vulnerable to shocks from transition risks,[17)] as the energy transition[18)] accelerates in the course of the transition to a low-carbon economy. In addition, if the power generation industry predominantly depends on issuing corporate bonds to fund capital investments for the energy transition, concerns may arise regarding the subsequent negative impact on supply and demand in the bond market, coupled with the rise in market interest rates.

A sudden, short-term surge in the burden of carbon reduction could have adverse effects on the stability of the real economy and financial markets. Therefore, it is essential to strengthen policy efforts to facilitate an orderly transition.

17) In the course of the energy transition, which involves the reduction of fossil fuel power generation, it is necessary to pursue a just energy transition, which seeks to alleviate the burden of transition faced by socially vulnerable groups including workers engaged in the carbon-intensive industries, and low-income groups.

18) Fossil fuel power generation (coal, LNG, etc.) represents the largest share, accounting for 60.4% of the country's total electricity generation in 2022 (KEPCO Statistics, 2022).

Box 9.

Results of the Systemic Risk Survey[1)]

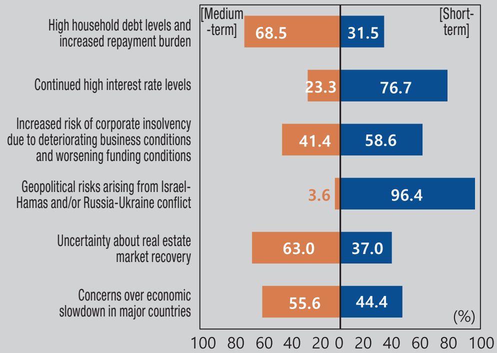
Bank of Korea conducts the Systemic Risk Survey as a means of identifying key risk factors within the financial system. This article scrutinizes the results of the Systemic Risk Survey carried out between October 30 and November 6, 2023, involving domestic and international financial and economic experts.[2)]

Key risk factors

Major potential risk factors for Korea's financial system in the second half of 2023 were identified in the following order of significance: "high household debt level and increased repayment burden" (70.1%, based on single response frequencies[3)]); "continued high interest rate levels" (55.8%); "increased risk of corporate insolvency due to deteriorating business conditions and worsening funding conditions" (37.7%); and "uncertainty about real estate market recovery" (35.1%). External risk factors included "geopolitical risks arising from Israel-Hamas and/or Russia-Ukraine conflict" (36.4%) and "concerns over economic slowdown in major countries" (35.1%).

In terms of the time horizons of the occurrence of risk factors, a high proportion of respondents answered that "high household debt level and increased repayment burden", "uncertainty about real estate market recovery" and "concerns over economic slowdown in major countries" were likely to occur in the medium term (1-3 years), while "geopolitical risks," "continued high interest rate levels" and "increased risk of corporate insolvency due to deteriorating business conditions and worsening funding conditions" were perceived as short-term issues (within one year).

Time horizon of occurrence[1)] of key risk factors[2)]



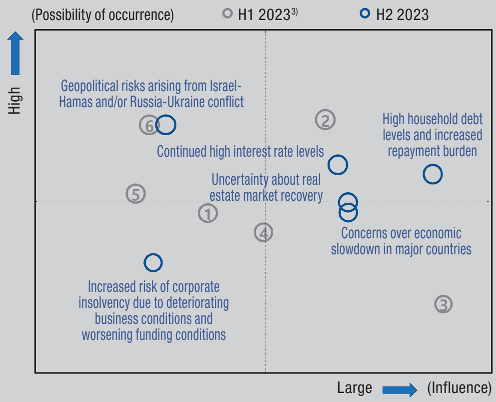
Notes: 1) The numbers represent the response rate(%) (short-term: occurring within 0~12 months, medium-term: occurring within 1~3 years).
2) Top 6 most cited factors.
Source: Bank of Korea.

1) This article was authored by Baek Yoonah and Park Seo-jung (Bank Risk Analysis Team) and was reviewed by Lee Jong-han (director of the Financial Risk Analysis Division) and Song Kil-sung (head of the Bank Risk Analysis Team).
2) The survey was conducted through the electronic survey system under the Economic Statistics System (ECOS) of Bank of Korea, with 77 respondents from a pool of 82 experts (72 business strategy and risk management personnel at domestic financial institutions and 10 personnel in charge of investments in Korea at foreign financial institutions). The response rate stood at 93.9%.
3) Survey participants were required to rank the top-five domestic and international risk factors within the financial system, taking into account their respective significance. The percentage in parentheses indicates the response rate, with a rate of 70% signifying that 70% of respondents designated the specified risk as one of the five risk factors.
4) The Systemic Risk Survey for the first half of 2023 was conducted in May 2023. The top-six risk factors selected during this survey had slight differences from the factors highlighted in the most recent survey.

Possibility of occurrence and influence of key risk factors

In comparison with the first half of the year,[4] the likelihood of key risk factors was assessed to have remained at a similar level, while their impact on the financial system was deemed to be greater. Respondents assigned a moderately high rating to both the likelihood and impact of "high household debt level and increased repayment burden" and "continued high interest rate levels" on the financial system. In contrast, "uncertainty about real estate market recovery" and "concerns over economic slowdown in major countries" were rated to have a higher impact on the financial system, but with a relatively low likelihood of occurrence. Receiving a higher response rate among external risk factors, "geopolitical risks" was not perceived to represent a significant impact on the financial system, although its likelihood of occurrence was seen to be higher.

Possibility of occurrence and influence[1] of key risk factors[2]



Notes: 1) Relative position of each risk factor.
2) Top 6 most cited factors.
3) Top 6 most cited factors in the H1 2023 survey were ①High levels of household debt and increased repayment burden, ②Real estate market recession, ③Deterioration in asset quality and realization of contingent liabilities among financial institutions, ④Possibility of a large withdrawal of funds, ⑤Increasing volatility in financial markets and the foreign exchange market, and ⑥Continuing current account deficit

Sources: Bank of Korea.

Assessment and improvement plan for financial system stability

Concerning the likelihood of shocks that could undermine the stability of the financial system, 20.8% of respondents responded "very high" or "high" for short-term shocks (within one year), indicating a significant decrease from the previous survey (36.8%). However, the response rate regarding the probability of medium-term issues (1-3 years) was 44.2%, higher than the previous survey (34.2%).

Probability of the financial system risks materializing in the short-term and the medium-term

Short-term | Medium-term

Notes: 1) Including 'Very high'.
2) Including 'Very low'.

Sources: Bank of Korea.

Meanwhile, confidence in the stability of Korea's financial system persisted at a high level. In response to a question about confidence in the stability of the country's financial system over the next three years, 96.1% of respondents responded "high" or "moderate," similar to the survey conducted in the first half of the year.

For the question regarding necessary policy measures to enhance the stability of the Korean financial system at the current time, the most commonly suggested options were “deleveraging of household debt” and “management of real estate-related PF loans.” Other options included “proactive stress tests for financial institutions” and “strengthened supervision of asset soundness” in preparation for prolonged economic uncertainty. Meanwhile, proposals for reinforcing the risk management system for internal and external factors included “smooth communication between supervisors, the government, and financial companies” and “maintaining financial policy consistency and increasing the use of macroprudential policies.”

Analysis of Financial Stability Issues

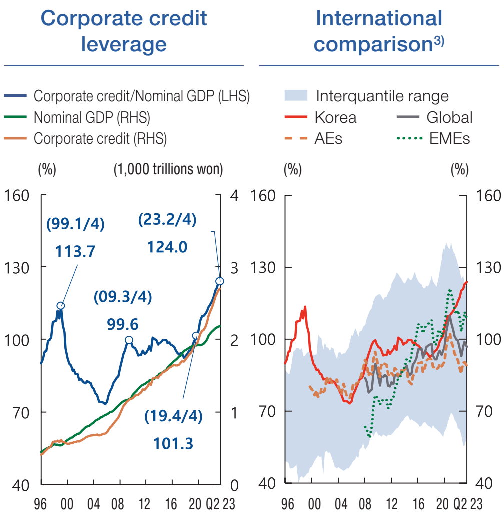
I. Analysis of Risks associated with the Recent Expansion of Corporate Credit in Korea and its Policy Implications[1)]

1. Background

With a substantial increase in corporate credit across both loans and debt securities after the COVID-19 pandemic, the ratio of corporate credit[2)] to nominal GDP[3)] (hereinafter "corporate credit leverage") reached a historic high of 124.0% as of the end of the second quarter of 2023. Unlike the recent trend of corporate credit leverage observed in major countries, the corporate credit leverage in Korea has been consistently on the rise (Figure I-1).

As experienced during previous crises such as the Asian Financial Crisis and the Global Financial Crisis, the occurrence of internal or external shocks amid a rapid quantitative increase in corporate credit over a short-term period has the potential to dramatically escalate unrest in the financial system. In this regard, this article examines the characteristics of the recent increase in corporate credit, particularly during the post-COVID-19 period when corporate credit soared sharply, and analyzes changes in the distribution of borrowings depending on the repayment capacities of firms to identify related risks.

Figure Ⅰ-1. Ratio of corporate credit[1)] to GDP[2)]



Notes: 1) Based on the sum of nominal GDP for the current quarter and previous three quarters.
2) Based on the sum of loans, securities, and government loans among the liabilities of non-financial corporate sector.
3) Based on 43 countries included in BIS credit statistics, South Korea included in EMEs.
Sources: Bank of Korea, BIS.

1) This article was authored by Pyoun Do-hoon and Hur Jung (Financial Stability Analysis Team) and was reviewed by Seo Pyoung-seok (director of the Financial Stability Strategy & Coordination Division) and Lee Jung-yeoun (head of the Financial Stability Analysis Team).
2) Generally, corporate credit is defined as the aggregate amount of the balances of loans, debt securities, and government loans under the flow of funds statistics, out of the liabilities held by non-financial corporations.
3) The corporate credit leverage is calculated by dividing the balance of corporate credit by the aggregate amount of the nominal GDP during the current quarter and the immediately preceding three quarters.

2. Characteristics of Corporate Credit Expansion by Sector

The average rate of growth in corporate credit (year-on-year basis) rose from 4.8% before the COVID-19 pandemic to 9.9% in the post-pandemic period. By item of corporate credit, loans from financial institutions increased more than debt securities and government loans.[4] By type of firm, credit to private firms increased more than credit to public enterprises (Table I-1).

Table Ⅰ-1. Comparison of the average[1] growth rate in corporate credit before and after COVID-19[2]

(%)

	Corporate credit	Loans	Securities	Government loans	Private corporations	enterprises
Pre-COVID-19	4.8	5.3	3.8	6.2	5.0	4.1
Post-COVID-19	9.9	11.9	4.8	10.1	10.4	6.9

Notes: 1) Average of quarterly Year-on-Year growth rates during the specified period.
2) Pre-COVID-19 refers to the period from the 1st quarter of 2010 to the 4th quarter of 2019, while Post-COVID-19 refers to the period from the 1st quarter of 2020 to the 2nd quarter of 2023.

Sources: Bank of Korea (Natianal Accounts, Flow of Funds).

A. Loans from Financial Institutions[5]

Sharp Increase in Loans Extended by Non-bank Financial Institutions and Loans to SMEs

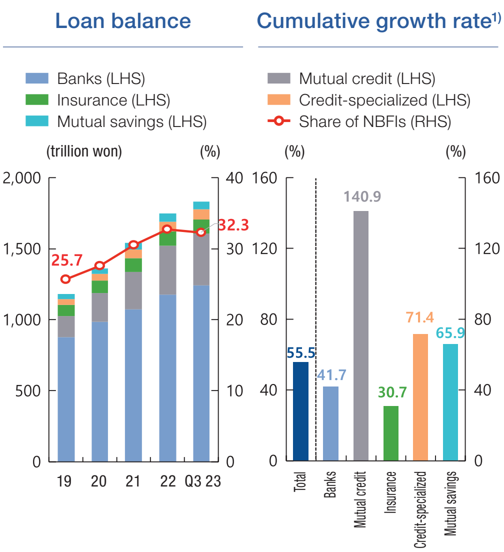
As of the third quarter of 2023, corporate loans extended by banks (KRW 1,241.0 trillion) increased by 41.7% (+KRW 365.2 trillion) from the end of 2019, before the onset of the COVID-19 pandemic, and during the same period, corporate loans extended by non-bank financial institutions (NBFIs) (KRW 591.7 trillion) rose by 95.4% (+KRW 288.9 trillion). Consequently, as of the end of the third quarter of 2023, NBFI loans constituted 32.3% of all corporate loans, showing an increase from the 25.7% recorded at the end of 2019. Notably, out of all corporate loans from NBFIs, corporate loans extended by mutual credit cooperatives, such as MG Community Credit Cooperatives, experienced a 140.9% surge since the end of 2019, resulting in an increase of loan balance from KRW 151.8 trillion to KRW 365.8 trillion[6] (Figure I-2).

4) The average year-on-year growth rate of government loans has increased significantly compared to the period before the COVID-19 pandemic, but the share of government loans among total corporate credit remained almost constant during the pandemic period (5.2% at the end of 2019 → 5.2% at the end of the second quarter of 2023).

5) This article evaluates the overall trend of corporate credit (balances and ratios to nominal GDP) based on the flow of funds statistics. However, to conduct a detailed analysis of corporate loans provided by financial institutions, this assessment incorporates periodic business reports submitted by various financial institutions (including banks, mutual savings banks, mutual credit cooperatives, insurance companies, and credit-specialized financial companies) to the Financial Supervisory Service, as well as official statistics of Industrial Loans of Depository Corporations. It must be noted that, due to the variations in items of loans and the scope of financial sectors covered by each statistical source, there may be some differences or discrepancies in the balances of corporate loans, etc.

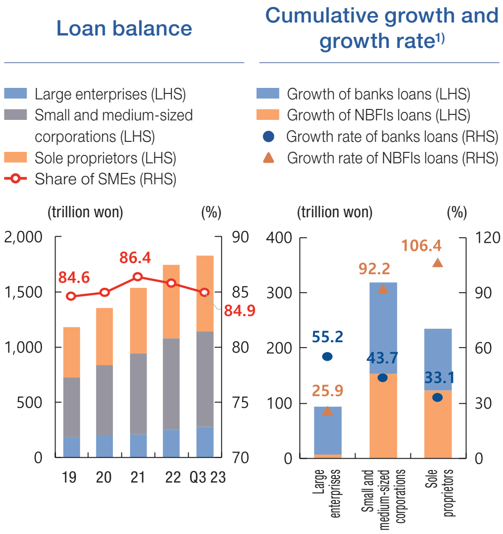
6) Meanwhile, corporate loans extended by credit-specialized financial companies and mutual savings banks increased by 71.4% and 65.9% respectively, from the end of 2019, with both figures surpassing the growth rate of loans extended by banks (41.7%).

Figure Ⅰ-2. Corporate loan trends by financial sector after COVID-19



Notes: 1) Growth rate of corporate loans by financial sector at the end of the third quarter of 2023 compared to the end of 2019.
Sources: Financial institutions' business reports.

Figure Ⅰ-3. Corporate loan trends by firm size after COVID-19



Notes: 1) Growth amount and rate of corporate loans of banks and non-banks at the end of the 3rd Quarter of 2023 compared to the end of 2019.
Sources: Financial institutions' business reports.

By size of the borrowing firm, from the end of 2019, there was a total 51.3% increase (+KRW 93.5 trillion) in loans granted to large enterprises, while loans to SMEs and sole proprietors experienced a growth as well, rising by 58.4% (+KRW 318.8 trillion) and 51.8% (+KRW 234.6 trillion), respectively. Consequently, the share of SME loans surged to 84.9%. Throughout this period, the expansion of large enterprise loans was primarily attributed to loans facilitated by banks, whereas approximately 50% of the entire growth in SME loans was attributed to loans extended by NBFIs[7] (Figure I-3).

Increase in Loans to Industries Related to Real Estate and Industries Impacted by the COVID-19 Pandemic

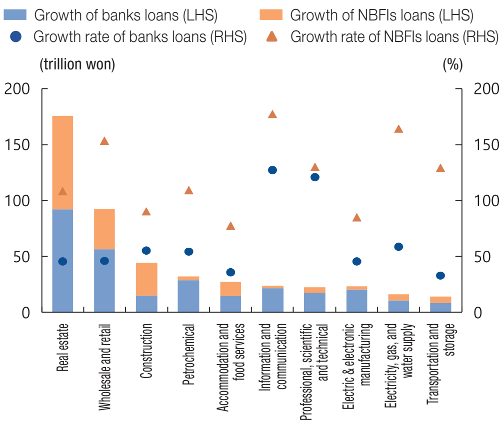
Examining the specifics of the fluctuations in corporate loans by industry (based on the statistics of Industrial Loans of Depository Corporations), there was a significant increase in loans particularly in industries related to real estate and those adversely affected by the COVID-19 pandemic. Following the pandemic, loans to the real estate and construction industries witnessed a surge of KRW 175.7 trillion and KRW 44.3 trillion, respectively, constituting 38.8% of the total increase in loans to industries under analysis (KRW 567.4 trillion).[8] In particular, loans extended to

7) Considering that, as of the end of the third quarter of 2023, SME corporate loans constituted 94.0% of all corporate loans operated by the non-bank sector, it can be surmised that the growth in NBFI corporate loans since the beginning of the COVID-19 pandemic led to the substantial increase in SME corporate loans.

8) The official statistics of Industrial Loans of Depository Corporations are used in this analysis. The analysis specifically focuses on the loans provided to the following industries: manufacturing, non-financial service (excluding financial and insurance industries and public administration services), construction, and electricity, gas, and water supply industries.

these two industries by NBFIs nearly doubled[9] compared to the figures at the end of 2019, highlighting a substantial increase in the reliance of real estate-related industries on NBFI loans. Moreover, loans to wholesale & retail trade industries and accommodation and food service industries, which suffered relatively higher damages during the COVID-19 pandemic, rose by KRW 92.7 trillion and KRW 27.5 trillion, respectively, influenced by financial support measures implemented by the government (Figure I-4).

Figure Ⅰ-4. Corporate loan[1] growth[2] by industry after COVID-19



Notes: 1) Based on banks and non-bank deposit-taking institutions(mutual credit, mutual savings banks).
2) Growth amount and rate of corporate loans by industry at the end of the 3rd Quarter of 2023 compared to the end of 2019.
Sources: Bank of Korea (Industrial Loans of Depository Corporations).

To evaluate the influence of the increase in industry-specific lending on the added value for each industry, this article analyzed the ratio of GDP by economic activities (nominal, aggregated over four quarters) to loans granted to each industry (hereinafter "loan leverage by industry"[10]). Firstly, the real estate industry witnessed a rise in loan leverage from 197.0% at the end of 2019 to 308.6% at the end of the third quarter of 2023. This increase was driven by a substantial 60.2% increase in loans to the real estate industry compared to the end of 2019, with only a modest increase in value added (3.6%). During the same period, the loan leverage of the construction industry also increased from 57.0% to 86.9%, though it remained below the average loan leverage across all industries (95.4%). Meanwhile, the loan leverage of the accommodation and food service industries rose to 199.9% at the end of 2021 from 122.7% at the end of 2019. However, after 2022, it decreased to 149.2% as of the end of the third quarter of 2023, attributed to improved business conditions within these industries and a slowdown in loan growth.[11] In contrast, the loan leverage of wholesale & retail trade sectors grew from 105.9% at the end of 2019 to 165.2% at the end of the third quarter of 2023, caused by the prolonged slump in business conditions within these industries (Figure I-5).

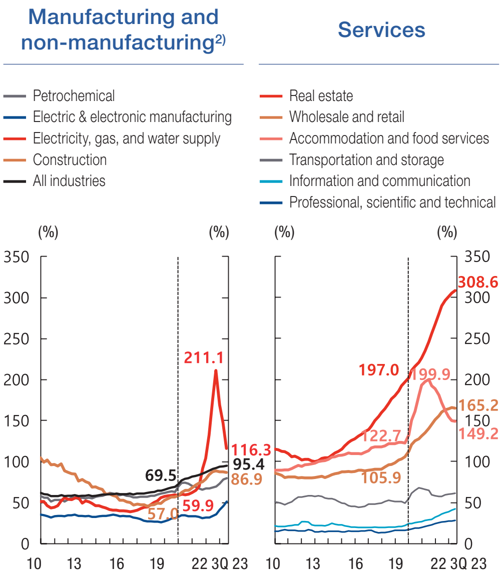
9) Loans to the real estate industry (unit: KRW 1 trillion): 278.6 at the end of 2019 (201.3 of bank loans, 77.3 of non-bank loans) → 454.2 at the end of the third quarter of 2023 (293.3 of bank loans, 161.0 of non-bank loans).
Loans to the construction industry (unit: KRW 1 trillion): 59.8 at the end of 2019 (27.9 of bank loans, 31.9 of non-bank loans) → 104.1 at the end of the third quarter of 2023 (43.3 of bank loans, 60.8 of non-bank loans).

10) The concept of loan leverage by industry is identical to the ratio calculated through the classification of corporate credit leverage by industry. However, the former solely encompasses loans, excluding debt securities and government loans. Additionally, because the ratio is calculated using loan statistics for each industry as reported by deposit-taking institutions, instead of flow of fund statistics, there may be disparities in its value.

11) Accumulated growth rate of nominal GDP in the accommodation and food service industries (aggregated over four quarters): -15.4% from the end of 2019 to the end of 2021, and 43.6% from the end of 2021 to the end of the third quarter of 2023.
Accumulated growth rate of loans issued by deposit-taking institutions: 32.5% from the end of 2019 to the end of 2021, and 11.5% from the end of 2021 to the end of the third quarter of 2023.

banks. In terms of company size, the increase in short-term loans to SMEs was more significant (+KRW 220.5 trillion) than that in loans to large enterprises (+KRW 65.6 trillion). As a result, the analysis reveals that, as of the third quarter of 2023, SMEs had a higher share of short-term loans (70.0%) than large enterprise (57.0%) (Figure I-6).

Figure Ⅰ-5. Trend of corporate loan leverage[1] by industry

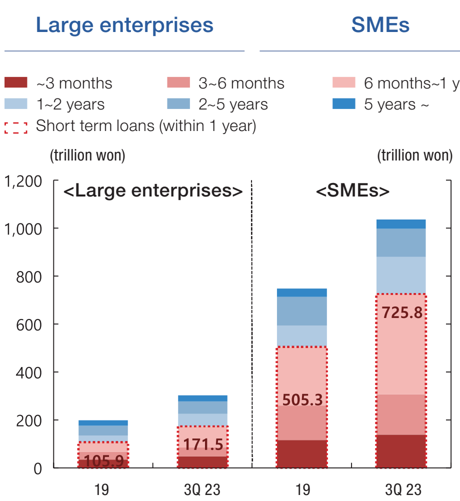


Notes: 1) The ratio of imdustry-specific loans to nominal GDP of industrial production(aggregated for four quarters).
2) Non-manufacturing industry, such as construction, electricity, gas and water supply, excluding service industries.
Sources: Bank of Korea.

Increase in the Share of Short-term and Floating-rate Loans Provided by Banks

Analyzing corporate loans extended by banks[12] based on the length of remaining maturity, as of the third quarter of 2023, short-term loans with a remaining maturity of less than one year totaled KRW 897.3 trillion, representing 67.0% of all corporate loans issued by banks. This indicates an increase in the share of short-term loans compared to before the COVID-19 pandemic (KRW 611.2 trillion, 64.8% at the end of 2019), despite an increase in the balance of corporate loans extended by banks. In terms of company size, the increase in short-term loans to SMEs was more significant (+KRW 220.5 trillion) than that in loans to large enterprises (+KRW 65.6 trillion). As a result, the analysis reveals that, as of the third quarter of 2023, SMEs had a higher share of short-term loans (70.0%) than large enterprise (57.0%) (Figure I-6).

Figure Ⅰ-6. Corporate loan[1] balances of banks by remaining maturity



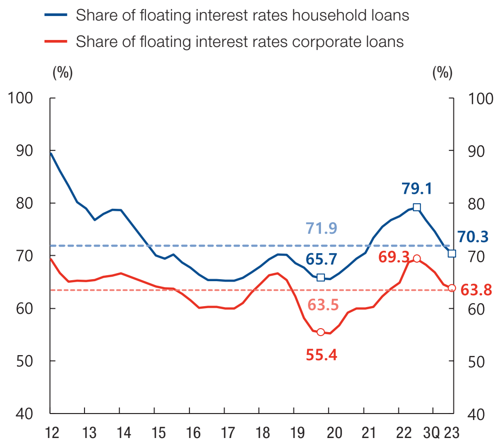
Notes: 1) Financial and insurance loans included.
Sources: Financial institutions' business reports.

Meanwhile, as of the end of the third quarter of 2022, the share of loans with floating interest rates increased to 69.3% from 55.4% at the end of 2019. However, as of the end of the third quarter of 2023, it declined to 63.8%, owing to the recent surge in newly-issued loans with fixed interest rates,[13] and reverted back to the level of the long-term average share before the pandemic (63.5%) (Figure I-7).

12) Given the limitations in obtaining detailed materials on corporate loans provided by non-bank financial institutions, this article conducted an analysis of maturity structure and distribution of interest rates based on the corporate loans provided by banks (including loans to financial and insurance industries).

13) The share of corporate loans with fixed interest rates (based on newly-issued loans): 35.4% at the end of the second quarter of 2022 → 51.6% at the end of the first quarter of 2023 → 45.8% at the end of the third quarter of 2023.

Figure Ⅰ-7. Share1) of floating interest rates corporate loans in banks2)

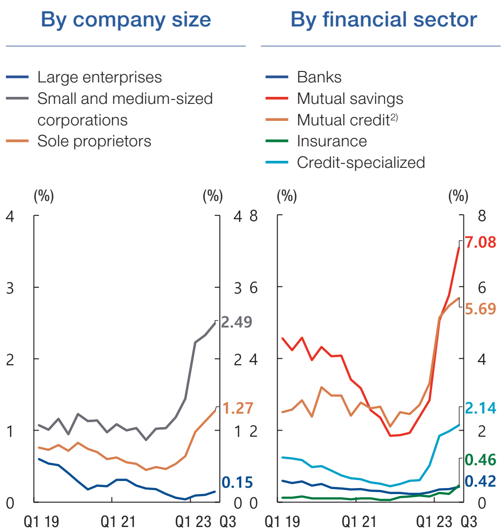


Notes: 1) Based on balance.
2) Dotted line shows the long-term average of the shares of floating interest rate loans (Q1 2012 ~ Q4 2019).
Sources: Bank of Korea.

Rise in Delinquency Rate of Loans Extended by NBFIs and Loans to SMEs

Regarding the delinquency rate of corporate loans based on sectors, there has been a notable increase in delinquency rates for loans to SMEs and those provided by NBFIs since the second half of 2022. By company size, as of the end of the third quarter of 2023, the delinquency rates for SME loans and sole proprietor loans were 2.49% and 1.27%, respectively, which are significantly higher than the delinquency rate for large enterprise loans, which stood at 0.15%. Examining the financial sector, it was identified that delinquency rates for corporate loans issued by banks and insurance companies remained relatively stable overall. In contrast, as of end of the third quarter of 2023, delinquency rates for corporate loans facilitated by mutual savings banks, mutual credit cooperatives, and credit-specialized financial companies were 7.08%, 5.69%, and 2.14%, respectively, marking increases across the board from the previous year (Figure I-8).

Figure Ⅰ-8. Delinquency rate1) of corporate loans by company size and financial sector



Notes: 1) Based on delinquency of principal and interest for more than one month (for mutual credit cooperatives and mutual savings banks, based on delinquency of principal for more than one day or interest for more than one month).
2) Nonghyup, Suhyup, Forest cooperatives, Sinhyup and MG communitiy credit cooperatives included.
Sources: Financial institutions' business reports.

B. Debt Securities

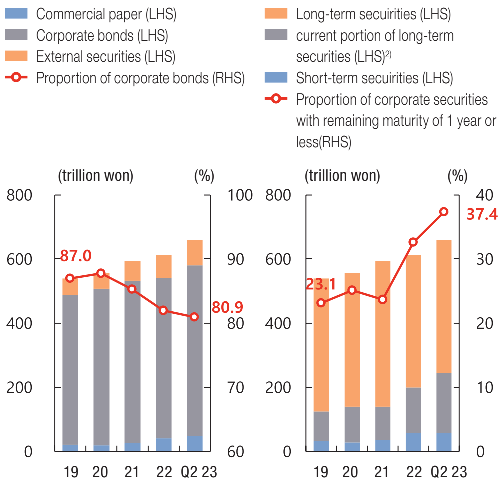
Increase in the Share of Short-term Securities with a Remaining Maturity of Less Than One Year and Prime Bonds

Concerning the sectoral characteristics related to the increase in debt securities among corporate credits after the COVID-19 pandemic, commercial papers (CPs) exhibited a more rapid escalation compared to corporate bonds in terms of the type of securities. This resulted in a decline in the proportion of corporate bonds, decreasing from 87.0% at the end of 2019 to 80.9% at the end of the second quarter of 2023. Conversely, throughout the same period, the proportion of CPs surged from 3.8% to 7.2%.

In terms of maturity, as of the end of the second quarter of 2023, short-term securities with a remaining maturity of less than one year constituted 37.4% among the total balance of debt securities. As the balance of current portion of long-term securities (long-term bonds with a remaining maturity of less than one year among those issued with a maturity of one year or more) experienced a rapid increase after the COVID-19 pandemic, the proportion of short-term securities due within one year exhibited a significant surge from the end of 2019 (23.1%) (Figure I-9).

Figure Ⅰ-9. Trend of corporate securities[1] balances by type and maturity after COVID-19

By type | By maturity



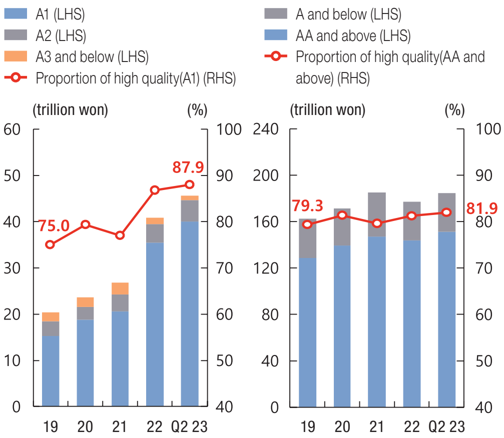
Notes: 1) The proportion of the balance by type and maturity to the balance of securities by year.
2) Securities with a remaining maturity of one year or less among long-term securities with an issue maturity of one year or more.

Sources: Bank of Korea(Flow of funds).

By credit rating, given that prime bonds comprise the majority of both commercial papers (CPs) and corporate bonds, it is evaluated that, overall, the credit risks associated with debt securities are low. As for the composition of CPs, the proportion of prime bonds with a grade of A1 or higher increased from 75.0% at the end of 2019 to 87.9% in the second quarter of 2023. In terms of corporate bonds, the trend of prioritizing the issuance of prime bonds persisted even amid the COVID-19 pandemic (Figure I-10).

Figure Ⅰ-10. Trend of corporate securities[1] balances by credit rating after COVID-19

CP | Corporate bonds[2]



Notes: 1) The proportion is the ratio of the balance of high quality to the balance of securities by year.
2) Based on public offering corporate bonds (excluding private equity), excluding issuance of financial companies.

Sources: Bank of Korea, Korea Securities Depository, Infomax.

3. Distribution of Borrowings by Repayment Capacities of Firms[14)]

Since the COVID-19 pandemic, corporate credit has undergone a swift quantitative expansion, with a notable emphasis on loans for the short term, facilitated by NBFIs, and provided to SMEs. Nonetheless, the qualitative evaluation of corporate credit may differ based on the ability of firms to meet their loan obligations through their profits and assets. The following section aims to examine the distribution of borrowings[15)] among listed companies, classifying them by size, and assessing their repayment capacities based on their profits and assets from both a flow and stock perspective.

A. Distribution of Borrowings by Repayment Capacities Based on Profits

Evaluating a firm's capacity to repay its borrowings through the use of the profits generated by its business operations throughout the year from a flow perspective, it was identified that there was a rise in borrowings among firms whose repayment capacities had recently been vulnerable in comparison to their profits, which led to a higher proportion of these borrowings within the overall distribution. In consideration of these findings, it can be deduced that there has been a deterioration in the distribution of borrowings by firms' repayment capacity.

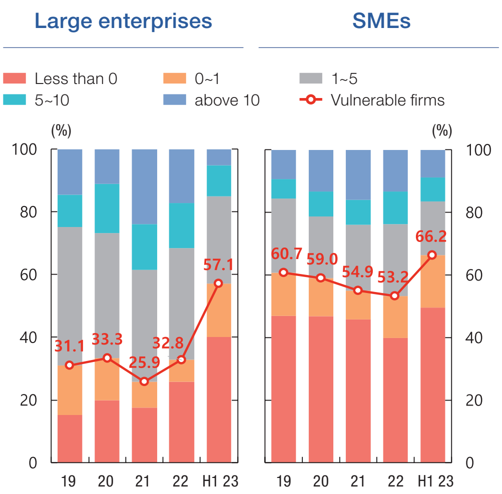
When reviewing the distribution of borrowings based on the interest coverage ratio (operating profits divided by total interest expenses), both large enterprises and SMEs maintained a stable distribution overall after the COVID-19 pandemic until 2022. However, in the first half of 2023, there was a significant surge in the borrowings of vulnerable firms burdened with excessive interests payable (firms with an interest coverage ratio less than 1). In particular, amid an increase in the number of large enterprises whose operating deficits worsened due to deteriorating business conditions in key industries, such as electrical and electronics, as well as an aggravated burden of interest (firms with an interest coverage ratio less than 0), the size of borrowings held by such large enterprises expanded as well.[16)] As a result, there was a significant increase in the proportion of borrowings held by vulnerable firms (Figure I-11).

14) To analyze changes in the financial soundness of firms during 2023, the following analysis targeted listed companies and some unlisted companies (excluding those in the financial and insurance industries) that have publicly disclosed their business reports as of the year-end prior to 2022 and the end of the second quarter of 2023 (a total of 2,558 firms as of the end of the second quarter of 2023, consisting of 1,291 large enterprises and 1,267 SMEs). It must be noted that this analysis may not be exhaustive in representing all SMEs, when compared to analyses targeting large samples that include companies subject to external audits.

15) The total amount of borrowings payable by a firm is calculated by aggregating long- and short-term borrowings as well as long- and short-term bonds, and current portion of long-term debts as reported in the statements of financial position (balance sheet) of the relevant firm. The concept is deemed to encompass loans, debt securities, and government loans within the context of corporate credit under the flow of fund statistics.

16) Interest coverage ratios and total borrowings: (Samsung Electronics) 213.3 times and KRW·9.7 trillion at the end of 2021 → 87.3 times and KRW·3.1 trillion at the end of 2022 → -15.9 times and KRW 25.5 trillion at the end of the second quarter of 2023, (SK Hynix) 71.0 times and KRW·13.8 trillion at the end of 2021 → 21.7 times and KRW·18.0 trillion at the end of 2022 → -8.5 times and KRW 25.3 trillion at the end of the second quarter of 2023.

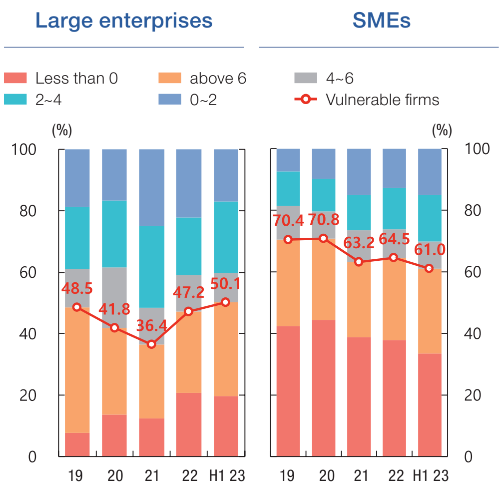
Figure Ⅰ-11. Distribution of corporate borrowings by interest coverage ratio1)2)



Notes: 1) Operating income/Total interest expenses.
2) Vulnerable firms refer to the proportion of borrowings of firms with an interest coverage ratio of less than 1.
Sources: Bank of Korea staff calculation (KIS-Value).

Simultaneously, when examining the distribution of borrowings based on the debt multiple[17] (total borrowings divided by Earnings Before Interest, Tax, Depreciation and Amortization (EBITDA)[18]), which gauges a firm's capacity to repay principals, there was a deterioration in the distribution of borrowings held by large enterprises, while SMEs exhibited an improvement. In the case of large enterprises, from 2022, there was a renewed increase in the proportion of borrowings held by vulnerable firms whose borrowing size exceeded their repayment capacities (firms with a debt multiple larger than six times or less than 0). In contrast, for SMEs, the proportion of borrowings held by vulnerable firms has seen a consistent decrease since the onset of the COVID-19 pandemic (Figure I-12).

Figure Ⅰ-12. Distribution of corporate borrowings by debt-to-EBITDA ratio1)2)



Notes: 1) Total debt/EBITDA.
2) Vulnerable firms refer to the proportion of borrowings of firms with a debt-to-EBITDA ratio of more than 6 or less than 0.
Sources: Bank of Korea staff calculation (KIS-Value).

B. Distribution of Borrowings by Repayment Capacities Based on Assets

Examining a firm's capacity to repay both long- and short-term debts by using its assets from a stock perspective, there was a slight in-

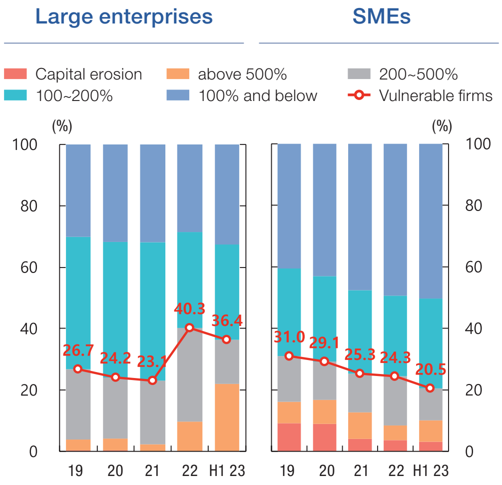
17) The debt multiple is an indicator calculated by dividing the total borrowings under the statements of financial position by EBITDA. It is used to evaluate the amount of borrowings held by the relevant firm compared to its currently available cash flow (EBITDA). A lower debt multiple indicates that a firm is more capable of repaying its borrowings. Typically, if the debt multiple exceeds five to six times, both the U.S. Federal Reserve and major international credit rating agencies evaluate that the size of the borrowings for the relevant firm is deemed excessive compared to its repayment capacities.

18) EBITDA is the sum of (i) net profits before deducing interests and corporate taxes, (ii) depreciation cost, and (iii) amortization expenses on intangible assets. Unlike any accounting net profits, EBITDA refers to the net profits not affected by non-operating factors, such as financial costs and amortization expenses, or by differences in accounting methods.

crease in the proportion of borrowings held by firms with good repayment capacities based on assets. This shift has resulted in a larger overall portion of such borrowings, suggesting that the distribution of borrowings by repayment capacity is generally sound.

Based on debt ratios (debts divided by equity capital) as an indicator of the stability of firms' debt structures, both large enterprises and SMEs witnessed an overall decline in the proportion of vulnerable firms burdened with excessive debts (firms with a debt ratio higher than 200% or less than 0) until 2021. However, since 2022, the distribution of borrowings for large enterprises has not experienced the same trend as that for SMEs. For large enterprises, due to a significant increase in the debt ratios of some energy public corporations holding substantial borrowings,[19] the proportion of borrowings held by vulnerable firms with excessive debts has seen a slight rise. Conversely, the distribution of borrowings for SMEs has demonstrated consistent improvement (Figure I-13).

Figure Ⅰ-13. Distribution of corporate borrowings by debt ratio[1)2)]



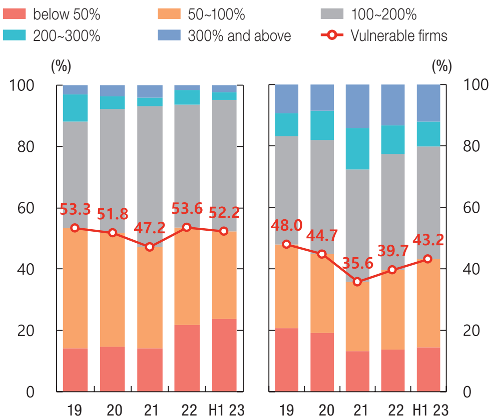
Notes: 1) Debt/Equity (%).
2) Vulnerable firms refer to the proportion of borrowings of firms with debt ratio exceeding 200% or with capital erosion.
Sources: Bank of Korea staff calculation (KIS-Value).

Based on the current ratio (current assets divided by current debts), which evaluates liquidity by considering the ratio of short-term assets to short-term debts, the proportion of borrowings held by firms with insufficient liquidity (firms with a current ratio less than 100%) saw a decrease by 2021, and then exhibited an increase since 2022. As of the end of the second quarter of 2023, the shares of borrowings of vulnerable firms in liquidity among both large enterprises and SMEs have remained lower than the levels observed before the onset of the pandemic (Figure I-14).

19) Debt ratios and total borrowings: (Korea Electric Power Corporation) 145.7% and KRW 39.1 trillion at the end of 2021 → 493.9% and KRW 76.8 billion at the end of 2022 → 727.1% and KRW 86.8 billion at the end of the second quarter of 2023, (Korea Gas Corporation) 452.6%·and KRW 26.4 trillion at the end of 2021 → 642.9% and KRW 43.1 trillion at the end of 2022 → 579.5%·and KRW 39.5 trillion at the end of the second quarter of 2023.

Figure Ⅰ-14. Distribution of corporate borrowings by current ratio[1)2)]

Large enterprises | SMEs



Notes: 1) Current asset/Current debt (%).
2) Vulnerable firms refer to the proportion of borrowings of firms with current ratio of less than 100%.
Sources: Bank of Korea staff calculation (KIS-Value).

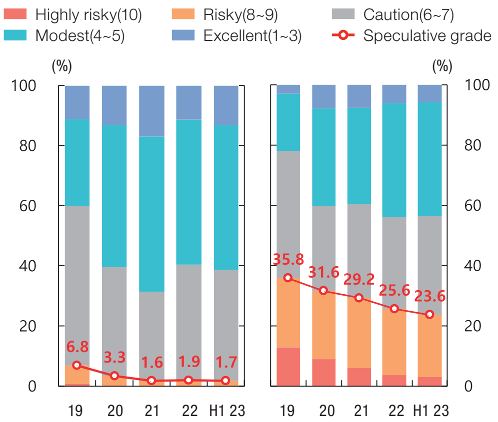
C. Distribution of Borrowings by Credit Ratings and Default Risk

When assessing the distribution of borrowings in terms of credit rating and default risk as an evaluation of the comprehensive financial soundness of firms, it appears that the distribution of borrowings by repayment capacity has gradually improved, given the decrease in the proportion of borrowings held by low-rated or high-risk firms.

In terms of the distribution of borrowings based on the credit ratings of firms,[20] following the COVID-19 pandemic, both large enterprises and SMEs observed a gradual decrease in the proportion of firms with low credit ratings falling within the speculative grade range (8 to 10 under the KIS rating scale). Notably, as of the end of the second quarter of 2023, firms falling into the investment grade category constituted at least 98% and 75% of the total borrowings for large enterprises and SMEs, respectively (Figure I-15).

Figure Ⅰ-15. Distribution of corporate borrowings by credit rating[1)2)]

Large enterprises | SMEs



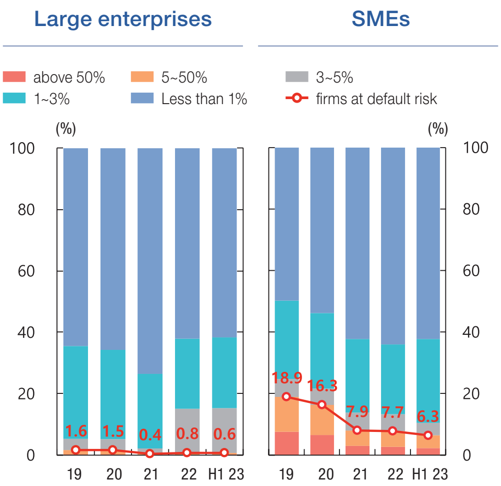
Notes: 1) Based on KIS credit rating.
2) Speculative grade refer to the proportion of borrowings of firms with a credit rating of 8 to 10 (less than B grade).
Sources: Bank of Korea staff calculation (KIS-Value).

In accordance with default risk, which gauges the probability that any defaults, including business closure and complete capital erosion, may occur after the elapse of a one-year period based on the various financial indicators

20) In this article, the credit ratings of the companies under analysis were broadly reclassified into five grades based on the KIS rating scale. The comparison between each of the grades under the KIS rating scale and those assigned by international credit rating agencies such as S&P and Moody's is outlined as follows: Excellent (1 to 3) corresponds to AAA to AA; Modest (4 to 5) corresponds to A; Caution (6 to 7) corresponds to BBB; Risky (8 to 9) corresponds to B to C; and Highly risky (10) corresponds to D. BBB or above is generally considered as investment grade, while any grade below BBB is typically classified as speculative grade.

of a firm,[21] there has been a general decline in the proportion of borrowings held by firms at default risk (those with a default risk higher than 5%) since the COVID-19 pandemic. This trend suggests an overall improvement in the distribution of borrowings. Consequently, as of the end of the second quarter of 2023, borrowings held by firms with low default risk accounted for at least 99% and 93% of the total borrowings for large enterprises and SMEs, respectively (Figure I-16).

Figure Ⅰ-16. Distribution of corporate borrowings by default risk[1)2)]



Notes: 1) The probability of business closure and capital erosiom (t+1) estimated based on a logit model using financial indicators of companies as explanatory variables (t)

2) Firms at default risk refers to the proportion of borrowings from firms with an default risk exceeding 5%.

Sources: Bank of Korea staff calculation (KIS-Value).

To summarize the recent distribution of borrowings by the repayment capacity of firms, the repayment capacity using profits became slightly vulnerable due to operating losses recently recorded by some of the large enterprises. On the other hand, with regard to repayment capacity based on the use of assets, the distribution of borrowings has generally improved since the COVID-19 pandemic. Concerning comprehensive financial soundness in consideration of firm's profit, asset and all borrowing conditions, such as reliance on borrowings, average interest rate of borrowings, etc., the distribution of borrowings has exhibited a gradual improvement since the pandemic, resulting in the conclusion that it has remained at a favorable level.

4. Comparison with Past Crises

Amid the current corporate credit leverage reaching 124.0% as of the end of the second quarter of 2023, a level surpassing those observed in previous crises (113.7% at the end of the first quarter of 1999 during the Asian Financial Crisis and 99.6% at the end of the third quarter of 2009 during the Global Financial Crisis), growing concerns have been voiced regarding the sustainability. of corporate credit. The following section reviewed and assessed relevant risks by comparing the current composition of corporate credit and the distribution of borrowings held by firms with the corresponding records during previous crises, namely the Asian Financial Crisis and the Global Financial Crisis.

21) Default risk refers to the likelihood that a firm will default, including business closure and complete capital erosion, after the elapse of the one-year period, which is estimated through a logit model that uses financial indicators representing the firm's profits (interest coverage ratios, return on assets (ROA)), assets (equity capital ratio, current ratio), and borrowing conditions (reliance on borrowings, average interest rate of borrowings) as explanatory variables. For details, refer to Box 2 "Assessment of Recent Default Risk of the Corporate Sector and its Implications," Financial Stability Report, December 2021.

Firstly, examining the composition of corporate credit as of the end of the second quarter of 2023 compared to the previous crises, the share of marketable borrowings held by firms, including corporate bonds and commercial papers, declined to 24.4%, whereas the share of funding through indirect financing increased to 70.4%. By type of firm, the majority of corporate credit lay with private firms, constituting 86.0% of the total and far surpassing the share of corporate credit held by public enterprises (Table I-2).

Table Ⅰ-2. Comparison[1)] of corporate credit composition[2)]

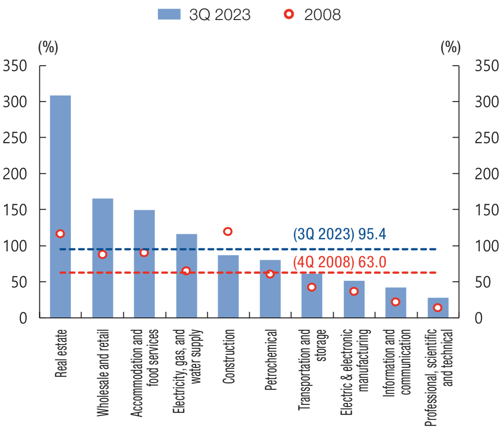
(%)

	By credit type			By corporate characteristics	
	Loans	Securities	Government loans	Private corporations	Public enterprises
1997	56.8	41.9	1.2	88.9	11.1
2008	66.0	31.5	2.5	84.6	15.4
Q2 23	70.4	24.4	5.2	86.0	14.0

Notes: 1) As of the end of 1997 and 2008, respectively, the Asian Financial Crisis and Global Financial Crisis.
2) Proportion to the total corporate credit outstanding by year.
Sources: Bank of Korea(Flow of Funds).

With regard to the recent leverage of loans by industry in comparison with that during the Global Financial Crisis,[22)] the average of loan leverage across all of the analyzed industries as of the end of the third quarter of 2023 surged to 95.4%, up from 63% at the end of 2008. By industrial sector, key sectors such as real estate, wholesale & retail trade, accommodation and food service, and electricity, gas, and water supply industries have witnessed a notable increase in loan leverage, surpassing the average loan leverage across all industries during the Global Financial Crisis (95.4%). Specifically, the construction industry experienced a 43.8% increase in loans after the Global Financial Crisis (KRW 72.4 trillion at the end of 2008 → KRW 104.1 trillion at the end of the third quarter of 2023). Despite this increase, the recent leverage of loans in the construction industry has decreased to 86.9% from 119.6% at the end of 2008, attributed to a robust increase of 97.9% in the GDP of the construction industry[23)] (KRW 60.6 trillion → KRW 119.8 trillion) over the same period (Figure I-17).

Figure Ⅰ-17. Comparison[1)2)] of corporate loan leverage[3)] by industry



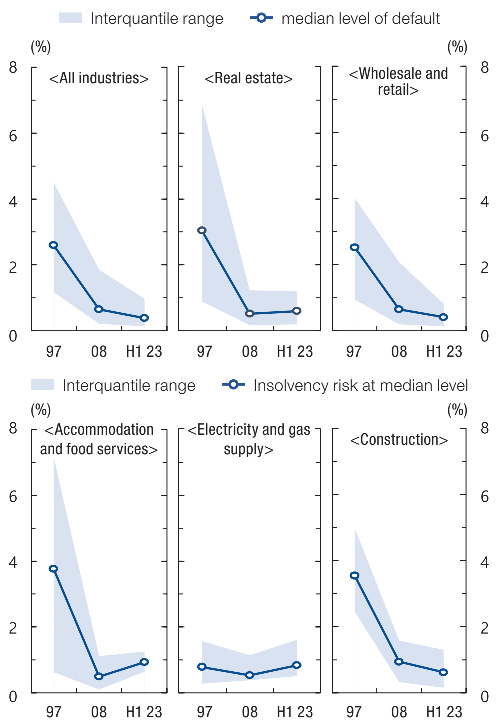
Notes: 1) The dotted line represents the loan leverage of all industry as of the end of 2008 and end of the third quarter of 2023.
2) Comparing with the Asian Financial Crisis (1997) is restricted due to date constraint.
3) The ratio of industry-specific loans to nominal GDP of industrial production (aggregated for four quarters)
Sources: Bank of Korea(Industrial Loans of Depository Corporations).

22) Given that statistics of Industrial Loans of Depository Corporations, which are used as the numerator when calculating the loan leverage of each industry, only became accessible from the first quarter of 2008, it was not possible to compare current statistics with the Asian Financial Crisis (1997-1999). Therefore, this article's analysis utilizes figures from the Global Financial Crisis (2008-2009).

23) From the end of 2008 to the end of the third quarter of 2023, amid a 97.9% increase in the nominal GDP of the construction industry (aggregated over four quarters), real GDP increased by 15.2%. It is estimated that inflationary factors such as escalated construction costs and labor expenses significantly influenced the value addition in the construction industry after the Global Financial Crisis.

Comparing overall changes in default risk among firms with a focus on industries with high loan leverage in order to evaluate credit risks associated with loans held by each industry, it was found that the default risk of firms across most sectors markedly decreased compared to the previous crises. In the real estate, wholesale & retail trade, accommodation and food service, and construction industries, median value of default risk ranged from mid-2% to high-3% during the Asian Financial Crisis, but as of the end of the second quarter of 2023, it decreased to less than 1% across all these industries. In the electricity and gas supply industries, although default risk was almost equivalent to the level observed during the Asian Financial Crisis, a low level of default risk among firms within the industries has maintained due to the high proportion of public corporations due to the characteristics of these sectors (Figure I-18).

Figure Ⅰ-18. Comparison[1] of default risk[2], by industry



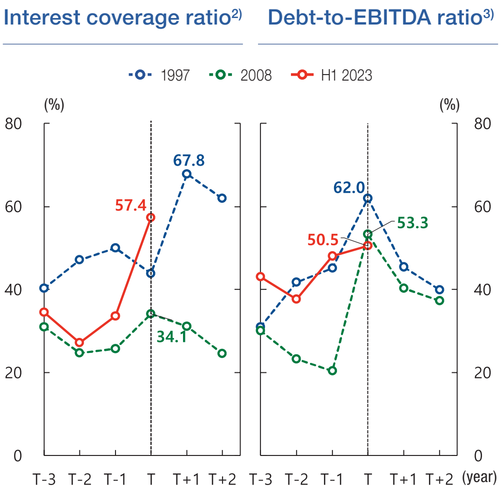
Notes: 1) Based on listed companies at the end of 1997, the end of 2008 and the end of the second quarter of 2023.
2) The probability of business closure and capital erosion (t+1) estimated based on a logit model using financial indicators of companies as explanatory variables (t)

Sources: Bank of Korea staff calculation (KIS-Value).

Meanwhile, a review of the share of borrowings held by firms with vulnerable repayment capacities in comparison with the share of such firms during historical crises reveals that, as of the end of the second quarter of 2023, the share of borrowings held by vulnerable firms was significantly lower than the level of such shares during the Asian Financial Crisis. However, some indicators were almost equivalent to or only slightly higher than the level at the time of the Global Financial Crisis.

In respect to the repayment capacities of firms based on their profits, in the first half of 2023, owing to operating losses incurred to certain firms holding a significant amount of borrowings, the share of borrowings held by vulnerable firms as determined by the interest coverage ratio (firms with an interest coverage ratio less than 1) (57.4%) exceeded the level observed during of the Global Financial Crisis (34.1% at the end of 2008) but was noticeably lower than the peak reached during the Asian Financial Crisis (67.8% at the end of 1998[24]). Considering debt multiple, the share of borrowings held by vulnerable firms (firms with a debt multiple larger than six times or less than 0) stood at 50.5%, a level lower than the shares during both the Asian Financial Crisis (62.0% at the end of 1997) and the Global Financial Crisis (53.3% at the end of 2008) (Figure I-19).

Figure Ⅰ-19. Comparison[1)] of the share of borrowings held by vulnerable firms in profit-based repayment capacity



Notes: 1) T based on the Asian Financial Crisis (1997), Global Financial Crisis (2008), and present (first half of 2023).
2) Share of borrowings from firms with an interest coverage ratio of less than 1
3) Share of borrowings from firms with debt-to-EBITDA ratio of less than 0 or greater than 6

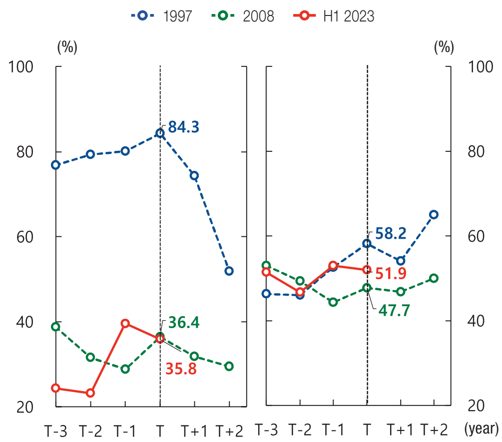
Sources: Bank of Korea staff calculation (KIS-Value).

Furthermore, in examining the repayment capacities of firms based on their assets, as of the end of the second quarter of 2023, vulnerable firms as determined by the debt ratio (firms with a debt ratio exceeding 200% or less than 0) are found to hold 35.8% of the borrowings held by listed companies. This share is similar to the level observed during the Global Financial Crisis (36.4% at the end of 2008) but remains notably lower than the corresponding share during the Asian Financial Crisis (84.3% at the end of 1997). Similarly, the share of borrowings held by firms with current assets valued less than debts due within a one-year period (firms with a current ratio less than 100%) was 51.9%. While the figure is higher than the said share during the Global Financial Crisis (47.7% at the end of 2008), it is lower than that observed during the Asian Financial Crisis (58.2% at the end of 1997) (Figure I-20).

24) As the impact of the Asian Financial Crisis became evident from the year-end of 1997, in 1998, the average operating profits of listed companies decreased by 33.8%, while the average amount of total interest expenses surged by 43.8%, compared to 1997. As a result, the share of borrowings for vulnerable corporations as determined by the interest coverage ratio (operating profits divided by total interest expenses) in 1997 was lower than that in 1998. However, the average total borrowings for listed companies declined by 2.6% from 1997, leading to the share of borrowings for vulnerable corporations as determined by the borrowing repayment ratio (total borrowings divided by EBITDA) in 1997 as higher than that in 1998.

Figure Ⅰ-20. Comparison[1)] of the share of borrowings held by vulnerable firms in asset-based repayment capacity

Debt ratio[2)]	Current ratio[3)]

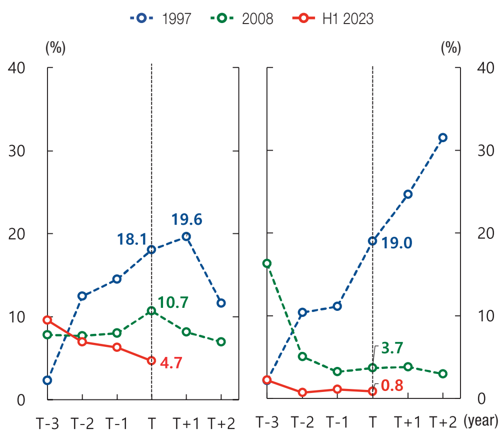


Notes: 1) T based on the Asian Financial Crisis (1997), Global Financial Crisis (2008), and present (first half of 2023).
2) Share of borrowings from firms with capital impairment or debt ratio exceeding 200%
3) Share of borrowings from firms with current ratio less than 100%
Sources: Bank of Korea staff calculation (KIS-Value).

The concluding analysis examines the proportion of firms whose default risk is calculated through a comprehensive consideration of key financial soundness indicators in terms of the flow and stock of such firms, exceeds 5% (hereinafter "firms at default risk"), based on the comparison with the previous crises. As of the end of the second quarter of 2023, the proportion of the firms at default risk, given the number of firms at default risk and the borrowings held by such firms, remained significantly low compared to both the Asian Financial Crisis and the Global Financial Crisis. However, unlike the Asian Financial Crisis, where the share of borrowings held by firms at default risk (19.0% at the end of 1997) exceeded the share calculated based on the number of such firms (18.1% during the same period) due to the rise in default risk among large enterprises with a substantial amount of loans, SMEs holding a small amount of borrowings constituted a majority portion of the firms at default risk as of the end of the second quarter of 2023.[25)] In this regard, it is found that the share of borrowings held by the firms at default risk (0.8%) is notably lower than that of the number of such firms (4.7%) (Figure I-21).

Figure Ⅰ-21. Comparison[1)] of the share of the number and borrowings of firms at default risk

Share of the number of firms[2)]	Share of borrowings[2)]



Notes: 1) T based on the Asian Financial Crisis (1997), Global Financial Crisis (2008), and present (first half of 2023).
2) Share of the number and borrowings of firms with default risk exceeding 5%.
Sources: Bank of Korea staff calculation (KIS-Value).

25) During the Asian Financial Crisis (at the end of 1997), 169 large enterprises constituted 53.0% of the total 319 firms at default risk. As of the end of the second quarter of 2023, 97 SMEs made up the majority of the 120 firms at default risk, accounting for 80.8% of the total.

5. Assessment and Implications

As corporate credit has expanded at a pace surpassing that of nominal GDP growth since the onset of the COVID-19 pandemic, corporate credit leverage has reached a notably elevated level. This heightened level not only surpasses the historical level of corporate credit leverage (in time-series) but also the corporate credit leverage observed in major countries (from cross-sectional dimensions).

Despite the ongoing quantitative growth in corporate credit, the distribution of borrowings based on firms' repayment capacities has been modest overall, while the default risk of firms has remained significantly lower compared to levels observed in the previous crises. Accordingly, from a qualitative perspective, it appears that the risks associated with corporate credit expansion have not proliferated widely. Meanwhile, although the delinquency rate of corporate loans has risen recently, it remains far below the levels observed during the Global Financial Crisis.[26] Also, in light of the profits as well as assets of vulnerable firms with relatively vulnerable repayment capacities, the proportion of borrowings held by such corporations is found to be lower than corresponding proportions observed during both the Asian Financial Crisis and the Global Financial Crisis. In this regard, the evaluation indicates that the delinquency rate of corporate loans is currently assessed to be at a level allowing for self-management and control by financial institutions.

However, since the recent level of corporate credit leverage has exceeded the corresponding levels observed during the past crises, it is crucial to note the following risk factors. Firstly, given that there has been a notable surge in loans to the real estate industry, largely attributed to non-bank loans, and that loans provided to the real estate industry have surpassed the added value (GDP) of the real estate sector, it is evaluated that the efficiency of resource distribution within the financial system has deteriorated. To address this issue, policy authorities need to take adequate control measures for the regulatory arbitrage of each financial sector, along with a careful consideration of the upside of both banks and non-banks, to prevent an excessive supply of corporate credit to specific sectors, such as real estate project financing (PF).

Furthermore, with regard to real estate PF, it is necessary to reassess project feasibility based on diverse scenarios, taking into account uncertainties over the recovery of the real estate sector and its extent. Specifically, it is advisable for policy authorities to offer support to real estate PF without direct intervention in its closure,[27] thereby allowing the lenders to decide on whether to continue the project or restructure it through discretionary consulta-

26) Delinquency rates of corporate loans by financial sector: (the highest rate from 2008 to 2009): 1.79% for banks, 18.91% for mutual savings banks, 8.61% for mutual credit cooperatives, 5.41% for insurers, 5.48% for credit-specialized financial companies, (at the end of the third quarter of 2023): 0.42% for banks, 7.08% for mutual savings banks, 5.69% for mutual credit cooperatives, 0.46% for insurers, 2.14% for credit-specialized financial companies.

27) The government announced that the PF Lenders' Agreement has been reimplemented since April and revealed its plan to support private-sector efforts to carry out the self-restructuring of projects by actively operating the Real Estate PF Site Normalization Fund, which amounts to KRW 1 trillion, from September (Financial Services Commission press release, July 4, 2023).

tions, in order to facilitate the resolution of PF sites facing default.

Additionally, with regard to corporate credit, there has been an increase in the proportion of short-term loans and bonds with a remaining maturity of less than one year. Consequently, it is necessary to acknowledge the potential escalation of roll-over risk in corporate credit if high interest rates persist for longer than market expectations. As such, any firms holding borrowings with a maturity due within the following year should proactively manage roll-over risk by developing an emergency funding plan, which may include measures such as the sale of assets and provision of additional collateral. Financial institutions are also advised to make consistent efforts to manage delinquency rates through the sale and write-off of delinquent loans and, at the same time, to accumulate sufficient loan loss provisions. Moreover, while policy authorities should continue selectively supporting companies facing temporary liquidity challenges, there is an imperative to encourage restructuring through self-improvement initiatives, which may include sales of assets, for firms deemed to be having difficulties in continuing operations.

Meanwhile, even in the case of small and medium-sized unlisted corporations and sole proprietors who are not covered in this analysis due to the absence of publicly disclosed information regarding their business performance in 2023, there has been a notable increase in the burden of debt servicing caused by the recent rise in interest rates and operational expenses, amid the substantial surge of corporate loans following the COVID-19 pandemic. The escalating delinquency rates in corporate loans, particularly those extended by NBFIs such as mutual credit cooperatives and mutual savings banks, underscore the need for policy authorities and financial institutions to proactively address potential risk factors. It is recommended that they establish a system facilitating early identification and analysis of changes in repayment capacities for SMEs and SEBOs along with the distribution of borrowings.

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II. Key Risk Assessment of Banks and Non-bank Deposit-taking Institutions[1)]

1. Background

Amid the ongoing monetary policy tightening in major economies, the risks facing deposit-taking institutions[2)] increasingly heightened this year, both in Korea and abroad. In March this year, Silicon Valley Bank (SVB) in the United States declared bankruptcy following a bank run triggered by concerns over expanded valuation losses on bonds held by the bank due to rising interest rates. Subsequently, in Korea, growing concerns over non-performing real estate PF loans led to an increase in deposit withdrawals from MG Community Credit Cooperatives. Meanwhile, as the competition among deposit-taking institutions to secure deposits escalated in the third quarter of the previous year, deposit interest rates increased rapidly, and the net interest spread[3)] narrowed (Figure II-1). As such, with the increased funding costs for deposit-taking institutions, combined with higher loan loss expenses due to the increased defaults on loans on the asset side, there were heightened concerns over declining profitability and growing difficulties in sufficiently enhancing loss absorption capabilities, such as loan loss provisions and capital adequacy.[4)]

Based on the business model of securing a stable increase in deposits and operating them as loans, deposit-taking institutions have historically been deemed less risky compared to other financial institutions, such as securities companies, which mainly engage in wholesale funding and operations. However, the prolonged high interest rates above market expectations are considered to have exposed the potential vulnerabilities in these institutions.

Against this backdrop, this report focused on banks and non-bank deposit-taking institutions (NBDIs) to examine the structural characteristics of funding and operations

1) This article was authored by You Jae-weon, Baek Yoonah, Park Seo-jung, Hong Jun-eui (Bank Risk Analysis Team) and was reviewed by Lee Jong-han (Director of the Financial Risk Analysis Division) and Song Kil-sung (Head of the Bank Risk Analysis Team).

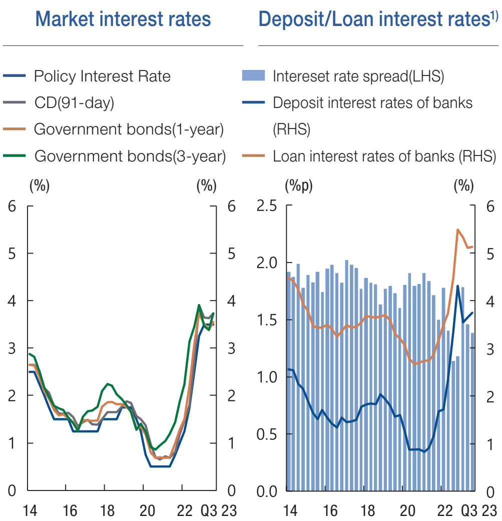
2) The deposit-taking institutions covered in this article include banks (excluding KDB and Korea Eximbank) and non-bank financial institutions such as mutual credit cooperatives (Nonghyup, Suhyup, Forestry Cooperatives, Sinhyup, MG Community Credit Cooperatives) and mutual savings banks, which rely on deposits as the primary source of funding.

3) In recent times, there has been a moderate increase in loan interest rates, resulting in a limited expansion of the net interest spread for banks. This is interpreted to reflect the government's efforts to foster competition among banks, coupled with the consideration that, in the rising interest rate environment, an excessive hike in loan interest rates may not only increase the potential for defaults on loan assets but also lead to customer attrition and a consequent contraction in the business base, given the intensified competition among institutions.

4) For more detailed information on the transmission channels through which rising interest rates affect financial stability, refer to "II. Impact of Base Rate Hikes on Financial Stability," Analysis of Financial Stability Issues of the Financial Stability Report, December 2022.

before and after the recent period of interest rate hikes. Furthermore, this article reviewed major risk factors with the potential to affect the soundness of financial institutions in the event that the high level of interest rates persists for a longer period than market expectations.

Figure Ⅱ-1. Market interest rates and deposit/loan rates



Notes: 1) Based on newly extended savings deposits and general loans

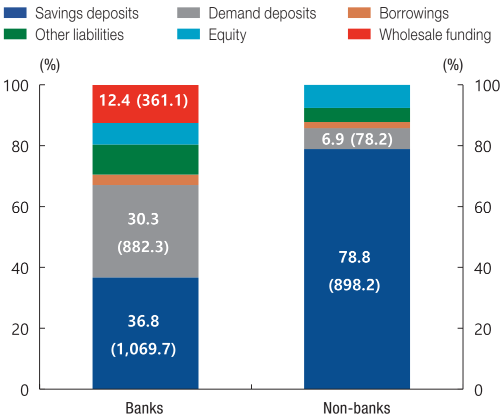
Source: Bank of Korea

2. Characteristics of Funding and Operations of Deposit-taking Institutions

A. Funding

Deposits are the primary source of funding for deposit-taking institutions. Unlike NBDIs however, banks also raise funds through the issuance of bank bonds. Consequently, the burden of funding for banks, NBDIs, and sectors within NBDIs differ depending on the ability to issue bank bonds and the ratios of savings deposits and demand deposits. First, examining the funding structure as of the end of the third quarter of 2023 shows that, for banks, wholesale funding, including bank bonds, accounted for 12.4% of total deposits. In addition, the proportion of low-cost demand deposits, which are less affected by rising interest rates, stood at 30.3%, significantly higher than that of NBDIs (6.9%). On the other hand, for NBDIs, savings deposits constituted 78.8% of their total deposits, more than twice as high as that of banks (36.8%) (Figure II-2). Furthermore, NBDIs typically set higher deposit interest rates[5] than banks to attract deposits, thus holding a structural competitive disadvantage against banks in terms of funding.

Figure Ⅱ-2. Funding structure of deposit-taking institutions[1]



Notes: 1) Proportion of components at the end of Q3 2023. Balance in parentheses (in trillion won)

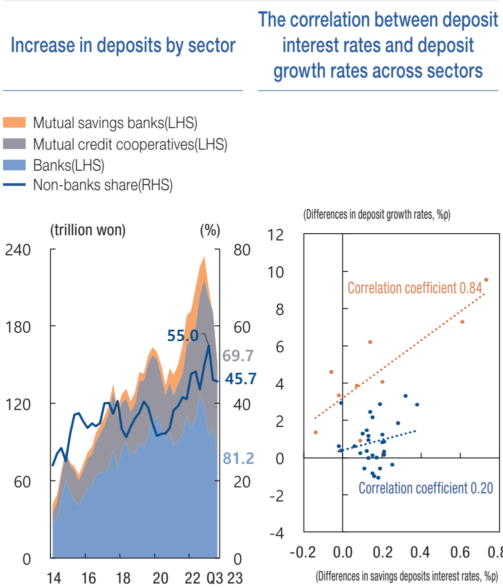
Source: Financial Institution Business Report

5) From the first quarter of 2019 to the third quarter of 2023, the average interest rates for 1-year time deposits (based on new deposits) for mutual credit cooperatives and mutual savings banks stood at 2.56% and 2.77%, respectively. In comparison, the average interest rate for 1-year time deposits (based on new deposits) at banks was 2.13%, and the average interest rate for bank bonds (based on 1-year maturity and a rating of AAA) was 2.09%.

Increased Deposit Inflows to NBDIs and Intensifying Competition between Banks and NBDIs in Deposit Markets

When examining the changes in deposits by type of deposit-taking institution over a medium-term horizon, deposits at NBDIs, such as those in mutual credit cooperatives and mutual savings banks, increased significantly from the second half of 2021. Whereas NBDIs accounted for 41.4% of the deposits flowing into deposit-taking institutions during the second half of 2021, this figure during the first quarter of 2023 reached 55.0%, mainly due to the widening difference in the deposit interest rates. During the same period, the positive correlation between the gaps in deposit interest rates and the deposit growth rate between banks and NBDIs (mutual credit cooperatives) was stronger than in the past (correlation coefficient from 0.20 to 0.84) (Figure II-3).

Figure Ⅱ-3. Increase in deposits[1] and the relationship between difference in deposit interest rate[2] and difference in deposit growth rate[3] by sector of deposit-taking institutions[4]



Notes: 1) Increase in savings deposits (YoY)
2) Difference in interest rates on savings deposits between banks and Mutual credit cooperatives, based on newly extended transactions
3) Difference in the growth rates of savings deposits between banks and Mutual credit cooperatives (YoY)
4) The blue dots represent the period from Q1 2014 to Q2 2021 and the red dots from Q3 2021 to Q3 2023

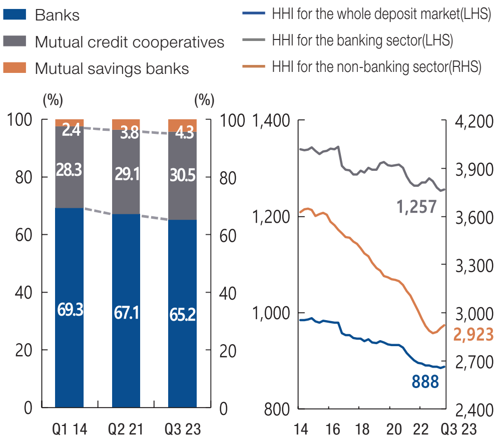
Source: Financial Institution Business Report

Meanwhile, the proportion of NBDIs in the total savings deposits raised by deposit-taking institutions also continuously increased from 30.7% in 2014 to 34.8% by the end of the third quarter of 2023. These increased deposit inflows to NBDIs, along with the growing deposit market share of NBDIs, intensified the competition among banks, among NBDIs, and between banks and NBDIs to renew maturing deposits and attract new deposits. When analyzing the intensity of the competition among financial institutions in the savings deposit market using the Herfindahl-Hirschman

Index (HHI),[6] the index value stood at 888 at the end of the third quarter of 2023, down from 985 in 2014, indicating that the competition for deposits heightened among individual financial institutions (Figure II-4).

Figure II-4. Deposit market share of deposit-taking institutions[1] and HHI[2]

Deposit share by sector	HHI for the deposit market



Notes: 1) Based on savings deposits
2) Herfindahl-Hirschman index
Source: Financial Institution Business Report

In particular, the HHI of the deposit market for NBDIs indicates that competition within the non-banking sector intensified significantly by the first half of 2023, driven by the strengthening of deposit attraction incentives among certain mutual credit cooperative units and mutual savings banks. The heightened competition mainly stemmed from the need to redeposit funds maturing this year, which were raised through aggressive deposit attraction activities, such as the expansion of associate membership[7] during the low-interest period and efforts to increase the sale of tax-exempt products. In particular, amid the uncertainty in the short-term money market in the fourth quarter of the previous year, the increased demand for funds among banks triggered a temporary competition between the different sectors of the deposit market, while also intensifying the competition within the sector of NBDIs to reattract maturing deposits.[8]

Deepening of Maturity Shortening for Time Deposits

Deposits at deposit-taking institutions naturally increase along with the scale of the economy. In addition, when deposits flow into NBDIs, which lack alternative funding sources such as bank bonds, the subsequent stimulation of competition between banks and NBDIs may yield positive effects such as improved interest rates for financial consumers. However, during periods of interest rate hikes in the deposit market, excessive competition

6) The Herfindahl-Hirschman Index (HHI) is calculated as the sum of the squared value of the market share of each company within a market, and is used as a secondary indicator to assess the level of market concentration and potential monopoly. A higher HHI indicates a lower level of competition, and vice versa. Generally, markets are divided into highly competitive markets with an HHI below 1,000, moderately competitive markets with an HHI from 1,000 to 1,800, and less competitive markets with an HHI exceeding 1,800. However, specific standards may vary depending on the financial system and industrial structure of each country.

7) As of September 2023, the number of associate members in mutual credit cooperatives increased by 15.4% compared to the end of 2015, in particular, with a 3.3% increase at the end of 2022 compared to the previous year, significantly contributing to the growth in the deposit volumes of mutual credit cooperatives.

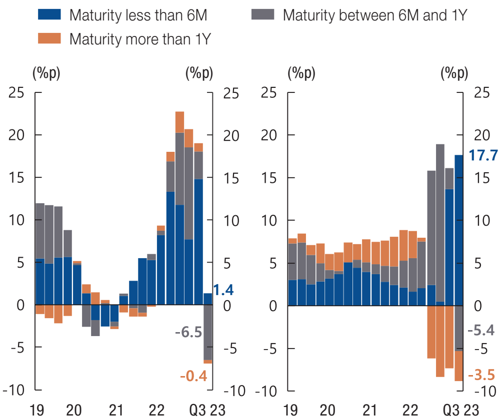
8) However, starting with the third quarter of 2023, NBDIs saw their deposits decrease by KRW 3.0 trillion relative to the end of the previous quarter, indicating that the competition for deposit attraction among NBDIs was somewhat alleviated.

may cause an undue shortening of deposit maturities, which may undermine the stability of the funding structure.

When examining the structure of deposit products by period, deposit-taking institutions are experiencing heightened volatility in deposit balances with the shortening of the cycle for setting deposit interest rates under the influence of the shortening of deposit maturities, as well as maturities are concentrated at specific times. In terms of contributions to short-term deposits (with a remaining maturity of 6 months or less[9]) in response to the volatility of deposit balances, NBDIs, particularly mutual credit cooperatives, show a higher contribution than banks. This appears to be attributable to households' preference for short-term deposit products during periods of interest rate hikes, combined with financial institutions' tendency to encourage consumers to opt for short-term deposits in order to mitigate the burden of high interest rates on long-term deposits (Figure II-5).

Figure Ⅱ-5. Contribution of deposit maturity[1] to changes[2] in deposit balance[3]

Banks	Mutual credit cooperatives



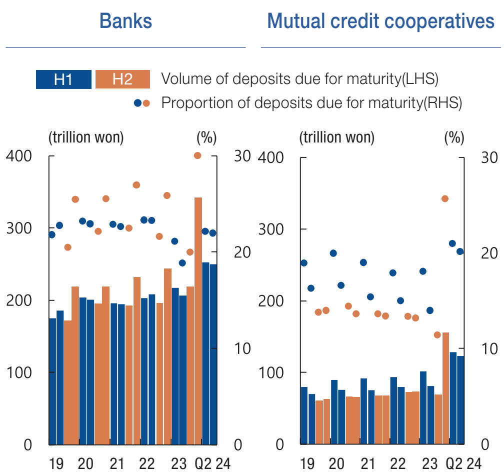
Notes: 1) Based on remaining maturity
2) Year-on-year basis
3) Term deposits (Time deposits, etc.)
Source: Financial Institution Business Report

Meanwhile, as the short-term deposits that saw an increase during the competition for deposits since late last year are now approaching maturity, there is a more prevalent tendency among NBDIs (mutual credit cooperatives) to have such maturities concentrated at specific times compared to banks. As for the volume of deposits (based on time deposits) maturing in the first half of 2024, banks (a quarterly average of KRW 251 trillion) are expected to register an increase of 23.0% compared to the first-half average of the past three years (KRW 204 trillion), whereas mutual credit cooperatives (a quarterly average of KRW 125 trillion) are expected to observe an increase of 44.2% over the same period. Consequently, in the first half of 2024, the proportion of maturing time deposits out of the total deposits held by mutual credit cooperatives is expected to

9) The remaining maturity at a specific point of time is composed of the remaining term of previously placed deposits that diminishes over time, and the contractual maturity of new deposits made at that specific point.

increase by 4.5%p compared to the first half of 2023 (Figure II-6).

Figure Ⅱ-6. Volume[1] and proportion[1)2] of deposits due for maturity[3]

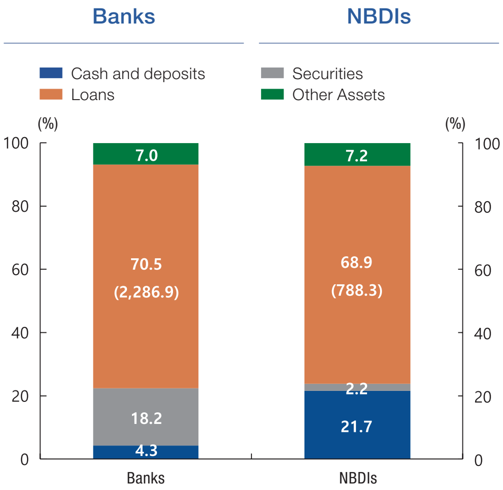


Notes: 1) Q2 2024 estimated
2) The proportion of the H1 2024 is estimated based on the balance of term deposits as of the end of September 2023
3) As of the end of September 2023, based on term deposits
Source: Financial Institution Business Report

B. Operation of Funds

Deposit-taking institutions are demonstrating a tendency to utilize the funds raised through deposits for loans rather than for investment in securities. As of the end of the third quarter of 2023, the proportion of loans to total assets for banks and NBDIs stood at 70.5% (KRW 2,286.9 trillion) and 68.9% (KRW 788.3 trillion), respectively, indicating that loans constitute the majority of the assets in each sector. While banks have a relatively high proportion of securities (18.2%), second only to loans, NBDIs exhibit a markedly higher proportion of cash and deposits (21.7%) than securities (2.2%) (Figure II-7).

Figure Ⅱ-7. Operating structure of deposit-taking institutions[1]



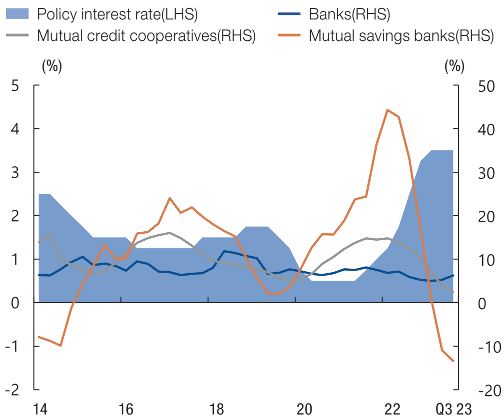
Notes: 1) Proportion of components at the end of the Q3 2023.
Balance in parentheses (in trillion won)
Source: Financial Institution Business Report

Increased Influence of NBDIs in the Real Estate Collateralized Loan Market

When examining the loan assets of deposit-taking institutions by type, real estate collateralized loans[10] have significantly increased, primarily driven by NBDIs, since the first half of 2020. By sector, mutual savings banks showed the highest volatility, with the growth rate of real estate collateralized loans increasing considerably, then decreasing. Particularly after the end of 2019, the average quarterly growth rate of real estate collateralized loans of NBDIs (from the first quarter of 2020 to the third quarter of 2023) marked 10.6%, substantially higher than that of banks (6.6%) (Figure II-8).

10) This refers to real estate collateralized loans for all borrowers, including household and corporate borrowers.

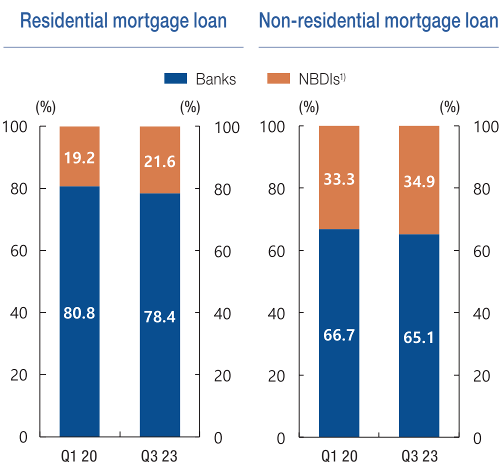
Figure Ⅱ-8. Growth rate[1] of real estate collateralized loan by sector



Notes: 1) Year-on-year basis
Source: Financial Institution Business Report

Looking at the proportion of banks and NBDIs in real estate collateralized loans by type of collateral,[11] in residintial mortgage loans, the share of banks was 78.4% at the end of the third quarter of 2023, a decrease of 2.4%p from 80.8% at the end of the first quarter of 2020. Similarly, in loans secured by collateral other than housing, the share of banks fell to 65.1% at the end of the third quarter of 2023, a decrease of 1.6%p from 66.7% in the first quarter of 2020 (Figure II-9). On the other hand, during the same period, NBDIs marked an increase in their share of both residential and non-residential mortgage loans. This appears to be attributable to the differences between banks and NBDIs in the intensity of loan regulations and the timing of their enforcement. The regulations on real estate collateralized loans were first applied to banks and later extended to NBDIs. The sequential application of these regulations[12] allowed NBDIs to capitalize on business opportunities involving consumers with limited access to bank loans.

Figure Ⅱ-9. Real estate collateralized loan market share by sector



Notes: 1) excluding MG community credit cooperatives
Source: Financial Institution Business Report

Meanwhile, when examining the changes in the proportion of residintial mortgage loans of deposit-taking institutions by region, NBDIs and some regional banks, which previously had a higher proportion of loans secured by collateral other than housing, such as land,[13]

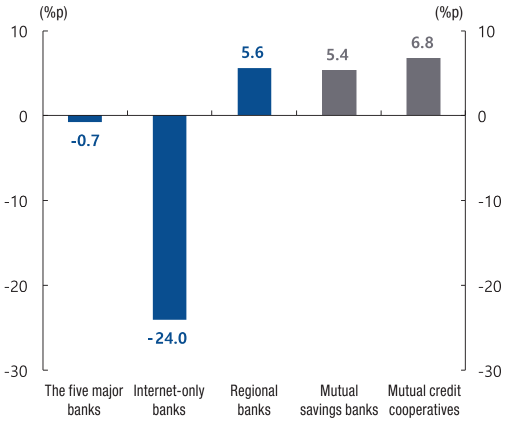
11) This comparison was made between the first quarter of 2020 and the present, taking into account the scope of available data on real estate collateralized loans by type of collateral.

12) For instance, before the Loan to Value (LTV) and Debt to Income (DTI) ratios were introduced across the entire financial sector in July 2014, the timing of their application differed between banks and NBDIs. In addition, borrower-based Debt Service Ratio (DSR) and average DSR regulations for financial companies were applied differentially by sector (with DSR standards for the second-tier financial sector being strengthened after January 2022). Furthermore, the enforcement decree of the Credit Union Act, which set limits on the supply of credit by mutual credit cooperatives to the real estate industry, was amended in December 2021.

13) In the total loans issued by NBDIs, including real estate collateralized loans, the proportion of non-residential mortgage loans stood at 65.4% at the end of the third quarter of 2023, higher than that of banks (31.8%).

expanded their residential mortgage loans in the Seoul metropolitan area during the most recent period of interest rate hikes. At the end of the third quarter of 2023, the proportion of home mortgage loans in the Seoul metropolitan area held by mutual credit cooperatives and mutual savings banks increased by 6.8%p and 5.4%p respectively, compared to the end of 2019. In the banking sector, unlike the top-five banks and internet-only banks,[14] the proportion of residential mortgage loans in the Seoul metropolitan area held by regional banks increased by 5.6%p compared to the end of 2019 (Figure II-10).

Figure Ⅱ-10. Changes in the proportion of seoul metropolitan area residential mortgage loans by sector[1)2)]



Notes: 1) Changes from Q4 2019 to Q3 2023
2) The five major banks include Woori, Shinhan, KEB Hana, KB and NACF. Mutual credit cooperatives exclude MG community credit cooperatives.
Source: Financial Institution Business Report

Increased Share of NBDIs in Real Estate-Related Corporate Loans

The role of NBDIs is also expanding in corporate loans. The volume of corporate loans at NBDIs more than doubled from KRW 151.0 trillion at the end of 2019 to KRW 323.9 trillion by the end of the third quarter of 2023, now accounting for 21.9% of the total corporate loans held by deposit-taking institutions. NBDIs' share of corporate loans by sector among deposit-taking institutions increased in construction (from 42.3% at the end of 2019 to 49.1% by the end of the third quarter of 2023) and real estate (from 23.0% to 27.9%), rising by 6.8%p and 4.9%p, respectively (Figure II-11).

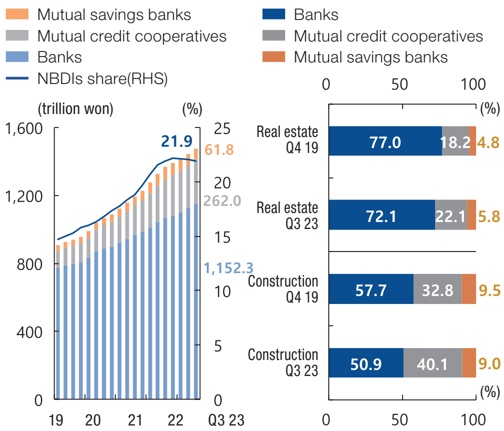
The expansion of corporate loans by deposit-taking institutions can be considered a desirable function of financial intermediation in that it supports productive business activities by corporations based on stable deposits. However, the concentration of loans in specific sectors, such as real estate and construction,[15] signifies that the marginal productivity of funds may decrease, and the soundness of deposit-taking institutions may become overly susceptible to fluctuations in real estate prices.

14) Recently, as internet-only banks have expanded their residential mortgage lending operations nationwide, the proportion of their business in the Seoul metropolitan area has significantly decreased (from 100% at the end of 2019 to 76% by the end of June 2023).

15) As of the end of the third quarter of 2023, the construction and real estate sectors accounted for 24.0% of corporate loans issued by banks, while the proportion stood at 47.4% for NBDIs (excluding MG Community Credit Cooperatives).

Figure II-11. Corporate loans of deposit-taking institutions[1]

Volume of corporate loans by sector	Share of Corporate loans by sector in each industiy



Notes: 1) Excluding MG community credit cooperatives
Source: Financial Institution Business Report

3. Assessment of Major Potential Risks

Concerns over the Deterioration of Financial Stability in the Event of Excessive Competition for Deposits

The efforts by financial authorities to reduce banks' dependency on deposits, such as limiting the margin of increase for market interest rates and abolishing the cap on bank bond issuance, are alleviating concerns over a resurgence of excessive competition for deposits among deposit-taking institutions,[16] as witnessed in the latter half of the previous year. However, as the volume of deposits maturing in the first half of the next year remains larger than in previous years, continued vigilance should counteract competitive behaviors incentivizing deposits through interest rate increases. This action is necessary because if deposit-taking institutions seek to enhance profitability by increasing loan rates or expanding high-risk loans due to rising funding costs, it could result in higher debt burdens for households and businesses. This, in turn, could lead to a deterioration in financial stability indicators such as delinquency rates and capital adequacy.

Indeed, the analysis of the impact of the competition for deposits among deposit-taking institutions on financial stability before and after the period of interest rate hikes revealed that no significant correlation between the spread of deposit interest rates[17] and financial stability (Z-score)[18] was observed during the period before the increase in interest rates (from the first quarter of 2016 to the second quarter of 2021). However, the most recent period of interest rate hikes (from the third quarter of 2021 to the second quarter of 2023) saw a negative correlation (Figure II-12).

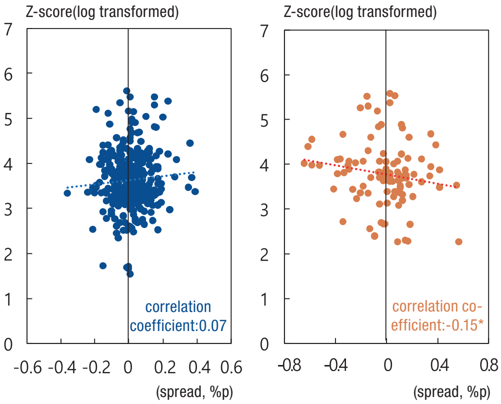
16) In the second half of 2022, deposit-taking institutions competitively sought to secure deposits by raising interest rates for deposits, in response to concerns about financial instability related to real estate PF and the normalization of certain regulations.

17) The deposit interest rate spread, used as a proxy for competition in attracting deposits, is calculated based on the difference between the interest rate of 1-year time deposits (based on new deposits) and the CD yield. This spread is not an indicator of the absolute level of interest rates, but a relative value that measures a specific deposit-taking institution's margin of increase for its deposit interest rates relative to market rates, compared to other institutions.

18) The Z-score (log-transformed) is calculated as [the four-quarter moving average of (return on assets + capital adequacy ratio)] divided by (the four-quarter standard deviation of the return on assets). A higher Z-score is interpreted as indicating better financial stability, and vice versa.

Figure Ⅱ-12. Relationship[1] between deposit interest rate spread[2] and financial soundness[3]

Before the recent interest rate hike period[4]	Recent interest rate hike period[4]



Notes: 1) An asterisk(*) on the correlation coefficient indicates a significance level at 10%

2) Difference between the quarterly weighted average deposit interest rates and CD yield based on the newly extended transactions for individual deposit-taking institutions

3) Z-score=[Moving average(4M) of (ROA+Capital Adequacy Ratio) / The average standard deviation of ROA over the 4 quarters]

4) The period before the recent interest rate hike corresponds to Q1 2016 to Q2 2021. The recent interest rate hike period corresponds to Q3 2021 to Q2 2023.

Source: Financial Institution Business Report, Bank of Korea

In the same vein, when analyzing the relationship between the competition for deposits among deposit-taking institutions and financial stability using a panel fixed effects model as well, the expansion of deposit interest rate spreads during the most recent period of interest rate hikes (from the third quarter of 2021 to the second quarter of 2023) undermined the financial stability of deposit-taking institutions much more significantly than other periods.[19]

Further exploring the relationship between the competition for deposits and financial stability based on the extent of net interest spreads found that, during a period of interest rate hikes, there was a prominent negative correlation between the expansion of deposit interest rate spreads and financial stability in deposit-taking institutions with lower levels of net interest spread. In particular, given that institutions with lower loan-deposit margins showed a more substantial decrease in these spreads during the most recent period of interest rate hikes,[20] this result indicates that financial institutions with relatively lower levels of loan-deposit margins might be more vulnera-

19) The estimation was conducted using the panel regression model based on the deposit interest rate spread and bank-specific variables for 15 deposit-taking institutions (12 general banks, two mutual credit cooperatives, and the entire sector of 79 mutual savings banks) from the first quarter of 2016 to the second quarter of 2023. For more detailed information, refer to “Changes in deposit-raising behaviors of deposit-taking institutions and policy implications,” the BOK Issue Note No. 2023-33.

$Y_{i,t} = \alpha_i + \beta_1$ Deposit Interest Rate $\text{Spread}_{i,t-1} + \beta_2$ Interest Rate Hike $\text{Period}_{t-1} + \beta_3$ Deposit Interest Rate $\text{Spread}_{i,t-1} \times$ Interest Rate Hike $\text{Period}_{t-1} + \gamma$ Bank-specific $\text{variables}_{i,t-1} + v_i + \tau_t + \varepsilon_{i,t}$

$Y_{i,t}$ represents the Z-score (log-transformed) of deposit-taking institution i in t quarter. Deposit Interest Rate Spread is measured as the difference between the 1-year time deposit interest rate (based on new deposits) and the CD yield. Interest Rate Hike Period is a dummy variable that takes the value of 1 during the period from the third quarter of 2021 to the second quarter of 2023 and 0 for other periods. Bank-specific variables include total assets, the proportion of deposits to liabilities, the proportion of loans to assets, delinquency rate, and interest income ratio. v_i and t_t represent dummies for bank and year, respectively.

20) In terms of the changes in the net interest spread during the period of interest rate hikes, based on the extent of the spread, deposit-taking institutions with a lower spread experienced a decrease in their net rate spread from 1.79%p in the third quarter of 2021 to 1.14%p in the fourth quarter of 2022, a drop of 0.65%p. However, for institutions with a higher spread, the spread saw a negligible drop of 0.02%p from 3.20%p to 3.18%p during the same period.

ble to pathways[21] to deteriorating profitability as deposit spreads narrow in the future.

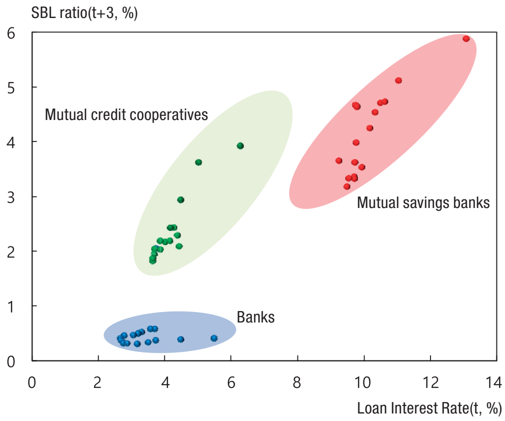
Increased Burden for NBDIs to Manage Non-Performing Assets in Vulnerable Sectors

If deposit-taking institutions raise loan interest rates or maintain the heightened level of interest rates for longer than market expectations in response to rising deposit interest rates, this could increase the likelihood for loans to households and businesses with already high debt repayment burdens to deteriorate.

Particularly for NBDIs, a strong correlation has been observed between indicators of financial soundness, such as substandard-or-below loan(SBL) ratios, and levels of loan interest rates. The distribution of quarterly loan interest rates (t) and the SBL ratios three quarters later (t+3) over the four years since 2019 demonstrates a clear positive relationship between the levels of loan interest rates and the SBL ratios, centered around mutual savings banks and mutual credit cooperatives (Figure II-13).

In addition, when examining the delayed changes in the SBL ratio during periods of interest rate hikes, unlike banks, NBDIs show an increase in the SBL ratio with a lag of 2 to 6 quarters after the commencement of interest rate hikes. This indicates that, if high interest rates persist beyond market expectations, the declining trend in the financial soundness indicators for NBDIs could continue (Figure II-14).

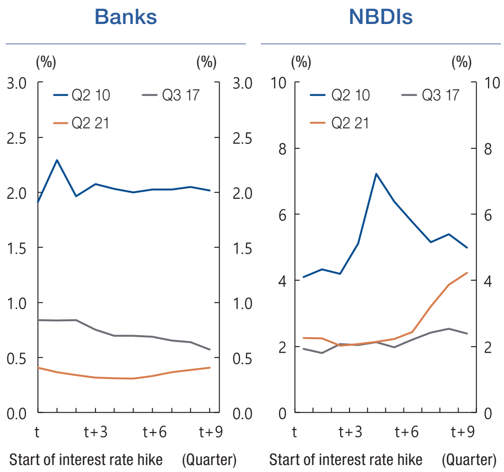
Figure Ⅱ-13. Relationship between loan interest rates[1] and substandard-or-below loan(SBL) ratio[2]



Notes: 1) Based on newly extended transactions
2) Comparing loan interest rates(Q1 2019 to Q4 2022) and SBL ratios(Q4 2019 to Q3 2023) across industries with a three-quarter lag

Source: Financial Institution Business Report

Figure Ⅱ-14. Substandard-or-below loan(SBL) ratios during periods of interest rate hike[1]



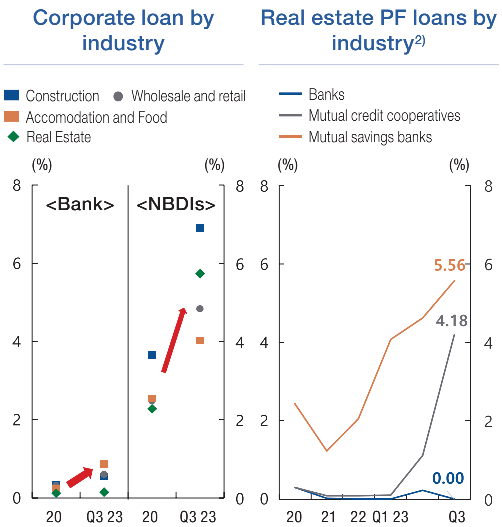
Notes: 1) The periods of interest rate hikes are: ① Q2 2010 to Q3 2012, ② Q3 2017 to Q4 2019, and ③ Q2 2021 to Q3 2023

Source: Financial Institution Business Report

21) The results of decomposing Z-score components for deposit-taking institutions with a lower net interest spread demonstrate that, during the most recent period of interest rate hikes, when the deposit interest rate spread expanded by 10 bp, the four-quarter standard deviation of the returns on total assets showed an 18 bp increase. This indicates that a reduction of the net interest spread, triggered by the recent surge in deposit interest rates, led to heightened volatility in the total asset returns, thereby adversely affecting financial stability.

For corporate loans issued by NBDIs, it is important to note that the recent increase in delinquency rates has expanded in industries such as real estate, construction, and wholesale and retail trade, which saw substantial growth in loan volumes after COVID-19. When comparing the delinquency rate at the end of the third quarter of 2023 with that of the end of 2020, the real estate sector experienced the steepest rise with an increase of 3.4%p (from 2.3% to 5.7%), followed by the construction sector with an increase of 3.2%p and the wholesale and retail trade sector with an increase of 2.4%p. Similarly, in the case of real estate PF loans, mutual credit cooperatives and mutual savings banks, unlike banks, also witnessed a surge in delinquency rates (Figure II-15).

Figure Ⅱ-15. Corprate loan delinquency rates[1)]



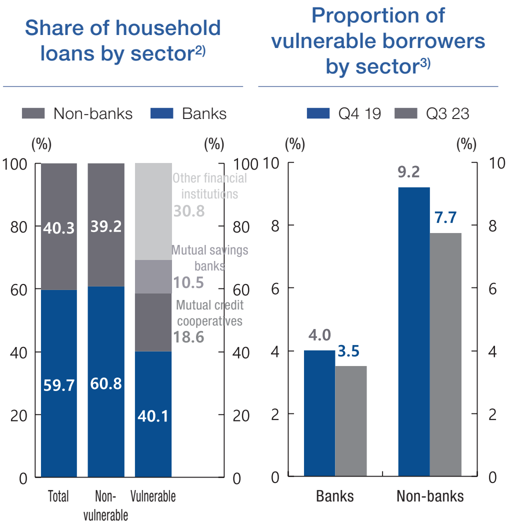
Notes: 1) Based on overdue payments of one month or more for principal and interest for banks, overdue principal for one day or overdue interest for one month or longer for mutual credit cooperatives and mutual savings banks.

2) The scope of banks includes all banks including foreign branches. Mutual credit cooperatives exclude MG community credit cooperatives.

Source: Financial Institution Business Report, Financial Supervisory Services

In terms of the share of household loans to vulnerable borrowers by sector, at the end of the third quarter of 2023, banks accounted for 40.1%, while non-banks, including mutual credit cooperatives (18.6%) and mutual savings banks (10.5%), constituted 59.9%. The proportion of loans to vulnerable borrowers within household loans by non-banks stood at 7.7%, higher than 3.5% for banks. However, at the end of the third quarter of 2023, the proportion of loans to vulnerable borrowers by both banks and non-banks fell by 0.5%p and 1.5%p, respectively, compared to the end of 2019 (Figure II-16).

Figure Ⅱ-16. Household loans to vulnerable borrowers by sector[1)]



Notes: 1) Banks include domestic banks, while non-banks encompass mutual credit cooperatives, mutual savings banks, insurance companies, credit-specialized financial companies, and private money lenders.

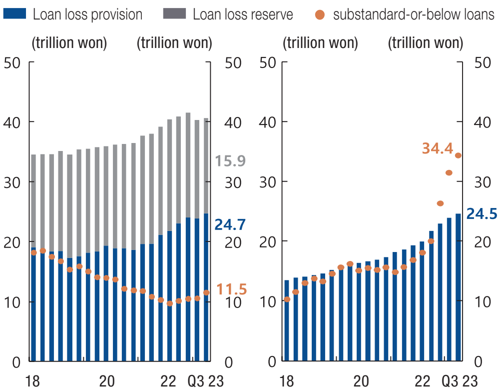
2) As of the end of Q3 2023

3) Proportion of loans to vulnerable borrowers in household loans within the respective sector

Source: Bank of Korea Consumer Credit Panel

Examining the loss absorption capacities of deposit-taking institutions in response to the potential deterioration of asset soundness, at the end of the third quarter of 2023, banks adequately reserved for loan loss provisions (KRW 24.7 trillion) and loan loss reserves (KRW 15.9 trillion) relative to the volume of substandard-or-below loans (KRW 11.5 trillion). However, for NBDIs, the volume of substandard-or-below loans (KRW 34.4 trillion) exceeded their loan loss provisions (KRW 24.5 trillion)[22] (Figure II-17). Banks are maintaining a robust level of loss absorption capacities through risk management and additional reserves as encouraged by financial authorities. On the other hand, NBDIs are assessed to require a further reinforcement of their loss absorption capacities, as their volume of substandard-or-below loans is increasing rapidly in a short period.

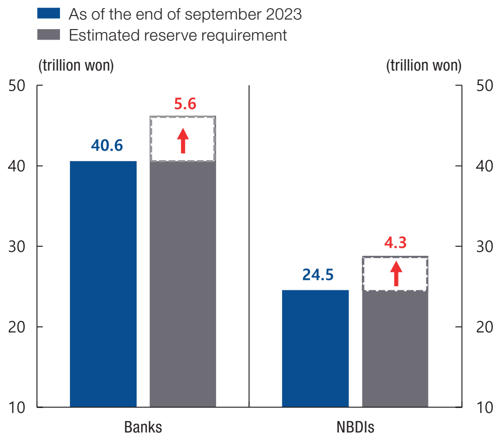
Figure Ⅱ-17. Loan loss provisions and reserves of deposit-taking institutions



Notes: 1) Based on loan loss provisions and loan loss reserves for all banks
2) Loan loss reserves are not applicable to NBDIs
Source: Financial Institution Business Report

Although the loan loss provisions held by banks are at a satisfactory level, considering the impact of the global financial crisis, banks are also deemed to require additional loan loss provisions, thereby improving loss absorption capacities based on conservative estimates (Figure II-18).

Figure Ⅱ-18. Estimation1) of required reserve amount2)



Notes: 1) The required reserves for loan losses after one year was estimated based on a scenario assuming the highest level of non-performing loans since the end of 2009.
2) Based on loan loss provisions and reserves for banks, based on loan loss provisions for NBDIs
Source: Financial Institution Business Report, Bank of Korea

22) However, for both mutual credit cooperatives and mutual savings banks, the proportion of loan loss provisions relative to required reserves surpass the supervisory standard of 100%.

4. Assessment and Implications

To smoothly perform their financial intermediation functions, deposit-taking institutions need to secure stable funding from deposits as their main source of funding, and manage the risk of loan assets appropriately to minimize the potential for defaults. However, in the wake of instability in the short-term funding market in the fourth quarter of the previous year, deposit maturities have shortened, and funding costs have significantly increased. It is also important to note that, given the significant expansion of real estate-related loans before and after COVID-19, the potential for defaults could significantly escalate if high interest rates persist beyond market expectations. Although the liquidity situation has considerably improved compared to the fourth quarter of the previous year and the reserves for loan loss provisions and capital adequacy are exceeding regulatory levels, there is still a need to enhance loss absorption capacities from a more conservative stance.

On the short-term horizon, despite predictions for 2024 that the volume of maturing deposits will increase and the impact of high interest rates will persist, it is necessary to closely monitor the funding stability of deposit-taking institutions[23] and prepare necessary measures. Particularly in preparation for potential liquidity shortages in the sector of NBDIs, it is essential to strengthen the liquidity support capabilities of the central association for each sector. In terms of fund management, some deposit-taking institutions with significant exposure to real estate-related assets will need to make proactive efforts to manage risks. Given the current high uncertainty in the real estate market, it is impossible to rule out the possibility that the passive management of non-performing assets through write-offs or disposal could lead to an expansion of defaults and an increase in associated costs.

To ensure a proactive response, NBDIs must strengthen their loss absorption capacities by enhancing provisions for the rapid increase in the volume of non-performing loans. For banks, it is necessary to further reinforce the crisis response capacity of the Korean financial system as a whole through the smooth implementation of the countercyclical capital buffer, which will be imposed starting in 2024, and efforts to manage soundness indicators such as delinquency rates in consideration of the economic conditions.

23) In November 2023, the Financial Supervisory Service is operating a system ("Real-time Deposit Integrated Monitoring System") that links the deposit databases of the Korea Federation of Banks and the Korea Federation of Savings Banks, allowing for real-time monitoring of fund inflows and outflows. This data is expected to be provided to the Bank of Korea and the Korea Deposit Insurance Corporation to be utilized in a collaborative response infrastructure through inter-agency information sharing.

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